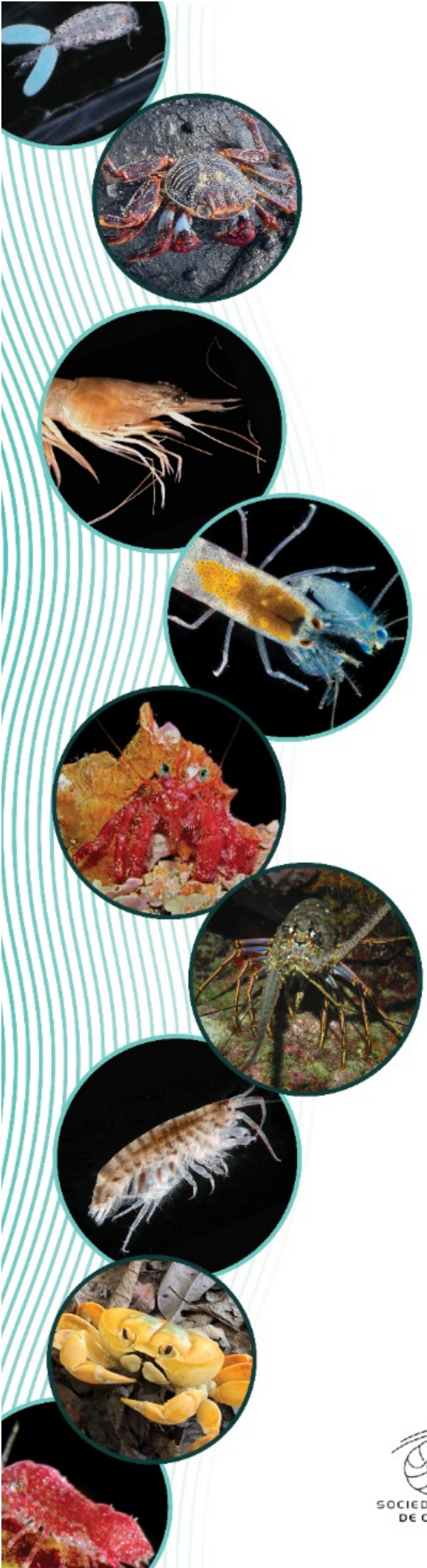
ISBN: 978-65-5941-736-0



Annals of XI Brazilian Congress on Crustaceans / The Crustacean Society Summer Meeting Brazil

XI CBC
TCS Summer Meeting
June 06-09th, 2022
Brazil

Santos (Brazil) - 2022

SOCIEDADE BRASILEIRA DE CARCINOLOGIA

unesp
UNIVERSIDADE ESTADUAL PAULISTA "JÚLIO DE MESQUITA FILHO"

The Crustacean Society

CONGRESSO BRASILEIRO SOBRE CRUSTÁCEOS (CBC)
THE CRUSTACEAN SOCIETY (TCS) SUMMER MEETING

XI CBC
TCS Summer Meeting
June 06-09th, 2022
Brazil

THEME
Tradition and Innovation:
Integrative Approaches to Crustacean Studies

Annals of

XI Brazilian Congress on Crustaceans / The Crustacean Society Summer Meeting Brazil

Santos (SP) – Brazil: June 06-09th, 2022

Brazil (2022)

A613 Annals of XI Brazilian Congress on Crustaceans / The Crustacean Society Summer Meeting Brazil (2022: São Vicente, SP)
Proceedings of The Crustacean Brazilian Congress (CBC) 11th and The Crustacean Society (TCS) – Summer Meeting. Tradition and innovation: integrative approaches to crustacean studies. Online event, 06th to 09th june, 2022. Rogério Caetano Costa, Marcelo Antonio Amaro Pinheiro (Orgs.) – São Vicente: Biosciences Institute, São Paulo State University / UNESP, Coastal Campus, 2022.
242 p.; il.

ISBN: 978-65-5941-736-0

1. Crustacean. 2. Congress. I. Rogério Caetano Costa. II. Marcelo Antonio Amaro Pinheiro. III. Crustacean Brazilian Congress (CBC) (11. : 2022 : São Vicente, SP. IV. The Crustacean Society (TCS) - Summer Meeting. V. Título

CDD 595.3

ORGANIZERS

Sociedade Brasileira de Carcinologia (SBC)
Dr. Allysson Pontes Pinheiro – Presidente

The Crustacean Society (TCS)
Dr. Benny Chan – President

ACCOMPLISHING INSTITUTION

Universidade Estadual Paulista (UNESP)
Faculdade de Ciências (FC) – UNESP Câmpus de Bauru
Instituto de Biociências (IB) – UNESP Câmpus do Litoral Paulista

COORDINATORS

Dr. Rogério Caetano da Costa – FC / UNESP Câmpus de Bauru
Dr. Marcelo Antonio Amaro Pinheiro – IB / UNESP Câmpus do Litoral Paulista

INTERNET PROVIDER

Bourbon Santos Convention Hotel
Santos (SP) - Brazil

SPONSORS

CNPq
Conselho Nacional de Desenvolvimento Científico e Tecnológico

analítica
www.analiticaweb.com.br

APOIO E FINANCIAMENTO DOS PROGRAMAS DE PÓS-GRADUAÇÃO

Biociências - Interunidades (UNESP FC / Câmpus de Assis e Bauru)
Biodiversidade de Ambientes Costeiros (UNESP IB / Câmpus do Litoral Paulista)
Ecologia, Evolução e Biodiversidade (UNESP IB / Câmpus de Rio Claro)
Zoologia (UNESP IB / Câmpus de Botucatu)

Table of Contents

Technical-Scientific Committee	1
General Information and Announcements	4
Welcome from the Organizing Committee	5
Event Organization and Structure	6
Additional Information	7
Scientific Program	8
Conference	10
Symposia	12
Oral Presentation	33
Videoposters – Session 1 (VPI)	35
Videoposters – Session 2 (VP2)	41
Workshops	47
Abstracts at CBC.TCS.2022	51

TECHNICAL-SCIENTIFIC COMMITTEE

Organizers

Dr. Rogério Caetano Costa
(Chairman)

Departamento de Biologia
Faculdade de Ciências (FC) - UNESP Câmpus de Bauru
Núcleo de Estudos em Biologia, Ecologia e Cultivo de Crustáceos (NEBECC)
Laboratório de Biologia da Conservação de Crustáceos (CRUSTA)
Bauru, SP, Brazil
Email: rogerio.c.costa@unesp.br

Dr. Marcelo Antonio Amaro Pinheiro
(Chairman)

Departamento de Ciências Biológicas e Ambientais
Instituto de Biociências (IB) - UNESP Câmpus do Litoral Paulista (CLP)
Laboratório de Biologia da Conservação de Crustáceos (CRUSTA)
São Vicente, SP, Brazil
Email: marcelo.pinheiro@unesp.br

International Committe

William Santana, Ph.D.
(Coordinator)

Pró-Reitoria de Pesquisa e Pós-Graduação
Universidade do Sagrado Coração (USC)
Laboratório de Sistemática Zoológica
Bauru, SP, Brazil
Email: willsantana@gmail.com

Antonio Leão Castilho, Ph.D.

Departamento de Zoologia - Instituto de Biociências (IB)
Universidade Estadual Paulista (UNESP)
Núcleo de Estudos em Biologia, Ecologia e Cultivo de Crustáceos (NEBECC)
Botucatu, SP, Brazil
Email: antonio.castilho@unesp.br

Marcos Domingos Siqueira Tavares, Ph.D.

Museu de Zoologia da USP (MZUSP)
Universidade de São Paulo (USP)
Laboratório de Carcinologia
São Paulo, SP, Brazil
Email: mdst@usp.br

Fernando Mantelatto, Ph.D.

Departamento de Biologia - FFCLRP
Universidade de São Paulo (USP)
Laboratório de Bioecologia e Sistemática de Crustáceos
Ribeirão Preto, SP, Brazil
Email: flmantel@usp.br

Scientific Committee

Dr. Christopher Tudge
(Chairman)

Biology Department
American University (AU)
Washington, DC, USA
Email: ctudge@american.edu

Dr. Heather Bracken-Grissom

Biological Sciences Department
Florida International University (FIU)
Miami, FL, USA
Email: hbracken@fiu.edu

Dr. Javier Luque

Department of Geology and Geophysics
Yale University
New Haven, CT, USA
Email: javierluquec@gmail.com

Dra. Paula Beatriz Araujo

Departamento de Zoologia, Instituto de Biociências
Universidade Federal do Rio Grande do Sul (UFRS)
Porto Alegre, RS, Brazil
Email: pabearaujo@gmail.com

Dr. Sandro Santos

Departamento de Ecologia e Evolução
Universidade Federal de Santa Maria (UFSM)
Santa Maria, RS, Brazil
Email: ssantos@ccne.ufsm.br

Financial Committee

Dr. Rogério Caetano da Costa (UNESP / Câmpus de Bauru) - President
Dr. Régis Augusto Pescinelli (UNESP / Câmpus de Bauru, BR)

Sponsorship Committee

Dr. Marcelo Antonio Amaro Pinheiro (UNESP / Câmpus do Litoral Paulista, BR) - President
MSc. Fernanda Vargas Barbi de Souza (UNESP / Câmpus do Litoral Paulista, BR)
Biol. Márcio Camargo Araújo João (UNESP / Câmpus do Litoral Paulista, BR)
Msc. Júlia Fernandes Perroca (UNESP / Câmpus de Bauru, BR)

Social Media Committee

Dr. Marcelo Antonio Amaro Pinheiro (UNESP / Câmpus do Litoral Paulista, BR) - Presidente
Dra. Milena Regina Wolf (UNESP / Câmpus de Botucatu, BR)
MSc. Júlia Fernandes Perroca (UNESP / Câmpus de Bauru, BR)
Gustavo Henrique Spadotto Pinheiro (Santos, BR)
Ryan Pinheiro Funari (Botucatu, BR)

Comissão do Cerimonial

Patrícia Gasparini Spadaro (Coordinator International Office - Reitoria da UNESP, BR)
Denise Martins do Valle (UNESP / Câmpus do Litoral Paulista, BR)

Video Streaming Committee

Dr. Alexandre da Silva (Museu de Zoologia USP, BR)
MSc. Júlia Fernandes Perroca (UNESP / Câmpus de Bauru, BR)
MSc. Isabela Morais (UNESP / Câmpus de Botucatu, BR)
Dra. Jéssica Colavite (Museu de Zoologia USP, BR)
Dra. Milena Regina Wolf (UNESP / Câmpus de Botucatu, BR)
MSc. Renan Augusto dos Santos (UNESP / Câmpus de Botucatu, BR)

Support Committee

Dra. Milena Regina Wolf (UNESP / Botucatu, BR)
Dra. Jéssica Colavite (Museu de Zoologia USP, BR)
MSc. Júlia Fernandes Perroca (UNESP / Bauru, BR)
MSc. Isabela Morais (UNESP / Botucatu, BR)

Welcome from the Organizing Committee

Dear friends,

On behalf of the Organizing Committee, it is an honor to welcome you to the **XI Brazilian Crustacean Congress and The Crustacean Society - Summer Meeting**, at Santos, Brazil. It is the second time these events are organized together in Brazil and thus the first time in São Paulo state.

This event was to be held in 2020 in person. However, due to the COVID pandemic that started that year, the event was postponed. Our perspective was that in 2022 the congress would be in person again, but unfortunately, it was not possible and both societies involved (SBC and TCS) and the Organization Committee of this event decided to be a virtual event, aiming for the safety and well-being of all participants.

The scientific event will begin on June 6th (Monday) with a solemn opening session at 9:00 am, Brasilia time, with a Magna Plenary Conference and many symposia with precious lectures. The 2-day scientific program that will follow on full days (June 7-8th, Tuesday, and Wednesday, respectively) includes other plenary talks, symposia, oral presentation sessions, and videoposter presentations on a wide range of topics. In total, we have 10 diverse symposia (with approximately 70 speakers) dealing with the theme *'Tradition and Innovation: Integrative Approaches to Crustacean Studies'*. There will be a student competition for the best oral and poster presentation.

The Scientific Committee received 195 abstracts, distributed into different topics on taxonomy and biology of crustaceans. We hope that all participants can enjoy this important event and that the virtual format that was necessary is not painful for them but inspiring, allowing the sharing of knowledge about the lives of crustaceans. We believe the worst is over.

We learned from this, but we still suffer the misfortunes of this separation. Let's toast to life and face it with determination and determination.

Santos (Brazil) – June 6-9th, 2022

Rogerio Costa & Marcelo Pinheiro
Co-chairmen of CBC.TCS.2022 - Brazil

Event Summary

During the assembly of the Brazilian Society of Carcinology (SBC), held in Recife (PE) in November 2018, on the occasion of the X Brazilian Congress on Crustaceans (CBC), it was decided that the city of Santos (SP) would be chosen as the seat of the XI CBC, in 2020. It was also approved that this event would be under the responsibility of professors, researchers and students from State of São Paulo University (UNESP). At the same time, in Washington (USA), it was decided during the meeting of The Crustacean Society (SBC), that the TCS Summer Meeting would be held in Brazil, together, when the event was named CBC.TCS.Santos, to be held at the Bourbon Santos Convention Hotel, in Santos, on the Coastal Center of the State of São Paulo. However, due to the COVID-19 pandemic, this event had to be postponed to June 6-9, 2022, as well as decided to be held in virtual format, due to the emergence of new mutations of this virus, worsening the situation in most major Latin countries and to ensure the safety of all participants. The congress was already being developed on a computerized platform, which was added to video streaming studios installed in three rooms in the same hotel initially proposed, which would act as a video emission center. Held every two years, the CBC is an event promoted by SBC, where the results of scientific investigations in the Carcinology Area are presented. TCS, in turn, holds two annual events, the winter one in the USA and the summer meeting (Summer Meeting) in other countries. The study of crustaceans has grown exponentially throughout the world, always assuming a prominent position in national and international scientific scenarios. Due to the commitments assumed by Brazil during the United Nations Conference on Environment and Development (ECO92) and compliance with the terms of the Convention on Biodiversity, it is up to our country to advance in the inventory of native carcinofauna, be it marine, freshwater or terrestrial. Thus, the conferences promoted by SBC and TCS have as common objectives to bring researchers together and stimulate the exchange of knowledge, providing their participants (researchers and students) with quality events. The theme of the event will be "Tradition and Innovation: Integrative Approaches to the Study of Crustaceans", being structured to include 04 conferences, 10 symposia (with about 50 lectures), work presentations (oral and videoposters) and 07 mini-courses.

Event Organization and Structure

Aiming to create a visual identity for the **XI CBC - TCS Summer Meeting Brazil,** a logo that would represent the city of Santos and the emblematic crustaceans of the place has been created. Even with the change of the event to the virtual format, we decided make a small change on the logo, due to the fact that the Baixada Santista Metropolitan Region (RMBS) presents a rich biodiversity of crustaceans, as well as symbolizes one of the most important touristic and fishing centers in the world. state of São Paulo. After several studies, carried out by the organizers, on a collab with *Gustavo Pinheiro Soluções Audiovisuais*, we chose the emblematic rounded balusters of Santos, one of the oldest cities on the coast of the State of São Paulo (474 years old), framing the seven-bearded shrimp" (*Xiphopenaeus kroyeri*) and the blue crab (*Callinectes danae*). This species of penaeid shrimp stands out for its great commercial value, showing wide geographic distribution in shallower places throughout the State of São Paulo (Brazil), occupying the third position as a fishing resource on the coast of São Paulo, in addition to being the second item in capture, right after sardines (*Sardinella brasiliensis*).The blue crab, on the other hand, is very abundant in the Bay-Estuary of Santos, where it is considered an expressive fishing resource, especially by artisanal fishermen from "Vila dos Pescadores", which sell these animals to tourists in the fishing markets. or even on the highways.

The **CBC.TCS.Santos** Organizing Committee, as well as the Societies involved (SBC and TCS), expect that the results to be presented on this event can be scientifically significant, for a better educated and sustainable usage of biological diversity. In addition, it is expected to enhance Brazilian scientific research on crustaceans, based on this international exchange, which would be fundamental to expand the papers to be published in high scientific impact journals. Besides that, Brazilian and foreign carcinologists will have the opportunity to reflect, exchange ideas and experiences, so that the latest discoveries are disseminated and the directions of Carcinology in Brazil can be discussed.

The **CBC.TCS.2022** (check the schedule below), counts on 04 conferences (CF1 to CF4), 10 symposia (S1 to S10), with 76 speakers, approaching the most varied themes on Carcinology. Additionally, the event offers 4 sessions of oral presentations (OP1 to OP4, each presentation with 15 min.); 2 video poster sessions, with 75 works each (VP1 and VP2, with presentations of 5 min.); and 7 workshops (W1 to W7), carried out post-congress.

The Organizing Committee of **CBC.TCS.2022 (XI CBC-TCS Summer Meeting - Brazil)** received a total of 192 abstracts, divided in the following categories: 150 abstracts on video poster format, 32 abstracts for oral presentation and 10 abstracts

submitted by invited speakers on symposia. The new video poster presentation format has replaced the traditional poster sessions. The total amount of people enrolled is 243, of which 81 were senior professionals, 33 were recent-graduated doctors and the remaining 50% were undergraduate and graduate students developing their scientific initiation, master's and doctoral studies. Undergraduate and graduate students accounted for a significant portion of this Congress, which highlights the importance of scientific events such as this one as complementary to academic training and the acquisition of better professional levels. We are also pleased to report that we had speakers from all continents, with 30 countries accounted. From the Brazilian territory, we had subscribers belonging to the 17 states of the country.

Additional Information

The **CBC.TCS.2022** will be held in 4 (four) days, from June 6th to 9th, 2022 (Monday to Thursday), having in its schedule conferences, symposia (with oral communication), presentation of panels and workshops, according to the scientific program that will be presented below. All activities will take place in virtual rooms, from 9 am to 7:30 pm (BRT), ending the last day (Jun/8/2022) at 8 pm. (BRT)

During the conferences, topics of general interest will be addressed, within the different areas of Carcinology. For the symposia, oral communications of completed works will be presented and of relevant contribution within the theme of each session, the topics of the sessions will be determined according to the profile presented on the abstracts. Studies in progress with previous results will be disclosed in the video-panel session. Selected national and international speakers will address current and innovative topics. In the workshops, students and other interested parties will have the possibility of greater contact with the lecturers, on topics of carcinological interest.

Symposia and oral presentations will be divided by thematic area, with the number of oral presentations being determined according to the papers to be submitted to the congress. In that regard, 7 (seven) thematic topics were previously selected, which will guide the submission, the organization of the symposia and the aforementioned oral presentations, as follows: 1) Taxonomy and Phylogeny; 2) Ecology and Biodiversity; 3) Genetics and Conservation; 4) Reproduction and Development; 5) Aquaculture and Fishing; 6) Physiology and Toxicology; 7) Environmental Education.

XI CBC TCS Summer Meeting
June 06-09th, 2022
Brazil

THEME
Tradition and Innovation:
Integrative Approaches to Crustacean Studies

Programação Científica / Scientific Program

06 de junho de 2022 (Segunda-feira) / June, 06th 2022 (Monday)			
9:00 - 9:45 h	Cerimônia de Abertura do Evento / *Opening Session*		
9:45 - 10:00 h	Intervalo / *Interval*		
10:00 - 11:30 h	Conferência 1 / *Plenary Lecture 1* **(CF1)** **"Crabs of the world, the world of crabs"** Dr. Daniéle Guinot (Museum d'Histoire Naturelle – France)		
11:30 - 13:30 h	Simpósio 2 (2h) / *Symposium 2* **(S2: FISHERY)**	Simpósio 3 (2h) / *Symposium 3* **(S3: CAVE)**	Simpósio 8 (2h) / *Symposium 8* **(S8: BEHAV)**
13:30 - 14:30 h	Almoço / *Lunch*		
14:30 - 16:00 h	Conferência 2 / *Plenary Lecture 2* **(CF2)** **'Perspectives on crustacean osmoregulation: from systemic adjustment to fine-tuning molecular transport mechanisms'** Dr. John McNamara (USP Ribeirão Preto – Brazil)		
16:00 - 18:00 h	Apresentações Orais 1 *Oral Presentations 1* **(OP1)**	Apresentações Orais 2 *Oral Presentations 2* **(OP2)**	Apresentações Orais 3 *Oral Presentations 3* **(OP3)**
18:00 - 19:30 h	Sessão de Videoposters 1 / *Videoposter Presentations 1* **(VP1)**		

07 de junho de 2022 (Terça-feira) / June, 07th 2022 (Tuesday)				
09:00 - 11:00 h	Simpósio 1 (2h) / *Symposium 1* **(S1: AEGLA – 1.2)**	Simpósio 5 (2h) / *Symposium 5* **(S5: AMPHI – 1.3)**	Apresentações Orais 4 *Oral Presentations 4* **(OP4)**	
11:00 - 11:30 h	Intervalo / *Interval*			
11:30 - 13:00 h	Conferência 3 / *Plenary Lecture 3* **(CF3)** **'Brachyuran Phylogeny: Achievements, Conflicts and Future Prospects'** Dr. Marcos Tavares (Museu de Zoologia USP – Brazil)			
13:00 - 14:00 h	Almoço / *Lunch*			
14:00 - 16:00h	Simpósio 1 (4h) *Symposium 1* **(S1: AEGLA – 2.2)**	Simpósio 5 (4h) *Symposium 5* **(S5: AMPHI – 2.3)**	Simpósio 10 (2h) *Symposium 10* **(S10: ECOTOX)**	--
16:00 - 18:00 h			--	Simpósio 9 (2h) *Symposium 9* **(S9: DEEPSEA)**
18:00 - 19:30 h	Sessão de Videoposters 2 / *Videoposter Presentations 2* **(VP2)**			

08 de junho de 2022 (Quarta-feira) / June, 08th 2022 (Wednesday)			
9:00 - 11:00 h	Simpósio 4 (4h) *Symposium 4* **(S4: CRAYFISH)**	Simpósio 5 (2h) *Symposium 5* **(S5: AMPHI – 3.3)**	Simpósio 7 (4h) *Symposium 7* **(S7: INTEGRA)**
11:00 - 13:00 h		Simpósio 6 (2h) *Symposium 6* **(S6: REPROD)**	
13:00 - 14:00 h	Almoço / *Lunch*		
14:00 - 15:30 h	Conferência 4 / *Plenary Lecture 4* **(CF4)** **'The Growth, Respiration and Reproduction of Crustaceans: A Synthesis through the Gill-Oxygen Limitation Theory (GOLT)'** Daniel Pauly (University of British Columbia – Canadá)		
15:30 - 15:45 h	Intervalo / *Interval*		
15:45 - 16:30 h	Reunião da TCS / *Meeting Councils and TCS members*		
16:30 - 17:30 h	Nauplius Journal / *Nauplius Journal Plenary Lecture* **'The Molt to the Next Instar'** Dr. Christopher Tudge (American University – USA)		
17:30 - 19:00 h	Assembleia Geral da SBC / *SBC Meeting* Premiações dos Melhores Trabalhos / *Best Student Awards* Sede do Próximo CBC / *Next CBC*		
19:00 - 19:30 h	Encerramento & Homenagens / *Closing Session & Honours*		

09 de junho de 2022 (Quinta-feira) / June, 09th 2022 (Thursday)

Mini-Cursos / Workshops

9:00 - 13:00 h: Workshops (W1, W2, W3, W4, W5, W6 and W7)
13:00 - 14:00 h: Almoço / Lunch
14:00 - 18:00 h: Workshops (W1, W2, W3, W4, W5, W6 and W7)

XI CBC TCS Summer Meeting
June 06-09th, 2022
Brazil

LISTA DE SIMPÓSIOS / SYMPOSIUM LIST

S1: AEGLA – To Encourage Study on the Systematics and Biology of *Aegla* (4 hours)

- **Part I: Taxonomy, Phylogenetics, Diversity and Distribution of *Aegla***

Coordinators: Dr. Sérgio Bueno & Dr. Tadashi Kawai

- **Part II: Reproduction, Physiology and Populational Studies**

Coordinators: Dr. Christopher Tudge & Dr. Milena Wolf

- **Round Table: 'New Challenges in Aeglid Conservation'**

Coordinators: Dr. Laura Lopez Greco & Dr. Sandro Santos

S2: FISHERY – Ecosystem Impacts of Shrimp Fisheries: Identifying the Main Problems and Possible Solutions (2 hours)
Coordinator: Dr. Luiz Felipe Dumont

S3: CAVE – Ecology and Diversity of Subterranean Crustaceans: from Surface to Underground (2 hours)
Coordinator: Dr. Maria Elina Bichuette

S4: CRAYFISH – Integrative Studies of Freshwater Crayfish in South America (4 hours)
Coordinator: Dr. Tadashi Kawai & Dr. Felipe Ribeiro

S5: AMPHI – Amphipods as Models in Multidisciplinary Studies (8 hours)

Coordinator: Dr. Fosca Pedini Pereira Leite

- **Round Table: Contribution to Increasing Knowledge of the Evolution and Phylogeny of Amphipods in Brazil and Future Perspectives**

Coordinator: Dr. Silvana Gomes Leite Siqueira

- **Amphipods and Models in Multidisciplinary Studies**

Coordinator: Dr. Giuliano Buzá Jacobucci

S6: REPROD – The Race to Paternity in Decapods: Morpho-Functional Analysis of Sperm Transference and Storage (2 hours)
Coordinators: Dr. Laura Lopez Greco & Dr. Fernando Zara

S7: INTEGRA – Using Integrative Biology and Crustacean Model Systems to Understand Nature (4 hours)
Coordinators: Dr. Heather Bracken-Grissom & Dr. Charles Derby

S8: BEHAV – What Behavioral Ecology and Evolution can Teach us About Crustaceans? (2 hours)
Coordinator: Dr. Alexandre Palaoro

S9: DEEPSEA – Diversity and Evolution in Deep-sea Crustaceans (2 hours)
Coordinator: Dr. Irene Cardoso

S10: ECOTOX – Crustaceans as Model Organisms in Aquatic Toxicology (2 hours)
Coordinator: Dr. Denis Moledo de Souza Abessa

CNPq
Conselho Nacional de Desenvolvimento Científico e Tecnológico

CONFERENCES (CF1 and CF2)

06/06/2022: Segunda-feira / *Monday*

R1: Sala 1 / Room 1 – "Profa. Dra. Georgina Bond Buckup"

10:00h - 11:30h — **CF1: Conferência 1 / *Conference 1***

Crabs of the World, the World of Crabs

Dr. Danièle Guinot
Museum d'Histoire Naturelle (France)

"Our world is splendidly filled with an extraordinary diversity of crabs. Brachyuran crabs, the most evolved of all Crustaceans, number over 7,500 different species. They are animals that are sometimes loved, sometimes hated. They may seem familiar to some, but their fascinating world of amazing shapes, unexpected behaviours and wonderful adaptations never ceases to amaze us, to amaze me. A world yet to be discovered. What we call natural history is not a thing of the past, and only the knowledge of the crabs of the world, of the world of crabs can contribute to their protection and that of their natural habitats. I am going to make you love them by passing on you that I have learned about them from my researches since I started at the age of twenty and which has filled my life for more than 60 years. A whole life, and yet still so many questions." – ***Danièle Guinot.***

06/06/2022: Segunda-feira / *Monday*

R1: Sala 1 / Room 1 – "Profa. Dra. Georgina Bond Buckup"

14:30h - 16:00h — **CF2: Conferência 2 / *Conference 2***

Perspectives on Crustacean: from Systemic Adjustment to Fine-tuning Molecular Transport Mechanisms

Dr. John McNamara
Universidade de São Paulo – USP Ribeirão Preto (Brazil)

"This presentation will review our knowledge of physiological and biochemical adjustments and the adaptations of crustaceans to their different biotopes and osmotic niches, focusing on the two main groups studied, the caridean shrimps and the brachyuran crabs. I will begin with the broad principles of hemolymph osmotic and ionic regulation, and examine the characteristics associated with different levels of structural organization: from wide-ranging systemic properties, through ion movements across epithelia dependent on transport by specialized cells, to the functional expression of genes and proteins that underlie ion regulatory ability. My aim is to bring together these different attributes of distinct structural levels in a coherent appraisal of how osmoregulatory physiology has developed over time, what are the current trends in ongoing research, and how we might best focus our attention on unresolved issues, such as hemolymph chloride regulation." – ***John McNamara.***

CONFERENCES (CF3 and CF4)

07/06/2022: Terça-feira / *Tuesday*

R1: Sala 1 / Room 1 – "Profa. Dra. Georgina Bond Buckup"

11:30h - 13:00h

CF3: Conferência 3 / *Conference 3*

Brachyuran Phylogeny: Achievements, Conflicts and Future Prospects

Dr. Marcos Tavares
Museu de Zoologia USP (Brazil)

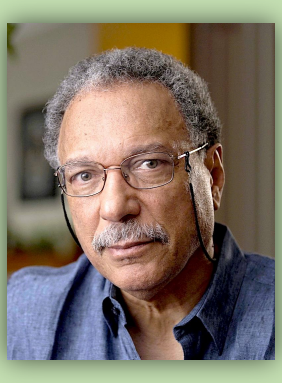
*"Major progress has been made towards consistent resolution for brachyuran crab phylogeny. Recent findings in the field are summarized. However, some major controversies (e.g., monophyly of Podotremata and Heterotremata, position of Cyclodorippoidea and Raninoidea) and poorly resolved deep nodes remain. Future directions are explored with particular emphasis to morphology." – **Marcos Tavares**.*

08/06/2022: Quarta-feira / *Wednesday*

R1: Sala 1 / Room 1 – "Profa. Dra. Georgina Bond Buckup"

14:00h - 16:30h

CF4: Conferência 4 / *Conference 4*



The Growth, Respiration and Reproduction of Crustaceans: A Synthesis through the Gill-Oxygen Limitation Theory (GOLT)

Dr. Daniel Pauly
University of British Columbia (Canada)

*"Crustaceans breathe through gills which, given that they function as a (2-dimentional) surface, cannot keep up with the oxygen demand generated by the increasing weight of their (3-dimensional) bodies. This presentation will thus highlight the implication of the resulting 'dimensional tension' for the growth of crustaceans ranging in size from tiny copepods to large lobsters. Also, the reproduction of crustaceans will be shown to be a succession of events that do not shape their growth, but, which, on the contrary, are shaped by it. Finally, this presentation will show how the linkages implied by the GOLT between growth, respiration and reproduction explain multiple aspects of the life history of crustaceans. Also, the GOLT allows solid predictions of the likely effect of ocean and freshwater bodies' warming on crustaceans." – **Daniel Pauly**.*

SIMPÓSIOS / SYMPOSIA

07/06/2022: Terça-feira / *Tuesday*

R1: Sala 1 / Room 1 – "Profa. Dra. Georgina Bond Buckup"

9:00h - 11:00h

S1 (AEGLA – 1.2): Simpósio 1 / *Symposium 1*

To Encourage Study on the Systematics and Biology of *Aegla*

Part 1: Taxonomy, Phylogenetics, Diversity and Distribution

COORDINATOR

SÉRGIO BUENO
Universidade de São Paulo, SP (Brazil)

COORDINATOR

TADASHI KAWAI
Hokkaido Research Organization (Japan)

TAXONOMY AND PHYLOGENETICS OF EXTANT AEGLIDS

SANDRO SANTOS
Universidade Federal de Santa, UFSM (Brazil)

SPERMIOTAXONOMY

MILENA WOLF
Universidade Estadual Paulista – UNESP Câmpus de Botucatu (Brazil)

DIVERSITY AND DISTRIBUTION OF AEGLIDS IN BRAZIL

GUSTAVO TEIXEIRA
Universidade Estadual de Londrina, PR (Brazil)

The fascinating taxon Aegla is only distributed in six South American countries (Brazil, Chile, Argentina, Uruguay, Paraguay & Bolivia), and so has mostly been studied by Portuguese and Spanish speaking researchers. The joint CBC.TCS.2022 meeting is the perfect opportunity for communication between these Latin and South American scientists and the rest of the international community. The symposium organizers also think that international scientific congresses, like the joint CBC.TCS.2022 meeting, should be an important venue for young students and researchers or early career scientists to participate and share their knowledge.

Coordenadores / Coordinators

Dr. Sérgio Bueno (Universidade de São Paulo – USP, Brazil)
Dr. Tadashi Kawai (Hokkaido Research Organization, Japan)

Taxonomy and Phylogenetics of Extant Aeglids
Dr. Sandro Santos (Universidade Federal de Santa Maria – UFSM, Brazil).

Spermiotaxonomy
Dr. Milena Wolf (Universidade Estadual Paulista – UNESP Câmpus de Botucatu, Brazil)

Diversity and Distribution of Aeglids in Brazil
Dr. Gustavo Teixeira (Universidade Estadual de Londrina – UEL, Brazil).

07/06/2022: Terça-feira / *Tuesday*

R1: Sala 1 / Room 1 – "Profa. Dra. Georgina Bond Buckup"

14:00h - 16:00h

S1 (AEGLA – 2.2): Simpósio 1 / *Symposium 1*

To Encourage Study on the Systematics and Biology of *Aegla*

Part 2: Reproduction, Physiology and Populational Studies

COORDINATOR

MILENA WOLF
Universidade Estadual Paulista – UNESP Câmpus de Botucatu (Brazil)

COORDINATOR

CHRISTOPHER TUDGE
American University, Washington DC (USA)

LATITUDINAL GRADIENT AND REPRODUCTIVE PATTERN IN DECAPODS, WITH EMPHASIS ON AEGLIDS

ANTONIO CASTILHO
Universidade Estadual Paulista, Botucatu, SP (Brazil)

PHYSIOLOGICAL ECOLOGY

JOHN MCNAMARA
Faculdade de Filosofia, Ciências e Letras - USP/RP (Brazil)

POPULATION SIZE ESTIMATION

SÉRGIO BUENO
Universidade de São Paulo, SP (Brazil)

The fascinating taxon Aegla is only distributed in six South American countries (Brazil, Chile, Argentina, Uruguay, Paraguay & Bolivia), and so has mostly been studied by Portuguese and Spanish speaking researchers. The joint CBC.TCS.2022 meeting is the perfect opportunity for communication between these Latin and South American scientists and the rest of the international community. The symposium organizers also think that international scientific congresses, like the joint CBC.TCS.2022 meeting, should be an important venue for young students and researchers or early career scientists to participate and share their knowledge.

Coordenadores / Coordinators
Dr. Milena Wolf
Universidade Estadual Paulista – UNESP Câmpus de Botucatu (Brazil)
Dr. Christopher Tudge
American University (USA)

Latitudinal Gradient and Reproductive Pattern in Decapods, with Emphasis on Aeglids
Dr. Antonio Leão Castilho (Universidade Estadual Paulista – UNESP Câmpus de Botucatu, Brazil).

Physiological Ecology
Dr. John MacNamara (Universidade de São Paulo - USP Ribeirão Preto, Brazil).

Population Size Estimation
Dr. Sérgio Bueno (Universidade de São Paulo – USP, Brazil).

07/06/2022: Terça-feira / *Tuesday*

R1: Sala 1 / Room 1 – "Profa. Dra. Georgina Bond Buckup"

16:00h - 18:00h

S1 (AEGLA – 2.2): Simpósio 1 / *Symposium 1*

To Encourage Study on the Systematics and Biology of *Aegla*

Round Table: New Challenges in Aeglid Conservation

COORDINATOR

SANDRO SANTOS
Federal University of Santa Maria, RS (Brazil)

COORDINATOR

LAURA LOPEZ-GRECO
University of Buenos Aires, Buenos Aires (Argentina)

CONSERVATION STATUS OF AEGLIDS FROM BRAZIL

HARRY BOOS
Instituto Chico Mendes de Conservação da Biodiversidade (Brazil)

CONSERVATION STATUS OF AEGLIDS FROM ARGENTINA

VERONICA WILLINER
Universidade Nacional del Litoral (Argentina)

CONSERVATION STATUS OF AEGLIDS FROM CHILE

CARLOS G. JARA
Instituto de Ciencias Marinas y Limnológicas, Universidad Austral de Chile, Valdivia (Chile)

The fascinating taxon Aegla is only distributed in six South American countries (Brazil, Chile, Argentina, Uruguay, Paraguay & Bolivia), and so has mostly been studied by Portuguese and Spanish speaking researchers. The joint CBC.TCS.2022 meeting is the perfect opportunity for communication between these Latin and South American scientists and the rest of the international community. The symposium organizers also think that international scientific congresses, like the joint CBC.TCS.2022 meeting, should be an important venue for young students and researchers or early career scientists to participate and share their knowledge.

Coordenadores / Coordinators

Dr. Sandro Santos (Universidade Federal de Santa Maria – UFSM, Brazil)
Dr. Laura Lopez Greco (Universidad de Buenos Aires, Argentina)

Conservation Status of Aeglids from Brazil
Dr. Harry Boos (ICMBio / CEPSUL, Brazil).

Conservation Status of Aeglids from Argentina
Dr. Verónica Williner (Universidade Nacional del Litoral, Argentina).

Conservation Status of Aeglids from Chile
Dr. Carlos G. Jara (Instituto de Ciencias Marinas y Limnológicas – Universidad Austral de Chile, Chile).

Observation: A very sensitive homage to *Dr. Georgina Bond-Buckup* and *Dr. Ludwig Buckup* is scheduled to be delivered by *Dr. Carlos Jara* and *Dr. Sandro Santos* following the conclusion of the Round Table.

06/06/2022: Segunda-feira / *Monday*

R1: Sala 1 / Room 1 – "Profa. Dra. Georgina Bond Buckup"

11:30h - 13:30h

S2 (FISHERY): Simpósio 2 / *Symposium 2*

Ecosystem Impacts of Shrimp Fisheries: Identifying the Main Problems and Possible Solutions

COORDINATOR

ECOLOGICAL IMPACTS OF SHRIMP FISHERIES: LESSONS FROM PATOS LAGOON ESTUARY

LUIZ FELIPE DUMONT
FURG (Brazil)

SHRIMP FISHERIES AND CLIMATE CHANGE

KARINA ANNES KEUNECKE
Universidade Federal Rural do Rio de Janeiro - UFRRJ (Brazil)

BYCATCH FROM SHRIMPS FISHERIES: A CRYPTIC AND VITAL RESOURCE TO UNDERPIN ECOSYSTEM MANAGEMENT ACTIONS IN BRAZIL

JORGE LUIZ RODRIGUES
Universidade do Estado de Santa Catarina - UDESC (Brazil)

CAN CLIMATE CHANGE REDUCE SHRIMP CAPTURE IN BRAZIL?

FÚLVIO AURÉLIO DE MORAIS FREIRE
Universidade Federal do Rio Grande do Norte - UFRN (Brazil)

The crustacean fisheries make up an important percentage to the global fishery market and play a key role on the ecosystems where they are found. Additionally, these fisheries have been considered as one of the most impacting activities to marine ecosystems, producing large amounts of discards and severe damage to benthic fauna. Additionally, most of the catch is originated from trawling fisheries with large oil burning engines. In order to deal with the ecosystem impacts caused by crustacean fisheries is vital to understand the role of crustaceans in trophic webs, as well as to identify the collateral damages of this practices and eventually to develop new technologies to reduce it. Among the possible solutions for mitigating the damage originated from shrimp fisheries, the adoption of Bycatch Reduction Devices (BRD's) have been widely adopted.

Coordenador / Coordinator

Dr. Luiz Felipe Dumont (Universidade Federal do Rio Grande – FURG, Brazil)

Ecological Impacts of Shrimp Fisheries: Lessons from Patos Lagoon Estuary.
Dr. Luiz Felipe Dumont (Universidade Federal do Rio Grande – FURG, Brazil).

Shrimp Fisheries and Climate Change
Dr. Karina Keunecke (Universidade Rural do Rio de Janeiro – UFRRJ, Brazil).

Can Climate Change reduce Shrimp Capture in Brazil?
Dr. Fúlvio Freire (Universidade do Rio Grande do Norte – UFRN, Brazil).

Bycatch from Shrimps Fisheries: A Cryptic and Vital Resource to Underpin Ecosystem Management Actions in Brazil
Dr. Jorge Luiz Rodrigues (Universidade do Estado de Santa Catarina – UDESC, Brazil).

06/06/2022: Segunda-feira / *Monday*

R2: Sala 2 / Room 2 – "Prof. Dr. Nilton José Hebling"

11:30h - 13:30h

S3 (CAVE): Simpósio 3 / *Symposium 3*

Ecology and Diversity of Subterranean Crustaceans: From Surface to Underground

COORDINATOR

WHAT DO WE KNOW ABOUT SUBTERRANEAN CRUSTACEANS IN SOUTH AMERICA? SHORTFALLS AND THREATS

MARIA ELINA BICHUETTE
Universidade Federal de São Carlos - UFSCar (Brazil)

AN OVERVIEW OF CAVE HYALELLIDAE

LUDMILA ROCHA PENONI
Universidade Federal de Lavras - UFAL (Brazil)

BRAZILIAN SUBTERRANEAN ISOPODS

GIOVANNA MONTICELLI CARDOSO
Universidade Federal de Lavras - UFAL (Brazil)

THE USE OF THE MOLECULAR TOOL IN TERRESTRIAL ISOPODS (ONISCIDEA): AN APPROACH INTO CAVE FAUNA

DR. IVANKLIN SOARES CAMPOS FILHO
(UNIVERSITY OF CYPRUS, REPUBLIC OF CYPRUS)
University of Cyprus (Republic of Cyprus)

Globally, the subterranean fauna is dominated by arthropods, and not surprisingly, crustaceans in the classes Maxillopoda, Ostracoda, and especially Malacostraca make up the bulk of the aquatic subterranean fauna. For example, the Eurasian amphipod genus Niphargus consists of over 300 species, and the predominantly North American amphipod genus Stygobromus consists of over 150 species, although no surface species is known for either genus. Knowledge of the ecology of the surface taxa is crucial for understanding the factors contributing to the initial colonization of the subterranean water. Some crustacean taxa in South America and especially in Brazil consists of multiple surface and subterranean species, such as amphipods in the genus Hyalella and decapods in the genus Aegla, among others. The goal of this symposium is to bring together researchers who study the biology of surface or subterranean crustaceans or both to explore commonalities or specific differences among taxonomic groups that may shed light on forces contributing to the colonization of subterranean habitats and the evolutionary dynamics of these taxa in subterranean environments.

Coordenadora / Coordinator

Dr. Maria Elina Bichuette (Universidade Federal de São Carlos – UFSCar, Brazil)

What do We Know About Subterranean Crustaceans in South America? Shortfalls and Threats
Dr. Maria Elina Bichuette (Universidade Federal de São Carlos – UFSCar, Brazil).

View of Cave Hyalellidae
Dr. Ludmila Rocha Penoni (Universidade Federal de Lavras – UFAL, Brazil).

Brazilian Subterranean Isopods
Dr. Giovanna Monticelli Cardoso (Universidade Federal de Lavras – UFAL, Brazil).

The Use of the Molecular Tool in Terrestrial Isopods (Oniscidea): An Approach into Cave Fauna
Dr. Ivanklin Soares Campos Filho (University of Cyprus, Republic of Cyprus).

08/06/2022: Quarta-feira / *Wednesday*

R2: Sala 2 / Room 2 – "Profa. Dra. Georgina Bond Buckup"

9:00h - 13:00h

S4 (CRAYFISH): Simpósio 4 / *Symposium 4*

Integrative Studies of Freshwater Crayfish in South America

COORDINATOR

TADASHI KAWAI
Hokkaido Research Organization (Japan)

COORDINATOR

INTEGRATIVE TAXONOMY AND CRYPTIC DIVERSITY IN PARASTACIDAE: HISTORY, DEVELOPMENT AND FUTURE TRENDS

FELIPE RIBEIRO
Universidade Federal do Rio Grande do Sul (UFRGS) and Universidade do Estado do Mato Grosso (UNEMAT)

AN OVERVIEW OF THE DECAPOD CRUSTACEAN FAUNA OF SOUTH AMERICA

CÉLIO MAGALHÃES
University of São Paulo, Ribeirão Preto (Brazil)

DOUBLE TROUBLE: ASTACICULTURE AND PET TRADE AS VECTORS FOR THE INTRODUCTION OF EXOTIC FRESHWATER CRAYFISH IN SOUTH AMERICA

TAINÃ GONÇALVES LOUREIRO
Cape Peninsula University of Technology / Global Ocean Accounts Partnership

SYSTEMATICS AND POPULATION GENOMICS OF THE BURROWING CRAYFISH PARASTACUS NICOLETI IN SOUTHERN CHILE

LUIS AMADOR
The University of New Mexico (USA)

HABITAT DIVERSITY AND CONSERVATION OF FRESHWATER CRAYFISH IN BRAZIL: AN APPROACH BASED ON CURRENT DISTRIBUTION AND FUTURE PREDICTIONS

KELLY GOMES
Universidade Federal do Rio Grande do Sul (Brazil)

FRESHWATER CRAYFISH IN BRAZILIAN PROTECTED AREAS: CONSERVATION, DIVERSITY AND THREATS

AUGUSTO HUBER
Universidade Federal do Rio Grande do Sul (Brazil)

Freshwater crayfish (Decapoda: Astacidea) encompass almost 700 species distributed worldwide, except in continental Africa and Antarctica. They can be found in several kinds of limnetic habitats, such as streams, lakes, wetlands, swamp forests and caves. In South American, several new endemic species have been discovered and described in the last years using traditional morphology and integrative taxonomy and also the development of behavioral and genetic studies. The advance of integrative studies of South American crayfish will contribute in the study of evolution of freshwater crayfish in the world. However, in this situation, the presence of alien crayfish in South America, especially in Brazil, brings new serious threaten for conservation of the native biodiversity and ecosystems. Present symposium will bring the newest information of integrative studies of Parastacidae in South America, taking into account systematics, population genetics, biogeography, distribution modelling, behavior, habitat characterization, conservation and alien crayfish species. This symposium will reveal all research developed with crayfish in South America and encourage new students to work in the field of Astacology.

Coordenadores / Coordinators

Dr. Tadashi Kawai
Hokkaido Research Organization (Japan)
Dr. Felipe Ribeiro
Universidade Federal do Rio Grande do Sul – UFRGS (Brazil)
Universidade do Estado do Mato Grosso – UNEMAT (Brazil)

Integrative Taxonomy and Cryptic Diversity in Parastacidae: History, Development and Future Trends
Dr. Felipe Ribeiro (Universidade Federal do Rio Grande do Sul (UFRGS) / Universidade do Estado do Mato Grosso (UNEMAT).

An Overview of the Freshwater Decapod Crustacean Fauna of South America
Dr. Célio Magalhães (Universidade de São Paulo – USP, Brazil).

Double Trouble: Astaciculture and Pet Trade as Vectors for the Introduction of Exotic Freshwater Crayfish in South America
Dr. Tainã Gonçalves Loureiro (Cape Peninsula University of Technology – CPUT, South Africa).

Systematics and Population Genomics of the Burrowing Crayfish *Parastacus nicoleti* in Southern Chile
Dr. Luis Amador (The University of New Mexico, USA).

Habitat Diversity and Conservation of Freshwater Crayfish in Brazil: An Approach based on Current Distribution and Future Predictions
Dr. Kelly Gomes (Universidade Federal do Rio Grande do Sul, Brazil).

Freshwater Crayfish in Brazilian Protected Areas: Conservation, Diversity and Threats
Dr. Augusto Huber (Universidade Federal do Rio Grande do Sul – UFRGS, Brazil).

07/06/2022: Terça-feira / *Tuesday*

R2: Sala 2 / Room 2 – "Prof. Dr. Nilton José Hebling"

9:00h - 11:00h

S5 (AMPHI – 1.3): Simpósio 5 / *Symposium 5*

Amphipods as Models in Multidisciplinary Studies

COORDINATOR

AMPHIPODS AS MODELS IN MULTIDISCIPLINARY STUDIES

FOSCA PEDINI PEREIRA LEITE
Universidade de Campinas - UNICAMP Campus de Campinas (Brazil)

AMPHIPODS: APPLICATIONS AND FUTURE OPPORTUNITIES

JOSE MANUEL GUERRA GARCÍA
University of Seville (Spain)

STATE OF KNOWLEDGE ON THE TAXONOMY OF THE ORDER AMPHIPODA IN BRAZIL

CRISTIANA SILVEIRA SEREJO
Museu Nacional – UFRJ (Brazil)

PARHYALE HAWAIENSIS AS MODEL ORGANISM IN ECOTOXICOLOGY

GISELA DE ARAGÃO UMBUZEIRO
Universidade de Campinas - UNICAMP Campus Limeira (Brazil)

MARINE AMPHIPODS AS MODELS TO STUDY BIOLOGICAL INVASIONS

AGNESE MARCHINI
University of Pavia (Italy)

The proposed symposium¨Amphipods as models in multidisciplinary studies "consists of lectures compatible with the general theme of the event, which is" Tradition and Innovation: Integrative Approaches for the Study of Crustaceans "in view of addressing topics that can be included Taxonomy and Phylogeny; Ecology and Biodiversity; Genetics and Conservation and Physiology and Toxicology. The themes were chosen due to the large number of current works on this group, widely distributed not only in Brazil but abroad.

Coordenador / Coordinator

Dr. Fosca Pedini Pereira Leite

Universidade de Campinas - UNICAMP Campus Campinas (Brazil)

Amphipods: Applications and Future Opportunities
Dr. Jose Manuel Guerra García (University of Seville, Spain).

***Parhyale hawaiensis* as Model Organism in Ecotoxicology**
Dr. Gisela de Aragão Umbuzeiro (Universidade de Campinas - UNICAMP Campus Limeira, Brazil).

State of Knowledge on the Taxonomy of the Order Amphipoda in Brazil
Dr. Cristiana Silveira Serejo (Museu Nacional da UFRJ, Brazil).

Marine Amphipods as Models to Study Biological Invasions
Dr. Agnese Marchini (University of Pavia, Italy).

07/06/2022: Terça-feira / *Tuesday*

R2: Sala 2 / Room 2 – "Prof. Dr. Nilton José Hebling"

14:00h - 18:00h

S5 (AMPHI – 2.3): Simpósio 5 / *Symposium 5*

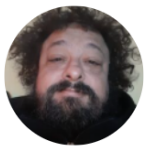
Contribution to Increasing Knowledge of the Evolution and Phylogeny of Amphipods in Brazil and Future Perspectives

COORDINATOR

SILVANA GOMES LEITE SIQUEIRA
Universidade de Campinas – UNICAMP Câmpus de Campinas (Brazil)

DIVERSITY OF FRESHWATER AMPHIPODS OF THE GENUS HYALELLA

RAYSSA KAROLINA FERREIRA BORGES
Universidade Federal de Lavras – UFLA (Brazil)



DIVERSITY IN LYSIANASSIDIRA: STATE OF ART AND PERSPECTIVES

ANDRÉ RESENDE DE SENNA
Universidade do Estado do Rio de Janeiro – UERJ (Brazil)

AMPHIPOD FOULING: DIVERSITY, BIOGEOGRAPHY AND DRIVERS OF AN UNDERSTUDIED COMMUNITY

ANDREA DESIDERATO
University of Lodz (Poland)

THE FAMILY PHOXOCEPHALIDAE IN BRAZIL: PAST, PRESENT AND FUTURE PERSPECTIVES

LUIZ FELIPE DE ANDRADE
Museu de Oceanografia da Universidade Federal de Pernambuco – MOUFPE (Brazil)

EVOLUTIVE GENOMICS OF AMPITHOE IN WESTERN ATLANTIC

TAMMY IWASA-ARAI
Instituto de Biologia, Universidade de Campinas – UNICAMP (Brazil)

The proposed symposium ¨Amphipods as models in multidisciplinary studies "consists of lectures compatible with the general theme of the event, which is" Tradition and Innovation: Integrative Approaches for the Study of Crustaceans "in view of addressing topics that can be included Taxonomy and Phylogeny; Ecology and Biodiversity; Genetics and Conservation and Physiology and Toxicology. The themes were chosen due to the large number of current works on this group, widely distributed not only in Brazil but abroad.

Coordenador / Coordinator

Dr. Silvana Gomes Leite Siqueira

Universidade de Campinas – Unicamp Câmpus de Campinas (Brazil)

Diversity in Lysianassidira: State of Art and Perspectives
Dr. André Resende de Senna (Universidade do Estado do Rio de Janeiro – UERJ, Brazil).

The Family Phoxocephalidae in Brazil: Past, Present and Future Perspectives
Dr. Luiz Felipe de Andrade (Museu de Oceanografia da UFPE – MOUFPE, Brazil).

Diversity of Freshwater Amphipods of the Genus *Hyalella*
MSc. Rayssa Karolina Ferreira Borges (Universidade Federal de Lavras – UFLA, Brazil).

Amphipod Fouling: Diversity, Biogeography and Drivers of an Understudied Community
Dr. Andrea Desiderato (University of Lodz, Poland).

Evolutive Genomics of Ampithoe in Western Atlantic
Dr. Tammy Iwasa-Arai (Universidade de Campinas – UNICAMP, Brazil).

08/06/2022: Quarta-feira / *Wednesday*

R2: Sala 2 / Room 2 – "Prof. Dr. Nilton José Hebling"

9:00h - 11:00h

S5 (AMPHI – 3.3): Simpósio 5 / *Symposium 5*

Contribution to Increasing Knowledge of the Evolution and Phylogeny of Amphipods in Brazil and Future Perspectives

LECTURE

NEW DNA BARCODING-DRIVEN PERSPECTIVES ON THE DIVERSITY AND EVOLUTION OF MARINE PERACARIDA (CRUSTACEA): THE CASE OF THE MACARONESIA'S HOTSPOT

FILIPE JOSÉ OLIVEIRA COSTA
Centro de Biologia Molecular e Ambiental (CBMA) Universidade do Minho (Portugal)

COORDINATOR

AMPHIPODS AS BIOINDICATORS

GIULIANO BUZÁ JACOBUCCI
Universidade Federal de Uberlândia – UFU (Brazil)

AMPHIPODS ASSOCIATED WITH ALGAE AS ECOLOGICAL MODELS

SILVANA GOMES LEITE SIQUEIRA
Universidade de Campinas – UNICAMP Câmpus de Campinas (Brazil)

Palestra / Lecture

New DNA Barcoding-Driven Perspectives on the Diversity and Evolution of Marine Peracarida (Crustacea): The Case of the Macaronesia's Hotspot

Dr. Filipe José Oliveira Costa (Universidade do Minho, Portugal)

Coordenador / Coordinator

Dr. Giuliano Buzá Jacobucci
Universidade Federal de Uberlândia – UFU (Brazil)

Amphipods as Bioindicators
Dr. Giuliano Buzá Jacobucci (Universidade Federal de Uberlândia – UFU. Brazil).

Amphipods Associated with Algae as Ecological Models
Dr. Silvana Gomes Leite Siqueira (Universidade de Campinas – UNICAMP Campinas, Brazil).

08/06/2022: Quarta-feira / *Wednesday*

R2: Sala 2 / Room 2 – "Prof. Dr. Nilton José Hebling"

11:00h - 13:00h

S6 (REPROD): Simpósio 6 / *Symposium 6*

The race to paternity in decapods: morpho-functional analysis of sperm transference and storage

COORDINATOR

LAURA LOPEZ GRECO
Universidad de Buenos Aires (Argentina)

COORDINATOR

FERNANDO JOSÉ ZARA
UNESP FCAV, Campus de Jaboticabal (Brazil)

HOW DO I LOVE THEE? LET ME COUNT THE WAYS." A SUMMARY OF DECAPOD SEX PRACTICES!

CHRISTOPHER TUDGE
American University, Washington DC

HOW SHRIMPS "DO IT": INSEMINATION MORPHOLOGY, FUNCTION AND EVOLUTION IN DECAPOD SHRIMPS.

RAYMOND THOMAS BAUER
University of Louisiana, Lafayette

HOW TO TRANSFER SPERMATOPHORES IN BRACHYURA? FORM AND FUNCTION OF THE GONOPODS.

MARIANA ANTUNES
Department of Zoology - Institute of Biosciences - Unesp, Botucatu.

DO WE TAKE MATING DYNAMICS INTO ACCOUNT IN CRUSTACEAN FISHERIES MANAGEMENT?

LUIS MIGUEL PARDO SUAZO
Universidad Austral de Chile y Centro de Investigación Dinámica de Ecosistemas Marinos de Altas Latitudes (IDEAL)

Decapod crustaceans show a remarkable diversity with regard to their reproductive strategies and the underlying anatomical structures. Thus, characters of decapod reproductive systems have always played an important role in resolving phylogenetic relationships within this group. The male copulatory systems that function in delivering sperm to the female can provide important taxonomic characters for the identification of species. However, especially gonopods often show structural and functional adaptations that are characteristic for certain higher-level taxa of decapods, and strongly correspond to the female structures that receive sperm. Within decapods, two very important reproductive traits have evolved in the female reproductive system. The first trait is sperm storage in specialized female structures. Sperm storage of any kind enables to uncouple the point in time of insemination (at mating) and the actual fertilization of ova (at spawning). While a range of decapod crustacean females have evolved sperm storage structures (e.g., Cambaridae, Nephropidae, Brachyura), a mode of internal fertilization has only evolved in Eubrachyura.

Coordenador / Coordinator

Dr. Laura Lopez Greco (Universidad de Buenos Aires, Argentina)
Dr. Fernando José Zara (Universidade Estadual Paulista – UNESP Jaboticabal, Brazil)

'How do I Love Thee? Let Me Count the Ways': A Summary of Decapod Sex Practices!
Dr. Christopher Tudge (American University, USA).

How Shrimps "Do It": Insemination Morphology, Function and Evolution in Decapod Shrimps
Dr. Raymond Thomas Bauer (University of Louisiana, USA).

How to Transfer Spermatophores in Brachyura? Form and Function of the Gonopods
Dr. Mariana Antunes (Universidade Estadual Paulista – UNESP Câmpus de Botucatu, Brazil).

Do We take Mating Dynamics into Account in Crustacean Fisheries Management?
Dr. Luis Miguel Pardo Suazo (Universidad Austral de Chile, Chile).

08/06/2022: Quarta-feira / *Wednesday*

R3: Sala 3 / Room 3 – "Prof. Dr. Fernando D'Incao"

9:00h - 13:00h

S7 (INTEGRA): Simpósio 7 / Symposium 7

Using Integrative Biology and Crustacean Model Systems to Understand Nature

COORDINATOR

HEATHER BRACKEN-GRISSOM
Florida International University (USA)

COORDINATOR

CHARLES DERBY
Georgia State University (USA)

SWALLOW OR SPIT? LAST-CHANCE DECISION MAKING IN THE BLUE CRAB, CALLINECTES SAPIDUS RATHBUN, 1896 (BRACHYURA: PORTUNIDAE) AND THE SPINY LOBSTER, PANULIRUS ARGUS LATREILLE, 1804 (ACHELATA: PALINURIDAE)

JUAN AGGIO
Georgia State University (USA)

USING AN INTEGRATIVE APPROACH TO ASSESS HABITAT TRANSITIONS AND PHYLOGENETIC RELATIONSHIPS WITHIN BRACHYURA

LAUREN BALLOU
Florida International University (USA)

THE IMPACT OF DIEL VERTICAL MIGRATION ON VISUAL GENE EXPRESSION IN DEEP-SEA SHRIMP

DANIELLE DELEO
Smithsonian National Museum of Natural History (USA)

INSULIN-LIKE PEPTIDES: LIMB REGENERATION AND MOLT INFLUENCERS

MIHIKA KOZMA
Colorado State University (USA)

CRUSTACEANS AS AN ALTERNATIVE MODEL FOR NEURODEGENERATIVE CONDITIONS

CARLOS AUGUSTO GOMES
Universidad Federal do Rio de Janeiro (Brasil)

LIVING IN A CHANGING WORLD: EFFECTS OF CLIMATE CHANGE ON CRUSTACEAN BEHAVIOR AND PHYSIOLOGY

JÖRG HARDEGE
University of Hull (United Kingdom)

EVOLUTION OF AMPHIPOD BODY PATTERNING

JENNY MCCARTHY
Marine Biological Laboratory (USA)

THE AMBIT OF PLANKTONIC COPEPODS

RUDI STRICKLER
University of Wisconsin Milwaukee (USA)

HOW TO BECOME A CRAB: PHENOTYPIC CONSTRAINTS ON A RECURRING BODY PLAN

JOANNA WOLFE
Harvard University (USA)

EFFECTS OF SOCIAL ENVIRONMENT ON NEUROBEHAVIORAL MECHANISMS IN CRAYFISH

JENS HERBERHOLZ
University of Maryland (USA)

FLOATING STUFF IN THE OCEANS AND WHAT CRUSTACEANS HAVE TO DO WITH IT

MARTIN THIEL
Universidad Catolica del Norte (Chile)

THE HITCHHIKER'S GUIDE TO TERRESTRIALITY: UNEARTHING THE GENOMIC BASIS OF TERRESTRIAL ADAPTATIONS IN DECAPOD CRABS

VICTORIA WATSON-ZINK
University of California-Davis / Stanford University (USA)

This symposium highlights the power of integrative approaches in understanding crustaceans. Speakers will present work using comparative and model systems approaches and techniques from molecular, systems, and behavioral biology to address larger issues relevant to crustacean biologists and beyond. The topics will be diverse, and speakers will be encouraged to present their work in the broadest context possible. The symposium intends to emphasize diversity – not only biological diversity (crustacean taxa) but also speaker diversity (gender, career level, etc.).

Coordenadores / Coordinators

Dr. Heather Bracken-Grisson (Florida International University, USA).
Dr. Charles Derby (Georgia State University, USA).

Swallow or Spit? Last-Chance Decision Making in the Blue Crab, *Callinectes sapidus* Rathbun, 1896 (Brachyura: Portunidae) and the Spiny Lobster, *Panulirus argus* Latreille, 1804 (Achelata: Palinuridae)
Dr. Juan Aggio (Georgia State University, USA).

Using an Integrative Approach to Assess Habitat Transitions and Phylogenetic Relationships within Brachyura
Dr. Lauren Ballou (Florida International University, USA).

The Impact of Diel Vertical Migration on Visual Gene Expression in Deep-Sea Shrimp
Dr. Danielle Deleo (Smithsonian National Museum of Natural History, USA).

Insulin-Like Peptides: Limb Regeneration and Molt Influencers
Dr. Mihika Kozma (Colorado State University, USA).

Crustaceans as an Alternative Model for Neurodegenerative Conditions
Dr. Carlos Augusto Gomes (Universidade Federal do Rio de Janeiro, Brazil).

Living in a Changing World: Effects of Climate Change on Crustacean Behavior and Physiology
Dr. Jörg Hardege (University of Hull, United Kingdom).

Evolution Of Amphipod Body Patterning
Dr. Jenny Mccarthy (Marine Biological Laboratory, USA).

The Ambit of Planktonic Copepods
Dr. Rudi Strickler (University of Wisconsin Milwaukee, USA).

How to Become a Crab: Phenotypic Constraints on a Recurring Body Plan
Dr. Joanna Wolfe (Harvard University, USA).

Effects of Social Environment on Neurobehavioral Mechanisms in Crayfish
Dr. Jens Herberholz (University of Maryland, USA).

Floating Stuff in The Oceans and What Crustaceans Have to Do with It
Dr. Martin Thiel (Universidad Catolica Del Norte, Chile).

The Hitchhiker's Guide to Terrestriality: Unearthing the Genomic Basis of Terrestrial Adaptations in Decapod Crabs
Dr. Victoria Watson-Zink (University of California-Davis / Stanford University, USA).

06/06/2022: Segunda-feira / *Monday*

R3: Sala 3 / Room 3 – "Prof. Dr. Fernando D'Incao"

11:30h - 13:30h

S8 (BEHAV): Simpósio 8 / *Symposium 8*

What Behavioral Ecology and Evolution can Teach us About Crustaceans?

COORDINATOR

HOW FIGHTING INFLUENCES CLAW BIOMECHANICS AND EVOLUTION

ALEXANDRE VARASCHIN PALAORO
Clemson University (USA)

SEXUAL SELECTION AND THE EVOLUTION OF COURTSHIP WAVING DISPLAYS IN FIDDLER CRABS

DANIELA M. PEREZ
Max Planck Institute of Animal Behavior (Germany)

WHAT A COLORFUL WORLD: THE STUDY OF ANIMAL COLORATION AND CAMOUFLAGE USING DECAPOD AS STUDY SYSTEMS

RAFAEL CAMPOS DUARTE
Universidade Federal do ABC – UFABC (Brazil)

USING FUNCTIONAL MORPHOLOGY TO UNDERSTAND CRAYFISH BEHAVIOR AND EVOLUTION

ZACKARY GRAHAM
(West Liberty University (USA)

Continuous swimming might enhance fitness because it makes finding a mate more likely. However, this behavior also increases the likelihood of being spotted by a predator. Similarly, inhabiting burrows might protect the individual for the harshness of the outside environment. However, the individual might have to defend its' burrow from competitors, thereby raising costs. These constant trade-offs between costs and benefits shape the behaviors and morphologies. Our goal with this symposium is to show examples of how behavioral ecology and evolutionary ecology might help us understand the diversity and the evolution of crustaceans. To do so, we will provide examples on: 1. How camouflage and color enhance survival in crustaceans, 2. How finding a mate may facilitate the evolution of extravagant behaviors and morphologies, 3. How fighting influences the evolution of claws. During our talks we will show how theory can be used to make broader inferences about evolution, while also demonstrating how such inferences helps us understanding the evolution of crustaceans.

Coordenador / Coordinator

Dr. Alexandre Varaschin Palaoro (Clemson University, USA)

How Fighting Influences Claw Biomechanics and Evolution
Dr. Alexandre Varaschin Palaoro (Clemson University, USA)

Sexual Selection and the Evolution of Courtship Waving Displays in Fiddler Crabs
Dra. Daniela M. Perez (Max Planck Institute of Animal Behavior, Germany).

What a Colorful World: The Study of Animal Coloration and Camouflage Using Decapod as Study Systems
Dr. Rafael Campos Duarte (Universidade Federal do ABC – UFABC, Brazil).

Using Functional Morphology to Understand Crayfish Behavior and Evolution
Dr. Zackary Graham (West Liberty University, USA).

07/06/2022: Terça-feira / *Tuesday*

R3: Sala 3 / Room 3 – "Prof. Dr. Fernando D'Incao"

16:00h - 18:00h

S9 (DEEPSEA): Simpósio 9 / Symposium 9

Diversity and Evolution in Deep-sea Crustaceans

COORDINATOR

DIVERSITY OF DECAPOD CRUSTACEANS IN BRAZILIAN DEEP SEA

IRENE CARDOSO
Museu Nacional / UFRJ (Brazil)

REVEALING THE DEEP SEA SECRETS: LARVAL DEVELOPMENT OF THE SUPERFAMILY OPLOPHOROIDEA

CÁTIA BARTILOTTI
Instituto Português do Mar e da Atmosfera, I.P. (IPMA, I.P.)
/Portuguese Institute for the Sea and Atmosphere

USING GENOMICS TO STUDY THE EARTH FINAL FRONTIER: ADVANCEMENTS IN DEEP-SEA CRUSTACEANS

PEDRO A. PERES
Florida International University (USA)

DEPTH AS A DRIVER OF EVOLUTION OF SQUAT LOBSTERS

DR. PAULA CAROLINA RODRÍGUEZ FLORES
Flores Harvard University (USA)

One of the last frontiers of human knowledge, the deep sea is an amazing and challenging environment. With temperatures around four degrees Celsius, extreme pressure, no sunlight and scarce feeding resources, it was once imagined as a homogeneous environment, almost without life. However, it proved to be highly variable, with many kinds of habitats such as mountains chains, trenches, abyssal plains, thermal vents, cold seeps, coral reefs and sponge gardens. A wide variety of life forms are living in these habitats, between them the crustaceans are one of the most diverse and abundant groups. Modern sampling and research techniques as remotely operated vehicles and molecular biology are allowing us to learn much more about the deep-sea Crustaceans. This symposium will cover aspects of diversity and evolution of crustaceans living in the deep sea, including systematic and genetic approaches. Come with us to discover more about this last frontier!

Coordenadora / Coordinator

Dr. Irene Cardoso

Museu Nacional da Universidade Federal do Rio de Janeiro – MN/UFRJ (Brazil)

Diversity of Decapod Crustaceans in Brazilian Deep-Sea
Dr. Irene Cardoso (Museu Nacional da UFRJ, Brazil).

Revealing the Deep-Sea Secrets: Larval Development of the Superfamily Oplophoroidea
Dr. Cátia Bartilotti (Instituto Português do Mar e da Atmosfera – IPMA, Portugal).

Using Genomics to Study the Earth Final Frontier: Advancements in Deep-Sea Crustacean
Dr. Pedro A. Peres (Florida International University – FIU, USA).

Depth as a driver of evolution of Squat Lobsters
Dr. Paula Carolina Rodríguez Flores (Harvard University, USA).

07/06/2022: Terça-feira / *Tuesday*

R3: Sala 3 / Room 3 – "Prof. Dr. Fernando D'Incao"

14:30h - 16:00h

S10 (ECOTOX): Simpósio 10 / *Symposium 10*

Crustaceans as Model Organisms in Aquatic Toxicology

COORDINATOR

DENIS MOLEDO DE SOUZA ABESSA
UNESP, IB, Campus do Litoral Paulista (Brazil)

TOLERANCES OF MULTIPLE STRESSORS AND CALCULATED SAFETY MARGINS PREDICT RESPONSES TO EXTREME ENVIRONMENTAL CONDITIONS IN CRUSTACEANS DECAPODS

MARIANA VELLOSA CAPPARELLI
Instituto De Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México

THE USE OF AQUATIC AND SOIL CRUSTACEANS IN ECOTOXICOLOGY: ADVANTAGES, CHALLENGES AND ADVANCES

SUSANA PATRÍCIA MENDES LOUREIRO
University of Aveiro (Portugal)

BIOMARKERS IN CRUSTACEAN, ANALYSIS IN DIFFERENT LEVELS OF BIOLOGICAL ORGANIZATION.

PABLO AGUSTÍN COLLINS
Instituto Nacional de Limnología (Argentina)

Ecotoxicology is a field of science involving the investigation of the effects of pollutants on organisms and ecosystems. Historically, many studies of aquatic toxicology have been done with crustaceans, because of their ecological relevance, economic importance and sensitivity. This symposium will focus on the use of crustaceans as model organisms in aquatic toxicology, and will include discussions on their historical role as test-organisms use in standardized toxicity tests, their use as models in studies involving molecular, physiological, biochemical histopathological, behavioral effects (biomarkers). The main idea is to provide an overview of the use of crustaceans in aquatic toxicology, as well as discuss perspectives to the future.

Coordenador / Coordinator:
Dr. Denis Moledo de Souza Abessa
Universidade Estadual Paulista – UNESP Câmpus do Litoral Paulista (Brazil)

Tolerances of Multiple Stressors and Calculated Safety Margins Predict Responses to Extreme Environmental Conditions in Crustaceans Decapods
Dr. Mariana Vellosa Capparelli (Universidad Nacional Autónoma de México, Mexico).

The Use of Aquatic and Soil Crustaceans in Ecotoxicology: Advantages, Challenges and Advances
Dr. Susana Patrícia Mendes Loureiro (Universidade de Aveiro, Portugal).

Biomarkers in Crustacean, Analysis in Different Levels of Biological Organization.
Dr. Pablo Agustín Collins (Instituto Nacional de Limnología, Argentina).

SYMPOSIUM GRID

Monday: June 6th, 2022

R1 11:30 - 13:30 h

S2 - FISHERY: Ecosystem Impacts of Shrimp Fisheries: Identifying the Main Problems and Possible Solutions — **Chair: Luiz Felipe Dumont**

Time	Speaker	Title of Talk	Institution
11:30 - 12:00 h	Luiz Felipe Dumont	*Ecological Impacts of Shrimp Fisheries: Lessons from Patos Lagoon Estuary*	Universidade Federal do Rio Grande – FURG (Brazil)
12:00 - 12:20 h	Jorge Luiz Rodrigues	*Bycatch From Shrimps: A Cryptic and Vital Resource to Underpin Ecosystem Management Actions in Brazil*	Universidade do Estado de Santa Catarina – UDESC (Brazil)
12:20 - 12:40 h	Karina Annes Keunecke	*Shrimp Fisheries and Climate Change*	Universidade Rural do Rio de Janeiro – UFRRJ (Brazil)
12:40 - 13:00 h	Fúlvio Aurélio de Morais Freire	*Can Climate Change Reduce Shrimp Capture in Brazil?*	Universidade do Rio Grande do Norte – UFRN (Brazil)
13:00 - 13:30 h	Questions		

R2 11:30 - 13:30 h

S3 - CAVE: Ecology and Diversity of Subterranean Crustaceans: From Surface to Underground — **Chair: Maria Elina Bichuette**

Time	Speaker	Title of Talk	Institution
11:30 - 11:50 h	Maria Elina Bichuette	*Welcome Address / What We Know about Subterranean Crustaceans in South America? Shortfalls and Threats*	Universidade Federal de São Carlos – UFSCar (Brazil)
11:55 - 12:15 h	Ludmila Rocha Penoni	*An Overview of Cave Hyalellidae*	Universidade Federal de Lavras – UFAL (Brazil)
12:20 - 12:40 h	Giovanna Monticelli Cardoso	*Brazilian Subterranean Isopods*	Universidade Federal de Lavras – UFAL (Brazil)
12:45 - 13:05 h	Ivanklin Soares Campos-Filho	*The Use of the Molecular Tool in Terrestrial Isopods (Oniscidea): An Approach into Cave Fauna*	University of Cyprus (Republic of Cyprus)
13:10 - 13:30 h	Questions and Discussions / Final Remarks		

R3 11:00 - 13:00 h

S8 - BEHAV: What Behavioral Ecology and Evolution can Teach us About Crustaceans? — **Chair: Alexandre Varaschin Palaoro**

Time	Speaker	Title of Talk	Institution
11:20 - 11:40 h	Alexandre Varaschin Palaoro	*How Fighting Influences Claw Biomechanics and Evolution*	Clemson University (USA)
11:40 - 12:00 h	Zackary Graham	*Using Functional Morphology to Understand Crayfish Behavior and Evolution*	West Liberty University (USA)
12:00 - 12:20 h	Daniela M. Perez	*Sexual Selection and The Evolution of Courtship Waving Displays in Fiddler Crabs*	Max Planck Institute of Animal Behavior (Germany)
12:20 - 12:40 h	Rafael Campos Duarte	*What a Colorful World: The Study of Animal Coloration and Camouflage Using Decapod as Study Systems*	Universidade Federal do ABC – UFABC (Brazil)
12:40 - 13:00 h	Discussion		

Tuesday: June 7th, 2022

R1 9:00 - 11:00 h

S1 - AEGLA (Part 1.2): Taxonomy, Phylogenetics, Diversity and Distribution — **Co-Chairs: Sérgio Bueno and Tadashi Kawai**

Time	Speaker	Title of Talk	Institution
9:00 - 9:10 h	Sérgio Bueno / Tadashi Kawai	*Welcome Address*	Universidade de São Paulo – USP (Brazil) / Hokkaido Research Organization (Japan)
9:10 - 9:35 h	Sandro Santos	*Taxonomy and Phylogenetics of Extant Aeglids*	Universidade Federal de Santa Maria – UFSM (Brazil)
9:35 - 10:00 h	Milena Wolf	*Reproduction in Aeglids: A Spermiotaxonomy Perspective*	Universidade Estadual Paulista – UNESP Câmpus de Botucatu (Brazil)
10:00 - 10:25 h	Gustavo Teixeira	*Diversity and Distribution of Aeglids in Brazil*	Universidade Estadual de Londrina – UEL (Brazil)
10:25 - 10:30 h	Remarks and Announcements		

R1 14:00 - 18:00 h

S1 - AEGLA (Part 2.2): Reproduction, Physiology and Population Studies — **Co-Chairs: Milena Wolf and Christopher Tudge**

Time	Speaker	Title of Talk	Institution
14:00 - 14:10 h	Milena Wolf / Christopher Tudge	*Welcome Address*	Universidade Estadual Paulista – UNESP Câmpus de Botucatu (Brazil) / American University (USA)
14:10 - 14:35 h	Antonio Leão Castilho	*Latitudinal Gradient and Reproductive Pattern in Decapods, with Emphasis on Aeglids*	Universidade Estadual Paulista – UNESP Câmpus de Botucatu (Brazil)
14:35 - 15:00 h	John McNamara	*The Evolution of Osmoregulation in the Aeglidae*	Universidade de São Paulo - USP Ribeirão Preto (Brazil)
15:00 - 15:25 h	Sérgio Bueno	*Population Size Estimation*	Universidade de São Paulo – USP (Brazil)
15:25 - 15:30 h	Remarks and Announcements		
15:30 - 16:00 h	**Interval**		

S1 - AEGLA (Part 2.2): Round Table - New Challenges in Aeglid Conservation — **Co-Chairs: Sandro Santos and Laura Lopez Greco**

Time	Speaker	Title of Talk	Institution
16:00 - 16:10 h	Sandro Santos / Laura Lopez Greco	*Welcome Address*	Universidade Federal de Santa Maria – UFSM (Brazil) / Universidad de Buenos Aires (Argentina)
16:10 - 16:30 h	Harry Boos	*Conservation Status of Aeglids from Brazil*	ICMBio / CEPSUL (Brazil)
16:30 - 16:50 h	Veronica Williner	*Conservation Status of Aeglids from Argentina*	Universidade Nacional del Litoral (Argentina)
16:50 - 17:10 h	Carlos G. Jara	*Conservation Status of Aeglids from Chile*	Instituto de Ciencias Marinas y Limnológicas – Universidad Austral de Chile (Chile)
17:10 - 17:25 h	Discussion and Questions		
17:25 - 17:55 h	Carlos G. Jara and Sandro Santos	*Homage to Georgina Bond-Buckup and Ludwig Buckup*	
17:55 - 18:00 h	Announcements		

Tuesday: June 7th, 2022 (continuation)

R2 9:00 - 11:00 h

S5 - AMPHI (Part 1.3): Amphipods as Models in Multidisciplinary Studies — **Chair: Fosca Pedini Pereira Leite**

Time	Speaker	Title of Talk	Institution
9:00 - 9:10 h	Fosca Pedini Pereira Leite	*Welcome Address*	Universidade de Campinas - UNICAMP Campus Campinas (Brazil)
9:10 - 9:50 h	Jose Manuel Guerra García	*Amphipods: Applications and Future Opportunities*	University of Seville (Spain)
9:50 - 10:00 h	Discussion and Questions		
10:00 - 10:50 h	Cristiana Silveira Serejo	*State of Knowledge on the Taxonomy of the Order Amphipoda in Brazil*	Museu Nacional da UFRJ (Brazil)
10:50 - 11:00 h	Discussion and Questions		

R2 14:00 - 18:00 h

S5 - AMPHI (Part 1.3 - cont.): Amphipods as Models in Multidisciplinary Studies — **Chair: Fosca Pedini Pereira Leite**

Time	Speaker	Title of Talk	Institution
14:00 - 14:40 h	Gisela de Aragão Umbuzeiro	*Parhyale hawaiensis* as Model Organism in Ecotoxicology	Universidade de Campinas - UNICAMP Campus Limeira (Brazil)
14:40 - 14:50 h	Discussion and Questions		
14:50 - 15:40 h	Agnese Marchini	*Marine Amphipods as Models to Study Biological Invasions*	(University of Pavia (Italy)
15:40 - 15:50 h	Discussion and Questions		

S5 - AMPHI (Part 2.3): Contribution to Increasing Knowledge of the Evolution and Phylogeny of Amphipods in Brazil and Future Perspectives — **Chair: Silvana Gomes Leite Siqueira**

Time	Speaker	Title of Talk	Institution
15:50 - 16:15 h	Rayssa Karolina Ferreira Borges	Diversity of freshwater amphipods of the genus Hyalella	Universidade Federal de Lavras – UFLA (Brazil)
16:15 - 16:40 h	André Resende de Senna	*Diversity in Lysianassidira: state of art and perspectives*	Universidade do Estado do Rio de Janeiro – UERJ (Brazil)
16:40 - 17:05 h	Andrea Desiderato	*Amphipod fouling: diversity, biogeography and drivers of an understudied community*	University of Lodz (Poland)
17:05 - 17:30 h	Luiz Felipe de Andrade	*The family Phoxocephalidae in Brazil: past, present and future perspectives*	Museu de Oceanografia da UFPE – MOUFPE (Brazil)
17:30 - 17:55 h	Tammy Iwasa-Arai	*Evolutive genomics of Ampithoe in western Atlantic*	Universidade de Campinas – UNICAMP (Brazil)
17:55 - 18:00 h	Questions and Discussions / Final Remarks		

R3 14:00 - 16:00 h

S10 - ECOTOX: Crustaceans as Model Organisms in Aquatic Toxicology — **Chair: Denis de Souza Moledo Abessa**

Time	Speaker	Title of Talk	Institution
14:00 - 14:10 h	Denis Moledo de Souza Abessa	*Opening and Introduction*	Universidade Estadual Paulista (UNESP), IB, Câmpus do Litoral Paulista (Brazil)
14:10 - 14:30 h	Suzana Patrícia Mendes Loureiro	*The Use of Aquatic and Soil Crustaceans in Ecotoxicology: Advantages, Challenges and Advances*	University of Aveiro (Portugal)
14:30 - 14:50 h	Pablo Augustín Collins	*Biomarkers in Crustacean: Analysis in Different Levels of Biological Organization*	Instituto Nacional de Limnología (Argentina)
14:50 - 15:10 h	Mariana Vellosa Capparelli	*Tolerances of Multiple Stressors and Calculated Safety Margins Predict Responses to Extreme Environmental Conditions in Custacean Decapods*	ICML, Universidad Nacional Autonoma de Mexico (Mexico)
15:10 - 16:00 h	Final Discussion and Questions		

R3 16:00 - 18:00 h

S9 - DEEPSEA: Diversity and Evolution in Deep-sea Crustaceans — **Chair: Irene Cardoso**

Time	Speaker	Title of Talk	Institution
16:00 - 16:30 h	Irene Cardoso	*Opening: Diversity of Decapod Crustaceans in Brazilian Deep Sea*	Museu Nacional da Universidade Federal do Rio de Janeiro – MN/UFRJ (Brazil)
16:30 - 16:55 h	Cátia Bartilotti	*Revealing the Deep-Sea Secrets: Larval Development of the Superfamily Oplophoroidea*	Instituto Português do Mar e da Atmosfera – IPMA (Portugal)
16:55 - 17:20 h	Pedro A. Peres	*Using Genomics to Study the Earth Final Frontier: Advancements in Deep-Sea Crustaceans*	Florida International University – FIU (USA)
17:20 - 17:45 h	Paula Carolina Rodríguez Flores	*Depth as a Driver of Evolution of Squat Lobsters*	Harvard University (USA)
17:45 - 18:00 h	Final Discussion and Questions		

Wednesday: June 8th, 2022

R1 — 9:00 - 13:00 h

S4 - CRAYFISH: Integrative Studies of Freshwater Crayfish in South America — **Co-Chairs: Tadashi Kawai and Felipe Ribeiro**

Time	Speaker	Title of Talk	Institution
09:00 - 09:05 h	Tadashi Kawai and Felipe Ribeiro	*Welcome Address*	
09:05 - 09:30 h	Tadashi Kawai	*Evolution of Freshwater Crayfish*	Hokkaido Research Organization (Japan)
09:30 - 10:00 h	Felipe Ribeiro	*Integrative Taxonomy and Cryptic Diversity in Parastacidae: History, Development and Future Trends*	Universidade Federal do Rio Grande do Sul – UFRGS / Universidade do Estado do Mato Grosso – UNEMAT (Brazil)
10:00 - 10:30 h	Tainã Gonçalves Loureiro	*Double Trouble: Astaciculture and Pet Trade as Vectors for the Introduction of Exotic Freshwater Crayfish in South America*	Cape Peninsula University of Technology – CPUT (South Africa)
10:30 - 11:00 h	Coffee Break		
11:00 - 11:30 h	Luis Amador	*Systematics and Population Genomics of the Burrowing Crayfish Parastacus nicoleti in Southern Chile*	The University of New Mexico (USA)
11:30 - 12:00 h	Kelly Gomes	*Habitat Diversity and Conservation of Freshwater Crayfish in Brazil: An Approach based on Current Distribution and Future Predictions*	Universidade Federal do Rio Grande do Sul – UFRGS (Brazil)
12:00 - 12:30 h	Augusto Huber	*Freshwater Crayfish in Brazilian Protected Areas: Conservation, Diversity and Threats*	Universidade Federal do Rio Grande do Sul – UFRGS (Brazil)
12:30 - 13:00 h	Célio Magalhães	*An Overview of the Decapod Crustacean Fauna of South America*	Universidade de São Paulo – USP (Brazil)
13:00 - 13:15 h	General Discussion		

R2 — 9:00 - 11:00 h

S5 - AMPHI (Part 3.3): Round Table - Amphipods as Ecological Models — **Chair: Giuliano Buzá Jacobucci**

Time	Speaker	Title of Talk	Institution
09:00 - 9:05 h	Fosca Pedini Pereira Leite	*Welcome Address*	Universidade de Campinas – UNICAMP Câmpus de Campinas (Brazil)
09:05 - 9:45 h	Filipe José Oliveira Costa	*New DNA Barcoding-Driven Perspectives on the Diversity and Evolution of Marine Peracarida (Crustacea): The Case of the Macaronesia's Hotspot*	Centro de Biologia Molecular e Ambiental (CBMA) / Universidade do Minho (Portugal)
09:45 - 10:00 h	Discussion and Questions		
10:00 - 10:25 h	Silvana Gomes Leite Siqueira	*Amphipods Associated with Algae as Ecological Models*	Universidade de Campinas – UNICAMP Câmpus de Campinas (Brazil)
10:25 - 10:50 h	Giuliano Buzá Jacobucci	*Amphipods as Bioindicators*	Universidade Federal de Uberlândia – UFU (Brazil)
10:50 - 11:00 h	Discussion and Questions + Closure		

R2 — 11:00 - 13:00 h

S6 - REPROD: The Race to Paternity in Decapods: Morpho-Functional Analysis of Sperm Transference and Storage — **Co-Chairs: Laura Lopez Greco and Fernando José Zara**

Time	Speaker	Title of Talk	Institution
11:00 - 11:25 h	Christopher Tudge	*How do I Love thee? Let me Count the Ways. A Summary of Decapod Sex Practices!*	American University (USA)
11:25 - 11:50 h	Raymond Thomas Bauer	*"How Shrimps "Do It": Insemination Structure, Function And Evolution In Decapod Shrimps*	University of Louisiana (USA)
11:50 - 12:15 h	Mariana Antunes	*How to Transfer Spermatophores in Brachyura? Form and Function of the Gonopods*	Universidade Estadual Paulista – UNESP Câmpus de Botucatu (Brazil)
12:15 - 12:40 h	Luis Miguel Pardo	*Do We take Mating Dynamics into Account in Crustacean Fisheries Management?*	Universidad Austral de Chile (Chile)
12:40 - 13:00 h	Discussion and Questions		

Wednesday: June 8th, 2022 (continuation)

R3 — 9:00 - 13:00 h

S7 - INTEGRA: Using Integrative Biology and Crustacean Model Systems to Understand Nature

Co-Chairs: Heather Bracken-Grissom and Charles Derby

Time	Speaker	Title of Talk	Institution
09:00 - 09:20 h	Juan Aggio	*Swallow or Spit? Last-chance Decision Making in the Blue Crab, Callinectes sapidus Rathbun, 1896 (Brachyura: Portunidae) and the Spiny Lobster, Panulirus argus Latreille, 1804 (Achelata: Palinuridae)*	Georgia State University, USA
09:20 - 09:40 h	Lauren Ballou	*Using an Integrative Approach to Assess Habitat Transitions and Phylogenetic Relationships within Brachyura*	Florida International University, USA
09:40 - 10:00 h	Danielle DeLeo	*The Impact of Diel Vertical Migration on Visual Gene Expression in Deep-Sea Shrimp*	Smithsonian National Museum of Natural History, USA
10:00 - 10:20 h	Mihika Kozma	*Insulin-like Peptides: limb regeneration and molt influencers*	Colorado State University, USA
10:20 - 10:40 h	Carlos Augusto Gomes	*Crustaceans as an alternative model for neurodegenerative conditions*	Universidad Federal do Rio de Janeiro, Brasil
10:40 - 11:00 h	Jörg Hardege	*Living in a changing world: effects of climate change on crustacean behavior and physiology*	University of Hull, United Kingdom
11:00 - 11:20 h	Jenny McCarthy	*Evolution of amphipod body patterning*	Marine Biological Laboratory, USA
11:20 - 11:40 h	Rudi Strickler	*The ambit of planktonic copepods*	University of Wisconsin Milwaukee, USA
11:40 - 12:00 h	Joanna Wolfe	*How to become a crab: Phenotypic constraints on a recurring body plan*	Harvard University, USA
12:00 - 12:20 h	Jens Herberholz	*Effects of social environment on neurobehavioral mechanisms in crayfish*	University of Maryland, USA
12:20 - 12:40 h	Martin Thiel	*Floating stuff in the oceans and what crustaceans have to do with it*	Universidad Catolica del Norte, Chile
12:40 - 13:00 h	Victoria Watson-Zink	*The Hitchhiker's Guide to Terrestriality: Unearthing the genomic basis of terrestrial adaptations in decapod crabs*	University of California-Davis / Stanford University, USA

ORAL PRESENTATIONS (OP1 and OP2)

June 6, 2022
16:00 - 18:00 h

R1: Room
"Dr. Georgina Bond Buckup "

OP1: Oral Presentations 1
"Ecology and Biodiversity"

Coordinators: *Júlia Perroca & Renan dos Santos*

TIME	TITLE OF TALK / SPEAKER
16:00 - 16:15	**COLD WATER TEMPERATURES DEFINE SOUTHERN BOUNDARIES DISTRIBUTION OF THE SOUTH AMERICA FIDDLER CRABS** **Speaker:** Fernando Rafael de Grande
16:15 - 16:30	**COLD HOUSING MARKET FOR BIG PROPERTIES: SHELL SPECIALIZATION INCREASES FOR LARGE HERMIT CRABS** **Speaker:** Gabriel Fellipe Barros Rodrigues
16:30 - 16:45	**ISOTOPIC NICHE PARTITIONING AMONG SYMPATRIC COASTAL HERMIT CRABS AS A COEXISTENCE MECHANISM** **Speaker:** Gabriel Fellipe Barros Rodrigues
16:45 - 17:00	**SPECIES DIVERSITY AND BIOGEOGRAPHY OF THE GENUS *Eurycope* (ASELLOTA: ISOPODA) IN THE JAPAN TRENCH AND THE SEA OF JAPAN** **Speaker:** Mizuki Ohta
17:00 - 17:15	**TWENTY YEARS ON: UPDATING THE INVENTORY OF NEW ZEALAND** **Speaker:** Kareen Schnabel
17:15 - 17:30	**FUNCTIONAL DIVERSITY OF MESOGRAZERS ASSOCIATED WITH MARINE** **Speaker:** Glauco Barreto de Oliveira Machado
17:30 - 17:45	**TEMPORAL VARIATIONS AND THE INFLUENCE OF ENSO AND ENVIRONMENTAL PARAMETERS ON THE ABUNDANCE OF *Artemesia longinaris* SPENCE BATE, 1888 IN SOUTHEASTERN BRAZIL** **Speaker:** Júlia Fernandes Perroca
17:45 - 18:00	**CRUSTACEANS ON THE MOVE: BIOFOULING COMMUNITIES ON TSUNAMI DETECTION BUOYS** **Speaker:** Rachael Peart

June 6, 2022
16:00 - 18:00 h

R2: Room
"Dr. Nilton José Hebling"

OP2: Oral Presentations 2
"Taxonomy and Phylogeny"

Coordinators: *Jéssica Colavite & Milena Wolf*

TIME	TITLE OF TALK / SPEAKER
16:00 - 16:15	**PHYLOGENETIC ANALYSIS OF THE FAMILY GLYPHOCRANGONIDAE SMITH, 1884 (DECAPODA: CARIDEA) BASED ON MORPHOLOPHICAL DATA** **Speaker:** Thaiana Garcia Almeida Rodrigues
16:15 - 16:30	**MYSTERIES OF THE UNDERGROUND: DESCRIPTION OF TWO FRESHWATER CRAYFISH NEW SPECIES OF *Parastacus brasiliensis* (VON MARTENS, 1869) SPECIES COMPLEX USING AN INTEGRATIVE TAXONOMY APPROACH** **Speaker:** Augusto Frederico Huber
16:30 - 16:45	**TWO NEW SPECIES OF *Hyalella* SMITH, 1874 (MALACOSTRACA: AMPHIPODA: HYALELLIDAE) FROM THE STATE OF SANTA CATARINA, BRAZIL** **Speaker:** Giovanna de Oliveira dos Reis
16:45 - 17:00	**SPATIOTEMPORAL DIVERSIFICATION OF THE CHINA ENDEMIC FRESHWATER CRAB GENUS *Sinopotamon* BOTT, 1967 (DECAPODA: BRACHYURA: POTAMIDAE)** **Speaker:** Ruxiao Wang
17:00 - 17:15	**MULTILOCUS PHYLOGENY OF THE ENDEMIC CHINESE FRESHWATER CRABS GENUS *Tenuipotamon* SENSU LATO REVEALS A DISTINCT SPECIES DIVISION AND PRONOUNCED EFFECT OF SKY ISLANDS** **Speaker:** Boyang Shi
17:15 - 17:30	**THE MORPHOLOGY AND EVOLUTION OF COMPOUND EYES ACROSS EXTANT AND FOSSIL CRABS** **Speaker:** Javier Luque
17:30 - 17:45	**CONTRIBUTIONS TO TERRESTRIAL ISOPODS (ONISCIDEA) FROM BRAZILIAN CAVES** **Speaker:** Ivanklin Soares Campos Filho
17:45 - 18:00	**MAPPING THE CONGRUENCE BETWEEN LARVAL CHARACTERS AND MULTIGENE MOLECULAR PHYLOGENY OF AMERICAN *Macrobrachium* (PALAEMONIDAE)** **Speaker:** João A. F. Pantaleão

ORAL PRESENTATIONS (OP3 and OP4)

June 6, 2022
16:00 - 18:00 h

R2: Room
"Dr. Fernando D'Incao"

OP3: Oral Presentations 3
"Genetic, Conservation, Reproduction, Development and Others"

Coordinators: *Alexandre Silva & Isabela de Moraes*

TIME	TITLE OF TALK / SPEAKER
16:00 - 16:15	**ACCUMULATION OF TRANSPOSABLE ELEMENTS IN EUSOCIAL SHRIMPS** **Speaker:** Tin Chi Solomon Chak
16:15 - 16:30	**HOW TO AVOID BECOMING A ZOMBIE: LOW SALINITY TOLERANCE IN WHITE-FINGERED MUD CRABS AS A MECHANISM TO AVOID CASTRATING PARASITES** **Speaker:** Darby Pochtar
16:30 - 16:45	**CHARACTERIZATION OF MrRas IN THE PRAWN *Macrobrachium rosenbergii* AND LENTI-VIRAL TRANSDUCTION OF MUTATED Ras INTO EMBRYONIC PRIMARY CELLS** **Speaker:** Gurucharan Sudarshan
16:45 - 17:00	**SEX-RATIO IN BRAZILIAN CARCINOLOGY: OBSTACLES TO EQUITY** **Speaker:** Isabela Ribeiro Rocha de Moraes
17:00 - 17:15	**FROM WEAPONS TO BODY COLOR: ONTOGENETIC CHANGES IN *Dilocarcinus pagei* Stimpson, 1861** **Speaker:** Alexandre R. Silva
17:15 - 17:30	**FECUNDITY OF THE MANTIS SHRIMP *Erugosquilla massavensis* (STOMATOPODA, CRUSTACEA) IN YUMURTALIK COVE, NORTH-EASTERN MEDITERRANEAN, TURKEY** **Speaker:** Irem Nur Yesilyurt
17:30 - 17:45	**MALE REPRODUCTIVE SYSTEM OF THE FRESHWATER PRAWN *Macrobrachium pantanalense* DOS SANTOS, HAYD & ANGER, 2013 (CARIDEA: PALAEMONIDAE)** **Speaker:** Caio dos Santos Nogueira
17:45 - 18:00	**THE EFFECT OF THE EGG-PREDATOR *Carcinonemertes conanobrieni* (NEMERTEA) ON THE REPRODUCTIVE PERFORMANCE OF THE CARIBBEAN SPINY LOBSTER *Panulirus argus*** **Speaker:** Natalie C. Stephens

June 7, 2022
9:00 - 11:00 h

R2: Room
"Dr. Fernando D'Incao"

OP4: Oral Presentations 4
"Ecology, Biodiversity, Aquaculture and Fisheries"

Coordinators: *Alexandre Silva & Isabela de Moraes*

TIME	TITLE OF TALK / SPEAKER
09:00 - 09:15	**DINING ON CORALS: STABLE ISOTOPE EVIDENCE FOR CLOSE CONNECTION BETWEEN GALL CRABS AND THEIR CORAL HOSTS** **Speaker:** Henrique Bravo Gouveia
09:15 - 09:30	**MOVEMENT ECOLOGY OF INSHORE DECAPODS** **Speaker:** Kirsty Lees
09:30 - 09:45	**DOES SHADING AFFECTS FIDDLER CRABS MICROHABITAT SELECTION?** **Speaker:** Fabio Henrique Carretero Sanches
09:45 - 10:00	**MARINE INTERACTIONS UNDER PRESSURE: PLANKTONIC CRAB LARVAE RESPONSE TO A POTENTIAL PREDATOR IS ALTERED IN LOW PH CONDITIONS** **Speaker:** Tânia Marcia Costa
10:00 - 10:15	**COPEPOD BODY SIZE LATITUDINAL PATTERNS AND THEIR ENVIRONMENTAL DRIVERS IN THE SOUTH ATLANTIC** **Speaker:** Érica Caroline Becker
10:15 - 10:30	**INVESTIGATING IMPACT POTENTIAL AND INVASION RISK OF NON-NATIVE CRAYFISHES IN TROPICAL FRESH WATERS** **Speaker:** Elysia Toh Xin Pei
10:30 - 10:45	**OCEAN TEMPERATURE AND DENSITY DEPENDENCE AS KEY DRIVERS OF THE POPULATION DYNAMICS OF AN INTERTIDAL CRAB AT THE BRAZILIAN OCEANIC ISLANDS** **Speaker:** Thais Peixoto Macedo
10:45 - 11:00	**SPIDER CRABS (MAJOIDEA) ASSOCIATED WITH THE INVASIVE SUN CORAL (*Tubastraea* spp.)** **Speaker:** Alexandre R. Silva

VIDEOPOSTER PRESENTATIONS 1 (VP1)

June 6, 2022
18:00 - 19:30 h

R1: Room "Georgina Bond Buckup"

VP1: Videoposter Presentations 1

VP1-01 to VP1-13

VP #	VIDEOPOSTER INFORMATION
VP1 - 01	**DENSITY, STRUCTURE AND DYNAMICS OF *Ucides cordatus* (LINNAEUS, 1763) (BRACHYURA: OCYPODIDAE) IN MANGROVE STANDS OF A COASTAL LAGOON IN SOUTHEASTERN BRAZIL** *Ecology and Biodiversity* **Speaker:** Robson Acha Leite **Videoposter Link:** https://youtu.be/VrJyVT9CYpg
VP1 - 02	**DENSITY OF THE LAND CRAB, *Johngarthia lagostoma* (BRACHYURA: GECARCINIDAE), IN FUNCTION OF THE MOON PHASES AND VEGETATION, IN TRINDADE ISLAND, BRAZIL** *Ecology and Biodiversity* **Speaker:** Nicholas Kriegler **Videoposter Link:** https://youtu.be/1nJqB4neWxQ
VP1 - 03	**NATURAL FEEDING OF THE FRESWATER CRAB *Dilocarcinus pagei* STIMPSON,1861 (DECAPODA: TRICHODACTYLIDAE) IN ARAGUARI RIVER, MINAS GERAIS, BRAZIL** *Ecology and Biodiversity* **Speaker:** Giuliano Buzá Jacobucci **Videoposter Link:** https://youtu.be/d0IMWRqPlV8
VP1 - 04	**POPULATION BIOLOGY OF THE PORCELLANID CRAB *Pachycheles laevidactylus* ORTMANN, 1892 (ANOMURA: PORCELLANIDAE) IN SOUTHERN BRAZIL** *Ecology and Biodiversity* **Speaker:** Amanda Porciuncula Horch **Videoposter Link:** https://youtu.be/3bgWAiolq58
VP1 - 05	**COEXISTENCE IN TWO SYMPATRIC HERMIT CRABS: USING THE SHELL ADEQUACY INDEX AS TOOL FOR ANALISING COMPETITION** *Ecology and Biodiversity* **Speaker:** Renan Augusto Pereira dos Santos **Videoposter Link:** https://youtu.be/y9JMV3voZb8
VP1 - 06	**DISTRIBUTION AND ZOOGEOGRAPHICAL AFFINITIES OF MOLE CRABS *Emerita*, *Lepidopa* AND *Albunea*, IN SANDY SEDIMENTS OF MEXICO ATLANTIC COAST** *Ecology and Biodiversity* **Speaker:** Julio Alberto Duarte Gutiérrez **Videoposter Link:** https://youtu.be/EJIFvshpe2U
VP1 - 07	**EXPLOITED LAND CRABS FROM GENERA *Cardisoma* AND *Ucides*: A SCIENTOMETRIC APPROACH** *Ecology and Biodiversity* **Speaker:** Cassia de Carvalho **Videoposter Link:** https://youtu.be/GYxz4wSRD8c
VP1 - 08	**HETEROCHELY AND LATERALITY IN *Fredius ibiapaba* SANTOS, TAVARES, SILVA, CERVINI, PINHEIRO & SANTANA, 2020 (BRACHYURA: PSEUDOTHELPHUSIDAE)** *Ecology and Biodiversity* **Speaker:** Allysson Pinheiro **Videoposter Link:** https://youtu.be/0PG5hm5SwAc
VP1 - 09	**THE PRAWN *Macrobrachium jelskii* (MIERS, 1877) FROM BRAZILIAN SEMIARID FOLLOWS THE RENSCH'S RULE?** *Ecology and Biodiversity* **Speaker:** José Iago Muniz **Videoposter Link:** https://youtu.be/VAVu84Dyomk
VP1 - 10	**A COMPARATIVE STUDY OF *Ptilohyale littoralis* STIMPSON, 1853 AND *Parhyale hawaiensis* DANA, 1853 (AMPHIPODA: HYALIDAE) IN DISTINCT YEARS** *Ecology and Biodiversity* **Speaker:** Paula Moretti **Videoposter Link:** https://youtu.be/f0b2p0gr-Y0
VP1 - 11	***Ucides cordatus* (LINNAEUS, 1763) (BRACHYURA, OCYPODIDAE): CYTOTOXICITY, GENOTOXICITY, AND THE IMPACTS ON THIS MANGROVE SENTINEL SPECIES AFTER AN ENVIRONMENTAL DISASTER IN CUBATÃO-SP/BRAZIL** *Physiology and Toxicology* **Speaker:** Fernanda Vargas Barbi de Souza **Videoposter Link:** https://youtu.be/fxjSZ1a1f78
VP1 - 12	**A NEW SPECIES OF *Hyalella* SMITH, 1874 (AMPHIPODA: HYALELLIDAE) FROM PARQUE ESTADUAL TURÍSTICO DO ALTO RIBEIRA – PETAR/SÃO PAULO, BRAZIL** *Taxonomy and Phylogeny* **Speaker:** Ludmila Rocha Penoni **Videoposter Link:** https://youtu.be/ofjlplihmxo
VP1 - 13	**INTERTIDAL BURROWING SHRIMPS (AXIIDEA: CALLIANASSIDAE, CALLICHIRIDAE; GEBIIDEA: AXIANASSIDAE, UPOGEBIIDAE) COLLECTING ALONG THE BRAZILIAN COAST** *Taxonomy and Phylogeny* **Speaker:** Patrício Hernaez **Videoposter Link:** https://youtu.be/35LR0Pvlav0

June 6, 2022
18:00 - 19:30 h

R1: Room
"Georgina Bond Buckup"

VP1: Videoposter Presentations 1

VP1-14 to VP1-27

VP #	VIDEOPOSTER INFORMATION
VP1 - 14	**THE GENUS *Schizidium* VERHOEFF, 1901 (ONISCIDEA, ARMADILLIDIIDAE) FROM CYPRUS** *Taxonomy and Phylogeny* **Speaker:** Ivanklin Soares Campos Filho **Videoposter Link:** https://youtu.be/sD1yc0QUEhk
VP1 - 15	**VARIATIONS IN GROWTH INVESTMENT BETWEEN CLADES OF THE SPECIES COMPLEX *Lysmata* RISSO, 1816 – *Exhippolysmata* STEBBING, 1915 (CRUSTACEA, DECAPODA, CARIDEA)** *Ecology and Biodiversity* **Speaker:** Juliano José da Silva **Videoposter Link:** https://youtu.be/cDb64U83B-Y
VP1 - 16	**INSIGHTS OF FORENSIC IDENTIFICATION OF SHRIMPS COMMERCIALIZED IN THE STATE OF SÃO PAULO** *Genetics and Conservation* **Speaker:** Rodrigo Pantoni **Videoposter Link:** https://youtu.be/BbbgcCNwOo0
VP1 - 17	**GENUS *Hyalella* IN URUGUAY: MOLECULAR DIVERSITY AND PROVISIONAL NEW SPECIES** *Taxonomy and Phylogeny* **Speaker:** Analisa Waller **Videoposter Link:** https://youtu.be/tjTUxs3HPU8
VP1 - 18	**REPRODUCTION INTENSITY OF *Pachycheles laevidactylus* ORTMANN, 1892 (ANOMURA: PORCELLANIDAE)** *Reproduction and Development* **Speaker:** Esli Emanoel Domingues Mosna **Videoposter Link:** https://youtu.be/lJC4a4YnBG8
VP1 - 19	**ANOMURAN CRUSTACEANS (DECAPODA) FROM THE FERNANDO DE NORONHA ARCHIPELAGO, BRAZIL** *Ecology and Biodiversity* **Speaker:** Giovanna Rosa Moreira **Videoposter Link:** https://youtu.be/eDHvPmx62gU
VP1 - 20	**MORPHOLOGICAL VARIATION IN THE FIDDLER CRAB *Leptuca uruguayensis* BETWEEN MICROHABITATS WITH DIFFERENT TEMPERATURES** *Ecology and Biodiversity* **Speaker:** Carolina Guardino Martins **Videoposter Link:** https://youtu.be/Dtidz3EZBGo
VP1 - 21	**INTEGRATIVE APPROACH REVEALS DOUBT ON THE OCCURRENCE OF *Panopeus occidentalis* SAUSSURE, 1857 (DECAPODA: BRACHYURA) ALONG THE BRAZILIAN COAST** *Taxonomy and Phylogeny* **Speaker:** Lucas Oliveira Rogeri **Videoposter Link:** https://youtu.be/k5bQ-Cf_k9E
VP1 - 22	**TAXONOMY OF CARIDEAN SHRIMPS (DECAPODA: CARIDEA) FROM THE REMOTE OCEANIC ISLANDS TRINDADE AND MARTIM VAZ** *Taxonomy and Phylogeny* **Speaker:** Jessica Colavite **Videoposter Link:** https://youtu.be/iUwwJ_L7fAE
VP1 - 23	**TAXONOMIC STATUS OF SOME PINNOTHERID CRABS (BRACHYURA: PINNOTHERIDAE) OF THE STATE OF SÃO PAULO: INTEGRATIVE ANALYSIS WITH MORPHOLOGY AND GENETICS** *Taxonomy and Phylogeny* **Speaker:** Felipe Cesar Balbino Santos **Videoposter Link:** https://youtu.be/7bO3JJaah9g
VP1 - 24	**MORPHOLOGY OF NAUPLIAR DEVELOPMENT AND FIRST PROTOZOEA OF THE ROCK SHRIMPS *Sicyonia dorsalis* AND *S. typica* (DENDROBRANCHIATA)** *Reproduction and Development* **Speaker:** João A. F. Pantaleão **Videoposter Link:** https://youtu.be/TTDAPX0wPxg
VP1 - 25	**MORPHOLOGICAL VARIABILITY BETWEEN POPULATIONS OF THE TROGLOBITIC AMPHIPOD *Hyalella veredae* CARDOSO AND BUENO, 2014** *Ecology and Biodiversity* **Speaker:** Rayssa Karolina Ferreira Borges **Videoposter Link:** https://youtu.be/ubDMGRf1nTY
VP1 - 26	**DOES THE TERRITORIAL EXPANSION OF THE FIDDLER CRAB *Leptuca cumulanta* CAN CHANGE THE DISTRIBUTION OF *Leptuca uruguayensis*?** *Ecology and Biodiversity* **Speaker:** Jonathann Yukio Arakaki **Videoposter Link:** https://youtu.be/v2pSR56fzKU
VP1 - 27	**DRIVERS OF PRIMARY FRESHWATER CRABS RICHNESS REVEAL CONTRASTING HISTORY AMONG DIFFERENT CLADES** *Ecology and Biodiversity* **Speaker:** Douglas F. R. Alves **Videoposter Link:** https://youtu.be/vMLtkCHXwQ8

June 6, 2022
18:00 - 19:30 h

R1: Room "Georgina Bond Buckup"

VP1: Videoposter Presentations 1

VP1-28 to VP1-41

VP #	VIDEOPOSTER INFORMATION
VP1 - 28	**POPULATION STRUCTURE OF *Pachygrapsus transversus* IN THREE ROCKY-SHORES OF BAIXADA SANTISTA (SÃO PAULO, BRAZIL)** *Ecology and Biodiversity* **Speaker:** Tainá Moreira Ferreira **Videoposter Link:** https://youtu.be/k1xEokRMTdk
VP1 - 29	**IDENTIFICATION OF REPRODUCTIVE AND NURSERY AREAS OF THE LAND CRAB *Johngarthia lagostoma* IN THE TRINDADE ISLAND, BRAZIL** *Ecology and Biodiversity* **Speaker:** Marcio Camargo Araujo João **Videoposter Link:** https://youtu.be/QOB-CssqyVM
VP1 - 30	**DESCRIPTION OF A NEW SPECIES OF *Hyalella* SMITH, 1874 (AMPHIPODA: HYALELLIDAE) FOR THE PARQUE ESTADUAL INTERVALES – SÃO PAULO, BRAZIL** *Taxonomy and Phylogeny* **Speaker:** Carolina Mendes Deotti Loures **Videoposter Link:** https://youtu.be/duuJvIRe1a0
VP1 - 31	**PRELIMINARY INSIGHTS ON GENETIC DATA ABOUT BRAZILIAN DECAPOD RED LIST** *Genetics and Conservation* **Speaker:** João Victor Ferraz Alonso **Videoposter Link:** https://youtu.be/JtFoEPmuwa4
VP1 - 32	**SETAE AS DIAGNOSTIC CHARACTERS FOR THE *Aegla longirostri* SPECIES COMPLEX (ANOMURA, AEGLIDAE)** *Taxonomy and Phylogeny* **Speaker:** Héllen Sbruzzi **Videoposter Link:** https://youtu.be/1pGOCUSVHLI
VP1 - 33	**INFLUENCE OF HIGH TEMPERATURE ON FOOD INTAKE OF THE CRAB *Pachygrapsus transversus* GIBBES, 1850 (BRACHYURA: GRAPSIDAE)** *Ecology and Biodiversity* **Speaker:** Jaqueline Santos Borges **Videoposter Link:** https://youtu.be/WHeUnESuPOw
VP1 - 34	**DOES THE FIDDLER CRAB *Minuca rapax* PREDATOR SHOW A PREFERENCE FOR ONE SEX OF FIDDLER CRAB PREY *Leptuca leptodactyla*?** *Ecology and Biodiversity* **Speaker:** Douglas Sarmento dos Santos Boás **Videoposter Link:** https://youtu.be/5f0ptAxGkUE
VP1 - 35	**ABUNDANCE AND SPATIO-TEMPORAL DISTRIBUTION OF TWO SYMPATRIC ROCK SHRIMPS *Sicyonia dorsalis* KINGSLEY, 1878 AND *Sicyonia typica* BOECK, 1864 (PENAEOIDEA: SICYONIIDAE), ON THE COAST OF ILHÉUS (BAHIA, BRAZIL)** *Ecology and Biodiversity* **Speaker:** Renzo Gonçalves Tavares **Videoposter Link:** https://youtu.be/B81-J3q5NlQ
VP1 - 36	**TEMPERATURE EFFECT ON THE MOLT CYCLE OF *Callinectes sapidus* RATHBUN, 1869 (BRACHYURA: PORTUNIDAE)** *Physiology and Toxicology* **Speaker:** Daniela Dantas David **Videoposter Link:** https://youtu.be/Yv_mpD4gYt4
VP1 - 37	**REVEALING THE RECRUITMENT OF THE LAND CRAB *Johngarthia lagostoma* (BRACHYURA: GECARCINIDAE), IN THE TRINDADE ISLAND, BRAZIL** *Reproduction and Development* **Speaker:** Isabella Dias e Silva **Videoposter Link:** https://youtu.be/Xg_ymnXVW9k
VP1 - 38	**PREDICT DISTRIBUTION OF PINK SHRIMP *Farfantepenaeus brasiliensis* DUE GLOBAL WARMING** *Ecology and Biodiversity* **Speaker:** Jeniffer Natalia Teles **Videoposter Link:** https://youtu.be/VsaHLSHdsY4
VP1 - 39	**FIRST REPORT OF THE GENOME SIZE FOR THE BRAZILIAN CRAB *Trichodactylus fluviatilis* LATREILLE, 1828 (BRACHYURA: TRICHODACTYLIDAE) INHABITING FRESHWATER ECOSYSTEMS** *Genetics and Conservation* **Speaker:** João Gabriel Barioto **Videoposter Link:** https://youtu.be/Y7OtqcJo5cs
VP1 - 40	**PHYLOGENETIC AND COEVOLUTIONARY INSIGHTS OF THE OBLIGATE COMMENSAL *Hyachelia lowryi* (CRUSTACEA: AMPHIPODA)** *Taxonomy and Phylogeny* **Speaker:** Tammy Iwasa Arai **Videoposter Link:** https://youtu.be/e66I8XTDdmw
VP1 - 41	**GENOMIC POPULATION ANALYSIS OF *Ampithoe marcuzzii* (AMPHIPODA: AMPITHOIDAE) REVEALS OCEANIC ISLANDS ISOLATION IN THE WESTERN ATLANTIC** *Genetics and Conservation* **Speaker:** Tammy Iwasa Arai **Videoposter Link:** https://youtu.be/MhlWzgaPgJ4

June 6, 2022
18:00 - 19:30 h

R1: Room "Georgina Bond Buckup"

VP1: Videoposter Presentations 1

VP1-42 to VP1-55

VP #	VIDEOPOSTER INFORMATION
VP1 - 42	**DESCRIPTION OF THE FIRST LARVAL STAGE (ZOEA I) OF THE SNAPPING SHRIMP *Synalpheus townsendi* COUTIÈRE, 1909** *Reproduction and Development* **Speaker:** Rafael de Carvalho Santos **Videoposter Link:** https://youtu.be/mAviXs26hDc
VP1 - 43	**SEXUAL MATURITY OF THE OCEANIC ISLAND GECARCINID *Johngarthia lagostoma* (H. MILNE EDWARDS, 1837)** *Reproduction and Development* **Speaker:** Letícia Stela Bispo da Silva **Videoposter Link:** https://youtu.be/AY1CsIjlfzU
VP1 - 44	**GROWTH, LONGEVITY AND MORTALITY OF PINK SHRIMPS *Farfantepenaeus brasiliensis* (LATREILLE, 1817) AND *F. paulensis* (PÉREZ-FARFANTE, 1967) IN SOUTHEASTERN BRAZIL** *Aquaculture and Fisheries* **Speaker:** Júlia Fernandes Perroca **Videoposter Link:** https://youtu.be/AMTiiWb6UW4
VP1 - 45	**RELATIVE GROWTH AND SEXUAL DIMORPHISM OF *Litopenaeus schmitti* AND *Xiphopenaeus* spp. IN THE ESTUARY-BAY COMPLEX FROM SANTOS/SÃO VICENTE, SÃO PAULO, BRAZIL** *Reproduction and Development* **Speaker:** Leonardo Moreira **Videoposter Link:** https://youtu.be/kbhdE65VnMo
VP1 - 46	**POPULATION STRUCTURE AND RELATIVE GROWTH OF THE BURROWING SHRIMP *Neocallichirus maryae* KARASAWA, 2004 (CRUSTACEA: AXIIDEA: CALLICHIRIDAE) ON A SANDY BEACH OF THE NORTHEASTERN COAST OF BRAZIL** *Ecology and Biodiversity* **Speaker:** Maria Eduarda Kusuky de Albuquerque **Videoposter Link:** https://youtu.be/XKyOd5wt5-E
VP1 - 47	**TAXONOMIC TRAINING ELUCIDATES PANAMANIAN AMPHIPOD DIVERSITY** *Taxonomy and Phylogeny* **Speaker:** Kristine White **Videoposter Link:** https://youtu.be/n9QQnksCtPY
VP1 - 48	**RELATIVE GROWTH AND MORPHOLOGICAL SEXUAL MATURITY OF *Hepatus pudibundus* (HERBST, 1785) (DECAPODA, AETHRIDAE) IN SÃO PAULO, BRASIL** *Reproduction and Development* **Speaker:** Milena Silva Jaconis **Videoposter Link:** https://youtu.be/nJ-FO6q8nWI
VP1 - 49	**FIRST ASSESSMENT OF THREE KING CRABS SPECIES (CRUSTACEA: LITHODIDAE) COLLECTED UNDER THE REVIZEE PROGRAM IN BRAZILIAN AMAZON PROVINCE** *Ecology and Biodiversity* **Speaker:** Déborah Elena Galvão Martins **Videoposter Link:** https://youtu.be/kFnNYtMjgyE
VP1 - 50	**REPRODUCTIVE ASPECTS OF *Persephona punctata* LINNAEUS, 1758 (BRACHYURA, LEUCOSIIDAE)** *Reproduction and Development* **Speaker:** Gabriel Vieira Martins Rezende Gois **Videoposter Link:** https://youtu.be/YaZCHk1ZDns
VP1 - 51	**MORPHOLOGY OF THE GASTRIC MILL IN NEOTROPICAL CRAYFISH: A COMPARATIVE ANALYSIS** *Ecology and Biodiversity* **Speaker:** Victória Cassel **Videoposter Link:** https://youtu.be/gWCR-S-h5bg
VP1 - 52	**THE COMPLETE MITOCHONDRIAL GENOME OF THE PINK SHRIMP *Farfantepenaeus duorarum* (BURKENROAD, 1939) (DECAPODA: DENDROBRANCHIATA: PENAEIDAE)** *Genetics and Conservation* **Speaker:** Stormie Collins **Videoposter Link:** https://youtu.be/rbSuOX13cro
VP1 - 53	**DESCRIPTION OF THE FIRST LARVAL STAGE (ZOEA I) OF THE SHRIMP *Typton distinctus* CHACE, 1972 (CARIDEA: PALAEMONIDAE)** *Reproduction and Development* **Speaker:** Matheus Sene Oliveira **Videoposter Link:** https://youtu.be/Ms_7Mto_aYs
VP1 - 54	**EARLY DEVELOPMENTAL STAGES OF THE WHITE SHRIMP *Litopenaeus schmitti* (DENDROBRANCHIATA: PENAEIDAE)** *Reproduction and Development* **Speaker:** Regis Pescinelli **Videoposter Link:** https://youtu.be/dqbXY5KpN0k
VP1 - 55	**THE COMPLETE MITOCHONDRIAL GENOME OF THE BROWN SPINY LOBSTER *Panulirus equinatus* WITH INSIGHTS INTO PHYLOGENETIC RELATIONSHIPS IN THE ACHELATA** *Genetics and Conservation* **Speaker:** Alyssa Baker **Videoposter Link:** https://youtu.be/1z7joEEI9GM

June 6, 2022
18:00 - 19:30 h

R1: Room
"Georgina Bond Buckup"

VP1: Videoposter Presentations 1

VP1-56 to VP1-69

VP #	VIDEOPOSTER INFORMATION
VP1 - 56	**MORPHOLOGICAL DESCRIPTION OF ZOEAS I AND II OF THE SNAPPING SHRIMP *Alpheus* cf. *packardii*, KINGSLEY, 1880** *Reproduction and Development* **Speaker:** Nádia de Moraes Sanches **Videoposter Link:** https://youtu.be/TpNWMILjAQ0
VP1 - 57	**WHEN SIZE AND SEX DO MATTER: IMPACT OF LOW-COST DIETS ON FEMALE MATURATION OF THE RED CLAW CRAYFISH** *Aquaculture and Fisheries* **Speaker:** Laura Lopez Greco **Videoposter Link:** https://youtu.be/OWlz0jJNeA4
VP1 - 58	**STUDIES ON THE TAXONOMY OF THE FRESHWATER CRABS IN CHINA AND SURROUNDING COUNTRIES** *Taxonomy and Phylogeny* **Speaker:** Da Pan **Videoposter Link:** https://youtu.be/wOF6hic-q1M
VP1 - 59	**UNDESCRIBED DIVERSITY IN THE CIRCUMTROPICAL GALL CRAB GENUS *Opecarcinus*, LINKED TO HOST SPECIFICITY AND BIOGEOGRAPHY** *Ecology and Biodiversity* **Speaker:** Tao X **Videoposter Link:** https://youtu.be/qhucR-7DiOs
VP1 - 60	**POTENTIAL RICHNESS OF PENEID SHRIMPS (DECAPODA; PENAEIDAE) IN PROTECTED AREAS IN THE COASTAL REGION AFFECTED BY THE FUNDÃO DAM TAILINGS (MARIANA-MG)** *Ecology and Biodiversity* **Speaker:** Wanessa Gomes Pereira, **Videoposter Link:** https://youtu.be/MM6fsC7-YN0
VP1 - 61	**OSMOREGULATION IN TEMPORO-SPATIALLY DISTINCT POPULATIONS OF THE FRESHWATER SHRIMP *Macrobrachium olfersii* (WIEGMANN, 1836) (DECAPODA, PALAEMONIDAE)** *Physiology and Toxicology* **Speaker:** Luiza Grassi Villela **Videoposter Link:** https://youtu.be/lq712LiX8m8
VP1 - 62	**DIVERSITY OF THE GENUS *Aegla* LEACH, 1920 (ANOMURA, AEGLIDAE) IN A HIGHLY ENDEMIC REGION** *Genetics and Conservation* **Speaker:** Victor Hugo dos Santos Mollmann **Videoposter Link:** https://youtu.be/14S2HNXFE8Q
VP1 - 63	**PHYLOGENETIC RELATIONSHIPS OF MOLE CRABS OF THE GENUS *Emerita*, DERIVED FROM MITOCHONDRIAL DNA, IN SANDY BEACHES OF MEXICO ATLANTIC COAST** *Taxonomy and Phylogeny* **Speaker:** Alejandro González Treviño **Videoposter Link:** https://youtu.be/xSmFBMRSEbs
VP1 - 64	**FIRST RECORD OF BILATERAL HYPERTROPHY IN *Uca rapax* (DECAPODA: OCYPODIDAE) IN LAGUNA MADRE, TAMAULIPAS, MEXICO** *Ecology and Biodiversity* **Speaker:** Alejandro González Treviño **Videoposter Link:** https://youtu.be/4cKvigOoY5o
VP1 - 65	**POPULATION STRUCTURE OF *Talitroides topitotum* BURT, 1934 (CRUSTACEA: AMPHIPODA: TALITRIDAE) IN SANTA MARIA, CENTRAL REGION OF RIO GRANDE DO SUL, BRAZIL** *Ecology and Biodiversity* **Speaker:** Gláucia Brisotto **Videoposter Link:** https://youtu.be/BCRUegU9VRM
VP1 - 66	**TRAP TO CONTROL THE INVASIVE SWIMMING CRAB *Charybdis hellerii* (A. MILNE-EDWARDS, 1867) (CRUSTACEA, DECAPODA, PORTUNIDAE)** Ecology and Biodiversity **Speaker:** Harry Boos **Videoposter Link:** https://youtu.be/3YxNJF-IlQM
VP1 - 67	**TAXONOMIC REVIEW OF SELECTED MARINE WIDESPREAD OSTRACOD (CRUSTACEA) GENERA** *Ecology and Biodiversity* **Speaker:** Stéfhanne Guimarães Santos **Videoposter Link:** https://youtu.be/POfu6g-yUto
VP1 - 68	**FIRST RECORD OF THE GENUS *Harpinia* BOECK, 1876 (AMPHIPODA: PHOXOCEPHALIDAE) FROM THE SOUTHWESTERN ATLANTIC, WITH DESCRIPTION OF THREE NOVEL SPECIES** *Taxonomy and Phylogeny* **Speaker:** Luiz Felipe de Andrade **Videoposter Link:** https://youtu.be/VtUseFC6SIc
VP1 - 69	**INSULIN-LIKE PEPTIDES: LIMB REGENERATION AND MOLT REGULATORS** *Others* **Speaker:** Mihika T. Kozma **Videoposter Link: not informed**

June 6, 2022
18:00 - 19:30 h

R1: Room
"Georgina Bond Buckup"

VP1: Videoposter Presentations 1

VP1-70 to VP1-75

VP #	VIDEOPOSTER INFORMATION
VP1 - 70	**FIRST ZOEAL STAGE MORPHOLOGY OF THE SNAPPING SHRIMP *Alpheus cristulifrons* RATHBUN, 1900 (CARIDEA: ALPHEIDAE)** *Reproduction and Development* **Speaker:** Karmine Pasinatto **Videoposter Link:** https://youtu.be/PyE68baa6Ls
VP1 - 71	**A REVISION OF THE GENUS *Sinopotamon* BOTT, 1976 (BRACHYURA: POTAMIDAEA), FRESHWATER CRABS ENDEMIC TO CHINA, WITH DESCRIPTIONS OF TWO NEW GENERA** *Taxonomy and Phylogeny* **Speaker:** Ruxiao Wang **Videoposter Link:** https://youtu.be/7Q6Pj6g30WM
VP1 - 72	**STUDY ON SHELL UTILIZATION PATTERN OF TWO SYMPATRIC HERMIT CRAB SPECIES ON THE ROCKY INTERTIDAL REGION OF VERAVAL, GUJARAT, INDIA** *Ecology and Biodiversity* **Speaker:** Patel Krupal J **Videoposter Link:** https://youtu.be/y52yotluu_Y
VP1 - 73	**PERCEPTIONS OF CLIMATE CHANGE IMPACTS ON THE MANGROVE CRAB, *Ucides cordatus* (LINNAEUS, 1763) (BRACHYURA: OCYPODIDAE), ACCORDING TO CRAB GATHERERS IN CANANEIA (SP), BRAZIL** *Others* **Speaker:** Maria Carolina Las Casas e Novaes **Videoposter Link:** https://youtu.be/QOQ-XZHgnDA
VP1 - 74	**ANNOTATED CHECKLIST OF MARINE AMPHIPODS (CRUSTACEA: AMPHIPODA) OF INDIA.** *Taxonomy and Phylogeny* **Speaker:** Thacker Dimple R **Videoposter Link:** https://youtu.be/_YsWGp-WUG8
VP1 - 75	**DIVERSITY COMPONENT DETERMINATION FOR BENTHIC CRAB AND THEIR INTERACTIVE REGIME IN MANGROVE COASTAL AREAS OF PAKISTAN** *Ecology and Biodiversity* **Speaker:** Noor Us Saher **Videoposter Link: not informed**

VIDEOPOSTER PRESENTATIONS 2 (VP2)

June 7, 2022
18:00 - 19:30 h

R1: Room
"Georgina Bond Buckup"

VP2: Videoposter Presentations 2

VP2-01 to VP2-14

VP #	VIDEOPOSTER INFORMATION
VP2 - 01	**STRUCTURE AND TEMPORAL DYNAMICS OF BRACHYURAN CRAB ASSEMBLAGES (CRUSTACEA: DECAPODA) IN MANGROVE STANDS OF A COASTAL LAGOON IN SOUTHEASTERN BRAZIL** *Ecology and Biodiversity* **Speaker:** Robson Acha Leite **Videoposter Link:** https://youtu.be/S_G0iFtQQbk
VP2 - 02	**ONTOGENETIC COLOR VARIATION AND CAMOUFLAGE OF THE INSULAR LAND CRAB *Johngarthia lagostoma* (H. MILNE EDWARDS, 1837)** *Ecology and Biodiversity* **Speaker:** Marcio Camargo Araujo João **Videoposter Link:** https://youtu.be/aS2kHX6gs8I
VP2 - 03	**POPULATION STRUCTURE OF THE CRAB *Dilocarcinus pagei* STIMPSON,1861 (DECAPODA: TRICHODACTYLIDAE) IN THE ARAGUARI RIVER, MINAS GERAIS, BRAZIL** *Ecology and Biodiversity* **Speaker:** Giuliano Buzá Jacobucci **Videoposter Link:** https://youtu.be/22d3Nkz0BT8
VP2 - 04	**PREVALENCE OF THE PARASITE *Aporobopyrus* sp. (ISOPODA: BOPYRIDAE) ON A PORCELLANID CRAB HOST IN TWO LOCATIONS IN THE SOUTH OF BRAZIL** *Ecology and Biodiversity* **Speaker:** Amanda Porciuncula Horch **Videoposter Link:** https://youtu.be/dQgnJFZKK8c
VP2 - 05	**BIOLOGY ASPECTS OF *Clibanarius antillensis* STIMPSON, 1859: POPULATION STRUCTURE AND SHELL OCCUPATION** *Ecology and Biodiversity* **Speaker:** Renan Augusto Pereira dos Santos **Videoposter Link:** https://youtu.be/_TYx4SzTyts
VP2 - 06	**SPATIAL DISTRIBUTION AND BETA DIVERSITY OF BENTHIC MACROINFAUNA IN SANDY BEACHES OF THE ATLANTIC COAST OF MEXICO** *Ecology and Biodiversity* **Speaker:** Julio Alberto Duarte Gutiérrez **Videoposter Link:** https://youtu.be/Jc1IN_xtDNE
VP2 - 07	**FIRST LOOK AT THE RESULTS OF THE GUAIAMUM PROJECT: BIOECOLOGY AND ETHNOBIOLOGY FOR CONSERVATION** *Ecology and Biodiversity* **Speaker:** Cassia de Carvalho **Videoposter Link:** https://youtu.be/BHr-6SvVnbI
VP2 - 08	**SEXUAL SHAPE DIMORPHISM IN *Fredius ibiapaba* SANTOS *et al.*, 2020 (DECAPODA, PSEUDOTHELPHUSIDAE)** *Ecology and Biodiversity* **Speaker:** Allysson Pinheiro **Videoposter Link:** https://youtu.be/e0Wig_nuawo
VP2 - 09	**ASSESSING THE RENSCH'S RULE FOR THE MANGROVE CRAB *Ucides cordatus* (LINNAEUS, 1763) (DECAPODA: BRACHYURA: OCYPODIDAE)** *Ecology and Biodiversity* **Speaker:** José Iago Muniz **Videoposter Link:** https://youtu.be/U0m_ru6Ujjo
VP2 - 10	**THE INFLUENCE OF WAVES AND SEASONALITY IN PERACARIDA OF ROCKY SHORES ON THE NORTH COAST OF THE STATE OF SÃO PAULO** *Ecology and Biodiversity* **Speaker:** Paula Moretti **Videoposter Link:** https://youtu.be/oEZt1tno8k4
VP2 - 11	**TOLERANCE OF *Macrobrachium potiuna* (CRUSTACEA, DECAPODA) TO LOW PH EXPOSURE IN BLACKWATER** *Physiology and Toxicology* **Speaker:** Natalia Romano Ferreira dos Santos **Videoposter Link:** https://youtu.be/gEeGQKI6SHs
VP2 - 12	**INTENSE WALKING EVENTS (IWEs) OF *Ucides cordatus* (LINNAEUS, 1763) (BRACHYURA, OCYPODIDAE) IN THE MARINE ENVIRONMENTAL PROTECTED AREA OF THE CENTRAL COAST OF SÃO PAULO STATE, BRAZIL** *Reproduction and Development* **Speaker:** Fernanda Vargas Barbi de Souza **Videoposter Link:** https://youtu.be/-JNx1IASeQw
VP2 - 13	**TWO NEW SPECIES OF *Hyalella* SMITH, 1874 (AMPHIPODA: HYALELLIDAE) FROM CAVES OF SÃO PAULO STATE, SOUTHEAST BRAZIL** *Taxonomy and Phylogeny* **Speaker:** Ludmila Rocha Penoni **Videoposter Link:** https://youtu.be/quQn37Twti4
VP2 - 14	**MONOGAMY IN THE BURROWING SHRIMP *Axianassa australis* RODRIGUES & SHIMIZU, 1992 (DECAPODA, GEBIIDEA, AXIANASSIDAE)** *Ecology and Biodiversity* **Speaker:** Patrício Hernaez **Videoposter Link:** https://youtu.be/Gi6beZI7bU4

June 7, 2022
18:00 - 19:30 h

R1: Room
"Georgina Bond Buckup"

VP2: Videoposter Presentations 2

VP2-15 to VP2-29

VP #	VIDEOPOSTER INFORMATION
VP2 - 15	**FILLING THE VOID: THIRTY-FOUR NEW SPECIES OF *Ischioscia* VERHOEFF, 1928 (ONISCIDEA, PHILOSCIIDAE) FROM COLOMBIA** *Taxonomy and Phylogeny* **Speaker:** Ivanklin Soares Campos Filho **Videoposter Link:** https://youtu.be/s44qzfN6zUQ
VP2 - 16	**METAL CONTAMINATION IN *Callichirus major* (Say, 1818) (DECAPODA: CALLIANASSIDAE) ON TWO BEACHES OF SÃO PAULO STATE, BRAZIL** *Genetics and Conservation* **Speaker:** Juliano José da Silva **Videoposter Link:** https://youtu.be/KDe526ctKoA
VP2 - 17	**POPULATION ASPECTS OF *Ucides cordatus* (L., 1763) IN LAGAMAR PARANÁ - SÃO PAULO** *Others* **Speaker:** Gabriele Costa Ramos **Videoposter Link:** https://youtu.be/PrlJZkXLUZk
VP2 - 18	**REPRODUCTIVE POTENTIAL OF THE LAND CRAB, *Johngarthia lagostoma* (H. MILNE-EDWARDS, 1837), IN TRINDADE ISLAND, BRAZIL** *Reproduction and Development* **Speaker:** Maria Antonia Machado de Oliveira **Videoposter Link:** https://youtu.be/QlvT2w6XWwk
VP2 - 19	**SPHEROID ECTOPARASITIC ISOPODS (EPICARIDEA: DAJIDAE) ATTACHED TO THE EXTREMITIES OF BRACHYURAN CRAB HOSTS – NOVEL MORPHOLOGY AND POSITION FOR "BACKPACK ISOPODS"** *Taxonomy and Phylogeny* **Speaker:** Jason Williams **Videoposter Link:** https://youtu.be/NKhpvnoeySs
VP2 - 20	**A NEW DEEP-SEA CUMACEAN SPECIES (CRUSTACEA: PERACARIDA) FROM ARGENTINA, AND THE TAXONOMIC STATUS OF *Platytyphlops orbicularis* (CALMAN, 1905)** *Taxonomy and Phylogeny* **Speaker:** Daniel Roccatagliata **Videoposter Link:** https://youtu.be/nupoF2UmeTU
VP2 - 21	**CHECKLIST OF BRACHYURAN CRABS (CRUSTACEA: DECAPODA) OF BARBADOS, WEST INDIES** *Ecology and Biodiversity* **Speaker:** Nadeshinie Parasram **Videoposter Link:** https://youtu.be/yqKpJu-ThSQ
VP2 - 22	**USE OF *Pleurotus ostreatus* POST-CULTIVATION SUBSTRATE(SMS) IN *Macrobrachium amazonicum* WEIGHT GAIN** *Aquaculture and Fisheries* **Speaker:** Paula Guimarães Moreira **Videoposter Link:** https://youtu.be/zlcvHoQHgJ4
VP2 - 23	**BERGMANN-RENSCH CONTINUUM UNDER SHELL: GENDER-SPECIFIC TREND IN RESPONSE TO LATITUDINAL GRADIENT** *Ecology and Biodiversity* **Speaker:** Valéria Fonseca Vale **Videoposter Link:** https://youtu.be/O8WlfiV4QHQ
VP2 - 24	**MICROPLASTIC IN *Ucides cordatus* (BRACHYURA: OCYPODIDAE) IN THE ESTUARINE COMPLEX OF PARANAGUÁ** *Ecology and Biodiversity* **Speaker:** Elizabeth do Nascimento Lopes **Videoposter Link:** https://youtu.be/V2XKfCjB8No
VP2 - 25	**SEX RATIO AND POPULATION STRUCTURE OF THE SHRIMP *Litopenaeus schmitti* (BURKENROAD, 1936) (DECAPODA: PENAEIDAE) IN CANANÉIA, SOUTH COAST OF SÃO PAULO STATE, BRAZIL** *Reproduction and Development* **Speaker:** João Gabriel Barioto **Videoposter Link:** https://youtu.be/7DQNvvX6dC8
VP2 - 26	**LACK OF GENETIC STRUCTURING AND RECENT POPULATION EXPANSION OF *Alpheus estuariensis* (CARIDEA: ALPHEIDAE) IN MARINE ECOREGIONS OF BRAZIL** *Genetics and Conservation* **Speaker:** Jeniffer Natalia Teles **Videoposter Link:** https://youtu.be/KaAEYeTzzaw
VP2 - 27	**PATTERNS OF GENOME SIZE VARIATION IN CARIDEAN SHRIMPS: A NEW DATA FOR NONGAMBARELLOIDES *Synalpheus* GENUS** *Ecology and Biodiversity* **Speaker:** Isabela Ribeiro Rocha de Moraes, **Videoposter Link:** https://youtu.be/zA5vq1JLXew
VP2 - 28	**DO DIVERGENCES IN THE CLIMATIC NICHE SUPPORT DIFFERENTIATION AMONG LINEAGES OF THE PEPPERMINT SHRIMP *Lysmata wurdemanni*?** *Ecology and Biodiversity* **Speaker:** Ariadine Almeita **Videoposter Link:** https://youtu.be/nATsaBGbdcQ
VP2 - 29	**ABUNDANCE OF THE INVASIVE CRAB *Charybdis hellerii* IN THE ESTUARINE COMPLEX OF PARANAGUÁ, PR** *Others* **Speaker:** Kevlyn Caroline dos Santos Pinto **Videoposter Link:** https://youtu.be/5_9WEeYIPNs

June 7, 2022
18:00 - 19:30 h

R1: Room "Georgina Bond Buckup"

VP2: Videoposter Presentations 2

VP2-30 to VP2-44

VP #	VIDEOPOSTER INFORMATION
VP2 - 30	**PRESENCE OR ABSENCE OF REPRODUCTIVE ACCESSORY GLANDS IN CRABS** *Reproduction and Development* **Speaker:** Maria Alice Garcia Bento **Videoposter Link:** https://youtu.be/JBhVi5oSYAg
VP2 - 31	**MORE AND SMALLER CRABS: IMPLICATIONS OF WARMING ON THE MORPHOMETRIC AND REPRODUCTIVE TRAITS OF *Carcinus maenas*** *Ecology and Biodiversity* **Speaker:** João Nuno Monteiro **Videoposter Link:** https://youtu.be/va3EDhvq9-I
VP2 - 32	**RELATIVE GROWTH AND SEXUAL MATURITY OF THE SPIDER CRAB *Libinia spinosa* GUÉRIN, 1832 (BRACHYURA: MAJOIDEA: EPIALTIDAE), FROM SOUTHEASTERN BRAZILIAN COAST** *Reproduction and Development* **Speaker:** Mateus Pereira Santos **Videoposter Link:** https://youtu.be/LszjdRzgsf8
VP2 - 33	**DENSITY AND EXTRACTIVE POTENTIAL OF 'UÇÁ'-CRAB, *Ucides cordatus* (LINNAEUS, 1763) IN MANGROVES OF THE 'TODOS OS SANTOS' BAY, BAHIA, BRAZIL** *Ecology and Biodiversity* **Speaker:** Sergio S Rocha **Videoposter Link:** https://youtu.be/URTQK6c3pcg
VP2 - 34	**CRUSTACEANS INHABITING SAND REEFS OF *Phragmatopoma caudata* (SABELARIIDAE) IN RIO GRANDE DO SUL, BRAZIL** *Ecology and Biodiversity* **Speaker:** Fernanda Zanini dos Santos Bentancur **Videoposter Link:** https://youtu.be/-vG6WEPdTAc
VP2 - 35	**FIRST RECORD OF *Atlantoscia inflata* CAMPOS-FILHO & ARAUJO, 2015 (ISOPODA: ONISCIDEA: PHILOSCIIDAE) IN NORTHEAST BRAZIL** *Taxonomy and Phylogeny* **Speaker:** Vanderley Ferreira Silva Costa **Videoposter Link:** https://youtu.be/DN3-HQiWebQ
VP2 - 36	**REPRODUCTIVE PERFORMANCE OF *Macrobrachium acanthurus* (WIEGMANN, 1836) (CRUSTACEA, PALAEMONIDAE) FEMALES SUBJECTED TO UNILATERAL EYESTALK ABLATION** *Reproduction and Development* **Speaker:** Maria Maschio Rodrigues **Videoposter Link:** https://youtu.be/kgWxDqx0RYg
VP2 - 37	**A NEW SPECIES OF *Macrothrix* (CRUSTACEA, BRANCHIOPODA, MACROTHRICIDAE) FROM THE NEOTROPICS WITH DESCRIPTION OF THE MARTHAE-GROUP** *Taxonomy and Phylogeny* **Speaker:** Giovana Bertini **Videoposter Link:** https://youtu.be/xAaOdOITDLU
VP2 - 38	**ACUTE TOXICITY OF AMMONIA ON JUVENILES AND ADULTS OF *Potimirim* sp. (HOLTHUIS, 1954)** *Aquaculture and Fisheries* **Speaker:** Esthephany Konesuk Santos Miranda **Videoposter Link:** https://youtu.be/vyI6Yd6o5Fs
VP2 - 39	**MICROPLASTICS AND PHYSIOLOGY OF SHRIMPS: SIGNS OF MORE HARMFUL EFFECTS ON DILUTED WATER** *Physiology and Toxicology* **Speaker:** Héllen Siqueira Leite **Videoposter Link:** https://youtu.be/LcV4zt3t3NE
VP2 - 40	**A NEW SPECIES OF *Capitetragonia* PEARSE, 1953 (ISOPODA, BOPYRIDAE) ASSOCIATED TO THE SNAPPING SHRIMP *Alpheus brasileiro* ANKER, 2012 (DECAPODA, ALPHEIDAE) FROM BRAZIL** *Taxonomy and Phylogeny* **Speaker:** Felipe Bezerra Ribeiro **Videoposter Link:** https://youtu.be/ZnrUo3VDats
VP2 - 41	**DO FIDDLER CRABS USE VISION TO GUIDE THEMSELVES UNDER WATER? THE EFFECT OF THE VARIATION OF THE TIDES IN ANTIPREDATORY RESPONSES OF** *Leptuca thayeri* *Ecology and Biodiversity* **Speaker:** Caio Augusto Paula **Videoposter Link:** https://youtu.be/X2lBGKKCKuI
VP2 - 42	**NEW SPECIES OF TERRESTRIAL CRUSTACEAN FROM NORTHEASTERN BRAZIL (ISOPODA: ONISCIDEA)** *Taxonomy and Phylogeny* **Speaker:** Carlos Anderson Soares Bezerra Pereira **Videoposter Link:** https://youtu.be/dJpftiT7NMU
VP2 - 43	**ABSTRACT REMOVED AT AUTHORS' REQUEST**
VP2 - 44	**ALLOMETRY AND MORPHOLOGICAL VARIATIONS OF *Aegla jacutinga* (DECAPODA, ANOMURA)** *Taxonomy and Phylogeny* **Speaker:** Priscila Frazato Da Silva **Videoposter Link:** https://youtu.be/DKAC7NbuN58

June 7, 2022 18:00 - 19:30 h *R1: Room "Georgina Bond Buckup"*	**VP2: Videoposter Presentations 2** **VP2-45 to VP2-59**

VP #	VIDEOPOSTER INFORMATION
VP2 - 45	**NEW SPECIES OF *Aegla* (CRUSTACEA, ANOMURA) DISCOVERED IN THE TIBAGI RIVER BASIN, PARANÁ, BRASIL** *Taxonomy and Phylogeny* **Speaker:** Tiago Arantes **Videoposter Link:** https://youtu.be/ldSadUjSqlc
VP2 - 46	**PARTICIPATIVE MONITORING OF POPULATION PARAMETERS OF SALTMARSH´S BIOENGINEER CRAB *Neohelice granulata* (BRACHYURA: VARUNIDAE) IN URUGUAY** *Others* **Speaker:** Estela Delgado Gargiulo **Videoposter Link:** https://youtu.be/85WwwDGhcDg
VP2 - 47	**MARINE ISOPODA LATREILLE, 1817 TYPE COLLECTION FROM THE NATIONAL MUSEUM/UFRJ** *Taxonomy and Phylogeny* **Speaker:** Agatha Cristhian Sousa Fernandes **Videoposter Link:** https://youtu.be/ogRowqbyuXQ
VP2 - 48	**CRITICAL THERMAL MAXIMA AND OXYGEN CONSUMPTION AS TOOLS TO INVESTIGATE THERMAL PLASTICITY IN *Macrobrachium petronioi* (DECAPODA: PALAEMONIDAE), FROM ITANHAÉM RIVER/SP – BRAZIL** *Ecology and Biodiversity* **Speaker:** Guilherme Ramos Panizza **Videoposter Link:** https://youtu.be/zfDD2JBg0t4
VP2 - 49	**COLOR VARIATION IN *Macrobrachium jelskii* (MIERS, 1877) UNDER LABORATORY CONDITIONS** *Ecology and Biodiversity* **Speaker:** Juliana Gonçalves de Araújo **Videoposter Link:** https://youtu.be/lVop4sBMLNg
VP2 - 50	**DISTRIBUTION OF *Aegla* (CRUSTACEA, ANOMURA) IN PARANÁ STATE, BRAZIL** *Taxonomy and Phylogeny* **Speaker:** Maria Clara Mendonça De Souza Silva **Videoposter Link:** https://youtu.be/_rBCIoiPPvg
VP2 - 51	**NEW OCCURRENCE OF *Fredius ibiapaba* SANTOS, TAVARES, SILVA, CERVINI, PINHEIRO & SANTANA, 2020 (BRACHYURA: PSEUDOTHELPHUSIDAE) ENDEMIC SPECIES FROM IBIAPABA PLATEAU, CEARÁ, BRAZIL** *Ecology and Biodiversity* **Speaker:** Juliana Gonçalves de Araújo **Videoposter Link:** https://youtu.be/zNgAcf2u_Ro
VP2 - 52	**LARVAL DISTRIBUTION OF *Clibanarius* sp. (ANOMURA: DIOGENIDAE) IN ONE OF THE LARGEST ESTUARIES IN THE WORLD** *Ecology and Biodiversity* **Speaker:** Lucas Iaacov Macedo Cardoso **Videoposter Link:** https://youtu.be/xqyf9k51FTc
VP2 - 53	**WHERE ARE THE WOMEN SCIENTISTS?** *Others* **Speaker:** Giovanna de Oliveira dos Reis **Videoposter Link:** https://youtu.be/ctKQMQuBHRk
VP2 - 54	**EVOLUTION OF THE CRUSTACEAN BODY PLAN: TOOLS TO EXPLORE EVOLUTIONARY MECHANISMS** *Others* **Speaker:** Jennifer McCarthy-Taylor **Videoposter Link: not informed**
VP2 - 55	**MORPHOLOGY OF A NEW SPECIES OF *Streblocerus* (CLADOCERA, MACROTHRICIDAE)** *Taxonomy and Phylogeny* **Speaker:** Lourdes Mari Abdu Elmoor Loureiro **Videoposter Link:** https://youtu.be/61E60Rq0jas
VP2 - 56	**EFFECT OF MICROPLASTICS EXPOSURE ON *Procambarus clarkii* GIRARD, 1852 (DECAPODA: CAMBARIDAE) AND *Leptuca pugilator* BOSC, 1801 (DECAPODA: BRACHYURA)** *Physiology and Toxicology* **Speaker:** Gabriela Silveyra **Videoposter Link:** https://youtu.be/zP1bHpms_nA
VP2 - 57	**CLOVE OIL AS ANAESTHETIC FOR AMAZON RIVER PRAWN** *Aquaculture and Fisheries* **Speaker:** Ana Beatriz Jodar Isaac **Videoposter Link:** https://youtu.be/wyGL-STjGqc
VP2 - 58	**MOVEMENTS OF THE SESSILE HERMAPHRODITE AND DWARF MALES OF THE TURTLE BARNACLE *Chelonibia testudinaria*** *Ecology and Biodiversity* **Speaker:** Kwok Kan Chan **Videoposter Link:** https://youtu.be/UYcXFdAv6rQ
VP2 - 59	**TEMPORAL COMPARISON OF SEXUAL MATURITY OF *Callinectes ornatus* (LATREILLE, 1817) (BRACHYURA, PORTUNIDAE)** *Reproduction and Development* **Speaker:** Gabriel de Lucca **Videoposter Link:** https://youtu.be/FognwMMH6FA

June 7, 2022
18:00 - 19:30 h

R1: Room
"Georgina Bond Buckup"

VP2: Videoposter Presentations 2

VP2-60 to VP2-73

VP #	VIDEOPOSTER INFORMATION
VP2 - 60	**IS *Allosquilla africana* (MANNING, 1970) (STOMATOPODA: TETRASQUILLIDAE) A WIDELY DISTRIBUTED BUT RARE SPECIES? SOME CONSIDERATIONS USING AN INTEGRATIVE TAXONOMICAL APPROACH** *Taxonomy and Phylogeny* **Speaker:** Pedro Miguel Duarte Gomes **Videoposter Link:** https://youtu.be/irlpRAvNGXQ
VP2 - 61	**SEXUAL MATURITY OF *Grapsus grapsus* (LINNAEUS, 1728), IN TRINDADE ISLAND (TRI) AND SAINT PETER AND SAINT PAUL ARCHIPLEAGO (SPSP)** *Reproduction and Development* **Speaker:** Vanessa Silva Martins **Videoposter Link: not informed**
VP2 - 62	**MOLECULAR PHYLOGENY REVEALS PARAPHYLY OF THE GENUS *Benthana* BUDDE-LUND, 1908 (ISOPODA: ONISCIDEA: PHILOSCIIDAE)** *Taxonomy and Phylogeny* **Speaker:** Bianca Laís Zimmermann **Videoposter Link:** https://youtu.be/e7bVVsbJo94
VP2 - 63	**TANAIDACEANS FROM SOUTHERN PORTUGAL: AN OVERVIEW WITH NEW SPECIES AND FIRST RECORDS OF *Apseudopsis*** *Taxonomy and Phylogeny* **Speaker:** André Neves de Carvalho **Videoposter Link:** https://youtu.be/2iZNKXzpGAs
VP2 - 64	**NEW SPECIES AND NEW RECORDS OF *Androdeloscia* LEISTIKOW, 1999 (ONISCIDEA: PHILOSCIIDAE) FROM COLOMBIA** *Taxonomy and Phylogeny* **Speaker:** Carlos Mario López Orozco **Videoposter Link:** https://youtu.be/k37jJ35HaRs
VP2 - 65	**NEW SPECIES AND NEW RECORDS OF THE FAMILY SCLEROPACTIDAE VERHOEFF, 1938 (ISOPODA, ONISCIDEA) FROM COLOMBIA** *Taxonomy and Phylogeny* **Speaker:** Yesenia M. Carpio-Diaz **Videoposter Link:** https://youtu.be/ZEPnL5oKK3I
VP2 - 66	**EFFECTS OF CHRONIC CADMIUM EXPOSURE ON THE ENERGY BALANCE OF THE WHITELEG SHRIMP *Litopenaeus vannamei*** *Physiology and Toxicology* **Speaker:** Juliana Rodrigues da Costa **Videoposter Link:** https://youtu.be/iRSFbvdFCHE
VP2 - 67	**THE SUN GOES DOWN AND THE SUNSCREEN CAUSES EFFECTS** *Physiology and Toxicology* **Speaker:** Caio Cesar Ribeiro **Videoposter Link:** https://youtu.be/EGi9yd5UXBg
VP2 - 68	**THE SALINITY CAN BE RESPONSIBLE FOR THE HIGHER GROWTH OF ESTUARINE POPULATIONS OF AMAZON RIVER PRAWN (*Macrobrachium amazonicum* HELLER, 1862)?** *Aquaculture and Fisheries* **Speaker:** Emanuelle Pereira Borges **Videoposter Link:** https://youtu.be/cRUC8_2B7JU
VP2 - 69	**NEW SPECIES OF PROSEKIINI LEISTIKOW, 2001 (ONISCIDEA: PHILOSCIIDAE) FROM PERU** *Taxonomy and Phylogeny* **Speaker:** Ana Teresa Ocampo Maceda **Videoposter Link:** https://youtu.be/ykh-PunZ9zQ
VP2 - 70	**ENVIRONMENTAL VARIABILITY ON THE AMAZON CONTINENTAL SHELF AND ITS RELATION TO SOUTHERN BROWN SHRIMP *Penaeus subtilis* (PÉREZ-FARFANTE, 1967) CATCHES** *Aquaculture and Fisheries* **Speaker:** Déborah Elena Galvão Martins **Videoposter Link:** https://youtu.be/fythO0fs6_Q
VP2 - 71	**ECOLOGICAL DATA OF *Xiphopenaeus dincao* CARVALHO-BATISTA, TEROSSI, ZARA, MANTELATTO, COSTA, 2020 (DECAPODA, PENAEIDAE), SÃO PAULO, BRAZIL** *Aquaculture and Fisheries* **Speaker:** Milena Silva Jaconis **Videoposter Link:** https://youtu.be/4tg6tw1nUXc
VP2 - 72	**POPULATION STRUCTURE OF THE FIDDLER CRAB *Minuca mordax* (SMITH, 1870) IN AN AMAZONIAN ESTUARY (JAPERICA BAY, BRAZIL)** *Ecology and Biodiversity* **Speaker:** Nívia Cristo de Melo Guimarães **Videoposter Link:** https://youtu.be/UogAFRG08X0
VP2 - 73	**BRACHYURAN CRAB ASSEMBLAGES IN A TROPICAL ESTUARY (JAPERICA BAY, BRAZILIAN AMAZONIAN COAST): BIODIVERSITY AND SPATIAL AND TEMPORAL VARIATIONS** *Ecology and Biodiversity* **Speaker:** Débora dos Remédio Encarnação de Souza **Videoposter Link:** https://youtu.be/wo1w1nNv3Io

June 7, 2022
18:00 - 19:30 h

R1: Room
"Georgina Bond Buckup"

VP2: Videoposter Presentations 2

VP2-74 to VP2-75

VP #	VIDEOPOSTER INFORMATION
VP2 - 74	**A NEW TROGLOBITIC SPECIES OF *Bilistra* (ISOPODA, SPHAEROMATIDAE) FROM NEW ZEALAND** *Taxonomy and Phylogeny* **Speaker:** Manuela Junqueira Merlo **Videoposter Link:** https://youtu.be/ZbHMqGMBKS0
VP2 - 75	**PHYLOGENETIC AND PHYLOGEOGRAPHIC STRUCTURE OF CRABS OF GENUS *Macrophthalmus* (BRACHYURA: OCYPODIDAE: MACROPHTHALMINAE) FROM NORTHERN ARABIAN SEA** *Taxonomy and Phylogeny* **Speaker:** Noor Us Saher **Videoposter Link:** https://youtu.be/8WmuMqCer8I

XI CBC TCS Summer Meeting
June 06-09th, 2022
Brazil

CNPq
Conselho Nacional de Desenvolvimento Científico e Tecnológico

analítica

MINI COURSES (MC1 to MC7)

All mini courses (workshops) will be held on 06/09/2022, having been proposed for a duration of 4 hours (8:00 am to 12:00 pm) or 8 hours (8:00 am to 12:00 pm; and 2:00 pm to 6:00 pm). Mini courses (workshops) will be taught in English, but if all attendees were Brazilian or Portuguese speakers, the contents will be taught in Portuguese.

MC1

INTRODUCTION TO SPATIAL DISTRIBUTION MODELS

Prof. Dr. Fúlvio Aurélio de Morais Freire
(UFRN)

The course will address notions and basics of spatial modeling for practical application in spatial ecology, biogeography, and conservation. In the course, an introduction to the manipulation and analysis of spatial data will be presented, emphasizing applications to niche models.

MC2

CRUSTACEANS AS SENTINEL SPECIES FOR THE ENVIRONMENTAL CONSERVATION STATUS

Dr. Luis Felipe A. Duarte
(CRUSTA / UNIFESP - Baixada Santista)

Profa. Dra. Helen S. Henrique
(UNISANTA)

Globally, aquatic environments have been influenced by several anthropogenic impacts, mainly due to the destruction of habitats and discharges of untreated domestic / industrial effluents. Such anthropogenic interference has drastically and intensely impacted ecosystems. Toxic concentrations of chemical compounds can lead to a reduction in biodiversity, extinction of less tolerant species, disruption of the ecosystems and lead to sublethal damage (biochemical, genetic, cellular, histological, physiological,

immunological, hormonal, behavioral and / or reproductive) in the organisms. Moreover, daily and seasonal changes in the physical and chemical water characteristics can be modulate the toxicity of contaminants, which brings additional concerns regarding the environmental quality and its effects to aquatic biota. Constant ineffective environmental management is observed worldwide, where thousands of species, countless ecosystems and millions of people suffer with the economic and socio-environmental consequences. Given this scenario, crustaceans have been used as sentinel species to establish conservation status of aquatic ecosystems. Species belonging to this group are distinguished by having numerous specific characteristics that highlight them as excellent environmental indicators. This course proposal aims to present current tools of environmental prognosis, mainly using pre-pathological indicators because they have the ability to detect biological dysfunctions in response to a stressor before population or/and ecological damage occurs. The integration of these information will provide to the participants a holistic view of anthropogenic impacts and the use of these techniques on crustaceans to establish an ecosystem assessment. In addition, participants are expected to envisage the use of these crustacean tools for scientific research and environmental management.

MC3

TAXONOMY AND ECOLOGY OF AMPHIPODS ASSOCIATED TO MARINE MACROALGAE

Dra. Silvana Gomes Leite Siqueira
(UNICAMP)

Dra. Tammy Iwasa Arai
(LICOMAR / UNICAMP)

Macroalgae play a key role in marine environments by providing microhabitats that allow the colonization of a diverse fauna of benthic invertebrates. Amphipod crustaceans are usual representatives this fauna, and they use the macroalgae as food and shelter during part of their lives or during the whole life cycle. Amphipods are numerous both in abundance as well as in species richness associated to macroalgae, and they are used as models to test ecological theories, to access environmental quality, and they are recently being used to predict effects of climate change in marine communities. However, the results of these studies may vary depending on the trophic level that species occupy, and especially depending on the intrinsic factors of each species. Thus, the correct identification of amphipod species associated with macroalgae is essential to a variety of studies.

MC4

MITOGENOMICS IN THE CRUSTACEA: ASSEMBLY, ANNOTATION, SELECTION, AND (MITO)PHYLOGENETIC(OMIC) ANALYSES

Dr. Juan Antonio Baeza
(Clemson University, USA)

To understand the theory focusing on mitochondrial organelles and to practice the use of multiple bioinformatic tools to assemble and annotate the entire mitochondrial genome of crustaceans obtained via classical Sanger sequencing or next generation sequencing technologies (ILLUMINA). The analyses include the exploration of mitochondrial gene order (synteny), annotation of protein coding gene regions, analysis of selective pressures, circular depiction of annotated mitogenomes, and phylogenomic analyses [using Maximum Likelihood].

MC5

SCIENTIFIC WRITING AND MANUSCRIPT READABILITY (IN ENGLISH).

Dr. Camila Timm Wood
(Edge - Inglês com Foco)

The course will focus on anticipating readers' needs and expectations to improve manuscript readability. Special emphasis will be given to the writing of the discussion. The course will include the following topics: reading strategies - skimming and scanning; planning the manuscript - creating an outline; paragraph structure - topic statement, logical development, and conclusion; sentence length - identifying wordiness; sentence flow - keeping coherence and cohesion. Online resources will be presented to help future writings.

MC6

ESCRITA CIENTÍFICA E LEITURABILIDADE DE MANUSCRITOS (EM PORTUGUÊS)

Dr. Camila Timm Wood
(Edge - Inglês com Foco)

O curso se concentrará em antecipar as necessidades e expectativas dos leitores para melhorar a legibilidade de manuscritos científicos. Ênfase especial será dada à redação da discussão. O curso incluirá os seguintes tópicos: 1) estratégias de leitura - leitura superficial e varredura; 2) planejando o manuscrito - criando um esboço; 3) estrutura do parágrafo - declaração do tópico, desenvolvimento lógico e conclusão; 4) comprimento da frase - identificando verbosidade; ev 5) fluxo de frases - mantendo a coerência e coesão. Serão apresentados recursos online para ajudar a redação científica futura.

MC7

INSIGHTS OF THE LIFE HISTORY IN THE BURROWING SHRIMPS (DECAPODA: AXIIDEA - GEBIIDEA): LIVING IN FOSSORIAL HABITATS

Dr. Patrício Hernáez
(Museu de Oceanografia - UFPE)

The objectives of this workshop is to learn and apply knowledge about the taxonomy, diversity and ecology of burrowing shrimps of the infraorders Axiidea and Gebiidea, make possible: 1) learn to identify common burrowing shrimps (Axiidea - Gebiidea) from the tropical and subtropical habitats of American coasts, some of which occur in the Brazilian coast; 2) learn general biological and ecological characteristics of the group; and 3) gain hands-on ecological and taxonomic experience with south American burrowing shrimps.

INSIGHTS OF FORENSIC IDENTIFICATION OF SHRIMPS COMMERCIALIZED IN THE STATE OF SÃO PAULO

PANTONI, R.[1]; PANTALEÃO, J.A.F.[1] & MANTELATTO, F.L.[1]

[1] Universidade de São Paulo (USP), *Campus* Ribeirão Preto.
Laboratório de Bioecologia e Sistemática de Crustáceos (LBSC), Brazil.

* Corresponding author: rodrigo.pantoni@usp.br

In Brazil, commercialized shrimps are also sold in supermarkets as labeled packages that must attend the Normative Instruction number 23 (August 20, 2019). The present study aims to test the accuracy of the information (i.e. identification) presented on the label of the packages sold in the state of São Paulo by means of the analysis of mitochondrial molecular markers (e.g., rDNA gene 16S). Labeled packages containing shrimp were purchased and some specimens (aprox. 10) are haphazardly chosen for molecular analysis. The methodology consists in DNA's extraction of shrimp's tissue with Chelex® 100 or E.Z.N.A.® Mollusc DNA Kit, amplification of the gene of interest via PCR in a Veriti 96 Well Thermal Cycler Applied Biosystems®, DNA's purification with SureClean Plus® kit and sequencing. The generated sequences were edited in Geneious Prime version 2022.0.1 software and compared with already deposited sequences in GenBank database via BLAST®. We found that are imprecise labeling regarding species identification. To cite, we detected in the identification of shrimp correspond to labels as "pink shrimps", which should be *Farfantepenaeus* spp. (Penaeidae), but molecular identification of 16S ribosomal gene sequences revealed that specimens are in fact *Pleoticus muelleri* (Solenoceridae). In the aforementioned case, 40% of the specimens into the package were misidentified. In the other hand, other packages were in line with the normative regarding species identification, at least in what involves the specimens selected for the molecular protocol. Our preliminary results indicated that approximately 20% of the packages do not comply with the normative, which means lack of accuracy about what is being purchased, and will be important to propose recommendations aligned with consumer rights and species conservation.

Keywords: forensic analysis, molecular identification, prawn, Penaeoidea, shrimp.

Financial support: Programa Unificado de Bolsas de Estudo para Apoio e Formação de Estudantes de Graduação (PUB-USP); FAPESP (BIOTA Temático INTERCRUSTA 2018/13685-5; PROTAX 2021/08075-6); CNPq (PQ # 302253/2019-0).

Area: Genetic & Conservation

REPRODUCTION INTENSITY OF *Pachycheles laevidactylus* ORTMANN, 1892 (ANOMURA: PORCELLANIDAE)

MOSNA, E.E.D.[1]; JOÃO, M.C.A.[1,2] & PINHEIRO, M.A.A[1,2]

[1] Universidade Estadual Paulista (UNESP), Instituto de Biociências (IB), Campus do Litoral Paulista (CLP) – Grupo de Pesquisa em Biologia de Crustáceos (CRUSTA), São Vicente, SP, Brazil; [2] Programa de Pós-Graduação em Ecologia, Evolução e Biodiversidade, IB / UNESP Campus Rio Claro, SP, Brazil.

* Corresponding author: e.mosna@unesp.br

This study describes the reproductive intensity of the porcelain crab *Pachycheles laevidactylus*, as associated fauna in sandy reefs of the polychaete *Phragmatopoma caudata*. Specimens were monthly collected during one year (July/1991 to May/1992), at Ubatuba, SP, Brazil, sexed and had size measured (CL, carapace length). The frequency of ovigerous females (OF%), adult-based sex ratio (OSR, operational sex ratio: males: females) and the average size of both sexes were compared between seasons to assess possible contrasts. For such, we used the seasonal frequencies of males and females, using a multiple proportions test for both situations. The average size of males and females was attested by a two-way-ANOVA to assess whether the CL varied between seasons, sex and the interaction of these factors. All seasons showed a high frequency of ovigerous females (≥54% of the total number of females sampled). The frequency of ovigerous females differed between seasons (χ^2 = 5.99, p< 0.001), with greater intensity in autumn (93.8%) and winter (86%). In the other seasons, the percentages were below 80% and represent a seasonal-continuous reproduction. The frequency of adult males and females was similar in winter, autumn and summer (OSR>1:0.84, $\chi^2 \leq 3.04$, $p \geq 0.08$), being males more frequent only in spring (OSR = 1:0.6, χ^2 = 18.63, p<0.0001). The smallest individuals of both sexes on average were found in spring (males: 5.2±1.6 mm CL; females: 5.2±1.4 mm CL), while the largest individuals occurred in winter (males: 6.7±1.6 mm CL; females: 6.8±1.6 mm CL) (F = 52.49, p<0.0001). The ovigerous females of tropical species can spawn in cooler seasons due to their milder temperatures; this allows the juveniles to occur in the warmer periods and favors a greater frequency of molting and availability of food for these planktotrophic animals. This fact is evidenced for *P. laevidactylus* in Ubatuba, Brazil (23º 28' 24'' S) with the highest occurrence of ovigerous females in autumn and winter and the presence of the smallest individuals in spring and summer, which indicates indicating reproduction and recruitment in those seasons, respectively.

Keywords: Porcellanidae, ovigerous females, Ubatuba.

Financial support: CNPq (PQ # 305957/2019-8).

Area: Reproduction & Development

ANOMURAN CRUSTACEANS (DECAPODA) FROM THE FERNANDO DE NORONHA ARCHIPELAGO, BRAZIL

MOREIRA, G.R.[1] & TEROSSI, M.[1]

[1] Universidade Federal do Rio Grande do Sul (UFRGS), Laboratório de Carcinologia, Brazil.

* Corresponding author: giovannarosamoreira@gmail.com

The Fernando de Noronha archipelago is located about 345 km off the Brazilian coast, comprising a main island and 20 islets. It has a very rich fauna, with several groups of animals, such as crustaceans, often found in rocks, burrows and in the intertidal zone. About 130 species of decapod crustaceans have been reported for the archipelago, including shrimps, lobsters, hermit crabs and crabs. Among them, the infraorder Anomura is the third most specious and is the most diversified, showing great heterogeneity in relation to the habits and morphological adaptations of its representatives. The purpose of this study was to carry out a survey of Anomura species from the Fernando de Noronha Archipelago. Initially, a literature review was carried out in order to do a survey of the species previously found in this location. Subsequently, 51 specimens from 10 samples (collected in 2019) were identified based on their morphology, in which each sample corresponds to a collection point/date. Each specimen was analyzed under a stereomicroscope and identified to a specific level using identification keys. In all, 68 manuscripts were reviewed, of which 19 reported species of Anomura for Fernando de Noronha. Records of 16 species were found for the archipelago, belonging to the families Diogenidae, Galatheidae, Hippidae, Paguridae and Porcellanidae. In the analyzed material, five of these species were identified, being three of the family Diogenidae (*Clibanarius antillensis*, *Calcinus tibicen* and *Paguristes tortugae*), one of the family Paguridae (*Pagurus provenzanoi*) and one of the family Porcellanidae (*Petrolisthes amoenus*). Some specimens showed morphological variation when compared to the literature, and these will be subjected to molecular analysis in order to confirm their identification or to describe a new species.

Keywords: Anomura, Atlantic, Brazil, decapod, survey.

Financial support: CNPq.

Area: Ecology & Biodiversity

MORPHOLOGICAL VARIATION IN THE FIDDLER CRAB *Leptuca uruguayensis* BETWEEN MICROHABITATS WITH DIFFERENT TEMPERATURES

GUARDINO, C.M.[1]; DE GRANDE, F.R.[1,2] & COSTA, T.M.[1,2]

[1] Universidade Estadual Paulista (UNESP), Campus do Litoral Paulista, Laboratório de Ecologia e Comportamento Animal, Brazil; [2] Universidade Estadual Paulista (UNESP), Campus de Botucatu, Instituto de Biociências, Brazil

* Corresponding author: carolinaguardino@hotmail.com

The climate change has altering or limiting the distribution, size and morphology of different species, especially those from coastal zones which can be indicators of temperature increase. These organisms must have physiological and morphological mechanisms able to withstand environmental conditions without exceeding their thermal limits. Fiddler crabs are organisms that live in intertidal zones and can be sensitive to climate change. Males of these crabs are characterized by exhibiting a hypertrophied claw that in addition to being used in combat and sexual selection, is also a thermal regulatory organ that helps them to heatsink while waving. When males lose their hypertrophied claw, it regenerates with different morphology (leptochelous). As leptochelous has a smaller volume, we hypothesized that this could be a relevant factor in the performance of heat dissipation, being the most efficient than non-regenerated claws (brachychelous), which could affect crab's distribution between thermal microhabitats. This study aims to evaluate if there is a variation in the distribution of fiddler crabs with regenerated and unregenerated claws in microhabitats with different temperatures. We tested the proportion of *Leptuca uruguayensis* males with regenerated and non-regenerated claws between two non-vegetated microhabitats and two vegetated microhabitats. We also measured temperature (°C) at 75 random points on the sediment surface in each microhabitat. In the laboratory, the number of males with different claws morphotypes was counted and we estimate the proportion of the dry weight of the claw in relation of dry body weight. In vegetated microhabitats the average temperature was 26°C, differing from the non-vegetated microhabitats where the average temperature was 34 ° C (GLMM, temperature: X^2_1 = 27.07; p> 0.0001). In vegetated microhabitats, the crab's claw is lighter than in non-vegetated microhabitats (GLMM, morphotype: X21 = 7,5780; p = 0,0059), and the proportion of males with leptochelous in vegetated microhabitats was lower than in non-vegetated microhabitats. (GLMM, leptochelous ratio: X21 = 6.08; p = 0.0136). Therefore, the proportion of *Leptuca uruguayensis* with the leptochelous morphotype was higher in non-vegetated environments, which indicated that thermal performance between claw morphotypes may be important for male's fiddler crab distribution along microhabitats.

Keywords: claw, climate change, phenotypic responses, thermal performance.

Financial support: CAPES - Finance Code 001 and FAPESP # 2020/03171-4.

Area: Ecology & Biodiversity

STRUCTURE AND TEMPORAL DYNAMICS OF BRACHYURAN CRAB ASSEMBLAGES (CRUSTACEA: DECAPODA) IN MANGROVE STANDS OF A COASTAL LAGOON IN SOUTHEASTERN BRAZIL

LEITE, R.A.[1,*]; MAGNANI, J.F.[2], LIMA, D.[3], SOARES-GOMES, A.[4] & KIEFER, M.C.[5]

[1,2,5] Universidade Federal Fluminense (UFF), Laboratório de Ecologia Animal e Vegetal, Brazil; [3] Universidade Federal Fluminense, Laboratório de Paleoecologia e Mudanças Globais, Brazil; [4] Universidade Federal Fluminense, Laboratório de Ecologia de Sedimentos, Brazil.

* Corresponding author: robsonleite86@gmail.com

Two distinct mangrove stands (planted and natural) emerge on opposite margins of a coastal lagoon in Southeastern Brazil (22°57´S) after the opening of an artificial marine channel. Little is known about their associated Brachyura crabs; therefore, they were studied in order to describe and compare their structure and spatio-temporal dynamics, and their interrelationships among environmental factors. Sampling took place monthly over a year, through the use of direct (organisms) and indirect (burrows) methods, within random plots of 1m². The vagrant, rare and/or arboreal species found outside the plots ("occasional records") were recorded. Individuals/burrows were identified by species and quantified *in situ*. The richness was nine species at the natural stand and seven at the planted, grouped in six families. *Minuca rapax* was the most common species. A low richness is assumed when compared to some mangroves of similar size and, to the Paleotropics, which is expected for this longitude. Although not statistically significant (PLS result), there were relevant associations of environmental factors on the fauna according to the PCA multivariate model. Species and factors were associated with the natural stand, which reflects its size/age and physiography, factors that justify its greater structural complexity. Despite their differences, the assemblage structure was similar among the stands, mainly in terms of composition. The main differences were justified by the relative frequencies/occurrences of both common and rare species, which are more abundant at the natural stand. *Rhizophora mangle* planting favored the colonization of crabs and the development of the planted stand, suggesting that stands tend to fulfill similar ecological functions, configuring successful planting interventions. However, monitoring the development of the ecosystem over the long term is recommended for better conclusions. This study demonstrated that carcinofauna reflected the status of the habitat, when different stands are compared. However, it´s complex to clearly distinguish the effects of ecological components on the systems, since there´s a complex set of factors that influence the differences of the microhabitat and hence the distribution and abundance of mangrove crabs.

Keywords: biological diversity, functional groups, Neotropical mangroves, planted mangroves, richness.

Area: Ecology & Biodiversity

DENSITY, STRUCTURE AND DYNAMICS OF *Ucides cordatus* (LINNAEUS, 1763) (BRACHYURA: OCYPODIDAE) IN MANGROVE STANDS OF A COASTAL LAGOON IN SOUTHEASTERN BRAZIL

LEITE, R.A.[1,*]; MAGNANI, J.F.[2], LIMA, D.[3], SOARES-GOMES, A.[4] & KIEFER, M.C.[5]

[1,2,5] Universidade Federal Fluminense (UFF), Laboratório de Ecologia Animal e Vegetal, Brazil; [3] Universidade Federal Fluminense, Laboratório de Paleoecologia e Mudanças Globais, Brazil; [4] Universidade Federal Fluminense, Laboratório de Ecologia de Sedimentos, Brazil.

* Corresponding author: robsonleite86@gmail.com

Mangrove stands of natural and anthropic (planted) origins occur on opposite banks of a lagoon estuary in the Southeastern coast of Brazil, since the opening of a marine channel in 1977. The uçá-crab, *Ucides cordatus*, is known for its high commercial value on the Brazilian coast and many of its populations have suffered reductions. Regarding an emerging mangrove, whose establishment ages are different, little is known about the population of this species. Therefore, the stands were studied in order to evaluate and compare some population parameters (density, structure and galleries classification). The population was studied in monthly samplings over a year in three stands, one planted (P) and two natural (N1 and N2). Density (ind.m^{-2}) was indirectly estimated by counting active and closed galleries in 4 m² plots (potentially occupied: indicative of biogenic activity), and body size (CW) was estimated through the size of the galleries (mm). The total density was estimated at 0.34 ± 0.18 ind.m^{-2} (ranging 0.06–1.04 ind.m^{-2}; n = 4,198) and was lower than in other mangroves in Brazil. Density and gallery size were highest at the P stand, which may be related to physiographic differences, forest structure and optimal foraging conditions. The lowest density and gallery/individual size occurred at the N2 stand, a site of inhibition of plant growth and which is under pressure from crab fishery, corroborating its highest proportion of abandoned galleries (66%). Furthermore, at the natural stands, the estimated body size of the population was below the limit established by the country´s capture legislation (60 mm). Considering the high level of organic contamination at the estuary and illegal capture in the domains of a Conservation Unit, continuous monitoring is needed to improve the management of the population. The population aspects reflect variations in selective pressures resulting from differences in smaller-scale factors inherent to habitats. This study demonstrates the relevance of lagoon mangroves and the value of planting/ecological restoration for the recovery of ecologically significant crab fauna.

Keywords: conservation, Crustacea, estuarine region, Neotropical mangrove, population.

Area: Ecology & Biodiversity

COLD WATER TEMPERATURES DEFINE SOUTHERN BOUNDARIES DISTRIBUTION OF SOUTH AMERICAN FIDDLER CRABS

DE GRANDE, F.R.[1,2,3*]; MAROCHI, M.Z.[1]; ARAKAKI, J.Y.[3] & COSTA, T.M.[1,3]

[1] Universidade Estadual Paulista (UNESP), Campus do Litoral Paulista, Laboratório de Ecologia e Comportamento Animal, Brazil; [2] Universidade Federal de São Paulo, Campus Baixada Santista, Laboratório de Ecologia e Gerenciamento Costeiro; [3] Universidade Estadual Paulista (UNESP), Campus de Botucatu, Instituto de Biociências, Brazil.

* Corresponding author: frdegrande@gmail.com

The temperature rise due to climate change has globally shifted the range distribution of several organisms. In intertidal environments, most organisms exhibit an amphibian life cycle and their latitudinal distribution can be delimited by their thermal sensibility during larval pelagic stages or in benthic adulthood. Herein we compare the minimum critical thermal limits (CT_{min}) of larvae and adults of South American fiddler crabs *Leptuca cumulanta, L. leptodactyla, L. thayeri, L. uruguayensis, Minuca burgersi, M. mordax, M. rapax, M. vocator* to evaluate whether environmental temperature delimits their distribution ranges. We found that during the larval stage the cold sensibility of the crabs differed between species (Anova: $F_{7,184}$=157.76, MS=89.53, P<0.0001), corroborating their southern boundaries gradient (the southernmost species were more tolerant to cold water). The most cold-sensitive species was *L. cumulanta,* reaching the CT_{min} at 16.5°C. The most sensitive species to the cold were *M. rapax, L. thayeri, L. leptodactyla, M. burguesi* and *M. vocator,* reaching the CT_{min} at approximately 14.5°C. *Minuca mordax* and *L. uruguayensis* were more tolerant to the cold reaching the CT_{min} at approximately 12.0 and 10.0°C, respectively. For all species, the mean minimum water temperature in the estuary of their boundary distribution was always higher than larvae's CT_{min}. In estuaries further south of species boundaries and focus species are not present, the number of days per year in which water temperature is lower than larvae CT_{min} was higher than in estuary of species limits. The adult's sensibility to cold did not show a clear pattern between species and the mean minimum air temperature in their distribution boundary, frequently decreasing below their CT_{min}. Therefore, the differential thermal sensibility during the larval stage implies consequences to the latitudinal range distribution of the fiddler crabs in South America.

Keywords: global warming, larvae, latitudinal distribution, thermal limits.

Financial support: CAPES - Finance Code 001, FAPESP # 2015/50300-6, FAPESP # 2020/03171-4 and FAPESP # 2021/04124-2.

Area: Ecology & Biodiversity

INTEGRATIVE APPROACH REVEALS DOUBT ON THE OCCURRENCE OF *Panopeus occidentalis* SAUSSURE, 1857 (DECAPODA: BRACHYURA) ALONG THE BRAZILIAN COAST

ROGERI, L. O.[1,*]; FRANÇA, N. F. C.[1]; PERES, P. A.[1,2] & MANTELATTO, F. L.[1]

[1] Universidade de São Paulo (USP), *Campus* Ribeirão Preto, Laboratório de Bioecologia e Sistemática de Crustáceos (LBSC), Brazil; [2] Florida International University (FIU), Institute of Environment and Department of Biology, USA.

* Corresponding author: luquinhaor.bio55@usp.br

Panopeus is a genus of crabs known to have a confusing taxonomic history due to morphological similarity among species. Along the Brazilian coast, there are records of six species, including *Panopeus occidentalis*. The morphological similarity among the species, the scarcity of taxonomic works, and the lack of genetic sequences increases the chances of misidentification of specimens, putting their occurrence on the Brazilian coast in question. The present study used molecular and morphological data to assess whether *P. occidentalis* occurs in Brazilian coast or not. Specimens from six of the eight Brazilian states where there are records of the occurrence of *P. occidentalis* were analyzed. The specimens were morphologically evaluated following the specific literature, compared with a syntype of *P. occidentalis* and with the sympatric congeneric species. The mitochondrial DNA fragments (16S rRNA and COI) were sequenced, and used in genetic distance analysis, and to build Maximum Likelihood and Bayesian Inference trees. After morphological and molecular analyses, a single specimen of *P. occidentalis* was found among all the material evaluated from Brazil. The vast majority of assessed specimens, which were previously identified as *P. occidentalis*, were actually members of other *Panopeus* species, such as *P. austrobesus*. Furthermore, we were able to determine a set of valid characters in distinguishing *P. occidentalis* from its sympatric congenerics, such as the shape of the gonopod's apex. Such limited occurrence raises the question if the species really occurs in the Brazilian waters or if it is an isolated and possibly accidental event (e.g., biological invasion).

Keywords: Brachyura, mitochondrial DNA, taxonomy, systematics.

Financial support: FAPESP (Temáticos BIOTA 2010/50188-8 and INTERCRUSTA 2018/13685-5; Coleções Científicas 2009/54931-0; PROTAX 2016/50376-5 and 2021/08075-6); CNPq (Programa Institucional de Bolsas de Iniciação Científica Proc. No. 118962/2019-1 and 159874/2020-3; PQ 302253/2019-0), CAPES (Projeto Ciências do Mar II Proc. 2005/2014 – 23038.004308/201414 – Código de Financiamento 001).

Area: Taxonomy & Phylogeny

TAXONOMY OF CARIDEAN SHRIMPS (DECAPODA: CARIDEA) FROM THE REMOTE OCEANIC ISLANDS TRINDADE AND MARTIM VAZ

COLAVITE, J; MENDONÇA, J.B. & TAVARES, M.

Museu de Zoologia da Universidade de São Paulo, MZUSP,
Laboratório de Carcinologia, Brazil.

*Corresponding author: jessica.colavite@gmail.com

The oceanic islands Trindade and Martim Vaz (TMV) are of volcanic origin, having emerged about 3 to 3.5 million years ago. Trindade and Martim Vaz are close to each other (49 km), but are geographically isolated about 1,200 km from the Brazilian coast and 4.200 km from the African coast. The closest oceanic islands to TMV are Fernando de Noronha (1.800 km), Rocas Atol (1,900 km), Saint Helena (2.000 km), Ascension Island (2.400 km), Saint Peter and Saint Paul Archipelago (2.500 km). During a four-year project (ProTrindade/CNPq) coordinated by the third author, eight campaigns to the Trindade and Martin Vaz Archipelago were conducted between 2012 and 2019, which resulted in a rich material (approximately 600 lots) of shallow-water caridean shrimps, collected mainly by scuba diving (269 dives), and thus represents a solid base for the first taxonomic assessment of the shallow-water caridean fauna of TMV. Fourteen species of caridean shrimps were previously known from TMV (Alpheidae excluded). A total of 27 species of non-alpheid caridean shrimps in 14 genera are reported herein, the vast majority representing new records from TMV. In addition, the penaeid *Penaeopsis serratus* is recorded from the first time for the area. As for other groups of benthic marine invertebrates, the faunistic composition of TMV is mostly represented by American Atlantic and Amphi-Atlantic species. During the study, potential new species were also identified, which are currently under study. This faunistic inventory, in addition to providing information about the taxonomic composition and colonization patterns of the islands, will contribute with information for public conservation policies for TMV that have recently been enacted as environmental protection areas (BRAZIL, Decree No 9.312, 2018).

Keywords: PROTRINDADE, Zoogeography, Penaeoidea, Brazilian Biodiversity.

Financial support: FAPESP, CNPq.

Area: Taxonomy & Phylogeny

MONOGAMY IN THE BURROWING SHRIMP *Axianassa australis* RODRIGUES & SHIMIZU, 1992 (DECAPODA, GEBIIDEA, AXIANASSIDAE)

HERNÁEZ, P.[1,*], MUGNAI, R.[2], SOUZA-FILHO, J.F.[3] & PINHEIRO, M.A.A.[4]

[1] Universidad de Tarapacá (UTA), Facultad de Ciencias, Centro de Estudios Marinos y Limnológicos, Arica, Chile [2] Universidade Federal do Maranhão (UFMA), Centro de Ciências Agrarias e Ambientais, Laboratório de Biogeociclos/Limnologia, Chapadinha, Maranhão, Brazil; [3] Universidade Federal de Pernambuco (UFPE), Departamento de Oceanografia, Museu de Oceanografia Petrônio Alves Coelho, Recife, Pernambuco, Brazil; [4] Universidade Estadual Paulista (UNESP), Instituto de Biociências (IB), Campus do Litoral Paulista (CLP), Laboratório de Biologia da Conservação de Crustáceos (LBC), Grupo de Pesquisa em Biologia de Crustáceos (CRUSTA), São Vicente, São Paulo, Brazil.

* Corresponding author: pahernaez@gmail.com

Our knowledge of the mating systems in burrowing shrimps (infraorder Axiidea and Gebiidea) is still rather limited. Here, we described the burrow use pattern, sex ratio and sexual dimorphism of the burrowing shrimp *Axianassa australis* to test for monogamy, considering that monogamous species live in heterosexual pairs and exhibit a low degree of sexual dimorphism. To this end, a total of 226 individuals of *A. australis* were collected from northeast region of Brazil. Samples were randomly collected at low tide during periods of lower daily temperature. Shrimps were collected from the burrows by using a handmade yabby pump. Our results showed that *A. australis* inhabited their burrows mainly as pairs, most of which were male-female pairs. In agreement with the expectations, *A. australis* was found dwelling as heterosexual pairs more frequently than expected by chance alone. The presence of ovigerous females was associated with the burrow occupation; that is, brooding females were more frequently observed in male-female combinations than solitary. Also supporting theoretical considerations, we did not observe sexual dimorphism in body size between males and females of the population and the different categories of the burrow occupation. Conversely, sexual dimorphism in cheliped size was evident in the population, with larger chelipeds in males than in females. This observation agrees with that reported for most burrowing shrimps in which male-male competition is the main evolutionary force of the sexual selection. The observations above argue in favor of the hypothesis that *A. australis* is primarily monogamous with a small fraction of the males moderately promiscuous.

Keywords: allometric growth, Brazil, Crustacea, mating systems, population demography.

Financial support: FAPESP, FACEPE and CNPq (PQ # 305957/2019-8).

Area: Ecology & Biodiversity

TAXONOMIC STATUS OF SOME PINNOTHERID CRABS (BRACHYURA: PINNOTHERIDAE) OF THE STATE OF SÃO PAULO: INTEGRATIVE ANALYSIS WITH MORPHOLOGY AND GENETICS

BALBINO, F.C; TAMBURUS, A.F & MANTELATTO, F.L.

Laboratory of Bioecology and Systematics of Crustaceans (LBSC) - Faculty of Philosophy, Sciences and Letters of Ribeirão Preto (FFCLRP) - University of São Paulo (USP), Brazil.

* Corresponding author: fcbsantos@usp.br

Pinnotheridae is composed by small crabs usually commensal with echinoids, annelids, other decapods, etc. The subfamily Pinnixinae encompasses species with controversial taxonomic statuses due to small size and variable intraspecific or similar interspecific morphology. Three species supposedly recorded in São Paulo, *Austinixa aidae*, *A. patagoniensis*, and *Pinnixa gracilipes*, were analyzed using morphological and molecular data. Morphological data was obtained from specimens under a stereomicroscope and molecular data was obtained through DNA extraction, PCR and purification, resulting in partial fragment sequences of the mitochondrial gene 16S. *Austinixa aidae* and *A. patagoniensis* are monophyletic with well supported branch. No sequences of specimens of *Pinnixa gracilipes* were obtained due to the previous fixing process. *Austinixa aidae* has newly observed characters which can be used as diagnostic (teeth on fixed finger, serrated tooth on the dactylus of cheliped, tufts of setae covering the fingers gap, and morphology of the first male gonopod). *Austinixa patagoniensis* also has new diagnostic characters (tooth on the fixed finger, a serrated carina on the dactylus of the cheliped, and morphology of the first male gonopod). For *Pinnixa gracilipes*, new characters were observed (spines on branchial region, finger with a small basal tooth, and dactylus of cheliped with small teeth). The morphology of *P. gracilipes* is similar to that of *Rathbunixa sayana* and might indicate a relationship between them. Due to the lack of specimens of *P. gracilipes* from São Paulo, which includes two specimens that we weren't able to analyze, these occurrences are probably occasional or misidentified, suggesting that this species does not occur in the state.

Keywords: 16S rRNA, morphology, phylogeny, Pinnixinae, taxonomy.

Financial support: FAPESP (Temáticos BIOTA 2010/50188-8, INTERCRUSTA 2018/13685-5; PROTAX 2021/08075-6); CNPq (PQ 302253/2019-0).

Area: Taxonomy & Phylogeny

MORPHOLOGY OF NAUPLIAR DEVELOPMENT AND FIRST PROTOZOEA OF THE ROCK SHRIMPS *Sicyonia dorsalis* AND *S. typica* (DENDROBRANCHIATA)

PANTALEÃO, J.A.F.[1,2,3]; PESCINELLI, R.A[1]; MANTELATTO[3], F.L. & COSTA, R.C.[1,2]

[1] São Paulo State University (UNESP), Laboratory of Biology and Ecology of Marine and Freshwater Shrimps (LABCAM), Bauru, Brazil; [2] São Paulo State University (UNESP), Graduate Program in Biological Sciences (Zoology), Botucatu, Brazil; [3] Present address - University of São Paulo (USP), Laboratory of Bioecology and Crustacean Systematics (LBSC), Ribeirão Preto, Brazil.

* Corresponding author: pantaleaojaf@gmail.com

The monotypic family Sicyoniidae Ortmann, 1898 includes 52 species distributed in tropical and subtropical areas of the Atlantic, Pacific, and Indian oceans. During a review of larval descriptions of genus *Sicyonia* we concluded that less than 10% of representatives had at least some larval stage described. As the knowledge of larval morphology is important in phylogenetic contexts and allow the elaboration of identification keys for larval ecology studies, our objective was to describe and illustrate for the first time the early larval stages of *Sicyonia dorsalis* and *S. typica*. Larvae were obtained under laboratory conditions. Females with developed ovaries were captured at Ubatuba, state of São Paulo, Brazil from 2012 to 2013, at 10m depth, using a shrimp-fishing boat equipped with two otter-trawl nets. The larvae passed through five naupliar stages (NI to NV) before reaching first protozoeal stage in about 48h. We found no morphological differences of naupliar and first protozoeal stages between the species, even though these species can be considered phylogenetically distant into the genus. On the other hand, some conspicuous differences were found in relation to previous larval descriptions of the genus. We hypothesized that morphological differences arise later during larval development, and that some of the differences observed between studied species and previous descriptions are possibly results of misidentification. Some larval characters (terminal spine of antennule of NI and spinules of all limbs of NV) are potential candidates to differentiate the genus because previous descriptions of other penaeoideans from Brazilian coast did not observe them. These findings are part of a long-term biodiversity project to increase larval descriptions of penaeids from the Brazilian coast as integrative information in taxonomic and phylogenetic contexts and also contribute to the identification of plankton samples as baseline for conservation practices.

Keywords: larval development, larval morphology, metanauplius, nauplius, Penaeoidea

Financial support: FAPESP (Temáticos BIOTA 2010/50188-8, INTERCRUSTA 2018/13685-5; PROTAX 2021/08075-6; Post-doctoral Scholarship 2020/14484-3); CAPES (Post-doctoral PNPD scholarship); CNPq (PQ 302253/2019-0; PQ 306672/2018-9).

Area: Reproduction & Development

MAPPING THE CONGRUENCE BETWEEN LARVAL CHARACTERS AND MULTIGENE MOLECULAR PHYLOGENY OF AMERICAN *Macrobrachium* (PALAEMONIDAE)

PANTALEÃO, J.A.F.[1] & MANTELATTO, F.L.[1]

[1] University of São Paulo (USP), Faculty of Philosophy, Sciences and Letters at Ribeirão Preto (FFCLRP), Laboratory of Bioecology and Crustacean Systematics (LBSC), Brazil.

* Corresponding author: pantaleaojaf@gmail.com

The most accepted hypothesis about the evolution of genus *Macrobrachium* postulates an invasion of freshwater by marine ancestors that had extended larval development (ELD). Previous phylogenetic studies indicated that adaptations to an entirely freshwater life cycle probably occurred several times in the Indo-Pacific-West region and, therefore, the abbreviated larval development (ALD) would be the result of convergence at this region. On the other hand, a previous phylogenetic hypothesis focused on the American species suggested that the emergence of ALD could have occurred only once on this continent. Thus, we build a multigene molecular phylogeny in order to use it, later, as an evolutionary guide to confront morphological characters of the first post-embryonic stage (Zoea I) of representatives from both (ALD and ELD) types of life history testing the hypothesis that these characteristics reflect the phylogenetic relationships of the American species of *Macrobrachium*. The evolutionary relationships were inferred based on four (mitochondrial and nuclear) genes including 28 DLE species (ten from the Indo-Pacific, two from Africa and 16 from the Americas) and 11 DLA species (all from the Americas). For the comparison of the morphological characters of the first post-embryonic stage, we used available descriptions of 24 *Macrobrachium*, representing approximately 60% of the total of the species included in the phylogeny. Our hypothesis that the morphology of the first post-embryonic stage reflects the phylogenetic relationships of the group and, consequently, the different types of life cycles (ELD and ALD), was confirmed. However, contrary to some initial predictions, our results suggest that the emergence of ALD in American species seems to have occurred in a few distinct events (at least twice), following an evolutionary path similar to that of Indo-Pacific species.

Keywords: Americas, Decapoda, phylogenetics, zoea.

Financial support: FAPESP (Temáticos BIOTA 2010/50188-8, INTERCRUSTA 2018/13685-5; PROTAX 2021/08075-6); CNPq (PDJ 151105/2019-7; PQ 302253/2019-0).

Area: Taxonomy & Phylogeny

MORPHOLOGICAL VARIABILITY BETWEEN POPULATIONS OF THE TROGLOBITIC AMPHIPOD *Hyalella veredae* CARDOSO AND BUENO, 2014

BORGES, R.K.F. [1]; BUENO, A.A.P. [2] & BICHUETTE, M.E.[3]

[1] Universidade Federal de Lavras (UFLA), Laboratório de Carcinologia, Brazil; [2] Universidade Federal de Lavras (UFLA), Laboratório de Carcinologia, Brazil; [3] Universidade Federal de São Carlos (UFScar), Laboratório de Estudos Subterrâneos, Brazil.

* Corresponding author: rayssakf@gmail.com

Subterranean habitats comprise several microhabitats, and the past decade of research unveiled that its particular selective regime, such as the absence of light and oligotrophy, conditioned the modifications found in specialized organisms at these places. New research shows that microhabitats within a given cave environment, such as puddles and rivers, can also drive existing morphological differences. Some organisms possess populations occurring exclusively in hypogean environments, including some amphipod crustaceans. Among the few *Hyalella* species recorded in Brazilian caves, only one is known to occur more than one cave and in different cave microhabitats, *Hyalella veredae*. The objective of this study was to assess if the morphologies observed in the troglobite *H. veredae* are associated with microhabitat variation and are not due only to the hypogean environment *per se*. We studied the populations from four caves of Presidente Olegário, Minas Gerais state, Southeast Brazil. The microhabitats were characterized as lentic or lotic. The crustaceans were analyzed concerning the troglomorphic traits (eyes area, size of antennas and pereopods IV to VII). A total of 108 specimens of both sexes were analyzed. The organisms differed significantly concerning the microhabitat, mainly in the eyes, antennas and pereopods IV, and VII. Longer antennae, larger eyes, and shorter pereopods were associated with lotic microhabitat, and the opposite was correlated with lentic microhabitat. Our results indicate that morphological differences may be associated with microhabitat.

Keywords: *Hyalella*, hypogean environment, morphology, southeast Brazil.

Financial support: FAPEMIG, CNPq.

Area: Ecology & Biodiversity

DOES THE TERRITORIAL EXPANSION OF THE FIDDLER CRAB *LEPTUCA cumulanta* CAN CHANGE THE DISTRIBUTION OF *LEPTUCA uruguayensis*?

ARAKAKI, J.Y.[1*]; DE GRANDE, F.R.[1,2,5]; ARVIGO, A.L.[1,2]; PARDO, J.C.F.[2,3,4]; FOGO, B.R.[1,2]; SANCHES, F.H.C.[5]; MIYAI, C.A.[1,6]; MAROCHI, M.Z.[1] & COSTA, T.M.[1,2,6]

[1] São Paulo State University (UNESP), Biosciences Institute, São Vicente, Brazil; [2] São Paulo State University (UNESP), Biosciences Institute, Botucatu, Brazil; [3] University of Agder (UiA), Centre for Coastal Research, NO-4604 Kristiansand, Norway; [4] Norwegian Institute for Water Research (NIVA), Jon Lilletuns vei 3, 4879, Grimstad, Norway; [5] Federal University of São Paulo (UNIFESP), Institute of Marine Science (IMar), Santos, Brazil; [6] São Paulo State University (UNESP), Aquacuture Center (CAUNESP), Jaboticabal, Brazil.

* Corresponding author: yukioarakaki@gmail.com

Climate change has been shifting habitats and resources available to organisms. Many species are changing their distributional ranges towards the poles to adjust their thermal needs. However, the presence of a new species can alter the abundance and structure of the resident community due to niche overlap and agonistic interactions. Thus, it is important to understand how species respond to climate change and its impacts. A recently observed expanding species, the fiddler crab *Leptuca cumulanta*, was originally described ranging from Venezuela to the state of Paraíba, and now expanded its distribution to the coast of São Paulo, thus overlapping its territory with a resident species *L. uruguayensis*. The goal of this study was to evaluate whether the presence of *L. cumulanta* can affect the distribution of *L. uruguayensis*. *Leptuca uruguayensis* males were inserted into microhabitats with different visual stimuli: (1) presence of *L. cumulanta*, (2) presence of conspecifics, and (3) an empty microhabitat. We compared the proportion of microhabitat choice by *L. uruguayensis* (initial – beginning of the experiment; and final – after 15 minutes of the experiment) between treatments with choice (different stimulus) and without the possibility of choice (same stimulus). *Leptuca uruguayensis* did not show any pattern for the microhabitat choice, regardless the presence of a conspecific or heterospecific, both at the beginning (GLM: $X^2_8 = 1.7314$, $P = 0.98$) and the end of the experiment (GLM: $X^2_8 = 1.3698$, $P = 0.99$). Therefore, *L. uruguayensis* and *L. cumulanta* can share habitats and live in mixed assemblies at an early stage of overlapping territory, which may not be disadvantageous for both species in a climate change scenario.

Keywords: climate change, habitat selection, territory overlap.

Financial support: FAPESP # 2015/50300-6 and # 2020/03171-4.

Area: Ecology & Biodiversity

DRIVERS OF PRIMARY FRESHWATER CRABS RICHNESS REVEAL CONTRASTING HISTORY AMONG DIFFERENT CLADES

ALVES, D.F.R.[1,*]; MARTINEZ, P.A.[2]; MAGALHÃES, C.[3]; BARROS-ALVES, S.P.[4]; ALMEIDA, A.C.[1] & AMADO, T.A.[5]

[1] Universidade Federal de Uberlândia, Laboratório de Ecologia de Ecossistemas Aquáticos (LEEA), Brazil; [2] Universidade Federal de Sergipe, Laboratório de Pesquisas Integrativas em Biodiversidade (PIBi Lab), Brazil; [3] Instituto Nacional de Pesquisas da Amazônia (INPA), Brazil; [4] Universidade do Estado de Minas Gerais, Laboratório de Ecologia e Zoologia, Brazil; [5] Universidad Rey Juan Carlos, Biodiversity and Macroecology Lab (BioMa), Spain.

* Corresponding author: douglas_biologo@yahoo.com.br

We describe the richness patterns of freshwater crabs at two taxonomic levels, multi-taxa and single taxa (family level). Subsequently, we tested combinations of four different hypotheses: Physiological Restriction (PRH), Resource Availability (RAH), Habitat Structure (HSH), and Anthropic Impact (AIH). We analyze which hypothesis or combination of hypotheses that best explains the richness patterns (multi-taxa and single taxa levels). We expect to find different factors driving the distribution of each family when there is an evolutionary and/or historical effect. To perform our analyses, we obtained geographic distribution maps for 1,271 species of freshwater crabs, from the IUCN Red List. Then, we overlaid those range maps and estimated the richness from the sum of the overlapping distributional ranges in each grid-cell. We used a set of environmental variables to test the four hypotheses, PRH, RAH, HSH, and AIH. On the multi-taxa level, we found higher richness values for freshwater crabs in northern South America and Southern Asia. We identified three regions in which richness is concentrated: Neotropical, Oriental, and Sino-Japanese. All families had richness concentrated in tropical regions at lower latitudes, except Potamidae with a higher richness in Southeast Asia. The best model that explained the variation in global richness included the hypotheses RAH, HSH, and AIH. There was low congruence in the best models to explain the variation in richness pattern among the families. We recorded a positive relationship between richness and Human Footprint Index in all the best models, for both taxonomic levels. This result is crucial for the conservation of the group, as it indicates that the richness is concentrated in areas of high human impact. Our models suggest that freshwater crab's richness is controlled by different processes acting at distinct environmental scenarios. Consequently, the different types of regions with high richness also vary greatly in their usefulness of conservation efforts.

Keywords: Brachyura, conservation, diversity, evolutionary history.

Financial support: CAPES (Scholarship PNPD 88887.341624/2019-00).

Area: Ecology & Biodiversity

MARINE AMPHIPODS AS MODELS TO STUDY BIOLOGICAL INVASIONS

MARCHINI, A.*

Department of Earth and Environmental Sciences, University of Pavia, Italy

* Corresponding author: agnese.marchini@unipv.it

The dispersal of marine alien species by human activities, such as aquaculture, shipping, and creation of artificial canals, is redefining the biogeography of the oceans and seas. To assess the role of species in structuring marine communities and to effectively prioritize management strategies, it is crucial to have accurate understanding of alien species occurrence and distribution. Unfortunately, the available information has several gaps, due to: lack of baseline monitoring for alien species occurrence, taxonomic impediments, poorly known biogeography. The case of marine amphipods is here presented as example to quantify the bioinvasions phenomenon as well as its gaps. Amphipods exhibit some features making them good models to assess biological invasions: they constitute one of the dominant taxa in shallow-water marine ecosystems, have little autonomous dispersal capability, yet are particularly well-suited for being unintentionally transported across oceans as biofouling on vessel hulls or aquaculture equipments. This presentation provides an overview of the research directions that should be taken to achieve accurate assessments of alien species occurrence and distribution.

Keywords: amphipods, alien species, cryptogenic species, cosmopolitanism, taxonomy.

Financial support: University of Pavia.

Area: Ecology & Biodiversity

POPULATION STRUCTURE OF *Pachygrapsus transversus* IN THREE ROCKY-SHORES OF BAIXADA SANTISTA (SÃO PAULO, BRAZIL)

FERREIRA, T.M.[1]; GRANADO, P.[2]; DE GRANDE, F.R.[3] & COSTA, T.M.[4]

[1] Universidade Estadual Paulista (UNESP), Campus do Litoral Paulista, Brazil; [2] Universidade Metropolitana de Santos, Brazil; [3] Universidade Federal de São Paulo, Campus Baixada Santista, Brazil; [4] Universidade Estadual Paulista, Campus Botucatu, Brazil

* Corresponding author: taina.ferreira@unesp.br

Pachygrapsus transversus has a wide distribution, including the west coast of Pacific and both coasts of Atlantic (35°07′32″N to 4°54′11″S). Active catches were executed during nocturnal low tide aiming to compare the population structure of *P. transversus* in rocky shores with different environmental conditions: São Vicente (SV, estuary); Guarujá (GU, estuary facing open sea) and Itanhaém (IT, exposed to the sea). A total of 1943 individuals were collected and their carapace width (CW) was measured and the sex determined. The mean size of the populations differed between locations (ANOVA $p<0.0001$), regardless of the sex (ANOVA $p=0.36$). In SV there were 65 (48.5%) males with CW between 4.3-21.4mm and 69 females (51.5%, 27.5% ovigerous) between 6,4-19.8mm. The mean CW of the population was 13,4mm. The most abundant class sizes were between 9-11mm and 15-17mm for males and 13-15mm for females. In GU there were 364 males (54.4%) between 6-21.3mm and 305 females (45.6%, 13.11% ovigerous) between 7-19.9mm. The mean CW of this population was 12,7mm. The most abundant class sizes for males were 15-17mm and for females were 13-15mm. In IT, 613 males (53.9%) were collected between 5-21.5mm and 525 females (46.1%, 27.04% ovigerous) between 5.1-21.4mm. The mean CW of this population was 13,9 mm. The most abundant class size was between 13-15mm for males and females. Crabs in SV and GU, present in sheltered estuarine areas, have populations with a similar mean of CW (LSD, $p=0.08$), but larger than in IT (LSD, $p<0.005$), an area facing the ocean. The large size of the SV and GU may be explained due larger quantities of food in sheltered-estuarine rocky shores and the need of less energy to attach themselves to rocks which are less susceptible to wave action.

Keywords: populational structure, rocky shore, size.

Financial support: CAPES # 001; FAPESP # 2020/03171-4.

Area: Ecology & Biodiversity

AMPHIPODS: APPLICATIONS AND FUTURE OPPORTUNITIES

GUERRA-GARCÍA, J.M.

Universidad de Sevilla, Laboratorio de Biología Marina, Departamento de Zoología, Spain

*Corresponding author: jmguerra@us.es

The importance of amphipods has significantly increased during the last decades. The annual rate of newly described amphipod species is going up, including taxonomical, ecological, biogeographical and behavioral data. New approaches using amphipods as models in proteogenomic, transcriptomic and mitogenomic studies have been remarkable, and detailed studies dealing with life histories, behavior, trophic ecology and invasive species have also been conducted. The potential and opportunities of the use of amphipods as bioindicators and as resource in aquaculture is promising. They are being used in environmental monitoring programs to provide information about the quality of water and sediments. Regarding nutritional interest, several studies have revealed the importance of amphipods as adequate food for growing fish and mollusks in aquaculture. Amphipods have an interesting nutritional value, especially dealing with the fatty acids profile. Amphipods are also interesting to be used as biofilters in Integrate Multitrophic Aquaculture (IMTA) and recirculating aquaculture systems (RAS). This is because most of amphipod species are detritivores, being able to feed on detritus. Therefore, they have the capacity of reducing the amount of detritus in the water column and this could be very useful to reduce the impact of eutrophication. Amphipods offer a sea of applied opportunities and governmental agencies and stakeholders at local, national and international level should take this into account to increase the funding sources.

Keywords: amphipods, aquaculture, bioindicators, ecology, taxonomy.

Financial support: Ministerio de Ciencia e Innovación – Spain.

Area: Others

IDENTIFICATION OF REPRODUCTIVE AND NURSERY AREAS OF THE LAND CRAB *Johngarthia lagostoma* IN THE TRINDADE ISLAND, BRAZIL

JOÃO, M.C.A.[1,*]; DUARTE, R.C.[2]; KRIEGLER, N.[1]; FREIRE, A.S.[3] & PINHEIRO, M.A.A.[1,4]

[1] UNESP, PPG – Ecologia, Evolução e Biodiversidade, Rio Claro, Brazil; [2] Universidade Federal do ABC (UFABC), São Bernardo do Campo, Brazil; [3] Universidade Federal de Santa catarina (UFSC), Florianópolis, Brazil; [4] Universidade Estadual Paulista (UNESP) Campus do Litoral Paulista, Instituto de Biociências, São Vicente, Brazil.

* Corresponding author: marcio.joao@unesp.br

Seasonal reproductive migration from high to low altitude areas is a common behavior for many insular gecarcinid crabs. Although the population structure of the yellow crab *Johngarthia lagostoma* has already been described in the Ascension Island (UK), there is no information about this fact in Brazilian oceanic islands (Rocas Atoll, Fernando de Noronha or Trindade). According to the IUCN criteria, *J. lagostoma* is considered endangered (EN) due to the high rates of habitat suppression recorded in insular environments. Here, we evaluate the structure of *J. lagostoma* in areas with different altitudes in the Trindade Island, during the reproductive season. For this purpose, we sampled crabs in two expeditions during the summer of 2019 and 2020 in four areas: Andradas and Tartarugas Beaches, Príncipe (136m) and Desejado Hills (612m). In these areas, crabs were sampled during the nocturnal period in fixed transects, with each crab being measured (CW, carapace width) and sexed. We used the sexual maturity size (mm CW) of each sex (males: 56.4; females: 56.6) to classify individuals as juvenile or adult. Next, we tested whether crab's CW varied between sexes and areas, and calculated the proportion between adult males and females, and of juvenile and adult individuals in each area. A total of 1,251 individuals (758 males and 493 females) were sampled. Male crabs are larger than females in all areas (F=4.7, p=0.003) but the smallest size difference (4mm CW) and the largest individuals of both sexes were registered in Andradas Beach. The adult proportion for each sex was similar only in Andradas Beach (χ^2=0.02, p=0.1), with a bias towards males being registered in the remaining areas. Adult individuals were predominant in the entire island but the major frequency of juveniles occurred in the Príncipe Hill (30%). Therefore, our results indicate Andradas Beach and Príncipe Hill as reproductive and nursery areas, respectively. We suggest that these two areas need to be included in conservation actions of *J. lagostoma* in the Trindade Island.

Keywords: Gecarcinidae, migration, population structure.

Financial support: CNPq (Crabs Project # 404224/2016; PQ # 305957/2019-8) and FAPESP (# 2019/16591-9).

Area: Ecology & Biodiversity

PHYLOGENETIC ANALYSIS OF THE FAMILY GLYPHOCRANGONIDAE SMITH, 1884 (DECAPODA: CARIDEA) BASED ON MORPHOLOPHIC DATA

RODRIGUES, G.A.T.* & CARDOSO, A.I.

Museu Nacional/Universidade Federal do Rio de Janeiro (MN/UFRJ),
Departamento de Invertebrados, Laboratório de Carcinologia, 20940-040, Brazil.

* Corresponding author: thaianagarod@gmail.com

The family Glyphocrangonidae includes about 95 species in one genus, *Glyphocrangon* A. Milne-Edwards, 1881. The diagnostic characters of the genus are: a rigid and firm body, rostrum flat or concave, armed with 2-7 pairs of lateral spines and a strong carapace, with carina, grooves, spines and tubercles (Chace, 1984). And the abundance of ornamentation in *Glyphocrangon* is a positive factor for the morphological phylogenetic analysis, since many characters can be identified, it requires a lot of care to trace the homologies. The genus was divided into four informal species groups: *Glyphocrangon spinicauda* A. Milne-Edwards, 1881 group (37 spp.); *Glyphocrangon regalis* Bate, 1888 group, (14 spp.); *Glyphocrangon caeca* Wood-Mason & Alcock, 1891 group (8 spp.); and *Glyphocrangon holthuisi* Kensley, Tranter & Griffin, 1987 group (7 spp.) (Komai 2004a, 2006). And 30 species (De Grave & Fransen, 2011) are not included in any of these four groups. The monophyly of the superfamily Crangonoidea is not well supported by molecular analyzes (Bracken *et al*., 2009) and the monophyly of the Glyphocrangonidae has never been tested by morphological or molecular phylogenetic analyses. In addition, the characteristic that defines Glyphocrangonidae is the first prehensile pereopod, all species of Glyphocrangonidae are included in a single genus for lack of further studies in the group. The propose of this work are: realized phylogenetic analysis of the family Glyphocrangonidae from the morphological characters, testing its monophyly and observe the interrelationships between species, especially if there is formation of monophyletic groups of species, and organize the taxonomy that reflects the evolution of the genus.The character matrix is elaborated in the MESQUITE program. A preliminary phylogenetic analysis was performed using 40 terminal taxa and 32 characters. Were generated 160 equally parsimonious trees. In strict consensus, *G. neglecta* Faxon, 1896 was found as the most basal taxa and *Glyphocrangon brevis* Komai, 2006, as the most derived taxa. The tree presented several polytomies, indicating a great instability in the grouping of terminal taxa. And some monophyletic groups were formed. This preliminary analysis is one of many that will still be carried out in order to verify the conduct of the characters and study the analysis program before reaching the final objective. The study of the morphological phylogenetic analysis methodology will be continuous, as well as the characters surveyed will be constantly improved and tested so that a clear and more secure result of the evolution of the group can be obtained.

Keywords: Caridae, deep sea, Decapoda, Glyphocrangonidae, Phylogeny.

Financial support: CAPES.

Area: Taxonomy & Phylogeny

DESCRIPTION OF A NEW SPECIES OF *Hyalella* SMITH, 1874 (AMPHIPODA: HYALELLIDAE) FOR THE PARQUE ESTADUAL INTERVALES – SÃO PAULO, BRAZIL

LOURES, C.M.D.[1]; PENONI, L.R.[2] & BUENO, A.A.P.[2]

[1] Universidade Estadual Paulista (UNESP), Programa de Pós-Graduação em Zoologia, Botucatu, UNESP, Brazil; [2] Universidade Federal de Lavras, Laboratório de Carcinologia, Departamento de Ecologia e Conservação, Lavras, Minas Gerais, Brazil.

* Corresponding author: cdeottil@gmail.com

The amphipod genus *Hyalella* is strictly freshwater and exclusive to the Americas. Until now, eight species are known to occur in the state of São Paulo, five epigean (superficial) and three subterranean (found on caves). The new species of *Hyalella* is found at Parque Estadual Intervales – São Paulo, in the Bocaina river basin. The main features of the new species include aesthetascs occurring on flagellum of antenna 1 from the article 3 distally; maxilla 1 with 8 serrate setae on outer plate and palp short, uniarticulate, covering almost half the distance between the base of the palp and the base of the setae on the outer plate; maxilliped palp with 4 articles being the internal margin covered with simple setae, without *comb-scales*, and the inner plate presents 7 cuspidate distal setae; gnathopods 1 and 2 with polygonal pattern on the disto-posterior margin and a pectin edge, the inner face of the propodus of gnathopod 1 presents some serrate setae with short setules; pleopods peduncle with several setules on the margin and a pair of coupling spines; uropod 1 without a curved seta on the inner ramus; telson with 2 simple setae apically and other 3 simple setae laterally on each side. The absence of troglobiotic features differentiates this species from *H. caeca* Pereira, 1989, *H. spelaea* Bueno and Cardoso, 2011 and *H. epikarstica* Rodrigues, Bueno and Ferreira, 2014. When comparing with the epigean *Hyalella* species, the main differente is the number of cuspidate distal setae found on the maxilliped, which is seven for the new species, and is usually three or four for other species. The morphology of the serrate setae on gnathopods 1 and 2 is also different from thar observed in other species of the genus. Therefore, we propose a new species for *Hyalella*, increasing the number of known species of the genus to São Paulo state.

Keywords: amphipods, epigean, taxonomy.

Area: Taxonomy & Phylogeny

COLD HOUSING MARKET FOR BIG PROPERTIES: SHELL SPECIALIZATION INCREASES FOR LARGE HERMIT CRABS

RODRIGUES, G.F.B.*; MORAES, I.R.R. & CASTILHO, A.L.

Universidade Estadual Paulista "Júlio de Mesquita Filho" (UNESP), LABIAQUA - Laboratório de Biologia de Invertebrados Aquáticos, *Campus* Botucatu, Brasil

* Corresponding author: gabriel.fb.rodrigues@unesp.br

Hermit crab-gastropod shell interactions are a unique interaction in nature, which is an example of a type of commensalism called metabiosis, where one organism creates conditions for others to survive in, even though it is posthumously. Hence, gastropod shells represent the most limiting and valuable resource for hermit crabs. It is expected that as hermit crabs reach bigger sizes, a more restricted subset of shells becomes available in the environment. In this study we hypothesized that hermit crab species that reach bigger sizes will interact with low diversity of shells and will be more specialized than species with smaller size patterns. Hermit crab carapace shield length (CSL) and width (CSW) median were used as a proxy of hermit crab size. Two species-level network metrics were selected: (A) Specialization (*d*'), which higher values denotes that from all possible interactions, a given species interacts just with few partners; and (B) Partner diversity (PD), which is the Shannon diversity applied to interacting partners (shells). In order to obtain both species-level metrics, i.e. *d*' and PD, quantitative interaction matrices of hermit crab - gastropod shell were built. Linear mixed models (LMMs) were created to test if d' and PD (response variables) and hermit crab size (CSL and CSW) were related, in which the species were treated as a random effect to control the species-specific singularities. We observed that CSL and CSW influenced species-level specialization (LMM, $p < 0.05$). However, we did not find the same pattern for PD (LMM, $p > 0.05$). These finding suggests that bigger hermit crabs specialize in a few gastropod shell species, although the same pattern was not found regarding shell diversity. A higher specialization is coherent with a more restricted subset of shells for bigger species compared to smaller ones. Although, diversity of shell subsets did not decrease as hermit crab size increased, implying a resource partitioning of shells for hermit crab species. Also, it is important to note that hermit crabs has the opportunity to interact with multiple shells of different species during its lifetime, which could be interpreted as a mechanism of coexistence.

Keywords: ecological network, resource partitioning, Paguroidea.

Financial support: FAPESP and CNPq.

Area: Ecology & Biodiversity

ISOTOPIC NICHE PARTITIONING AMONG SYMPATRIC COASTAL HERMIT CRABS AS A COEXISTENCE MECHANISM

RODRIGUES, G.F.B.[1,*]; MORAES, IR.R.[1]; COSTA, V.E.[2] & CASTILHO, A.L.[1]

[1] Universidade Estadual Paulista "Júlio de Mesquita Filho" (UNESP), LABIAQUA - Laboratório de Biologia de Invertebrados Aquáticos, *Campus* Botucatu, Brazil; [2] UNESP, Centro de Isótopos Estáveis - *Campus* Botucatu, Brazil

*Corresponding author: gabriel.fb.rodrigues@unesp.br

Trophic partitioning of food items is commonly a coexistence mechanism among sympatric species. However, little partitioning of food niches occurs for hermit crab' species, even among closely related sympatric species, suggesting that nutrient availability has rarely been a limiting factor. Here, a stable isotope approach was used to investigate isotopic niche overlap among three co-existing coastal hermit crab species in the South-Eastern Brazilian Coast. Hermit crabs were trawled using a fishing boat equipped with double-rig nets. Samples were taken at four non-consecutive months from September 2019 to August 2021. We measured nitrogen ($\delta^{15}N$) and carbon isotope ($\delta^{13}C$) ratios to investigate isotopic niche partitioning from the hermit crabs' white muscle (first major cheliped). The number of sampled specimens was 18, 5, and 5 for *Dardanus insignis*, *Loxopagurus loxochelis*, and *Petrochirus diogenes*, respectively. The standard Ellipse Areas corrected for small samples (SEAc) was calculated to investigate isotopic niche widths of different hermit crab species, using the Stable Isotopes Ellipses (SIBER) package in R. Also, the overlaps between hermit crab niches were calculated based on the SEAc values. The hermit crab *L. loxochelis* presented a wider isotopic niche (SEAc = 18.16 ‰²), followed by *D. insignis* (6.46 ‰²) and lastly *Petrochirus diogenes* (1.16 ‰²). Regarding isotopic niche overlap, the overlap was reported to be higher between *D. insignis* and *L. loxochelis* (overlap = 76.86 %). In contrast, *L. loxochelis* and *P. diogenes* presented a low degree of overlap (4.96 %). Differentiation in isotopic niches indicates that at least in part food resource partitioning may be considered a coexistence mechanism in hermit crab communities. Generalist species tend to occupy a wide niche, which is the case of *D. insignis*, feeding of diverse resources. The low overlap between *L. loxochelis* and *P. diogenes* could be interpreted as difference in food catch. While *P. diogenes* actively search for preys (carnivore), *L. loxochelis* is a filtering animal (but not exclusive), feeding of particles in suspension. Although others resources are important limiting resources, such as empty gastropod shells, dietary niche partitioning could be an important strategy to avoid interspecifically competition.

Keywords: niche overlap, stable isotopes, trophic ecology.

Financial support: FAPESP # 2019/01287 and CNPq # 141593/2019-9.

Area: Ecology & Biodiversity

PRELIMINARY INSIGHTS ON GENETIC DATA ABOUT BRAZILIAN DECAPOD RED LIST

ALONSO, J.V.F.[1]; TELES, J.N.[1]; BOOS, H.[2] & MANTELATTO, F.L.[1]

[1] University of São Paulo (USP), Laboratory of Bioecology and Crustacean Systematics (LBSC), Ribeirão Preto (SP), Brazil; [2] Centro Nacional de Pesquisa e Conservação da Biodiversidade Marinha do Sudeste e Sul – ICMBio/CEPSUL, Itajaí (SC), Brazil.

* Corresponding author: jvalonso2001@usp.br

The “Livro Vermelho dos Crustáceos do Brasil” brings information about 255 crustacean species and have nine categories, according to the threat level by the International Union for Conservation of Nature (IUCN). For this work, we selected the four most critical threat categories: Critically endangered (CR), Endangered (EN), Vulnerable (VU) and Near threatened (NT) and compilated and generate genetic data for each entity. Searches were executed on GenBank and Bold Systems database to evaluate the cytochrome c oxidase subunit I (COI) and 16S sequences deposited with an acceptable genetic voucher. These four categories of IUCN have 38 species, being 9 in CR, 13 in EN, 6 in VU and 10 in NT. For CR, the most critical category, was found 5 sequences, 2 of COI (22.2% of data available) and 3 for 16S (33.3%). The category with the lowest percentage of sequences was EN, with 1 sequence for COI (7.7%) and 16S (7.7%). The VU category also presented a low number of sequences, being 1 for COI (16.7%) and 16S (16.7%). The category with the highest percentage was NT, was presented 5 sequences for COI (50%) and 6 for 16S (60%). In total, we found 9 sequences for COI (23.7%) and 11 for 16S (28.9%). Therefore, 26,3% of the sequences of the species on the IUCN list were found deposited. These numbers reveal the lack of knowledge in genetic data of endangered species, and can be helpful to understand the genetic variability. We also detected problems in the available sequences, such as lack of taxonomic criteria and quality of the sequences. Based on this scenario, our efforts are focused on generating sequences of species with such problems and of species that have never been sequenced. So far, we have 5 new sequences, this information will serve as baseline to contextualize the genetic variability of species and this relationship with the level of threat categories in order to furnish subsidies for future conservation proposal of the Brazilian carcinofauna.

Keywords: Conservation, Crustacea, IUCN.

Financial support: FAPESP (BIOTA Temático INTERCRUSTA 2018/13685-5; PROTAX 2021/08075-6); CNPq (PIBIC/USP Proc. 121751/2021-0; PQ 302253/2019-0).

Area: Genetic & Conservation

SETAE AS DIAGNOSTIC CHARACTERS FOR THE *Aegla longirostri* SPECIES COMPLEX (ANOMURA, AEGLIDAE)

SBRUZZI, H.*; BARTHOLOMEI-SANTOS, M.L. & SANTOS, S.

Universidade Federal de Santa Maria (UFSM), Laboratório de Carcinologia, Brazil.

* Corresponding author: hellensbruzzi27@gmail.com

Crustaceans have a body covered by a rigid skeleton that does not allow direct interactions between body tissues and the environment, so that the interface to the surrounding world is a role of specialized cuticular structures, such as setae, with chemosensory and mechanosensory functions. Setae have variable morphology, with various forms of articulation with the cuticle, different projections along the length of the setal shaft, annulations that circumscribe the shaft and may also contain terminally or subterminally located pores. This variety of setal shapes may be related to the different functions they perform and give setae a great taxonomic value since they help distinguish among different species through the types of setae. In addition, setae are usually present in specific body regions and amounts and may be associated with the animal's different habits. In this study, we sought to use the setae as diagnostic characters for *Aegla longirostri*, which, through molecular analysis, was found to be a complex of cryptic species and does not have prominent traditional morphological characters that differentiate among them. To reach this goal, we analyzed the third maxilliped by scanning electron microscopy to describe the setae of one species of the complex, compared to those from other crustaceans in literature. We registered nine types of setae: pappose, comb, pore, serrate, plumose, simple, stout simple, sword, and stout serrated, evidencing a potential source of useful characters for use in taxonomy. The next steps include analyzing the setae in the third maxilliped for the other species of the *A. longirostri* complex and looking for characters that can help differentiate among the species of the complex.

Keywords: cuticular structures, diagnostic character, scanning electron microscopy, taxonomy.

Financial support: FAPERGS and CNPq.

Area: Taxonomy & Phylogeny

INFLUENCE OF HIGH TEMPERATURE ON FOOD INTAKE OF THE CRAB *Pachygrapsus transversus* GIBBES, 1850 (BRACHYURA: GRAPSIDAE)

BORGES, J.S.* [1,2]; GRANADO, P.[2,4]; DE GRANDE, F.R.[1,3] & COSTA, T.M.[1,2]

[1] Universidade Estadual Paulista (UNESP), Campus do Litoral Paulista, Laboratório de Ecologia e Comportamento Animal, Brazil; [2] Universidade Estadual Paulista (UNESP), Campus de Botucatu, Instituto de Biociências, Brazil; [3] Universidade Federal de São Paulo, Campus Baixada Santista, Laboratório de Ecologia e Gerenciamento Costeiro; [4] Universidade Metropolitana de Santos (UNIMES), Brazil.

* Corresponding author: jaqueline.borges@unesp.br

Animals from intertidal zones endure stressful conditions which will be intensified due climate change. As a semiterrestrial, omnivorous and abundant animal in rocky shores, the crab *Pachygrapsus transversus* has an important role as a community structurer. Here we evaluate whether the high temperature increases the food intake of in *P. transversus*. We offer as a food model the macroalgae *Ulva fasciata* and the mussel *Perna perna* under three temperature regimes: 24°C, 35°C, and 40°C (35ºC+5°C, IPCC-RCP 8.5). We did not observe a significant difference between the consumption of the mussels (Kruskal-Wallis: H=2,446, P=0,2942), but there was in the consumption of the macroalgae of the treatments (Kruskal-Wallis: H=6,846, P=0,02968). The crabs ingested more macroalgae at higher temperatures (35°C to 40°C) than in 24ºC (Dunn, p<0,05). The above could be explained because a diet high in protein, such as that provided by the consumption of mussels, provide a greater amount of energy substrate for crustaceans compared to carbohydrates (i.e., macroalgae diet). Extreme situations require greater energy expenditure, so the highest consumption of macroalgae at high temperatures may be interpreted as one response to supply the higher metabolic dispend. In climate change scenarios, *P. transversus* may to exert greater predatory pressure on macroalgae populations which, potentially, could will to destruct the rocky shore communities by bottom-up effects.

Keywords: feeding behavior, global warming, rocky shore, tide pool.

Financial support: CAPES # 001 and FAPESP # 2020/03171-4.

Area: Ecology & Biodiversity

DOES THE FIDDLER CRAB *Minuca rapax* PREDATOR SHOW A PREFERENCE FOR ONE SEX OF FIDDLER CRAB PREY *Leptuca leptodactyla*?

BOÁS, D.S.S.[1,3,*]; DE GRANDE, F.R.[1,2] & COSTA, T.M.[1,3]

[1] Paulista State University, São Vicente Coastal Campus. Institute of Biosciences, Brazil;
[2] Federal University of São Paulo, Baixada Santista Campus, Laboratory of Ecology and Coastal Management;
[3] Paulista State University, Botucatu Campus, Institute of Biosciences, Brazil.

* Corresponding author: douglas.boas@unesp.br

Predator-prey have several effects in shaping the co-evolutionary characteristics of species. The choice of a prey by a predator is related to the availability of prey and the energy profitability of the prey. Fiddler crabs show marked sexual dimorphism, in which males are hypertrophied, used as a defensive weapon and in reproductive displays, while the claws feature two small, symmetrical claws. The females of these crabs are more preyed on birds. In previous studies, the fiddler crab *Minuca rapax* has been observed preying on other fiddler crab species, and it is hypothesized that it may show a preference for females due to its vulnerability. Here we are evaluating the choice preference of *M. rapax* for prey of one sex of the species *Leptuca leptodactyla*; the latter a sympatric species of *M. rapax* in intertidal environments of the Southwest Atlantic. To assess predator preference, we developed four treatments composed of two groups of males each: T¹: 3 males and 3 females; T2: 3 males and 3 males; T³: 3 females and 3 females; and T4: 3 females and 3 males. To identify each group of crabs, we painted their abs with permanent pen. The predator went through 48 hours before we offered up prey. The prey remained with the predator for 12 hours and 25 were performed per treatment. Our results showed that there was no difference between similar treatment means of choice ≈ 5, where that of the treatment values was 0.48 of the VA treatments: F=0.07978; MS=0.07978. Thus, the crab *M. rapax* is not distinguished by sex, presenting itself as a generalist predator capable of capturing its prey according to the availability in the environment, regardless of sex.

Keywords: fiddler crab foraging, predation, predator-prey.

Financial support: FAPESP # 2020/03171-4.

Area: Ecology & Biodiversity

ABUNDANCE AND SPATIO-TEMPORAL DISTRIBUTION OF TWO SYMPATRIC ROCK SHRIMPS *Sicyonia dorsalis* KINGSLEY, 1878 AND *Sicyonia typica* BOECK, 1864 (PENAEOIDEA: SICYONIIDAE), ON THE COAST OF ILHÉUS (BAHIA, BRAZIL)

TAVARES, R.G.[1,*]; COUTO, E.C.G.[1] & BRANDÃO, S.N.[2]

[1] Universidade Estadual de Santa Cruz (UESC), Programa de Pós-Graduação em Zoologia, Laboratório de Ecologia Bêntica; [2] Laboratório de Invertebrados, Brazil.

* Corresponding author: renzo.gtavares@gmail.com

On the Brazilian coast, rock shrimps usually are caught as bycatch during trawling. They are not commercially exploited because of their small size and rigid carapace. Our objective was to evaluate the abundance and spatio-temporal distribution of *Sicyonia dorsalis* and *S. typica* in the estuary of the Almada River and on the adjacent coast to evaluate the influence of environmental factors (temperature, salinity, pH, conductivity, dissolved oxygen, transparency, chlorophyll-*a* in the water column near the bottom, percentage of organic matter and sediment granulometry, in addition to river flow and rainfall). Monthly samples for one year (February/2010 to February/2011) were taken along a transect at right angles to the coast, at depths of 5, 10, 15, 20, 25, 30 and 35m, off the mouth of the Almada River, and in its estuary, using the double-rig nets of a fishing boat. Each trawl lasted 30 minutes. Water and sediment samples were collected for analysis. Flow data for the Almada River and rainfall indices for the region were obtained from the Agência Nacional de Águas and from the Centro de Previsão de Tempo e Estudos Climáticos. A total of 3,195 individuals of *S. dorsalis* and 190 of *S. typica* were collected. Individuals were not recorded in the estuary. The highest abundances of both species were recorded in March and decreased from April to November. Spatially, *S. dorsalis* was more abundant at 25m deep, and *S. typica* at 15m. Both were less common at depths of 5 and 10m. Between 15 and 25m the sediment is mostly silt and clay, while between 5 and 10m it is sand and clay. The distribution of granulometric fractions was identified by Principal Component Analysis as the most important factor for the difference in the abundances. The cluster analysis showed a spatial and temporal separation, with the shallower stations (5 and 10m) separated from the deeper ones and the rainy months from the dry ones. The decrease in abundance coincided with the period of highest flow in the Almada River.

Keywords: bycatch, ecology, shrimp trawling.

Financial support: FAPESB, CAPES and UESC.

Area: Ecology & Biodiversity

FROM WEAPONS TO BODY COLOR: ONTOGENETIC CHANGES IN *Dilocarcinus pagei* STIMPSON, 1861

DA SILVA, A.R.[1,*] & NOGUEIRA, C.S.[2]

[1] Museu de Zoologia da Universidade de São Paulo (MZUSP), São Paulo, Brazil;
[2] Laboratório de Biologia de Camarões Marinhos e de Água Doce (LABCAM), Universidade Estadual Paulista (UNESP), Bauru, Brazil.

* Corresponding author: alers.dino@gmail.com

Crustaceans undergo a series of changes during its ontological growth specially regarding sizes and shapes. These changes are often related to reproduction purposes in which the larger robust males acquire the necessary tools to fight for resources. To perform these tasks, they need enough pinching force which is generated in propodus' muscles and translated into kinetic force in the lever action performed by the dactyl. To assess these morphological changes during ontogeny were used the freshwater crab *Dilocarcinus pagei.* The animals were sampled in a dam (S 20º49.53′; W 48º49.66′), at São Paulo state. The animals had the carapace and propodus length measured in order to calculate the sexual maturity based on the LC50. Afterwards the animals were classified in the juvenile males, juvenile females, adult males and adult females. Later the propodus (major and minor) were dissected and the apodeme was photographed and its area measured, the apodeme was used as proxy for pinching force. The animals' coloration was assessed through the RGB distribution in the images of the chelipeds and carapace. The apodeme area were compared between the demographic groups using the Kruskal-Wallis test. A PERMANOVA was performed between the demographic groups in order to assess whether there is an increase in the apodeme area during ontogeny, as well as variations in coloration. The sexual maturity was obtained at 35.36 mm and 36.49 mm for females and males, respectively. Both minor and major cheliped did not showed differences in the apodeme area for the juveniles (both males and females; $p>0.05$), all other groups differed among themselves ($p<0.05$) with the adult males apodeme being larger, hence, stronger chelipeds. Coloration also did not differ between juveniles (males and females, $p>0.05$) but differed between other groups ($p<0.05$) being the adult males redder than the other groups. All these ontogenetic changes points to a better performance and force in the males propodus to which it can increase its fitness, also the color changes could be an adaptation in mating signaling for females or social dominance among males.

Keywords: color, force, freshwater.

Financial support: Pró-Reitoria de Pesquisa – USP and FAPESP # 2019/0061-3.

Area: Reproduction & Development

POPULATION STRUCTURE OF THE CRAB *Dilocarcinus pagei* STIMPSON,1861 (DECAPODA: TRICHODACTYLIDAE) IN THE ARAGUARI RIVER, MINAS GERAIS, BRAZIL

BARBOZA, A.C.G.*; LONDE, B.P.; SANTOS, G.P.R. & JACOBUCCI, G.B.

Universidade Federal de Uberlândia (UFU),
Laboratório de Ecologia de Ecossistemas Aquáticos, Brazil.

* Corresponding author: ana.barboza1@ufu.br

Dilocarcinus pagei is a freshwater species of the Trichodactylidae family, with a wide distribution in South American waters, mainly in large basins, including the Amazon and Paraguay/Paraná. However, in Brazil, particularly in Minas Gerais (Upper Paraná Basin) its occurrence is possibly associated with accidental or deliberate introduction as bait in sport fishing. The aim of this work was to evaluate the population structure of *D. pagei* in Araguari River (downstream of the Amador Aguiar II dam), Triângulo Mineiro region, Minas Gerais, Brazil. Crabs were collected from September 2020 to November 2021 using active search up to one meter above and one meter below the waterline in a 300 m long stretch. Sampling was done manually with a sieve in a one-hour period at night. The specimens were identified according to sex by means of abdomen morphology and the carapace width was measured. Ovigerous females and those carrying juveniles in their abdomen had eggs, and juveniles counted. A total of 393 individuals were analyzed, 72% of which were males and 28% females. The general sex ratio, considering the entire sampling period was significantly different from the expected 1:1 ratio, with a higher proportion of males (1:0.28). Among the females, 85% had no eggs or juveniles, 12% presented only eggs or juveniles, and 3% had eggs and juveniles, simultaneously. The number of eggs and juveniles in the abdominal cavity ranged from 584 to 1108 and from 186 to 1948, respectively, with the highest proportion (~77% of eggs and 100% of juveniles) during the rainy season. There was no significant difference in mean carapace width between males (CW = 39.68 ±9.18 mm) and females (CW = 40.09 ± 7.28 mm) (p = 0.303). The frequency distribution by size classes (CW) indicated a peak occurring in the 40 - 44.99 mm size class for males and females. The present study brought population and reproductive information about *D. pagei*, which may contribute to the understanding of the ecological role of the species in the Araguari River basin.

Keywords: Crustacea, dams, freshwater environments, population dynamics, reproductive biology.

Financial support: CAPES and CNPq/FAPEMIG (PELD).

Area: Ecology & Biodiversity

TEMPERATURE EFFECT ON THE MOLT CYCLE OF *Callinectes sapidus* RATHBUN, 1869 (BRACHYURA: PORTUNIDAE)

DAVID, D.D.; SUA-CESPEDES, C.D.; SOUTO-NETO, J.A.; ZANETTI, G.; SANTOS, G.V.; LACERDA, J.T. & CASTRUCCI, A.M.L.

University of Sao Paulo (USP), Department of Physiology, Institute of Biosciences, Sao Paulo, Brazil.

* Corresponding author: danieladantas@usp.br

Many behaviors and physiological processes in crustaceans are affected by temperature changes. Molt cycle is a complex process responsible for arthropod growth regulated by ecdysteroids synthesized and released by the Y-organ and by the molt-inhibiting hormone (MIH) is synthesized and released by the X-organ/sinus gland complex. The study aimed to evaluate the gene expression of *Caspre-mih* (molt-inhibiting hormone precursor), *Casmih* (molt-inhibiting hormone) in the eyestalk ganglia, and *CasCg-YO1* (MIH receptor) in the Y-organ, the hemolymphatic ecdysteroid levels, and the morphological changes in the hepatopancreas of *Callinectes sapidus* adult males subjected to 24°C (control temperature), 19°C and 29°C. For that, the animals were acclimated in control temperature for 3 days and 5 more days at each temperature. Organs were excised at the end of the experiment and hemolymph was collected at the start and final of the experiment, to obtain the delta ecdysteroid concentration. Our results showed that the *Caspre-mih* gene expression was significantly reduced at 19°C compared to 24°C (*t*-test, p=0.0423) and 29°C (*t*-test, p=0.0053). The treatments did not alter *Casmih* gene expression in comparison to the control temperature, nor no difference was seen between them. The *CasCg-YO1* transcripts did not differ between temperatures, but a reduction was visible in animals submitted to 19°C. Ecdysteroid levels in the hemolymph were reduced in crabs at 19°C (One-Way, $p<0.05$), as compared to 24°C and 29°C. Morphological changes were also observed in the hepatopancreas of the animals maintained at different temperatures. In the control temperature, the organ showed a higher content of B cells, followed by F cells; the animal submitted at 19°C showed mostly R and E cells; and the animal under 29°C exhibited equivalent numbers of F and B cells. Based on our results, MIH gene did not change its expression, but the Y-organ seems to display reduced responsivity to MIH at 19°C. Lower temperature also reduced the circulating ecdysteroids, which may culminate in the delay of ecdysis. Taken altogether, the data indicated that the hepatopancreas is responsive to different temperatures, probably due to the changes in the metabolic demands of the animals.

Keywords: Crustacea, ecdysteroids, hepatopancreas. molt-inhibiting hormone, temperature.

Financial support: FAPESP, CNPq and CAPES.

Area: Physiology & Toxicology

DENSITY OF THE LAND CRAB, *Johngarthia lagostoma* (BRACHYURA: GECARCINIDAE), IN FUNCTION OF THE MOON PHASES AND VEGETATION, IN TRINDADE ISLAND, BRAZIL

KRIEGLER, N.[1,*]; JOÃO, M.C.A.[1] & PINHEIRO, M.A.A.[1,2]

[1] UNESP, PPG – Ecologia, Evolução e Biodiversidade, Rio Claro, Brazil; [1,2] Universidade Estadual Paulista (UNESP), Instituto de Biociências (IB), Campus do Litoral Paulista (CLP) – Grupo de Pesquisa em Biologia de Crustáceos (CRUSTA), São Vicente, SP, Brazil.

* Corresponding author: nicholaskriegler@outlook.com

Trindade Island is known to harbor the most genetically isolated population of the land crab *Johngarthia lagostoma*, requiring a better understanding of their population biology. Andradas Beach is considered a reproductive site for this species, due to the predominance of adults in comparison to other places in the island. This study aims to compare the density of *J. lagostoma* in function of moon phases and vegetation during the breeding season. The samples were conducted during daytime in three established areas parallel to the sea, at different distances and dominated by distinct vegetation types, as follow: A1, presence of *Canavalia rosea* and bare soil (80 m); A2, an association between *Cyperus atlanticus*, *C. rosea* and bare soil (120 m); and A3, fully covered by *C. atlanticus* (150 m). During full and new moon, in each area, eight sampling quadrats (4m²) were randomly distributed and all crabs inside of them were counted. A two-way ANOVA was carried out to test if crab density varies according to moon phase, vegetation type, as well their interaction. No crabs were found in A1, probably due to the absence of humid shelter vegetation and because of this these quadrats were removed from statistics. The density of crabs differs in relation to moon phases (F=12.68, p=0.01), being higher at full moon (1.72±0.75 ind./m²) than at new moon (0.95±0.70 ind./m²), the same occurring to the vegetation (F=13.74, p=0.001), being higher in A2 (2.22±0.73 ind./m²) when compared to A3 (1.22±0.34 ind./m²), but not in their interaction (F=0.89, p=0.35). Full moon is related to a higher reproductive intensity in many crab species and seems to play a major role in *J. lagostoma*, principally in A2 due to a more complex substrate (two vegetation species), as well as the proximity to the sea. Vegetation adjacent to beaches provides protection and humidity to the crabs during daytime. We emphasize the relevance of these vegetated areas in management actions for *J. lagostoma* in Trindade Island, and not only areas nearest to the sea.

Keywords: breeding season, oceanic island, shelter.

Financial support: CNPq (Crabs Project # 404224/2016-4 and PQ # 305957/2019-8).

Area: Ecology & Biodiversity

REVEALING THE RECRUITMENT OF THE LAND CRAB *Johngarthia lagostoma* (BRACHYURA: GECARCINIDAE), IN THE TRINDADE ISLAND, BRAZIL

DIAS-SILVA, I.[1,*]; JOÃO, M.C.A.[2] & PINHEIRO, M.A.A.[1,2,3]

[1] PPG – Biodiversidade de Ambientes Costeiros (UNESP IB/Campus do Litoral Paulista), Brazil; [2] PPG – Ecologia, Evolução e Biodiversidade (UNESP IB/Campus de Rio Claro), Brazil; [3] Universidade Estadual Paulista (UNESP), Instituto de Biociências, Campus do Litoral Paulista, São Vicente, Brazil.

* Corresponding author: dias.e@unesp.br

Johngarthia lagostoma inhabits four oceanic islands in the Atlantic, three of them belonging to Brazil (Fernando de Noronha, Rocas Atoll and Trindade). This is a threatened species, categorized as Endangered (EN) species in Brazilian territory, though poorly studied. Some parameters of the *J. lagostoma* recruitment were evaluated in Andradas beach (Trindade Island, Brazil), inspecting 30 galleries of adult's specimens by lunar phase (n=128) in January 2020. Galleries were carefully examined to registered recruits, whose were counted to calculate their density (ind./gallery). In laboratory, juveniles were submitted to image analysis system (0.001 mm) for recording measurements of the carapace (*CW*, width; and *CL*, length), chelar propodus (*PL*, length) and abdomen (*AW*, width). Individual wet weight (*WT*) was registered by an analytical scale (0.0001 g). Recruits were distributed in size classes (1mm *CW*) and the asymmetry coefficient (sk) was calculated. Density and size (*CW*) were also compared among lunar phases (ANOVA). The biometric relationships (*CLxCW*, *PLxCW* and *AWxCW*) were submitted to regression analysis (power function) to check for isometric or allometric growth (b=1 or b≠1, respectively); the same established to *WTxCW* relationship but using b=3 or b≠3, respectively. We obtained 79 recruits in 49% of adult galleries, with *CW* ranging from 2.2 to 7.5mm *CW* (4.9±0.8mm *CW*). Recruits' density and size showed an inverse pattern, with a higher density (2.1±2.5 ind./gallery) of smaller recruits (2.2±5.7mm *CW*) in full moon, with reduced density in the subsequent moon phases and attaining a lower density (0.2±0.4 ind./gallery) of bigger crabs (5.4±7.5mm *CW*) in crescent moon (F=11.2, p<0.01). The recruits' size frequency was symmetric (sk=-0.17), with a little specimen>7mm *CW*. This size increase of the recruits inside the galleries can promote an expulsion behavior or predation by adult co-inhabiting crab. All biometric relationships showed a negative allometric growth, while the weight relation showed a positive growth that means the main energy allocation goes to somatic growth. These results are pioneers and extremely relevant for the management and conservation of this species.

Keywords: biometry, endangered, Gecarcinidae, recruit.

Financial support: CNPq (Crabs Project # 404224/2016; PQ # 305957/2019-8; and PIBIC grant # 143295/2020-9).

Area: Reproduction & Development

PREDICT DISTRIBUTION OF PINK SHRIMP *Farfantepenaeus brasiliensis* DUE GLOBAL WARMING

TELES, J.N.* & MANTELATTO, F.L.

Laboratory of Bioecology and Crustacean Systematics (LBSC), Department of Biology,
Faculty of Philosophy, Science and Letters at Ribeirão Preto (FFCLRP),
University of São Paulo (USP), Ribeirão Preto (SP), Brazil.

* Corresponding author: jenifferteles94@gmail.com

Species Distribution Models (SDMs), aim to predict habitat suitability by linking Species Distribution data with environmental data, and have been widely used to investigate the impacts of climate change on the potential distribution of several species. *Farfantepenaeus brasiliensis* has a great economic importance as fishery resource, being the second most caught target in the trawl fisheries of the Brazilian coast. The objective was to prospect the potential distribution of *F. brasiliensis* in the present and future in relation to the global warming scenario, using SDMs as modeling tools. Our hypotheses are that I) The species has a great distribution potential due to the amplitude of environmental variations it occupies in America, II) Shrimp should lose potential range of distribution in the future due to ocean warming caused by climate change. After filtering the data, a total of 359 sites of occurrences were used, coupled with platforms, Global Biodiversity Information Facility, Ocean Biodiversity Information System, and material deposited in the Crustacean Collection of the Department of Biology of FFCLRP, University of São Paulo, Ribeirão Preto, Brazil. The environmental variables used were average temperature and background salinity and current velocity, available for present and future time on the Bio-ORACLE platform [Future Model: CMIP5 - RCP 8.5 - (2040-2050) and (2090-2100)]. To perform the modeling (SDM), binary data were used, with Ensemble of 3 methods ("bioclim.dismo", "glm", "maxlike") in the "sdm package" - R software. Environmental factors did not present collinearity (variance inflation factor < 2) and the best models were glm and maxlike. Our hypotheses were corroborated, the species has a great potential for worldwide distribution and future. In the future, both 2050 and 2100, *F. brasiliensis* must lose a large and worrying occupation area. In addition to a migration to the current poles (which theoretically in the future will present fewer hot temperatures compared to the tropics). Such future predictions should occur in case of anthropic impacts (eg. pollution and increased emissions of greenhouse gases such as CO^2 and CH_4, as well as other combined factors as overfishing) that cause climate change are not diminished or stagnant.

Keywords: conservation, climate change, Decapoda, SDM.

Financial support: FAPESP (Temáticos BIOTA 2010/50188-8, INTERCRUSTA 2018/13685-5; PROTAX 2021/08075-6); CNPq (DR 140957-2020-0; PQ 302253/2019-0).

Area: Ecology & Biodiversity

LACK OF GENETIC STRUCTURING AND RECENT POPULATION EXPANSION OF *Alpheus estuariensis* (CARIDEA: ALPHEIDAE) IN MARINE ECOREGIONS OF BRAZIL

TELES, J.N. & MANTELATTO, F.L.

Laboratory of Bioecology and Crustacean Systematics (LBSC), Department of Biology,
Faculty of Philosophy, Science and Letters at Ribeirão Preto (FFCLRP), University of São Paulo (USP),
Ribeirão Preto (SP), Brazil.

* Corresponding author: jenifferteles94@gmail.com

Understanding the patterns of diversity and genetic structuring of marine organisms are key factors to understand population dynamics, since the genome of oceanic species is being modified by numerous anthropogenic impacts (e.g. overfishing, habitat degradation, pollution, climate change, etc.). We analyzed the structure and genetic diversity of *A. estuariensis* along the marine ecoregions of Brazil to test the hypothesis of genetic structuring due to the environmental barriers that define the ecoregions and higher genetic diversity at lower latitudes. Genetic sequences of the mitochondrial genes Cytochrome Oxidase subunit I (COI) and 16S from four ecoregions of Brazil (Amazônia, Northeastern Brazil, Eastern Brazil and Southeastern Brazil) were used. Haplotypic and nucleotide diversity, congruence test between distance matrices, haplotype networks, molecular variance analysis (AMOVA), Mismatch Distribution, Fs de Fu, D de Tajima, and Extended Bayesian Skyline Plot (BEAST) analyses were performed. The greatest diversity was found in the Southeastern Brazil, except for haplotypic diversity for the COI. We found absence of genetic structuring between studied populations and the species is in a recent population expansion (Tajima's D = -2.86 and -2.10, for COI and 16S, respectively). The greatest genetic diversity was found in the latitude areas between -20 and -30, corroborating the hypothesis that the greatest diversities are found in these regions much probably due to abiotic conditions that favor the primary productivity and greater trophic interaction of marine organisms. The absence of structuring is consistent with the standard of living for most marine decapods, with larval stages as the main responsible for high dispersion rate. These results evidenced the ability to travel long distances, even with large geomorphological and physiological barriers that separate the Ecoregions. In addition, *A. estuariensis* continues to expand its population, in which the potential geographical distribution and gene flow of its population must increase further.

Keywords: Genetic variability, mangrove, phylogeography, snapping shrimp.

Financial support: FAPESP (Temáticos BIOTA 2010/50188-8, INTERCRUSTA 2018/13685-5; PROTAX 2021/08075-6); CNPq (DR 140957/2020-0 ; PQ 302253/2019-0).

Area: Genetics & Conservation

PHYLOGENETIC AND COEVOLUTIONARY INSIGHTS OF THE OBLIGATE COMMENSAL *Hyachelia lowryi* (CRUSTACEA: AMPHIPODA)

IWASA-ARAI, T.[1,2,*]; ANDRADE, S.C.S.[3]; SIQUEIRA, S.G.L.[2]; WERNECK, M.R.[4]; LEITE, F.P.P.[2]; MEDEIROS, L.S.[5,6]; LOPES, U.H.[6] & SEREJO, C.S.[7]

[1] Programa de Pós-Graduação em Biologia Animal, Universidade Estadual de Campinas (UNICAMP). Campinas, São Paulo, Brazil; [2] Departamento de Biologia Animal, Instituto de Biologia, Universidade Estadual de Campinas, Campinas, SP, Brazil; [3] Departamento de Genética e Biologia Evolutiva, Instituto de Biociências, Universidade de São Paulo, São Paulo, SP, Brazil; [4] Instituto BW para Conservação e Medicina da Fauna Marinha. Araruama, Rio de Janeiro, Brazil; [5] Programa de Pós-Graduação em Ciência Animal, Universidade Federal de Alagoas (UFAL), Viçosa, AL, Brazil; [6] Instituto Biota de Conservação, Maceió, AL, Brazil; [7] Laboratório de Carcinologia, Departamento de Invertebrados, Museu Nacional/UFRJ, Rio de Janeiro, RJ, Brazil

* Corresponding author: araitammy@gmail.com

Obligate commensalism in the marine environment and its evolutionary role are still poorly investigated. Within turtles and other large marine vertebrates, crustaceans represent one of the most diverse groups of epibionts, and amphipods show a great variety of ecological adaptations. Several species of amphipods are known as facultative commensals but only two species are known as obligate commensals of sea turtles: *Hyachelia tortugae* and *H. lowryi*. *Hyachelia* displays a very restricted distribution and host specificity, with both species being described in the Pacific Ocean only, with *H. tortugae* being reported on green turtles and *H. lowryi* on green and loggerhead turtles. Here, we report a new host record for *Hyachelia lowryi* on the hawksbill turtle *Eretmochelys imbricata* and describe a larger distribution of the species/genus in the Atlantic Ocean. In order to provide insights into the evolution of *Hyachelia*, we propose a phylogenetic hypothesis based on molecular analyses, including species of other six genera from the family Hyalidae obtained from GenBank. Cytochrome oxidase I gene tree was inferred using IQTree and divergence times were calculated with BEAST. As the analysis inferred recent colonization of sea turtles by this specialized amphipod, around 16.12 Ma. Further data on *Hyachelia tortugae* is important to fully understand the genus evolution. This pattern of apparent lack of coevolution between host-epibiont was also observed in the amphipod family Cyamidae, another obligate ectoparasite found in whales and dolphins. Lastly, the low richness of *Hyachelia* species also suggests an absence of host-epibiont co-speciation, corroborated by the known interspecific interactions and even hybridization between the three host species.

Keywords: coevolution, epibiosis, Hyalidae, molecular evolution, new record.

Financial support: FAPESP # 2018/00488-7.

Area: Taxonomy & Phylogeny

GENOMIC POPULATION ANALYSIS OF *Ampithoe marcuzzii* (AMPHIPODA: AMPITHOIDAE) REVEALS OCEANIC ISLANDS ISOLATION IN THE WESTERN ATLANTIC

IWASA-ARAI, T.[1,*]; LEITE, F.P.P.[1]; SIQUEIRA, S.G.L.[1] & ANDRADE, S.C.S.[2]

[1] Departamento de Biologia Animal, Instituto de Biologia, UNICAMP, Campinas, SP, Brazil;
[2] Departamento de Genética e Biologia Evolutiva, Instituto de Biociências, USP, São Paulo, SP, Brazil.

* Corresponding author: araitammy@gmail.com

The distinctive evolution on oceanic islands is recognized by the high endemicity caused by isolation, and the diversity of isolated places is mostly shaped by dispersion. The recent surface and climate dynamics have changed the patterns of pelagic floating *Sargassum* in the Atlantic Ocean. Consequently, the species diversity and genetic connectivity associated to this ecosystem may be also affected. Several species of invertebrates are found in association with macroalgae, including amphipods, that have direct development and consequently low dispersion, favoring the establishment of endemic species. Thus, the dispersal of macroalgae by surface currents, especially *Sargassum*, might shape the population structure of species with low dispersive capacities. The objective of this study was to understand the population structure and genetic diversity of the herbivore amphipod *Ampithoe marcuzzii* through most of its distribution, investigating the influence of rafting in the population's connectivity and isolation. Samplings were conducted in the Caribbean, along the Brazilian mainland coast, continental and oceanic islands. We used fragments of COI,16SrRNA, 28SrRNA and SNPs recovered from GBS to understand the distribution and population structure of *A. marcuzzii* species complex along the Western Atlantic. Population analyses showed high latitudinal structure on Brazilian mainland, separated into southeastern and northeastern populations, including continental islands, whereas isolated from Brazilian oceanic islands and the Caribbean. This continental separation agrees with the seasonal upwelling system observed between northeastern and southeastern coast, although continental islands' population structure might be related to other abiotic factors. *Ampithoe marcuzzii* from oceanic islands, on the other hand, are connected with Caribbean, showing a possible rafting dispersion by the North Brazilian and Guyana Current. Thus, a biogeographical barrier may influence the isolation between mainland Brazil and oceanic islands, favoring the connectivity with the Caribbean. This pattern of speciation is suggested to be associated to the geographic isolation of the oceanic islands at the last maximum glacial (~21k), where species distribution suitability was restricted to shallow water habitats due to lower sea levels, preventing oceanic islands and continent connection.

Keywords: ENM, genetic diversity, geographic boundaries, SNPs.

Financial support: FAPESP # 2018/00488-7 and # 2018/10313-0.

Area: Genetics & Conservation

ONTOGENETIC COLOR VARIATION AND CAMOUFLAGE OF THE INSULAR LAND CRAB *Johngarthia lagostoma* (H. MILNE EDWARDS, 1837)

JOÃO, M.C.A.[1]; DUARTE, R.C.[2,*]; FREIRE, A.S.[3] & PINHEIRO, M.A.A.[1,4]

[1] UNESP, Programa de Pós-Graduação – Ecologia, Evolução e Biodiversidade, Rio Claro, Brazil; [2] UFABC, São Bernardo do Campo, Brazil; [3] UFSC, Florianópolis, Brazil; [4] UNESP, Campus do Litoral Paulista, Instituto de Biociências, São Vicente, Brazil.

* Corresponding author: rafaduarte87@gmail.com

Although many crab species exhibit intraspecific color variation, there are few reports about this trait in species with high degree of terrestriality. The insular land crab *Johngarthia lagostoma* (Gecarcinidae family) is variable in color and occupy areas under lower predation pressure, but the function of this variation remains unstudied. Here, image analyses were used to describe *J. lagostoma* chromatic types in the Trindade Island, and to test whether they are selected by sexual, ontogenetic and/or ecological purposes. We explored four areas with distinct altitude – Andradas and Tartarugas Beaches, Príncipe Hill (136m) and Desejado Peak (612m) – where crabs were sampled, sexed and measured (CW, carapace width). We took digital photographs of crab's carapace and the main substrates of each area, from which we obtained normalized reflectance values to calculate different color metrics. We tested whether the occurrence of each color type differed between sexes and areas, and compared crab's CW and color metrics (brightness, saturation and hue) between sex and chromatic types. Finally, we evaluated the color background matching between crab chromatic types and the different substrates. Three color types were observed for the species, being black and yellow/purple individuals restricted for small (CW<30mm) and large crabs, respectively, indicating an ontogenetic color change. All types occurred in similar proportions between sex, with yellow crabs being predominant in the population and exhibiting larger CW, brightness, saturation and hue than the other color types. Black crabs exhibited higher color matching with sand and ground substrates, which are characteristic of recruitment and hill areas, respectively, where this chromatic type is more frequent, suggesting effective camouflage against these backgrounds. However, while yellow and purple crabs matched hill and beach substrates, respectively, this variation is probably maintained in the population by neutral selection due to the low predation pressure that adult crabs are exposed. Future studies with other insular crabs are necessary to understand whether the pattern described here for *J. lagostoma* is widespread in the Gecarcinidae family.

Keywords: background matching, coloration, Gecarcinidae.

Financial support: CNPq (Crabs Project # 404224/2016; PQ # 305957/2019-8) and FAPESP (# 2019/16591-9 and # 2019/01934-3).

Area: Ecology & Biodiversity

FECUNDITY OF THE MANTIS SHRIMP *Erugosquilla massavensis* (STOMATOPODA, CRUSTACEA) IN YUMURTALIK COVE, NORTH-EASTERN MEDITERRANEAN, TURKEY

YEŞİLYURT, İ. N.* & TÜRELİ, C.

Cukurova University, Faculty of Fisheries, Adana, Turkey

* Corresponding author: iyesilyurt@cu.edu.tr

E. massavensis (Kossman, 1880) is one of the target species in fisheries and is economically valuable in the Mediterranean, due to its consumption as a food. It is the Lesepsian, invasive species in Turkey. Although it is one of the dominant stomatopod species especially in the Iskenderun Bay, it is in the bycatch category because it is not used economically. In this research, fecundity of *E. massavensis* was examined. Mature females were obtained from fishermen and placed in aquaculture tanks for spawning in Yumurtalık Cove, in Iskenderun Bay, in the northeastern Mediterranean of Turkey, between 30 June-24 August (2019). Also, ovigerous females were collected from the gillnets of commercial boats operating in Yumurtalık Cove between 26 July and 30 August (2019). A total of 49 ovigerous females, 26 females brooded fertilized eggs in tanks and 23 ovigerous females collected from gillnets, were used in fecundity estimations. Carapace length of ovigerous females were measured between 19.2 and 35.67 mm, mean 28.1± 3.53 mm. Total lengths of ovigerous females were measured minimum 79.08 mm and maximum 150.14 mm, mean 115.52 ± 14.63 mm. Fecundity of spawning females was determined as minimum 14789.82 (26.84 mm KU), maximum 157775.38 (33.12 mm KU), average 59,822.25 ± 33,393.96 eggs. Egg diameters were calculated as a minimum of 0.339 mm, a maximum of 0.855 mm and an average of 0.611 ± 0.02 mm. It has been observed that the females carry the fertilized eggs in its maxillipeds between 9 and 12 days, at the end of this period the eggs hatched into pseudozoea larvae. A strong correlation was determined between fecundity-carapace length, total length, total weight and egg weight (R^2=0.98, R^2=0.91, R^2=0.87, R^2=0.96, respectively). With this research, information about the spawning and fecundity of *E. massavensis* females in nature and in tanks on the Turkish coast were obtained for the first time.

Keywords: fecundity, invasive, Lessepsian, mantis shrimp, Squillidae.

Financial support: Cukurova University Scientific Research Project Unit, Project # FDK-2016-7368.

Area: Reproduction & Development

MALE REPRODUCTIVE SYSTEM OF THE FRESHWATER PRAWN *Macrobrachium pantanalense* DOS SANTOS, HAYD & ANGER, 2013 (CARIDEA: PALAEMONIDAE)

NOGUEIRA, C.S.[1*]; ZARA, F.J.[2] & COSTA, R.C.[1]

[1] Laboratório de Biologia de Camarões Marinhos e de Água Doce (LABCAM), Universidade Estadual Paulista (UNESP), Bauru, Brazil; [2] Laboratório de Morfologia de Invertebrados (IML), Universidade Estadual Paulista (UNESP), Jaboticabal, Brazil

* Corresponding author: caiosnogueira@hotmail.com

Studies about the male reproductive system can provide important information on reproductive biology and even to the relationships among species. The present study describes the functional anatomy of the male reproductive system (MRS) including its histochemistry and the sperm morphology of a recently described prawn species, *Macrobrachium pantanalense*. The prawns were sampled, anesthetized, and had the MRS fixed in 4% paraformaldehyde to be processed for histological and scanning electron microscopy routines. Histochemical analysis was performed to detect neutral and acid polysaccharides and also proteins. The anatomy of the MRS consists of a pair of testes, from which the vasa deferentia (VD) arise and extend until to the fifth pair of pereopods. The VD is divided into three regions: proximal (PVD), median (MVD), and distal (DVD) according to testicular distance and VD caliber. In PVD, a typhlosole made up of secretory columnar cells was observed. In the MVD, the typhlosole is incorporated into a single face of the VD wall, maintaining the simple columnar epithelium, with the remainder of the VD wall formed by simple squamous epithelium. Typhlosole has the function of producing type II and III secretion in the VD, causing asymmetry of the spermatophore, with one face containing thicker layers of secretion. In DVD, the VD epithelium is lined by simple cubic cells, without typhlosole and no additional secretion. Thus, the future asymmetric spermatophore is composed of type I secretion (glycoprotein, with intense labeling for neutral polysaccharides and less intense for acids) and II (intensely glycoprotein, less intense for neutral polysaccharides, and non-reactive for acids) mixed and surrounded by a type III secretion (glycoprotein, less intense for neutral polysaccharides and non-reactive for acids). Along the VD regions there were differences between the histochemical pattern of secretions. Sperm morphology was similar to some congeners of *M. pantanalense*. Overall, the histological and histochemical patterns showed similarities with other caridean shrimp species. The histochemical variation along the VD may be related to sperm maturation and the formation of protective and adhesive matrices that constitute the spermatophore.

Keywords: Decapoda, histology, histochemistry.

Financial support: FAPESP (# 2019/00661-3; # 2018/13685-5) and CNPq (PQ # 306672/2018-9).

Area: Reproduction & Development

SPECIES DIVERSITY AND BIOGEOGRAPHY OF THE GENUS *Eurycope* (ASELLOTA: ISOPODA) IN THE JAPAN TRENCH AND THE SEA OF JAPAN

OHTA, M.* & KOJIMA, S.

Atmosphere and Ocean Research Institute (AORI), The University of Tokyo, Japan.

* Corresponding author: ota.mizuki@s.nenv.k.u-tokyo.ac.jp

Asellote isopods (Isopoda: Arthropoda) are one of the dominant groups at the deep-sea floor and shows the high species diversity in the bathyal, abyssal, and hadal zone. Among the suborder, the family Munnopsidae is particularly abundant and some species belonging this family known as cosmopolitan. Our recent studies have revealed several species of the genus *Eurycope* in the Japanese waters, which include two species found in the Sea of Japan. The Sea of Japan, a marginal sea in the northwestern Pacific between the Japanese archipelago and the Asian continent, has been the focus of much attention as a research subject in biogeography because of its unique geographic location and geologic history. The maximum depth of the straits connecting the Sea of Japan with the Pacific Ocean is about 130 m and the mass extinction occurred there during the glacial periods. However, both species of *Eurycope* were collected from deeper layers than the straits. We collected specimens of Japanese species to conduct morphological examination and molecular phylogenetic analysis based on the mitochondrial COI region. The large genetic differentiation between species of the Sea of Japan and those of the Pacific suggests that the common ancestor of the former was isolated from the Pacific species after migration prior to the establishment of the Sea of Japan and survived the mass extinction events. Furthermore, the intraspecific genetic deviation was detected between local populations at different depths. In this presentation, we will introduce *Eurycope* species distributed in the Sea of Japan and Pacific Ocean, and discuss their evolution in conjunction with the geohistory of the Sea of Japan.

Keywords: Asellota, biogeography, deep-sea, Sea of Japan.

Financial support: TEAMS, KAKENHI and SPRING-GX.

Area: Ecology & Biodiversity

SWALLOW OR SPIT? LAST-CHANCE DECISION MAKING IN THE BLUE CRAB, *Callinectes sapidus* RATHBUN, 1896 (BRACHYURA: PORTUNIDAE), AND THE SPINY LOBSTER, *Panulirus argus* LATREILLE, 1804 (ACHELATA: PALINURIDAE)

AGGIO, J.F.*

Georgia State University, Atlanta, Georgia, USA.

* Corresponding author: juanfaggio@yahoo.com

As aquatic animals, blue crabs and spiny lobsters possess chemosensory neurons distributed throughout their entire bodies, but concentrated in their first pair of antennae (antennules), second pair of antennae, pereiopods, mouthparts, and oesophagus. All these chemoreceptors play a part in the detection, search, and ingestion of food. Among the many mechanisms used to avoid being consumed, many aquatic organisms deploy feeding deterrents, compounds that cause potential predators to reject them as food. In addition, because in the aquatic environment there is no clear distinction between the types of molecules that elicit responses from olfactory and taste receptors (which in the terrestrial environment are, respectively, volatile and water-soluble), the same deterrent compound could affect a potential predator at more than one level. The objective of this work was to identify the receptors responsible for the chemosensory-mediated rejection of otherwise palatable food laced with a variety of deterrents, including the ecologically relevant ink secretion of the sea hare *Aplysia californica*, seen in these two species of crustaceans. Our behavioral results show that both control and deterrent-laced food items elicit a search response and are taken to the animals' oral regions. But the similarities end there; while control food is rapidly consumed, deterrent-laced items are manipulated in the vicinity of the oral regions for much longer periods of time before being finally consumed or rejected altogether. Further, ablation experiments show that the deterrence is not mediated by chemoreceptors located in the mouthparts. This is mirrored in our electrophysiology results, which show that deterrent compounds do not elicit responses from chemosensory neurons located in the antennules or other appendages. Finally, additional behavioral experiments seem to indicate that the ultimate decision of "to eat or not to eat" is made at the past possible moment, by receptors located in the oesophagus. Although seemingly paradoxical (why wait till the last minute?), these results are consistent with the fact that many deterrent compounds, including those found in the ink of *Aplysia californica*, are not water-soluble, which makes them poor stimuli for crustacean external chemoreceptors.

Keywords: behavior, chemosensation feeding, deterrence, physiology.

Financial Support: GSU/NSF.

Area: Others

INFLUENCE OF DIEL VERTICAL MIGRATORY BEHAVIOR ON THE VISUAL GENE EXPRESSION OF BIOLUMINESCENT SHRIMP

DELEO, D.M.[1,2,*] & BRACKEN-GRISSOM, H.D.[2]

[1] Smithsonian National Museum of Natural History, USA;
[2] Florida International University, USA

* Corresponding author: dmdeleo14@gmail.com

Diel vertical migration of deep-sea animals represents the largest migration on our planet. Vertically migrating fauna are subjected to a variety of light fields among other environmental conditions that can have notable impacts on sensory mechanisms, including an organism's visual capabilities. Among deep-sea migrators are oplophorid shrimp, that vertically migrate 100s of meters (m) to feed in shallow waters at night. These species also have bioluminescent light organs called photophores that emit light during shallow-water migrations to aid in a dynamic form of camouflage known as counterillumination. The organs have recently been shown to contain opsins and other genes that infer light sensitivity. Knowledge regarding the impacts of this vertical migratory behavior, and fluctuating environmental conditions, on sensory system (visual/photophore) evolution is unknown. In this study, the oplophorid *Systellaspis debilis* was either collected pre-sunset (Day) from 450-750 m, or pre-dawn (Night) from 150-330 m to ensure sampling across the vertical distributional range. RNA was then extracted and sequenced from the light sensitive tissues (eyes/photophores). *De novo* transcriptomes were assembled discretely for each tissue from *Day* (n=5) and *Night* (n=5) specimens and analyzed to characterize opsin diversity, visual and light interaction genes within a phylogenetic context. Gene expression analyses were also conducted to quantify expression differences associated with the migration. This study sheds light on the visual system of a deep-sea bioluminescent shrimp and provides additional evidence for photophore light sensitivity. Our findings also suggest opsin coexpression and subsequent fluctuations in opsin expression may play an important role in diversifying the visual responses of this deep-sea vertical migrator.

Keywords: bioluminescence, gene expression, invertebrates, opsins, transcriptomics.

Area: Others

DESCRIPTION OF THE FIRST LARVAL STAGE (ZOEA I) OF THE SNAPPING SHRIMP *Synalpheus townsendi* COUTIÈRE, 1909

SANTOS, R.C.[1,*]; PESCINELLI, R.A.[1]; PANTALEÃO, J.A.F.[2] & COSTA, R.C.[1]

[1] Universidade Estadual Paulista (UNESP), Laboratório de Biologia de Camarões Marinhos e de Água Doce, Brazil; [2] Universidade de São Paulo (USP), Laboratório de Bioecologia e Sistemática de Crustáceos, Brazil.

* Corresponding author: rafa_bio@hotmail.com.br

Synalpheus Spence Bate, 1888 is the second most diverse and abundant genus from Alpheidae Rafinesque, 1815, nevertheless, information on the first larval stage morphology is available for only about 10% of its 171 described species. This study aims to describe the morphology of the first larval stage (zoea I) of *Synalpheus townsendi* Coutière, 1909 and compare with other congeners. Three ovigerous females were captured at Couves Island (Ubatuba) and Alcatrazes Archipelago (São Sebastião), North coast of São Paulo State, Brazil. Parental females were maintained in aquariums with controlled salinity and temperature. After hatch, larvae were conserved in a mixture (1:1) of ethyl alcohol 70% and glycerin, and ten larvae of each female were separated for dissection and illustrations. The zoea I morphology of *S. townsendi* was compared with other six available descriptions of *Synalpheus* species. The following morphological characteristics were shared among the seven species: carapace and abdomen lacking spines; inner flagellum of antennule as a long plumose seta; antennal peduncle unsegmented; exopod of first maxilliped with 4 plumose natatory setae; pleopods absent; rounded telson, with 7+7 plumose setae on its margin (outermost 2 pairs plumose only in the inner margin). Most of these characteristics are shared with alpheid and caridean shrimps. The first zoea of *S. townsendi* differed from other species in the genus by a set of exclusive morphological characteristics: coxal endite of maxillule with 4 simple setae; basial endite of maxillule with 2 stout spines and 1 small spine; basial endite of maxilla bilobed with 3+3 simple setae (proximal and distal lobes); basis of first maxilliped with 4 spines and 2 simple setae; endopod of second maxilliped with 4 articles, 0, 0, 1 serrate setae, 4 simple setae + 1 serrate seta; endopod od third maxilliped with 5 articles, 0, 0, 0, 2, 4 simple setae. This study improved the knowledge about the early larval development of *Synalpheus* and contribute for the formulation of a larval identification keys for marine coastal decapods from Brazil.

Keywords: Alpheidae, Caridea, larval morphology.

Financial support: FAPESP-Scholarships # 2018/00739-0; # 2020/14484-3; BIOTA/INTERCRUSTA # 2018/13685-5; SISBIO # 69588-8, ICMBio-Alcatrazes; CNPq # 305919/2014-8.

Area: Reproduction & Development

SEXUAL MATURITY OF THE OCEANIC ISLAND GECARCINID *Johngarthia lagostoma* (H. MILNE EDWARDS, 1837)

SILVA, L.S.B.[1,*]; JOÃO, M.C.A[1]; DUARTE, R.C.[2]; FREIRE, A.S.[3] & PINHEIRO, M.A.A.[1]

[1] Universidade Estadual Paulista (UNESP), Instituto de Biociências, Campus do Litoral Paulista, Brazil; [2] Universidade Federal do ABC (UFABC), Centro de Ciências Naturais e Humanas, Brazil; [3] Universidade Federal de Santa Catarina (UFSC), Departamento de Ecologia e Zoologia, Brazil.

* Corresponding author: stela.bispo@unesp.br

Gecarcinid crabs exhibit the highest degree of terrestriality within the infraorder Brachyura, providing different ecological functions in coastal and oceanic island habitats. *Johngarthia lagostoma* is an endemic species of oceanic islands in the South Atlantic (Rocas Atoll, Fernando de Noronha, Ascension, and Trindade). In Brazil, this species was categorized as an 'endangered' (EN) using IUCN criteria, requiring a better understanding of the reproductive aspects, such as the size at the onset of sexual maturity. Our study aims to assess the size of the sexual maturity of both sex of *J. lagostoma* in Trindade Island, Brazil, using three criteria: morphological (MO), physiological (PH), and functional (FU). During two expeditions (summer of 2019 and 2020), a total of 1,658 individuals (1,001 males and 657 females) were collected. To estimate MO, the carapace width (CW) was used as an independent variable, while the chelar propodus length (both sexes), gonopods lengths (males), and the 5th abdominal width (females) were used as dependent variables in relative growth analysis. For the PH estimate, crabs of both sexes were sacrificed and dissected for gonadal macroscopic analysis, with the proportion of mature individuals (developing and mature gonads) calculated in function of size (CW) along the ontogeny, to be estimated the size at which 50% of individuals were physiologically developed. Lastly, FU was also estimated for both sexes, considering individuals larger than MO size exhibiting mature or developing gonads (PH size). Generally, males and females reach MO size previously to PH size, being functionally mature at 56.4- and 56.6-mm CW, respectively. These values correspond to half of the maximum size that this species reaches in Trindade island (105.5 mm) and a literature review confirms this situation as a pattern for the gecarcinids crabs. These results can contribute to the conservation of *J. lagostoma* in Trindade Island, being used to manage the local population and identify reproductive and nursery areas.

Keywords: conservation, reproduction, terrestrial crab.

Financial support: CNPq (Crabs Project # 404224/2016-4; PQ # 305957/2019-8) and FAPESP (# 2019/16581-9; # 2020/09968-1).

Area: Reproduction & Development

TWENTY YEARS ON: UPDATING THE INVENTORY OF NEW ZEALAND CRUSTACEA

SCHNABEL, K.[1,*]; PEART, R.[1]; BRADFORD-GRIEVE, J.[1,2]; BUCKERIDGE, J.[3]; EAGAR, S.[2]; HOSIE, A.[4] & GERKEN, S.[5]

[1] National Institute of Water and Atmospheric Research, Wellington, New Zealand; [2] retired; [3] RMIT University, Melbourne VIC, Australia; [4] Collections & Research, Western Australian Museum, Welshpool WA, Australia; [5] University of Alaska, Anchorage, USA.

* Corresponding author: kareen.schnabel@niwa.co.nz

New Zealand was the first country to catalogue its entire known living and fossil life in a comprehensive three-volume inventory completed in 2012. Based on the Species 2000 Catalogue of Life initiative, it documented New Zealand's unique fauna and flora that is characterized by high levels of endemicity in many groups. Here, we present an update on the recent taxonomic and systematic research of New Zealand's marine crustacean biota. Over 3300 species are now recorded, with 740 taxa added to the New Zealand marine Crustacea in the last twenty years. The overall level of endemicity is currently at 37%, however, this mask an extreme range from <10% (e.g. pelagic euphausiid shrimp and copepods) to 93% in the small epibenthic peracarid Cumacea (comma shrimp). Considering that a significant portion of the nearly 730 species of known undescribed and undetermined species are likely to be endemic, the level of endemism will only increase in the future. Despite the incredible progress made in the last decade, the potential for new species discoveries remains extremely high with little indication of our species richness curve reaching a plateau and (conservative) estimates of twice as many species remaining to be described or discovered. We highlight some exciting discoveries of the last twenty years, our ongoing challenges in discovering and documenting our fauna and place the New Zealand fauna in a global context.

Keywords: biodiversity, endemism, fossil, extant, taxonomy.

Financial support: New Zealand Ministry of Business, Innovation and Employment.

Area: Ecology & Biodiversity

GROWTH, LONGEVITY AND MORTALITY OF PINK SHRIMPS *Farfantepenaeus brasiliensis* (LATREILLE, 1817) AND *F. paulensis* (PÉREZ-FARFANTE, 1967) IN SOUTHEASTERN BRAZIL

PERROCA, J.F.[1,*]; MIAZAKI, L.F.[1]; FRANSOZO, A.[2]; FREIRE, F.A.M.[3] & COSTA, R.C.[1]

[1] Laboratory of Biology of Marine and Freshwater Shrimp (LABCAM), Biological Sciences Department, Faculty of Sciences, São Paulo State University. Bauru, São Paulo, Brazil; [2] Study Group on Crustacean Biology, Ecology and Culture (NEBECC) – Zoology Department, Bioscience Institute, UNESP, 18618-000, Botucatu, Brazil; [3] Laboratory of Biology, Ecology and Evolution of Crustaceans (LABEEC), Department of Botany and Zoology, UFRN, Lagoa Nova University Campus, 59078-970, Natal/RN – Brazil.

* Corresponding author: juliaperroca@gmail.com

Pink shrimp are an important economic resource throughout the Americas, and their stocks have been exploited to the point of collapse in southeastern Brazil. In order to assess the stock status in the Ubatuba region, we estimated the parameters of growth, longevity, fishing mortality (F), natural mortality (M), and total mortality (Z) and the exploitation rates (E) of the shrimp *Farfantepenaeus brasiliensis* and *F. paulensis* sampled in Ubatuba Bay from January to December 2000. Shrimps were identified by species, sexed and measured (carapace length – CL in mm). Overall, 1,231 individuals of *F. brasiliensis* and 687 individuals of *F. paulensis* were analyzed. The mean size between the sexes did not differ for both species. The estimated parameters of *F. brasiliensis* where: $CL\infty$ = 41.08 mm, k = 2.41 year^{-1} for males and $CL\infty$ = 47.32 mm, k = 2.23 year^{-1} for females; longevity of 1.91 years (males) and 2.05 years (females); M of 2.47 (males) and 2.28 (females); F of 7.97 (males) and 8.42 (females). For *F. paulensis*, the following values were observed: $CL\infty$ = 36.55 mm, k = 2.41 year^{-1} for males and $CL\infty$ = 49.24 mm, k = 2.51 year^{-1} for females; longevity of 1.91 years (males) and 1.81 years (females); M of 2.52 (males) and 2.52 (females); F of 7.64 (males) and 10.25 (females). E values were higher than 0.7 for both sexes of both species. Therefore, pink shrimp stocks were over-exploited in the Ubatuba region, with results similar to those of other important tropical shrimp fishing areas. This is especially concerning because the bay is an auxiliary nursery area for these species' juveniles. Our results are important for comparisons with the current stock situation.

Keywords: artisanal fishery, Bertalanffy, closed season, exploitation rate, Penaeidae.

Financial support: FAPESP # 2019/01308-5, # 2018/13685-5, # 1997/12108-6, # 1997/12106-3, # 1997/12107-0; CAPES # 88887.161311/2017-00; CNPq PQ # 306672/2018-9.

Area: Aquaculture & Fisheries

RELATIVE GROWTH AND SEXUAL DIMORPHISM OF *Litopenaeus schmitti* AND *Xiphopenaeus* spp. IN THE ESTUARY-BAY COMPLEX FROM SANTOS/SÃO VICENTE, SÃO PAULO, BRAZIL

MOREIRA, L.*; PESCINELLI, R.A. & COSTA, R.C.

São Paulo State University (UNESP), Laboratory of Biology and Ecology of Marine and Freshwater Shrimps (LABCAM), Bauru, Brazil.

* Corresponding author: l.felipe@unesp.br

The relative growth is an effective tool to reveal different energy allocation strategies between males and females of different species and to contribute to the evaluation of important fishing stocks, such as penaeid shrimps. In this context, the aim of this study was to analyze the relative growth and sexual dimorphism of *Litopenaeus schmitti* (Burkenroad, 1936) and *Xiphopenaeus* spp. (Heller, 1862). The collections occurred monthly between May/2008 and April/2009 in the estuary-bay complex from Santos/São Vicente. The specimens were identified and measured for carapace length (CL) and width (CW), rostrum length (RL) and abdomen length (AL). Relative growth was investigated by allometric regression ($log\ y = log\ a + b*log\ x$). An analysis of covariance was used to compare the angular and linear coefficients for each relationship. The allometric condition *b* of each body structure was analyzed using the Student's t-test. The Mann–Whitney test was used to verify the difference between the sizes of each body structure of males and females. Negative allometry was found in all relationships in both species, indicating a larger energy investment in body size (CL). In *L. schmitti* and *Xiphopenaeus* spp., sexual dimorphism was mostly found in carapace length, with females being larger than males. The sexual dimorphism in CL might be related to their reproductive aspects, it was observed in the literature that for penaeid shrimp, males have a higher growth rate than females and a shorter lifespan, therefore, males could reach maturity at smaller sizes while the females remain growing reaching larger sizes. The findings provide us a better understanding of penaeid shrimp relative growth. Furthermore, data collected between 2008 and 2009 can be compared to current data in the same study zone, allowing for shrimp monitoring in an area of considerable anthropization on the Brazilian coast.

Keywords: allometry, seabob shrimp, white shrimp.

Financial support: COPE CONECTA Scholarship - Student Permanence Coordination (COPE)/UNESP; FAPESP (Temáticos BIOTA # 2010/50188-8, INTERCRUSTA # 2018/13685-5; Post-doctoral scholarship # 2020/14484-3); CNPq - PQ # 306672/2018-9.

Area: Reproduction & Development

INTERTIDAL BURROWING SHRIMPS (AXIIDEA: CALLIANASSIDAE, CALLICHIRIDAE; GEBIIDEA: AXIANASSIDAE, UPOGEBIIDAE) COLLECTED ALONG THE BRAZILIAN COAST

HERNÁEZ, P.[1,*] & PINHEIRO, M.A.A.[2]

[1] Universidad de Tarapacá (UTA), Facultad de Ciencias, Centro de Estudios Marinos y Limnológicos, Arica, Chile;
[2] Universidade Estadual Paulista (UNESP), Instituto de Biociências (IB), Campus do Litoral Paulista (CLP), Laboratório de Biologia da Conservação de Crustáceos (LBC), Grupo de Pesquisa em Biologia de Crustáceos (CRUSTA), São Vicente, São Paulo, Brazil.

*Corresponding author: pahernaez@gmail.com

An annotated checklist of the intertidal species of burrowing shrimps of the Brazilian coast is provided from samples collected during latitudinal research expeditions between 2015 and 2018, during which 1166 specimens of nine species were collected. The species are as follow: Axiidea: Callianassidae: *Biffarius botterae* Hernáez, Miranda & Tavares, 2020; Callichiridae: *Audacallichirus mirim* (Rodrigues, 1971), *Callichirus* aff. *major* (Say, 1818), *Lepidophthalmus siriboia Felder &* Rodrigues, 1993, *Neocallichirus guara* (Rodrigues, 1971), *N. maryae* (Karasawa, 2004), *N. pinheiroi* Hernáez, Windsor, Paula & Santana, 2020; Gebiidea: Axianassidae: *Axianassa australis* Rodrigues & Shimizu, 1992, Upogebiidae: *Upogebia omissa* Gomes-Corrêa, 1968. For each species, diagnostic features, distribution, and habitat are recorded. The taxonomic information is discussed and compared to the information reported in literature for each taxon.

Keywords: Decapoda, ghost shrimps, mud lobsters, Southwestern Atlantic, Thalassinidae.

Financial support: FAPESP, FACEPE and CNPq (PQ # 305957/2019-8).

Area: Taxonomy & Phylogeny

CRUSTACEANS: ARE THEY ALTERNATIVE MODELS TO STUDY PARKINSON´S DISEASE?

GOMES, C.A.B.A.*; CORREA, C.L. & ALLODI, S.

Universidade Federal do Rio de Janeiro (UFRJ) *Campus* Fundão,
Laboratório de Neurobiologia Comparativa e do Desenvolvimento, Brazil.

* Corresponding author: cgomes@id.uff.br

Introduction: Parkinson's disease (PD) is a neurodegenerative affection leading to selective loss of dopaminergic neurons in human brain specific areas. Lewy bodies, alpha-synuclein protein aggregates, are found in the cytoplasm of PD dopaminergic neurons and other cells causing both oxidative stress and cell death. The major symptoms of PD include the Parkinson´s tetrad: bradykinesia, stiffness, postural instability and resting tremor. Naturally, vertebrates are the most common models for PD studies, however, alternatively, flies, nematodes and yeasts have been used. The main characteristics of these models are short life cycle, easy maintenance and manipulation, low cost and genetic homology with vertebrates. Crabs also fit well as models to study PD, since crustaceans are a sister-group of insects, have a well-described central nervous system (CNS) and, due to the transition between aquatic and terrestrial life cycle, may be useful to understand the condition considering evolution. To validate the crab *Ucides cordatus* (Linnaeus, 1763) as a PD model, we evaluated the presence of molecules, such as the enzyme tyrosine hydroxylase (TH), responsible for dopamine production; the protein alpha-synuclein, a pre-synaptic molecule; and the cerebral dopamine neurotrophic factor (CDNF), a neuroprotective molecule. Objectives: 1. to verify the presence of TH, alpha-synuclein and CDNF in the cerebral ganglia of the crab *U. cordatus*. 2. to evaluate the effects of the neurotoxin 6-hydroxydopamine (6-OHDA) - a substance used to produce parkinsonism - on cell cultures of neural cells from *U. cordatus* cerebral ganglia. Results: We identified the three molecules in the CNS. *Ex vivo* results, using immunohistochemistry and western blot, showed TH+, alpha-synuclein+ and CDNF+ cells in regions associated with sensorial processing, motor control, memory and neurogenesis. The *in vitro* approach showed less TH+ cells than the time-matched control groups. We also observed more alpha-synuclein+ cells than the time-matched control groups. Conclusion: The results showed the presence of TH+, alpha-synuclein+ and CDNF+ cells in the crab brain. In addition, 6-OHDA affected the cells in a similar way to that which occurs in vertebrates. Therefore, *U. cordatus* can be used as a model to study neurodegeneration, with focus on cellular physiology and evolution.

Keywords: alternative model, cerebral ganglia, crustacean, Parkinson's disease.

Financial support: FAPERJ, CAPES and CNPq.

Area: Physiology & Toxicology

FUNCTIONAL DIVERSITY OF MESOGRAZERS ASSOCIATED WITH MARINE MACROALGAE

MACHADO, G.B.O.[1,*]; ANDRADE, A.R.[1]; PAULA, C.A.[1]; FERREIRA, A.P.[1,2]; COSTA, V.E.[3] & COSTA, T.M.[1]

[1] Universidade Estadual Paulista (UNESP), Campus do Litoral Paulista. Laboratório de Ecologia e Comportamento Animal (LABECOM), Brazil; [2] Universidade Estadual de Campinas (UNICAMP), Instituto de Biologia. Laboratório de Interações em Comunidades Marinhas (LICOMAR), Brazil; [3] Universidade Estadual Paulista (UNESP), Campus de Botucatu. Centro de Isótopos Estáveis, Brazil.

* Corresponding author: gbomachado@gmail.com

Biodiversity plays a key role on the functioning of terrestrial and aquatic ecosystems. Investigating functional diversity, the variability among species in traits influencing one or more ecosystem processes, is an important step to understand the impacts of biodiversity on ecosystem functioning. Herein, we investigated the functional diversity of crustacean mesograzers associated with the marine macroalgae *Dichotomaria marginata*, *Sargassum filipendula* and *Padina gymnospora* on a subtropical rocky shore. The following traits were evaluated for each mesograzer species: host use pattern in the field during summer, feeding preference, feeding rate, stable isotope signatures, tube-building behavior and body mass. Six mesograzers species were studied: the amphipods *Cymadusa filosa* Savigny, 1816, *Sunamphitoe pelagica* (Milne Edwards, 1830), *Ampithoe marcuzzi* Ruffo, 1954 and *Hyale niger* (Haswell, 1879), the isopod *Paracerceis sculpta* (Holmes, 1904) and the decapod *Hippolyte obliquimanus* Dana, 1852. Most mesograzers primarily used the brown seaweeds *Sargassum* and/or *Padina* as hosts and food. The red seaweed *Dichotomaria* was used as host and food mainly by *A. marcuzzi*. The amphipods *C. filosa*, *H. niger* and *S. pelagica* showed similar carbon and nitrogen stable isotopes ratios, while *A. marcuzzi* and *H. obliquimanus* presented unique signatures. The amphipods *C. filosa*, *S. pelagica* and *A. marcuzzi* built tubes on their hosts, while *H. niger*, *P. sculpta* and *H. obliquimanus* did not present such behavior. *Cymadusa filosa* and *A. marcuzzi* had the highest body mass, while *H. niger* and *S. pelagica* had the smallest one. This mesograzer assemblage is composed of species that differ from each other in traits that are important for their interaction with macroalgal hosts. Such trait diversity may facilitate the coexistence of these mesograzers, as well as strengthen their top-down control on primary producers.

Keywords: biodiversity, herbivory, macroalgae.

Financial support: FAPESP.

Area: Ecology & Biodiversity

TAXONOMIC TRAINING ELUCIDATES PANAMANIAN AMPHIPOD DIVERSITY

WHITE, K.N.*, SIR, S.J. & DURHAM, E.L.

Georgia College & State University, Department of Biological and Environmental Sciences, U.S.A.

* Corresponding author: kristine.white@gcsu.edu

Amphipod crustaceans inhabit virtually all aquatic and some terrestrial habitats, comprising approximately 10,000 described species. Amphipods are an important food source in marine environments and can be useful environmental indicators. Changes in species composition over time can indicate environmental degradation or the presence of invasive species at an early stage, when mitigation is still an option. However, the small size (2–15 mm) of amphipods makes them difficult to identify, hindering their use as environmental indicators and highlighting the importance of taxonomic training. The Smithsonian Tropical Research Institute in Bocas del Toro, Panama has a substantial marine biodiversity database, yet, amphipods are understudied in this area. A National Science Foundation (NSF) funded project has allowed the training of two students in amphipod taxonomy using two amphipod collections (2005 and 2021) from Bocas del Toro. The results include the collection, imaging, and identification of over 80 amphipod species. Continued work will produce identification tools for both experts and non-experts, allowing the application of amphipods as environmental indicators in this area.

Keywords: Amphipoda, biodiversity, environmental indicator, Panama, taxonomic training.

Financial support: National Science Foundation Grant: Collaborative Research: ARTS: Understanding Tropical Invertebrate Diversity Through Integrative Revisionary Systematics and Training (1856421).

Area: Taxonomy & Phylogeny

Ucides cordatus (LINNAEUS, 1763) (BRACHYURA, OCYPODIDAE): CYTOTOXICITY, GENOTOXICITY, AND THE IMPACTS ON THIS MANGROVE SENTINEL SPECIES AFTER AN ENVIRONMENTAL DISASTER IN CUBATÃO-SP/BRAZIL

SOUZA, F.V.B.[1,2,*]; DUARTE, L.F.A.[3]; BOOS, H.[4] & PINHEIRO, M.A.A.[1,2]

[1] Programa de Pós-graduação em Biodiversidade de Ambientes Costeiros (UNESP IB/CLP). [2] Universidade Estadual Paulista (UNESP), Instituto de Biociências, *Campus* do Litoral Paulista, Brazil. [3] Universidade Federal de São Paulo (UNIFESP), Centro de Ciências Biológicas e da Saúde, Brazil. [4] Centro Nacional de Pesquisa e Conservação da Biodiversidade Marinha do Sudeste e Sul (ICMBio/CEPSUL), Brazil.

* Corresponding author: vargas.barbi@unesp.br

Mangroves are noteworthy for their diversity and ecosystem services. The 'uçá'-crab (*Ucides cordatus*), with its socioeconomic importance in the South Atlantic, is endemic to this ecosystem and acts as an indicator of its environmental quality and state of conservation. In 2015, a major environmental catastrophe that occurred at the *Ultracargo* - *Aratu* S/A Terminal (Cubatão-SP, Brazil) caused a seven-day fire that resulted in the release of numerous chemical pollutants, including those used to contain the fire. These contaminants were dispersed throughout the inner region of the Santos-São Vicente Estuarine System, requiring, therefore, an assessment of the quality of its mangroves in the post-disaster period. Biological indicators were used for the species (density, structure, and cytogenotoxicity), both pre- (2013) and post-disaster (2016). The mean size of animals in the post-disaster period (54.9±16.3 mm CW) was smaller than in the pre-disaster period (60.5±14.4 mm CW) (KW=7.42, p=0.0065). Cytotoxicity (NRRT) increased by 22.2% post-disaster (26.3 ± 8.3 min) when compared to the pre-disaster period (33.8 ± 8.4 min) (KW= 6.96, p=0.008). However, genotoxicity did not differ significantly between the two periods (3 to 9 micronucleated cells/1,000; KW=2.86, p=0.41). PCA based on the previously cited variables explained 87.7% of the variance (p<0.01) and indicated that the post-disaster group was more heterogeneous, reinforcing the environmental damages that occurred. The minor changes recorded for the biological indicators in the post-disaster period may be due to the higher resilience and biological flexibility of this species to environmental stress promoted by xenobiotics compared to other resident and more sensitive species (*e.g.*, bivalves). Monitoring is recommended in order to assess the magnitude of the chronic environmental impacts of the accident, thus guiding environmental agencies in mitigating damage and quantifying possible future impacts.

Keywords: biomarkers, crab, environmental disaster, estuary, mangrove crab.

Financial support: FAPESP/FGB ('Uçá' Project # 2014/50438-5), CNPq (PQ # 305957/2019-8).

Area: Physiology & Toxicology

INTENSE WALKING EVENTS (IWEs) OF *Ucides cordatus* (Linnaeus, 1763) (BRACHYURA, OCYPODIDAE) IN THE MARINE ENVIRONMENTAL PROTECTED AREA OF THE CENTRAL COAST OF SÃO PAULO STATE, BRAZIL

SOUZA, F.V.B.[1,*]; MOSNA, E.E.D.[1]; BOOS, H.[3]; LANZA, M.C.T.[4] & PINHEIRO, M.A.A.[1,2]

[1] Universidade Estadual Paulista (UNESP), Instituto de Biociências, Campus do Litoral Paulista, São Vicente, Brazil; [2] PPG – EcoEvoBio (IB / UNESP Rio Claro); [3] ICMBio/CEPSUL, Itajaí, Brazil; [4] Fundação Florestal/SIMA, São Paulo, Brazil.

* Corresponding author: vargas.barbi@unesp.br

Ucides cordatus is a macrocrustacean with wide distribution in Brazilian mangroves. Its reproductive period (Dec-May) presents associations with rising temperatures, photoperiod, and rainfall, which occur during the highest flood tides (full and new moons). In this period, specimens show greater activity outside their burrows (walking behavior) due to the mating season, sometimes with expressive crab migration towards the sea (IWE, intense walking event), when a considerable density is recorded on some beaches. This study aimed to record the occurrence of IWEs on beaches within the scope of the Marine Environmental Protection Area of the Litoral Centro in the State of São Paulo (APA-MLC), Brazil, evaluating the months, sites, and moon phases involved. Concerns raised by the local community and tourists regarding the IWEs led us to evaluate these migrations in function of some possible causes: 1) environment and crab contamination by metals, assessed by atomic absorption spectrophotometry; 2) crab genetic damage, through the micronucleus test (MN‰); and 3) expressive reductions in pluviosity/salinity in the estuarine system. During ten years (2013-2022), the APA-MLC management team recorded, through photographic and audiovisual records, seven IWEs on two beaches in its coverage area (Guaratuba: 62.5%; Itaguaré: 37.5%) from December to February: Jan (57.1%) > Feb (28.6%) > Dec (14.3%). The Itaguaré and Guaratuba beaches receive the waters from the Itaguaré River estuary, where the biotic and abiotic samples were collected. The IWEs on these beaches occurred lasting 3-13 days (7.7±4.0 days) after the highest flood tides, promoted by previous new moons (85.7%) or full moons (14.3%). In 2018, the IWE registered in Itaguaré was not associated with contamination by metals (< CONAMA reference values), a fact confirmed by reduced *U. cordatus* genetic damage (<4 MN‰) and normal pluviosity regimen/water salinity. The reproduction of *U. cordatus* is affected by abiotic factors, among which are the synchrony of geophysical cycles (alignment of the Moon, Sun, and Earth), affecting the amplitude of the tides and the intensity of the walking behavior. Therefore, the occurrence of these behavioral events at only two sites of the APA-MLC was confirmed as a natural phenomenon and not induced by anthropic causes, requiring a further evaluation concerning the topography or morphodynamics of these estuarine systems.

Keywords: behavior, lunar cycle, migration, reproduction.

Financial support: CNPq (PQ # 305957/2019-8).

Area: Reproduction & Development

RELATIVE GROWTH AND MORPHOLOGICAL SEXUAL MATURITY OF *Hepatus pudibundus* (HERBST, 1785) (DECAPODA, AETHRIDAE) IN SÃO PAULO, BRASIL

JACONIS, M.S.*; GOIS, G.V.M.R.; NOGUEIRA, C.S.; PERROCA, J.F. & COSTA, R.C.

Laboratory of Biology of Marine and Freshwater Shrimp (LABCAM), Biological Sciences Department, Faculty of Sciences, São Paulo State University, Bauru, São Paulo, Brazil.

* Corresponding author: mi.jaconis@gmail.com

Shrimp fishing bycatch includes the box crab, *Hepatus pudibundus*. Despite the fact that it has no commercial value, it is one of the most commonly collected decapods and may be harmed as a result of this activity. In this way, studies into relative growth and sexual maturity can aid in the understanding of the life cycle of species affected by fisheries. Thus, we investigated the relative growth of several body components as well as the morphological sexual maturity (MSM) of *H. pudibundus* in Ubatuba Bay. Sampling occurred monthly from July to December 2021, using a shrimp fishing boat equipped with a double-rig in four transects of different depths. Individuals were sex identified and measured in the laboratory. Five structures were measured for morphometric analysis and MSM estimation: carapace width (CW), cheliped propodus length (PL), cheliped propodus height (PH), abdomen width (AW) and first pleopod length of males (FPL). In total, 354 individuals were analyzed, 199 females and 155 males. There was no difference in size between the sexes, with females having a mean CW of 42.4 ± 8.96 mm and males having a mean CW of 44.2 ± 11.07 mm (Mann–Whitney U = 13.658, p = 0.1). Females and males, respectively, reached morphological sexual maturity at 41.87- and 44.71-mm CW (L50). The relation CW vs. AW in juvenile and adult females, as well as CW vs. FPL in juvenile and adult males, showed a positive allometric development. The positive allometric pattern in the CW vs. AW in females characterizes an adaptation of the abdomen for incubation and protection of eggs. In the case of males, juveniles showed a higher allometric constant than adults, which suggests an investment in the development of secondary sexual characters to reach maturity. The current study provides information on the pattern of development, as well as an estimate of the size at which *H. pudibundus* reaches MSM. This data can be utilized to create future conservation plans for this species.

Keywords: allometry, Brachyura, reproduction.

Financial support: FAPESP # 2019/01305-8; Thematic Biota # 2018/13685-5; CNPq PQ # 305919/2014-8.

Area: Reproduction & Development

ECOLOGICAL DATA OF *Xiphopenaeus dincao* CARVALHO-BATISTA, TEROSSI, ZARA, MANTELATTO, COSTA, 2020 (DECAPODA, PENAEIDAE), SÃO PAULO, BRAZIL

JACONIS, M.S.[1,*]; CARVALHO-BATISTA, A.[2]; PERROCA, J.F.[1] & COSTA, R.C.[1]

[1] Laboratory of Biology of Marine and Freshwater Shrimp (LABCAM), Biological Sciences Department, Faculty of Sciences, São Paulo State University, Bauru, São Paulo, Brazil; [2] Institute of Health Sciences, University Paulista. Bauru, São Paulo, Brazil.

* Corresponding author: mi.jaconis@gmail.com

For a long time in Brazil, it was thought that there was only one species of the heavily fished seabob shrimp, *Xiphopenaeus kroyeri*. Recently, two new species were described for the genus: *X. dincao* and *X. baueri*, the first of which was discovered in Ubatuba, SP. Studies on the bioecology of *X. dincao* are necessary once the effects of fishing activity on this population are still unknown. Thus, we investigated the abundance and distribution of *X. dincao* in Ubatuba Bay. Sampling occurred monthly from July 2021 to February 2022, using a shrimp fishing boat equipped with a double-rig net in four transects: 15 m (T1), 10.4 m (T2), 3 m (T3), and 9.2 m (T4). In each transect, abiotic factors (temperature and salinity) were also sampled. The specimens were identified, classified according to sex, weighed, and measured (CL). To identify *X. dincao*, it is necessary to observe the secondary sexual characters (petasma and telic), which complete their development when the individuals reach sexual maturity. As a consequence, only adults were analyzed. In total, 231 individuals of *X. dincao* were identified. The highest abundance was found in T3 (N = 195). Among all the transects sampled, the abundance observed in T3 differed significantly from T1 (N = 4) and T4 (N = 7) (ANOVA, $p < 0.0122$). *X. dincao* abundance was positively correlated with temperature (Lag 0, Times Series, $p < 0.05$). Individuals varied in size from 10.0 to 28.5 mm (CL). The sex ratio leaned toward males (2.2:0.44) in the size classes 14.0–15.99, 16.0–16.99, and 18.0–18.99 mm and for females (0.04:22) in the size classes 22.0–22.99, and 24.0–24.99 mm (CL) (Binomial test, $p < 0.05$). The predominance of *X. dincao* in T3 suggests the species' preference for depths less than 5 meters, which present higher temperatures and where trawling is prohibited. The results on the ecological aspects of *X. dincao* may contribute to the protection of fish stocks.

Keywords: Atlantic, ecological aspects, fishing.

Financial support: FAPESP # 2019/01305-8, Thematic Biota # 2018/13685-5; CNPq PQ # 305919/2014-8.

Area: Aquaculture & Fisheries

SPIDER CRABS (MAJOIDEA) ASSOCIATED WITH THE INVASIVE SUN CORAL (*Tubastraea* spp.)

SILVA, A.R.[1,*] & TAVARES, M.

Museu de Zoologia da Universidade de São Paulo.

* Corresponding author: alers.dino@gmail.com

Two species of the invasive Indo-West Pacific sun coral *Tubastraea* have been reported from Brazil since the late 1980s, accidentally introduced by oil platforms: *T. coccinea* and *T. tagusensis*, known from Ceará (~2º30" S) to Santa Catarina (~26º93" S). These invasive species are capable of altering local communities by excluding local species and then acting as filter to its associated fauna. *Tubastraea* spp. can also act as bioengineers by providing new microhabitats and niche for other species. The present study aimed at evaluating the taxonomic composition of the spider crab fauna (Majoidea) associated with both species of *Tubastraea*. Sixty concrete blocks with living corals and dead corals were left for a year in the sublittoral of Ilha dos Macacos (Baía da Ilha Grande, Rio de Janeiro) on rocky substrates in depths ranging from 1.5m to 5m. Afterwards, the blocks were removed and the associated fauna were identified. Six species of Majoidea were recorded associating with the sun coral, being *Mithraculus forceps* and *Omalacantha bicornuta* the most abundant species both in living and dead corals. *Mithraculus forceps* is common and abundant in sublittoral regions in Brazil, however, most of the specimens observed associating with *Tubastraea* spp. (both large and small colonies) were small, thus suggesting that the sun coral may be a nursery ground for this species. Because there was no difference in taxonomic composition and abundance, it is unclear whether or not the sun coral acts a filter.

Keywords: bioengineer, biological invasion, filter, nursery.

Financial support: Pró-Reitoria de Pesquisa – PRP USP.

Area: Ecology & Biodiversity

REPRODUCTIVE ASPECTS OF *Persephona punctata* LINNAEUS, 1758 (BRACHYURA, LEUCOSIIDAE)

GOIS G.V.M.R.*; PERROCA J.F. & COSTA R.C.

Laboratory of Biology of Marine and Freshwater Shrimp (LABCAM), Biological Sciences Department, Faculty of Sciences, São Paulo State University, Bauru, São Paulo, Brazil.

* Corresponding author: gabriel.gois@unesp.br

The crab *Persephona punctata* is captured as bycatch in shrimp trawl fisheries and suffers the same impacts as economically valuable species. To better understand this species' life cycle, fecundity (F), egg volume (EV), and reproductive investment (RI) were investigated. From June to December 2021, ovigerous females (OF) were collected in Ubatuba Bay, SP, Brazil, with the aid of a shrimp fishing boat. In the laboratory, the carapace width (CW), EV, and number of eggs were measured and classified into three developmental stages: initial (IN), intermediate (IT), and final (FI). The variation of F was evaluated using GAM, with negative binomial distribution, link function identity, and an ARMA correlation structure containing the response variable F and explanatory variables CW, EV, and stage of development. 35 OF were obtained, with 24 bearing eggs on stage IN, 8 on stage IT, and 3 on stage FI. In the IN stage, the CW of OF ranged from 25.4 to 35.32 mm, the mean F was 9,750 ± 5,237, and the mean RI was 3,733 ± 1,601. For IT stage OF, the CW ranged from 30.62 to 34.11 mm, the mean F from 6,736 to 3,272, and the mean EV from 0.0222 ± 0.0057. The CW of the OF in the FI stage ranged from 30.21 to 31.72 mm, with a mean F of 5,283 ± 1,183 and an EV of 0.0153 ± 0.0027. The F and CW were found to be positively correlated. With the increase in female size, there was an increase in the F, providing a larger physical space for incubation. When the F was compared to the egg development stage, it was discovered that the number of eggs decreased between the IN and FI stages. The results presented herein provide information about aspects of *P. punctata's* reproductive biology, as well as subsidies for estimating the reproductive potential of this species in the Ubatuba region.

Keywords: fecundity, investment, reproduction.

Financial support: FAPESP # 2019/01308-5, Thematic Biota # 2018/13685-5, CAPES # 88887.604989/2021-00 and CNPq PQ # 305919/2014-8.

Area: Reproduction & Development

PREVALENCE OF THE PARASITE *Aporobopyrus* sp. (ISOPODA: BOPYRIDAE) ON A PORCELLANID CRAB HOST IN TWO LOCATIONS IN THE SOUTH OF BRAZIL

HORCH, A.P.* & TEROSSI, M.

Universidade Federal do Rio Grande do Sul, Laboratório de Carcinologia, Brazil.

* Corresponding author: amandahorch@gmail.com

The Bopyridae family contains around 605 described species, most of them are ectoparasites which can be found attached to the branchial chamber or the pleon of their definitive decapod hosts. The presence of bopyrid parasites on these hosts can cause many negative effects, such as parasitic castration, feminization of males and branchial damage. The host crabs, *Pachycheles laevidactylus*, were collected seasonally during one year (November 2018 to August 2019) from sandbanks of the polychaete *Phragmatopoma caudata* in two locations in southern Brazil, Torres and Tramandaí. Individuals were sexed, counted, measured and searched for parasites. The bopyrids were identified as a new species of the genus *Aporobopyrus*. Of the 943 hosts collected in Torres, 25 were parasitized by Bopyridae and 10 had empty carapace swellings. In Tramandaí, 27 of 591 crabs were parasitized, while 10 had empty carapace swellings. In both locations the majority of the crabs with empty carapace swellings were collected in summer. All parasitized individuals had only one branchial chamber occupied at a time, with a preference for the right side seen only in Torres. Carapace width of parasitized hosts ranged between 2.70–11.86 mm. The overall bopyrid prevalence was higher in Tramandaí (4.6%) than in Torres (2.7%). When compared to a similar species, *Aporobopyrus curtatus* parasitizing *Petrolisthes armatus*, the prevalence in *Aporobopyrus* sp. is both similar to one location (3.1%) but lower than in another (9.5%). Seasonally, the highest prevalence was in winter in Torres (5.8%) and summer in Tramandaí (5.7%), and the lowest prevalence was in spring (0.8%, Torres; 1.2%, Tramandaí). There was no difference in prevalence in relation to the sex of the host in either location, however, ovigerous females were significantly more parasitized than non-ovigerous females exclusively in Torres. A total of 13 parasitized ovigerous females were collected in Torres and 6 in Tramandaí, indicating that this bopyrid species does not cause castration on *P. laevidactylus* in these locations. This contrasts with the two studies regarding *Aporobopyrus curtatus*, where no parasitized ovigerous females of *Petrolisthes armatus* were found.

Keywords: Anomura, Atlantic Ocean, castration, parasitism, Pseudioninae.

Financial support: CNPq and CAPES.

Area: Ecology & Biodiversity

POPULATION BIOLOGY OF THE PORCELLANID CRAB *Pachycheles laevidactylus* ORTMANN, 1892 (ANOMURA: PORCELLANIDAE) IN SOUTHERN BRAZIL

HORCH, A.P.* & TEROSSI, M.

[1] Universidade Federal do Rio Grande do Sul, Laboratório de Carcinologia, Brazil.

* Corresponding author: amandahorch@gmail.com

Pachycheles laevidactylus is a porcellanid crab found in the intertidal zone of the south-western Atlantic coast. The species lives under rocks, in mussel beds, among seaweed or associated with other invertebrates, such as species of Bryozoa or Annelida. It is the most frequent decapod in the polychaete sandbanks in the south of Brazil, nevertheless no populational data is available for this species in the area. In this study, we analyzed the population structure, sex ratio, size at sexual maturity (functional and morphological), reproductive period and relative growth of *P. laevidactylus* from two locations in southern Brazil. During one year the crabs were collected once per season, sexed, measured and counted. In total, 943 crabs were collected in Torres and 591 in Tramandaí. The sex ratio was 1:1 in both locations overall and seasonally. Ovigerous females were present in all seasons in Torres and Tramandaí, with a higher frequency in the coldest seasons. Megalopae were found only in spring. *Pachycheles laevidactylus* females reached the morphological sexual maturity at a larger size than the size at functional sexual maturity (smallest ovigerous female). Considering the previous studies conducted with this species and the present data, females start reproducing at smaller sizes at locations closer to the edges of its distribution (northern Brazil and northern Argentina) and larger sizes towards the center areas (southern Brazil). Some differences in relative growth were found between males and females, as well as between adults and juveniles within each sex. Cheliped size was not different between sexes, but females were both larger and had larger pleons than males, a difference that is probably related to reproduction. This study analyzed many populational aspects of *P. laevidactylus* from southern Brazil for the first time, and is the first one overall to do so in all seasons. Further studies on the population dynamics of this species are needed to better understand how its biological aspects vary along its wide distribution, and this is especially necessary in the tropical zone (northern Brazil) where the knowledge of *P. laevidactylus* is the scarcest.

Keywords: Atlantic, relative growth, reproductive period, sex ratio, sexual maturity.

Financial support: CNPq and CAPES.

Area: Ecology & Biodiversity

CRUSTACEANS ON THE MOVE: BIOFOULING COMMUNITIES ON TSUNAMI DETECTION BUOYS

PEART, R.*

National Institute of Water and Atmospheric Research, Wellington, New Zealand.

* Corresponding author: rachael.peart@niwa.co.nz

The DART buoy network around the Pacific Rim provides a high-speed early warning of tsunami activity in our region, triggering alert systems for vulnerable coastal communities. This network also has the potential to measure and detect changes in the complex pelagic biota of the Pacific Ocean and how they may influence the marine biota landscape of Aotearoa, New Zealand. To date, NIWA has assembled and deployed 12 purpose-built tsunami detection buoys in the waters off New Zealand and north into the Pacific. As with most solid structures in the aquatic environment, these buoys attract a large biofouling community. The placement of the buoys in NZ's EEZ is a special opportunity to examine the composition and presence of an unknown marine biota (pelagic) and the influences to NZ's marine biota. Previous studies in other parts of the world documenting artificial ecosystems shows this community is often comprised of 'new to science' fauna, nursery fauna (vertebrates and invertebrates), naturally pelagic fauna, and may have a large component of adventive/invasive fauna Despite this research there are no records of this being done on the Tsunami detection buoys around the Pacific Rim. The first servicing of the NZ maintained buoys was carried out in December 2021. This was essential as a pilot study for the project. This collection showed the three buoys serviced and scraped clean had significantly different invertebrate biofouling communities but were all considerably dominated by crustacea. There are considerable gaps in our knowledge of what species occur in NZ's EEZ and how they influence our inshore biota and fisheries. As climatic and environmental conditions change due to anthropogenic influences, species ranges will change. Having such a detailed latitudinal time series, this project will be able to observe and document this change. Additionally, this project provides strong connections to NZ's biosecurity landscape. It is vital to understand the pathways of adventive organisms and other vectors which may contribute to the translocation of non-indigenous organisms, such as rafting, not just hull and ballast-water. The location of these DART buoys provides spatial and temporal information as 'floating reefs' in the deep oceanic water as refuges for some non-indigenous organisms to New Zealand.

Keywords: biodiversity, biofouling, crustaceans, Pacific Ocean.

Financial support: New Zealand Ministry of Business, Innovation and Employment.

Area: Ecology & Biodiversity

THE HITCHHIKER'S GUIDE TO TERRESTRIALITY: UNEARTHING THE GENOMIC BASIS OF TERRESTRIAL ADAPTATIONS IN DECAPOD CRABS (BRACHYURA: GECARCINIDAE)

WATSON-ZINK, V.M.[1,2,*]; GROSBERG, R.K.[1]; LAI, J.C.Y.[3] & BAY, R.A.[1]

[1] University of California, Davis, Department of Evolution and Ecology, United States; [2] Stanford University, Department of Biology, United States; [3] National University of Singapore, Department of Biological Sciences, Republic of Singapore.

* Corresponding author: vmmorgan@ucdavis.edu

Much of Earth's biodiversity currently exists on land and in the air, but all life began in the oceans. Nevertheless, sea-to-land transitions are rare and physiologically challenging; few marine groups have successfully invaded land and diversified there. Decapod crabs are a notable exception; at least 11 families have colonized terrestrial environments. Furthermore, these lineages occupy different transitional stages: some lineages live intertidally and spend short periods of time above water, while others live up to several kilometers inland and only seasonally return to the ocean to hatch eggs that then undergo normal planktonic development. No matter where they exist on this spectrum of terrestriality, they all have successfully overcome significant osmotic challenges and evolved solutions to address the vast physical differences between seawater and air. The evolutionary pathways to overcoming these obstacles are largely unexplored, and little is known about the genomic basis of these impressive phenotypic and behavioral changes. We sought to characterize the genomic changes associated with the transition from marine to terrestrial habitats in gecarcinid crabs that exhibit varying grades of terrestrial adaptation. Are certain genes repeatedly associated with more terrestrial lifestyles, and if so, what are their evolutionary histories? Are they pre-existing genes that have been co-opted to play novel roles in terrestrial habitats? To address these questions, we measured tissue-specific differential gene expression in two congeneric land crab sister species displaying different terrestrial grades, *Tuerkayana celeste* (Grade III), and *T. magna* (Grade IV), and a highly-terrestrial confamilial species, *Gecarcoidea natalis* (Grade V) after placing the crabs into increasingly severe desiccation conditions. We found that while most of the differentially expressed genes were more likely to be conserved across all three species, genes from families expanded in one or more lineage or genes not shared across species also appear to play a critical role in how land crabs from different terrestrial grades adapt to the unique selective challenges that accompany a terrestrial life.

Keywords: land crabs, transcriptomics, terrestrial adaptation

Financial support: U.S. NSF GRFP, U.S. NSF EAPSI, NUS, SSE, UC DAVIS CPB, SIGMA XI.

Area: Genetics & Conservation

ACCUMULATION OF TRANSPOSABLE ELEMENTS IN EUSOCIAL SHRIMPS

CHAK, T.C.S.*

State University of New York at Old Westbury.

*Corresponding author: solomonchak@gmail.com

Eusociality, often considered the pinnacle of animal social evolution, has convergently arisen at least 17 times in arthropods. Although a great deal of research has explored the genomic underpinning of eusociality, whether and how sociality may also affect genome evolution remains unknown. Focusing on *Synalpheus* snapping shrimps that exhibit multiple, independent origins of eusociality, we showed that eusocial species have higher genome sizes that is caused by an accumulation of transposable elements. We hypothesized that the intense reproductive skew in eusocial colonies may reduce the effective population sizes of eusocial species, leading to less effective purifying selection and the accumulation of transposable elements. This hypothesis is supported by comparative analyses based on field data, demographic inference, and mitochondrial genomes. Our results demonstrate a potential mechanism on how social organization can affect genome evolution.

Keywords: demographic inference, ddRAD, genome size, Synalpheus, transposable element.

Financial support: Life Sciences Research Foundation.

Area: Genetics & Conservation

THE AMBIT OF PLANKTONIC COPEPODS

STRICKLER, J.R.*

University of Wisconsin-Milwaukee (UWM), Biological Sciences.

* Corresponding author: jrs@uwm.edu

Being 3 mm big and living in the water column of an ocean is a peculiar way of life--strange for us because the forces governing the lives of these animals are different in strength to what we experience. Gravity, for one, is minute because it is counterbalanced by buoyancy. Friction, on the other hand, is larger relative to the size of the animal because of the increased importance of viscosity. Additionally, there are no landmarks, no solid items to hold on to, and food, prey and mates are distributed in the three-dimensional space. The question is whether planktonic copepods have established an individual ambit for themselves, a sphere of influence around themselves to minimize the randomness of their larger environment. Observations and experimentations at the temporal and spatial scales of the animals revealed an astonishing structuring of the far-field and near-field water volume they live in. Laminar flows allow early perception of food items in the feeding current. Sensory structures detect vorticity and strain from approaching bodies. Additionally, chemical sensing enhances the range and precision of perception. These studies on planktonic animals, done by many researchers in the past 200 years, give us a picture of what parasitic copepods might use to find their hosts, and of what many crustaceans experience during their early life history.

Keywords: copepods, feeding currents, low Reynolds Number Flow, mating, zooplankton.

Area: Ecology & Biodiversity

USING FUNCTIONAL MORPHOLOGY TO UNDERSTAND CRAYFISH BEHAVIOR AND EVOLUTION

GRAHAM, Z.A.[1,2,*] & LOUGHMAN, Z.J.[1]

[1] West Liberty University (WLU), Department of Organismal Biology, Ecology, and Zoo Science, USA;
[2] Arizona State University (ASU), School of Life Sciences, USA.

* Corresponding author: zackary.graham@westliberty.edu

Crayfishes are an ecologically and behaviorally diverse taxa, with over 700 species inhabiting a variety of freshwater ecosystems. Despite this diversity, we have a poor understanding of how and why crayfishes have diversified. Here, I present research from three separate investigations, where I used traditional methods within the field of functional morphology to document the unique behaviors and evolutionary strategies of two unique crayfishes, *Cambarus chasmodactylus* and *Cambarus friaufi*. *Cambarus chasmodactylus* is a large stream-dwelling species with an exaggerated claw gape that had a previously unknown function. By experimentally manipulating the claw gape in *C. chasmodactylus*, I demonstrate that this unusual morphology is an adaptation to movement within the fast-flowing stream they inhabit. Furthermore, I demonstrate how this morphology has altered this species fighting style in male-male contests. By contrast, *Cambarus friaufi* is a small, compact species which inhabits the hyporheic zones in streams. By evaluating the digging performance of *C. friaufi* within three separate substrates, I demonstrated the how this species is morphologically and ecologically adapted to live within an environment that is uninhabited by other crayfishes. Overall, this work demonstrates the utility of integrative studies within crustacean biology.

Keywords: behavioral ecology, crayfish, sexual selection.

Area: Ecology & Biodiversity

BIOLOGY ASPECTS OF *Clibanarius antillensis* STIMPSON, 1859: POPULATION STRUCTURE AND SHELL OCCUPATION

SANTOS, R.A.P.[1,*]; DA SILVA, A.R.[2] & GREGATI, R.A.[3]

[1] Universidade Estadual Paulista (UNESP), Campus de Botucatu, Laboratório de Biologia de Invertebrados Aquáticos (LABIAQUA), Brazil; [2] Museu de Zoologia da Universidade de São Paulo (MZUSP), Brazil; [3] Universidade Estadual do Centro-Oeste (UNICENTRO), Laboratório de Biologia Aquática, Brazil.

* Corresponding author: rap.santos@unesp.br

Hermit crabs have soft pleon and therefore, need to use empty gastropod shells as protection. Because these resources are scarce in the environment, and considering the animals' need to grow, breed, and protect itself, shell choices are not random, but aimed at characteristics that can improve activity, movement, and protection. To live in intertidal and sublittoral zones, regions subjected to daily variations in temperature and wave forces, besides being home to a lot of predators, sometimes these animals must consider some aspects about the quality of the shells available, such as: past experiences they had with other shells, architecture in terms of spires, weight, condition, strength, and size. *Clibanarius antillensis*, broadly studied in Brazil's southeast, is a species of hermit crab widely sold as an "aquarium cleaner", along with several others, so this study aimed at describing its population in the south of Brazil and assessing its occupation of shells on the environment. The animals were sampled from Lagoinha beach, in the state of Santa Catarina, through free diving. Six hundred and thirteen specimens were frozen and conserved for the study of their populational structure, being: 343 males, 35 females, 190 ovigerous females and 45 intersex. Sex ratio was skewed for males (1.52:1), and ovigerous females were present during the whole year, but with a spring peak. Males were the most abundant demographic group, being predominant in all size-classes analyzed, but one. The hermit crabs occupied 14 different types of gastropod shells, but mainly two of them: 63.13% of the animals were found occupying *Cerithium atratum* shells, while 24.8% were found in *Agathistoma viridulum* shells, both commonly used by the species, and usually abundant; ovigerous females only used *C. atratum*. These results are important for decision making in terms of the exploitation of hermit crabs for the aquarium trade, for these animals are widely sold as "aquarium cleaners".

Keywords: hermit crabs, circadian rhythm, shell choices, population structure.

Financial support: PRP – USP and CAPES.

Area: Ecology & Biodiversity

MORPHOLOGY OF THE GASTRIC MILL IN NEOTROPICAL CRAYFISH: A COMPARATIVE ANALYSIS

CASSEL, V.[1]; ARAUJO, P.B.[1]; LOUREIRO, T.G.[2]; KAWAI, T.K.[3] & RIBEIRO, F.B.[1,4,*]

[1] Universidade Federal do Rio Grande do Sul (UFRGS), Laboratório de Carcinologia, Brazil;
[2] Centre for Sustainable Oceans, Cape Peninsula University of Technology, South Africa;
[3] Hokkaido Research Organization, Japan; [4] Universidade do Estado do Mato Grosso (UNEMAT), Brazil.

* Corresponding author: fbribeiro.bio@gmail.com

The stomach of decapod crustaceans has two regions: the cardiac and the pyloric chambers. The cardiac chamber contains the gastric mill, which breaks and grinds food particles. Freshwater crayfish occupy a wide variety of habitats, acting mainly as omnivores. The genus *Parastacus*, endemic to South America, encompasses 15 species that can demonstrate burrowing behavior at different levels, possibly related to the availability of food. This study aims to describe and analyze the morphology of the gastric mill of *Parastacus* species with different burrowing habits: *Parastacus brasiliensis, P. buckupi, P. caeruleodactylus, P. defossus, P. fluviatilis, P. laevigatus, P. nicoleti, P. pilicarpus, P. pilimanus, P. promatensis, P. pugnax, P. saffordi, P. tuerkayi and P. varicosus*. Specimens from the crustacean collection of the Zoology Department of the Federal University of Rio Grande do Sul were analyzed. Two to five individuals of each species were selected, had the carapace length (CC) measured and were dissected to remove the stomach. The teeth of the gastric mill were illustrated and measured with the aid of a stereomicroscope coupled with a camera lucida. The measurements were obtained for the median tooth (MT) and the median plate (PM) of the mesocardiac ossicle (OM) and the lateral teeth (LT) of the zygocardiac ossicle (ZO). Data were checked for homogenization and compared among species using ANCOVA and CC as covariate to control the difference related to the size of the specimens. With the illustrations it was possible to observe differences in these structures, such as the number, shape, and level of calcification. These differences are probably associated with the species' diet and habitat. As in other studies, more acute teeth have been associated with high burrowing potential and high intake of plant material, possibly available in the burrows. The size of the lateral cusp is associated with the ingestion of animal matter, such small invertebrates, and is presumed to occur in riverside species, whose burrowing habit is incipient.

Keywords: cardiac stomach, diet, foregut, functional morphology.

Financial support: CNPq and CAPES.

Area: Ecology & Biodiversity

MYSTERIES OF THE UNDERGROUND: DESCRIPTION OF TWO FRESHWATER CRAYFISH NEW SPECIES OF *Parastacus brasiliensis* (VON MARTENS, 1869) SPECIES COMPLEX USING AN INTEGRATIVE TAXONOMY APPROACH

HUBER, A.F.[1,*]; ARAUJO, P.B.[1,2] & RIBEIRO, F.B.[1]

[1] Universidade Federal do Rio Grande do Sul (UFRGS), Laboratório de Carcinologia, Brazil;
[2] Universidade do Estado do Mato Grosso (UNEMAT), Brazil.

* Corresponding author: gutofh@yahoo.com.br

A species complex is characterized when two or more species are classified as a single one because they are morphologically very similar or even indistinguishable. Furthermore, additional information is necessary to identify them, such as genetic data. This is the case of the freshwater crayfish species *Parastacus brasiliensis*, which recent molecular analysis showed that it is composed of *P. brasiliensis sensu stricto* and at least other seven lineages. The study aimed to describe two lineages of the *P. brasiliensis* species complex from the state of Rio Grande do Sul, southern Brazil. We used an integrative taxonomy approach with morphology and the mitochondrial DNA marker 16S rRNA. We also evaluated the conservation status of the new species according to the IUCN Red List Criteria. *Parastacus* sp. nov. 1 was collected in the municipality of Pantano Grande and it differs from all other congeneric species in having an epistome anterolateral section with a large conical projection ending in a big sharp spine on both sides. It also differs from *P. brasiliensis sensu-stricto* in the shape of the rostral surface, sub-orbital angle > 90° and carpal spine present. *Parastacus* sp. nov. 2 was collected in the municipality of São Jerônimo, it differs from all analyzed species for rostral spine absent, epistome anteromedian lobe heptagonal and mandible incisive process with seven teeth. It is also distinguished of *P. brasiliensis sensu stricto* in the sub-orbital angle > 90°, areola narrow and pleon short. Phylogenetic relationships confirmed the distinct position of these new species to the already described species. The extent of occurrence (EOO)/area of occurrence (AOO) of *Parastacus* sp. nov. 1 were estimated at 937 km²/1,87 km², and 2.107 km² / 23,9 km² for *Parastacus* sp. nov. 2. The main threats identified were continued decline in the quality of habitats, resulting from deforestation and forestry areas. However, as we know only one occurrence record for each new species, we suggest that for now both should be categorized as Data Deficient.

Keywords: burrowing crayfish, conservation, cryptic species, taxonomy.

Financial support: CAPES.

Area: Taxonomy & Phylogeny

THE COMPLETE MITOCHONDRIAL GENOME OF THE PINK SHRIMP *Farfantepenaeus duoraum* (BURKENROAD, 1939) (DECAPODA: DENDROBRANCHIATA: PENAEIDAE)

COLLINS, S.B.[1*]; BRACKEN-GRISSOM, H.D.[1] & BAEZA, J.A.[2,3,4]

[1] Department of Biological Sciences, Institute of Environment, Florida International University, Miami, FL 33319, USA; [2] Department of Biological Sciences, Clemson University, Clemson, SC 29634, USA; [3] Smithsonian Marine Station at Fort Pierce, Fort Pierce, Florida 34949, USA; [4] Departamento de Biología Marina, Facultad de Ciencias del Mar, Universidad Católica del Norte, Coquimbo, Chile.

* Corresponding author: scoll064@fiu.edu

For the first time, we report the complete mitochondrial genome of a commercially harvested decapod shrimp, *Farfantepenaeus duorarum* (Burkenroad, 1939). *F. duorarum* inhabits waters ranging from the eastern coast of the United States, throughout the Gulf of Mexico, as far south as Isla Mujeres, Mexico. The mitochondrial genome of *F. duorarum* is 15,971 base pairs in length and is comprised of 13 protein-coding genes (PCGs), 2 ribosomal RNA genes, and 22 transfer RNA genes. An intergenic space located between the rrnS (12S) and trnI (Isoleucine) genes, 982 bp in length, is presumed to be the D-loop. The order of genes in mitochondrial genomes of *F. duorarum* congruent with that reported for congeners. KA/KS ratios were calculated for all PCGs to assess selection pressures within the mitochondrial genome, and result in values < 1, indicating that all genes within the mitochondrial genome are evolving under purifying selection. This work contributes one more mitochondrial genome to the penaeid shrimps, an economically targeted group.

Keywords: mtDNA, next-generation sequencing, penaeid shrimps, protein-coding genes, selective pressure.

Area: Genetics & Conservation

COEXISTENCE IN TWO SYMPATRIC HERMIT CRABS: USING THE SHELL ADEQUACY INDEX AS TOOL FOR ANALISING COMPETITION

SANTOS, R.A.P.[1,*]; DA SILVA, A.R.[2]; RODRIGUES, G.F.B.[1] & GREGATI, R.A.[3]

[1] Universidade Estadual Paulista (UNESP), Campus de Botucatu, Laboratório de Biologia de Invertebrados Aquáticos (LABIAQUA), Brazil; [2] Museu de Zoologia da Universidade de São Paulo (MZUSP), Brazil; [3] Universidade Estadual do Centro-Oeste (UNICENTRO), Laboratório de Biologia Aquática, Brazil.

* Corresponding author: rap.santos@unesp.br

Shells play an important role in the life story of hermit crabs, directly influencing biological characteristics, such as population structure, size, reproduction, mortality, and growth. These animals do not, therefore, select shells randomly, showing preferences toward some features that may indicate a better fitting shell, some of them being the presence/absence of epibionts, internal volume, and weight. One way shell quality can be evaluated is through the Shell Adequacy Index (SAI), which calculates the shell's ideal size/weight for the hermit crab using it, comparing it with the observed size/weight of the one occupied by the animal. The search for a better shell along with species coexisting in the intertidal zones may result in competition, so this study aims to evaluate if two sympatric species of hermit crabs, *Pagurus brevidactylus* and *Pagurus criniticornis*, are competing for the best fitting shells. The specimens were sampled in the state of Santa Catarina, Brazil, wet weighed, and had their shells identified and measured according to their aperture length and width. The SAI was calculated using linear models of the wet weight, shell aperture length and width. *Pagurus brevidactylus* occupied mainly *Cerithium atratum* and *Claremontiella nodulosa* shells, while *P. criniticornis* occupied mainly *C. atratum* shells. Our results showed that the two species are competing for shells, with *P. brevidactylus* occupying the best-fit shells rather than *P. criniticornis*. In this region, shell competition is influencing the coexistence of the two species, with *P. brevidactylus* being the better competitor.

Keywords: competition, hermit crabs, shell adequacy index, Pagurus.

Financial support: PRP – USP, CAPES and FAPESP.

Area: Ecology & Biodiversity

DESCRIPTION OF THE FIRST LARVAL STAGE (ZOEA I) OF THE SHRIMP *Typton distinctus* CHACE, 1972 (CARIDEA: PALAEMONIDAE)

SENE, M.*; SANTOS, R.C.; SANCHES, N.M. & COSTA, R.C.

[1] São Paulo State University (UNESP), Laboratory of Biology and Ecology of Marine and Freshwater Shrimps (LABCAM), Bauru, Brazil.

* Corresponding author: matheus.sene@unesp.br

Typton Costa, 1844, is a genus of marine shrimp with a wide distribution that is known to dwell in symbiotic relationships with other organisms, like sponges and corals, although little is known about the real nature and adaptive value of these associations. Only two species from the genus have information about the larval morphology. The present study aims to describe the first larval stage of the shrimp *Typton distinctus* Chace, 1972, which will be the genus' third larval description. The parental female was sampled at Cais do Porto, Ubatuba, São Paulo, Brazil, and maintained in aquarium until the larvae hatch, with salinity and temperature controlled. After the larvae hatch, they were conserved in a mixture of ethyl alcohol (70%) and glycerin with proportion 1:1 for posterior dissection and illustration. The morphology of *T. distinctus'* initial larval stage was compared to that of its congener, *Typton spongicola* Costa, 1844, in order to identify morphological differences that aid in the diagnosis and separation of *Typton* larvae. The two zoeas shared a few morphological characteristics, most of them present in the caridean shrimps. In this way, *T. distinctus* can be separated from *T. spongicola* by a series of morphological features, present on the rostrum; peduncle and exopod of antenulle; peduncle and exopod of antenna; basal endite and endopod of maxillule; endopod and basal endite of maxilla; basis, endopod and exopod of the first maxilliped; basis, endopod and exopod of the second maxilliped; exopod of the third maxilliped; second pair of biramous pereopods. The absence of details in various structures documented for *T. spongicola* may have resulted in the high number of exclusive traits for *T. distinctus*, increasing the distinctions between both species' zoea I. This study provides information to our understanding of *Typton* larvae. Additionally, contribute to the conceptualization of larval identification keys in the meroplankton as well.

Keywords: Decapoda, larval development, sponge shrimp.

Financial support: PIBIC/CNPq # 121446/2021-2, FAPESP Scholarships # 2018/00739-0 and # 2021/13318-5; BIOTA/INTERCRUSTA # 2018/13685-5; CNPq # 305919/2014-8.

Area: Reproduction & Development

EARLY DEVELOPMENTAL STAGES OF THE WHITE SHRIMP *Litopenaeus schmitti* (Burkenroad, 1936) (DENDROBRANCHIATA: PENAEIDAE)

PESCINELLI, R.A.*; SANCHES, N.M. & COSTA, R.C.

São Paulo State University (UNESP), Laboratory of Biology and Ecology of Marine and Freshwater Shrimps (LABCAM), Bauru, Brazil.

* Corresponding author: regispescinelli@yahoo.com.br

The penaeid shrimps are an important resource for fisheries and aquaculture worldwide, playing an important socio-economic role in the South Atlantic. The white shrimp *Litopenaeus schmitti* (Burkenroad, 1936) is one of the most important penaeid species in terms of fishery biomass. *Litopenaeus schmitti* is distributed throughout the western Atlantic, from Cuba to the Brazilian State of Rio Grande do Sul. Although several studies on the species have been carried out, most of them focus on its population dynamics and ecological distribution. However, there is a lack of information on its post-embryonic development. Considering the importance of larval morphology to the identification of planktonic forms and in taxonomic and phylogenetic studies, the aim of this study was to describe and illustrate the early larval stages of *L. schmitti.* Larvae were obtained under laboratory conditions. The female with developed ovaries and attached spermatophore was captured in December 2021 at Ubatuba, state of São Paulo, Brazil, at 10 m depth, using a shrimp-fishing boat equipped with two otter-trawl nets. After the larvae hatched, they were conserved in a mixture (1:1) of ethyl alcohol 70% and glycerin for dissection and illustrations. Six naupliar stages (NI-NVI) were described and illustrated. The larval stages of *L. schmitti* are generally similar to those of other closely related species, such as *Litopenaeus vannamei* (Boone, 1931) and *Penaeus semisulcatus* De Haan, 1844 [in De Haan, 1833-1850]. Despite the great morphological similarity, we found differences in the naupliar morphology between the species. Some conspicuous differences were found between the first and second antennas. The differences occurred in the number and in the size of the setae since the NI. However, the differences were more conspicuous in NVI. These results, added to other studies on the larval morphology of penaeid shrimps from the Brazilian coast, are essential for the establishment of morphological characters that enable the identification of species in the post-embryonic stages, thus allowing ecological studies directed to the first life stages of penaeid shrimps.

Keywords: Crustacea, larval development, nauplius, white shrimp

Financial support: FAPESP (Temáticos BIOTA # 2010/50188-8, INTERCRUSTA # 2018/13685-5; scholarship # 2021/13318-5 and Post-doctoral scholarship # 2020/14484-3); CNPq (PQ # 306672/2018; PQ # 302253/2019-0).

Area: Reproduction & Development

THE COMPLETE MITOCHONDRIAL GENOME OF THE BROWN SPINY LOBSTER *Panulirus equinatus* WITH INSIGHTS INTO PHYLOGENETIC RELATIONSHIPS IN THE ACHELATA

BAKER, A.[1,*]; DINIZ, F.B.[2] & BAEZA, J.A.[2,*]

[1] Department of Biological Sciences, Clemson University, Clemson, South Carolina, USA;
[2] Embrapa Caprinos e Ovinos, Embrapa, Sobral, CE, Brazil.

*Corresponding author: jbaezam@clemson.edu

Panulirus equinatus is the target of a lucrative fishery in the southwestern Atlantic. This study reports, for the first time, the complete mitochondrial genome of *Panulirus equinatus* (coverage = 55×) assembled from short Illumina reads. The AT-rich mitochondrial genome of *Panulirus equinatus* was 15,644 bp in length and comprised 13 protein-coding genes (PCGs), 2 ribosomal RNA genes, and 22 transfer RNA genes. A single 732 bp long intergenic space was assumed to be the D-loop. Most of the PCGs were encoded on the H-strand. The gene order observed in the mitochondrial genome of *Panulirus equinatus* corresponds to the presumed Pancrustacean ground pattern. KA/KS ratios calculated for all mitochondrial PCGs showed values < 1, indicating that all these PCGs are evolving under purifying selection. A maximum likelihood phylogenetic analysis (concatenated translated [aa] PCGs [n = 13]) supported the monophyly of the Achelata and other infraorders within the Decapoda. Mitochondrial PCGs have enough phylogenetic informativeness to explore high-level genealogical relationships in the Pancrustacea. The complete mitochondrial genome of the brown spiny lobster *Panulirus equinatus* will contribute to the better understanding of meta-population connectivity in this heavily exploited species.

Keywords: crawfish, mitochondrial genome, phylomitogenomics, selective pressure.

Financial support: Clemson Creative Inquiry.

Area: Genetics & Conservation

THE EFFECT OF THE EGG-PREDATOR *Carcinonemertes conanobrieni* (NEMERTEA) ON THE REPRODUCTIVE PERFORMANCE OF THE CARIBBEAN SPINY LOBSTER *Panulirus argus*

STEPHENS, N.C.; BERBEN, A.; GONZALES-CUETO, J.; COLORADO, A.; VELASQUEZ, Y.; QUIROGA, S.; GONZALEZ, M.T.; BAEZA, J.A.*

Grupo de Investigación MIKU, Universidad del Magdalena, Santa Marta, DTHC, Colombia. Facultad de Ciencias Básicas, Programa de Biología, Universidad del Madgalena, Santa Marta, DTHC, Colombia; Instituto de Ciencias Naturales "Alexander von Humboldt", Facultad de Ciencias del Mar y Recursos Biológicos, Universidad de Antofagasta, Antofagasta, Chile; Department of Biological Sciences, Clemson University, Clemson, SC, USA; Smithsonian Marine Station at Fort Pierce, Fort Pierce, Florida, USA; Departamento de Biología Marina, Facultad de Ciencias del Mar, Universidad Católica del Norte, Coquimbo, Chile.

* Corresponding author: jbaezam@clemson.edu

The Caribbean spiny lobster *Panulirus argus* is the target of one of the most valuable fisheries in the Greater Caribbean basin and Gulf of Mexico. In 2017, a parasitic nemertean, *Carcinonemertes conanobrieni*, was described from ovigerous females of *P. argus* in Florida, USA and a year later, the presence of the same parasite was recorded in the southern Caribbean coast (Colombia). The effect of this parasite on the reproductive performance, including fecundity, embryo mortality, and reproductive output, of its host is unknown. In this study, weformally tested whether or not C. conanobrieni affects embryo mortality, fecundity, and reproductive output in brooding females of *P. argus*. A total of 90 ovigerous lobsters were caught by artisan fishermen near Puebloviejo, Magdalena, Colombia. Each ovigerous female was examined for the presence/absence of the parasite and lobster egg mortality (%), fecundity (nº eggs female -1), and reproductive output was estimated. Prevalence of *C. conanobrieni* in the studied population was 87.78%. The mean intensity of *C. conanobrieni* (all life stages) in the population was 11.68 (± 1.98) parasites per egg mass. Infested females brooding late-stage embryos exhibited the lowest fecundity and reproductive performance values, and the highest embryo mortality compared to females brooding early-stage embryos. Embryo stage and infestation level negatively impacted fecundity and reproductive output. Furthermore, infestation level and the number of adult nemertean worms also affected embryo mortality. The aforementioned results demonstrate a negative effect of *C. conanobrieni* on the reproductive performance of *P. argus*. The interactive effect of this parasite, natural stressors, as well as anthropogenic stressors, on reproductive performance of *P. argus* remains to be addressed.

Keywords: Anthropocene, disease, ribbon worms.

Financial support: Clemson Creative Inquiry.

Area: Reproduction & Development

MORPHOLOGICAL DESCRIPTION OF ZOEAS I AND II OF THE SNAPPING SHRIMP *Alpheus* cf. *packardii*, KINGSLEY 1880

SANCHES, N.M.*; PESCINELLI, R.A.; SENE, M.; ARENALES, H.B. & COSTA, R.C.

São Paulo State University (UNESP), Laboratory of Biology and Ecology of Marine and Freshwater Shrimps (LABCAM), Bauru, Brazil.

* Corresponding author: nadia.m.sanches@unesp.br

Snapping shrimps of the genus *Alpheus* Fabricius, 1798 are the most representative of the family Alpheidae Rafinesque, 1815. Despite Alpheidae larvae constitute one of the most common intertidal inshore meroplankton communities, larval descriptions of this family are very poorly reported when considered in terms of the total number of species described. Considering the importance of studies on the larval morphology for the taxonomy and phylogeny of decapods crustaceans, the aim of this study was to describe the morphology of the zoea I and II of *Alpheus* cf. *packardii* Kingsley 1880. Ovigerous female was captured at Ubatuba bay, north coast of São Paulo, Brazil. Parental female was maintained in aquariums with controlled salinity and temperature. After the larvae hatched, they were removed and conserved in a mixture (1:1) of ethyl alcohol and glycerin for dissection and illustrations. The results of this study showed that zoea I of *A*. cf. *packardii* differs from the other species of the genus through the morphological characters: maxilla with 1 simple and 1 sparsely plumose setae on the coxal endite, basial endite bilobed with 3 simple, 1 sparsely plumose setae on the proximal lobe, 2 simple and 1 sparsely plumose setae in the distal lobe; 3 simple and 1 sparsely plumose on the 1st maxilliped; 6 simple setae on the endopod of the 3rd maxilliped The number of segmentation of the antennule (increase) and antenna (decreased) were the most significant changes in the zoea II. Changes were observed in the number of setae of maxillipeds, maxilla, maxillule and telson. The findings reveal that the early larval stages of *A*. cf. *packardii* can be distinguished from those of other species in the genus. Considering the importance of the identification of larval forms in the natural environment, our results in addition to those already published and new descriptions of *Alpheus* species present on the Brazilian coast, can be used in the formulation of a larval key.

Keywords: larval development; Caridea; morphology; Alpheidae

Financial support: FAPESP (Temáticos BIOTA # 2010/50188-8, INTERCRUSTA # 2018/13685-5; scholarship # 2021/13318-5; Post-doctoral scholarship # 2020/14484-3); CNPq (PIBIC # 121446/2021-2; PQ # 302253/2019-0; PQ # 306672/2018-9).

Area: Reproduction & Development

DINING ON CORALS: STABLE ISOTOPE EVIDENCE FOR CLOSE CONNECTION BETWEEN GALL CRABS AND THEIR CORAL HOSTS

BRAVO, H.[1,*], DROMARD, C.R.[2], VAN DER MEER, M.T.J.[3] & VAN DER MEIJ, S.E.T.[1,4]

[1] GELIFES, University of Groningen, Groningen, The Netherlands; [2] Laboratoire de Biologie des Organismes et Ecosystèmes Aquatiques (BOREA), Université des Antilles, Pointe-à-Pitre, Guadeloupe; [3] Department of Marine Microbiology & Biogeochemistry, NIOZ Royal Netherlands Institute for Sea Research, Den Hoorn, The Netherlands;
[4] Marine Biodiversity Group, Naturalis Biodiversity Center, Leiden, The Netherlands.

* Corresponding author: Henrique.Bravo@rug.nl

The exact nature of the relationship between symbionts and hosts is often unclear, but understanding more about these intricate ecological interactions could aid in accurate constructions of food-webs. Scleractinian corals are hosts to hundreds of symbionts. Some of this associated fauna is beneficial to their coral host whereas other taxa can have detrimental effects, yet the difference is often difficult to determine. Coral-dwelling gall crabs (Cryptochiridae) are obligate, host-specific symbionts of scleractinian corals, but the nature of this relationship is still under debate. Three Atlantic gall crab species (*Kroppcarcinus siderastreicola*, *Opecarcinus hypostegus* and *Troglocarcinus corallicola*) and their host corals were collected on reefs in Guadeloupe. Stable carbon and nitrogen isotope values were investigated for 58 crabs inhabiting 38 coral colonies belonging to seven different coral species, alongside other potential food sources (plankton, algae, POM). The stable carbon and nitrogen isotope values of the gall crabs relative to those of the respective coral host(s) and other possible food sources suggests that the main food source for the crabs is indeed coral mucus. In *T. corallicola,* the isotopic food web fitting with the coral differs between sexes, possibly caused by the high sexual dimorphism observed in that species. Here we showed that Atlantic gall crabs mainly dine on mucus excreted by their coral hosts, suggesting that their relationship is parasitic. However, coral mucus is continuously exuded by scleractinians, hence the energetic or metabolic drain for corals is expected to be minimal. Gall crabs depend on their coral hosts for settlement cues as larvae, for shelter as adults and - highlighted by this study - for food, essential for their subsistence. This obligate dependence on their hosts for all parts of their life makes them extremely vulnerable to reef degradation and underlines why it is important to understand the exact nature of a relationship between symbiont and coral host.

Keywords: Cryptochiridae, Scleractinia, symbiont, trophic food-web.

Financial support: Treub-Maatschappij and Flying Sharks.

Area: Ecology & Biodiversity

WHEN SIZE AND SEX DO MATTER: IMPACT OF LOW-COST DIETS ON FEMALE MATURATION OF THE RED CLAW CRAYFISH

LÓPEZ-GRECO, L.S.[1,*]; STUMPF, L.[1]; TIMPANARO, S[1].; REBAGLIATI CID, A.[1]; LAMBERTI, M.[1]; BATTISTA, A.[1] & JONES, C.M[2].

[1] Universidad de Buenos Aires, CONICET, Instituto de Biodiversidad y Biología Experimental y Aplicada (IBBEA), Facultad de Ciencias Exactas y Naturales, Departamento de Biodiversidad y Biología Experimental, Laboratorio de Biología de la Reproducción y el Crecimiento de Crustáceos Decápodos, CABA, Argentina; [2]James Cook University, PO Box 6811, Cairns Q 4870, Australia.

* Corresponding author: laura_lopez_greco@hotmail.com

The onset of sexual maturity represents a complex step in animal life involving morphological, physiological, and behavioral changes. From this point onward, the energy income from food will be involved in three energetic-demanding-competing processes: metabolism-homeostasis, growth, and reproduction. Hence, in cultured species formulated feeds need to cover all nutritional requirements of the growing phase and the additional cost demanded by reproduction. Two low-cost diets manufactured with local supplies specifically formulated for *Cherax quadricarinatus,* were evaluated in a prolonged assay with females at the transition from juvenile to mature and compared with a high-quality and priced commercial diet. Somatic indices, growth, feed efficiency, biochemical composition of the ovary and hepatopancreas, ovarian growth, and histological alterations in hepatopancreas were analyzed. Both diets demonstrated that the high demands of both somatic and ovarian growth in maturating females were not covered, contrasting with previous results in early juveniles. This highlights the enormous energetic cost of vitellogenesis at the start of sexual maturity and the differential nutrients demand during crayfish growth. Biochemical analysis demonstrated a lower oocyte quality due to the experimental diets, as well as decreased reserves both of lipids and carbohydrates and a possible impact on carotenoids content. The hepatopancreas also showed partial histological damage and differences in its biochemical content. Although further analysis is required, lower embryo survival, hatching rate, and early performance of juveniles are expected in progeny from females fed with both diets. The low-cost diets tested are useful as a baseline, modified formulations derived therefrom can be considered to achieve a more adequate composition, enhancing somatic and gonad growth as well as feed efficiency in maturing females.

Keywords: biochemical content, histological damage, oocyte quality, red claw, sexual maturity.

Financial support: CONICET (PIP 2021-2023 # 11220200100605CO), UBACYT 2018-2022 (# 20020170100021BA).

Area: Aquaculture & Fisheries

STUDIES ON THE TAXONOMY OF THE FRESHWATER CRABS IN CHINA AND SURROUNDING COUNTRIES

PAN, D.*; SHI, B.; WANG, R. & SUN, H.

Jiangsu Key Laboratory for Biodiversity and Biotechnology, College of Life Sciences, Nanjing Normal University; Wenyuan Road, Nanjing 210023, P.R. China.

* Corresponding author: dapan@njnu.edu.cn; sunhongying@njnu.edu.cn

China has the richest freshwater crab fauna around the world. To date, a total of 361 species, in 56 genera and 2 families, have been discovered. Nevertheless, the biodiversity of freshwater crabs appears to be still underestimated. New species and genera were reported continuously. During the last two years, we have intensively conducted field surveys of the freshwater crab fauna in China and surrounding countries, and a number of specimens belonging to new species have been collected. Here, we present our latest results on the taxonomy of freshwater crabs. A total of two genera, *Aiyunamon* and *Barbamon*, were established, and 11 species, *Aparapotamon* sp., *Barbamon zhoui*, *Demanietta liui*, *Demanietta lenya*, *Eosamon daiae*, *Esanthelphusa kayinensis*, *Huananpotamon shangyouense*, *Indochinamon malipoense*, *Mekhongthelphusa menlongensis*, *Minpotamon auritum*, and *Teretamon husicum,* were described. They were compared with their congeners morphologically. The new species and genera were also supported by molecular analyses. Our studies have contributed to increasing our knowledge of the biodiversity of freshwater crabs in China and surrounding countries.

Keywords: freshwater crab, Gecarcinucidae, Potamidae, taxonomy.

Financial support: National Natural Science Foundation of China (# 32170454 and # 31772427) to SHY.

Area: Taxonomy & Phylogeny

UNDESCRIBED DIVERSITY IN THE CIRCUMTROPICAL GALL CRAB GENUS *Opecarcinus*, LINKED TO HOST SPECIFICITY AND BIOGEOGRAPHY

TAO, X.[1,*]; GUSTAV, P.[2]; SILVIA, V.[3]; FRANCESCA, B.[3] & SANCIA, V.D.M.[1,4]

[1] GELIFES, University of Groningen, Groningen, The Netherlands; [2] Florida Museum of Natural History, Gainesville, USA; [3] King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; [4] Naturalis Biodiversity Center, Leiden, The Netherlands.

* Corresponding author: tao.xu@rug.nl

Coral reefs are home to the greatest diversity of marine life with many species living in symbiotic associations with a host organism. Understanding the historical biogeography of associated species is key to unravelling potential coevolutionary processes and explaining species richness patterns. Coral-dwelling gall crabs (Cryptochiridae) are obligately associated with stony corals, on which they rely for settlement cues, protection and/or sustenance. The genus *Opecarcinus* is of particular interest because it occurs in both the Indo-Pacific and Atlantic basins, where its representatives inhabit Agariciidae corals. We applied several species delimitation tests to characterize diversity in the genus, and uncovered 15 undescribed species based on mitochondrial and nuclear DNA gene fragments of specimens sampled from 21 Indo-Pacific localities and one Atlantic (Caribbean) locality. These new species are currently being described as new to science using an integrative morpho-molecular approach. Furthermore, we investigated the evolutionary history of *Opecarcinus*, by constructing a Bayesian molecular-clock time-calibrated phylogeny and an ancestral area reconstruction. Co-evolutionary analyses will be applied to study the observed host specificity patterns between crabs and corals. The Indo-West Pacific was inferred to be the most probable ancestral area, from where the *Opecarcinus* lineage colonized the Western Atlantic and subsequently speciated into *O. hypostegus*. Time to the most recent common ancestor of *Opecarcinus* is estimated at 15−6 Mya (middle Miocene — late Miocene). The estimated divergence time of the West Atlantic species *O. hypostegus* at ca. 3.25 Mya roughly coincides with the closure time of the Isthmus of Panama at 2.8 Mya, suggesting that this lineage could have arrived in the Atlantic by crossing the Eastern Pacific Barrier, before the closure of the Isthmus of Panama. The speciation of *O. hypostegus* is possibly associated with newly available host niches in the Caribbean, in combination with genetic isolation following the closure of the Panama Isthmus.

Key words: ancestral area reconstruction, coral reefs, historical biogeography, marine biodiversity.

Financial support: LIPI, RISTEK, WWF-Malaysia, MOSTI, USAID CTSP, KNAW and CSC.

Area: Ecology & Biodiversity

NATURAL FEEDING OF THE FRESHWATER CRAB *Dilocarcinus pagei* STIMPSON,1861 (DECAPODA: TRICHODACTYLIDAE) IN ARAGUARI RIVER, MINAS GERAIS, BRAZIL

BARBOZA, A.C.G.[1,*]; SANTOS, G.P.R.[1]; BUENO, A.A.P.[2] & JACOBUCCI, G.B.[1]

[1] Universidade Federal de Uberlândia (UFU), Laboratório de Ecologia de Ecossistemas Aquáticos, Brazil;
[2] Universidade Federal de Lavras (UFLA), Laboratório de Carcinologia, Brazil.

* Corresponding author: ana.barboza1@ufu.br

Studies on the diet of freshwater decapods can provide information about their trophic role in the aquatic ecosystems in which they occur. The trophic role of the crab *Dilocarcinus pagei*, Stimpson 1861 is little known, despite being an important benthic component in rivers and dams. In this work, we evaluate the natural diet of *D. pagei* in a stretch of the Araguari River - Triângulo Mineiro region. Samples were collected monthly from September/21 to August/22, downstream of a Hydroelectric Power Plant. We collected the specimens by hand and sieving in a stretch of 300 m. The individuals had their sex determined and carapace width (CW) measured. To examine their stomach contents, we analyzed the Fullness Degree (FD), the absolute frequency of points (MP), and the frequency of occurrence (FO). Among 334 stomachs, 188 (56.29%) were full, and 146 (43.71%) were empty. From the stomachs with content, 138 (66.35%) were from males, and 50 (24.08%) from females. We found no significance of FD between dry and rainy periods ($p = 0.4920$), sexes ($p=0.8941$) and effect of period on sex ($p = 0.0735$). Analysis of stomach contents showed the presence of digested material, plant debris, insects, fragments of unidentified animals, molluscs, eggs, and sand. The MP indicated that in both periods there were differences among the items ($p < 0.0001$). Plant debris represented the largest volume (47%), followed by digested material (24%) and sand (7.23%), with variation of these items between sexes depending on the period ($p < 0.05$). In both periods, females ingested more plant detritus than males, while males ingested more sand and animal resources ($p < 0.0001$; $p < 0.05$, $p <0.0001$, respectively). The FO analysis showed differences among items in both periods ($p < 0.0001$). Plant debris (46%) had the highest FO, followed by digested material (37%), and sand (10%), with no variation between sexes in any period. Based on this diet, we concluded that *D. pagei* is omnivorous, with the dominant use of plant debris, in general with different proportions between sexes.

Keywords: Crustacea, Brachyura, diet, feeding ecology.

Financial support: CAPES and CNPq/FAPEMIG (PELD).

Area: Ecology & Biodiversity

POTENTIAL RICHNESS OF PENEID SHRIMPS (DECAPODA; PENAEIDAE) IN PROTECTED AREAS IN THE COASTAL REGION AFFECTED BY THE FUNDÃO DAM TAILINGS (MARIANA-MG)

PEREIRA, W.G.[1,2,3,*]; ALMEIDA, A.C.[1,3] & ALVES, D.F.R.[1,2,3]

[1] Federal University of Uberlândia (UFU); [2] Graduate Program in Ecology, Conservation and Biodiversity; [3] Laboratory of Ecology of Aquatic Ecosystems (LEEA) - Institute of Biology, UFU - Uberlândia, Minas Gerais, Brazil - Campus Umuarama.

* Corresponding author: wanessag02@hotmail.com

The tailings from the collapse of the Fundão dam in the city of Mariana (MG) reached the Atlantic affecting several species of fauna, including the penaeid shrimp. Considering the scarcity of data on the spatial distribution of penaeids in the affected region and that this tailings reached five marine protected areas (MPAs); APA Costa das Algas (APA-CAL), PARNA Marinho de Abrolhos (PARNA-ABR), REBIO de Comboios (REBIO-COM), RESEX de Cassurubá (RESEX-CAS) and REVIS de Santa Cruz (REVIS-SCR), the objective of this study was to estimate the potential richness of these shrimps in the MPAs , in order to assist direction future actions for restoration and conservation of populations. The list of penaeids in the impacted region was obtained from the scientific literature, the Global Biodiversity Information System (GBIF) and the Ocean Biodiversity Information System (OBIS), being: *Artemesia longinaris, Parapenaeus americanus, Penaeopsis serrata, Penaeus brasiliensis, P. paulensis, P. subtilis, P. schmitti, Xiphopenaeus dincao* and *X. kroyeri*. To predict the potential distribution of each species, ecological niche models were generated based on MaxEnt algorithm. Thirty replicates were performed for each species. Then, using the average models generated, environmental suitability (AA) values were extracted for each MPA for the nine shrimp species, being AA = 0 (absence), or AA = 1 (presence). The potential richness (PR) was inferred by the sum of the AA values of the nine species, varying from 0 to 9. The average PR values in the MPAs ranged from 9 (REVIS-SCR) to 5.1 (PARNA-ABR). REVIS-SCR showed higher potential richness, showing environmental suitability to harbor all species. It is important to emphasize that REVIS-SCR is located in a region highly impacted by the tailings plume, consequently, mitigation measures and monitoring studies of these shrimps in this MPA, should be prioritized aiming the restoration and conservation of these populations in the entire affected region.

Keywords: ecological niche models, Penaeids, protected areas, reject.

Financial support: CAPES and FAPEMIG.

Area: Ecology & Biodiversity

OSMOREGULATION IN TEMPORO-SPATIALLY DISTINCT POPULATIONS OF THE FRESHWATER SHRIMP *Macrobrachium olfersii* (WIEGMANN, 1836) (DECAPODA, PALAEMONIDAE)

VILLELA, L.G.* & McNAMARA, J.C.

Universidade de São Paulo, FFCLRP, Biologia, Brazil.

* Corresponding author: luiza.villela@usp.br

The diadromous palaemonid *M. olfersii* is distributed throughout coastal rivers in the tropical and subtropical Americas. We compare osmoregulatory ability in two temporally (30 years) and spatially (75 km) distinct populations from the northern coast of São Paulo State, Brazil. The Guaecá River population (23° 49' 26.85 S"; 45° 27' 09.37" W) was sampled in 1987 (https://doi.org/10.1016/0022-0981(87)90041-4) while the Puruba River population (23° 20' 57.01" S; 44° 56' 45.71" W) was assessed in 2016/2017. Shrimps were collected by sieving the marginal vegetation and were subjected to a 24-h osmotic challenge in river water (RW, control) and at 7, 14, 21, 28 or 35 ‰S (N_{1987} = 11, $N_{2016\text{-}7}$ = 5) using standard procedures. Hemolymph osmolality in the Guaecá River population was measured by freezing point depression in 50 µL aliquots employing a Knauer semi-micro-osmometer; samples from the Puruba River population were measured in 10 µL aliquots using a Wescor 5500 vapor pressure micro-osmometer. A linear regression analysis of the osmolalities generated showed excellent agreement (R^2=0.99, P<0.001), demonstrating that different colligative properties provide equivalent osmotic data. For statistical purposes, hemolymph osmolalities were averaged for the 2016/17 groups, and location and time were considered as a co-variable; data were distributed normally, showing equality of variance. A two-way ANOVA was performed to evaluate the effects of location/time and salinity, followed by the Student-Newman-Keuls test (α=0.5, P=0.05). Only salinity affected hemolymph osmolality (P<0.001); location/time had no effect. Respective osmolalities in the Guaecá and Puruba populations were 377±12.9 and 397±63.7 mOsm/kg H_2O in RW, increasing significantly to isosmoticity at 597 and 612 mOsm/kg H_2O, and again to 931±13.7 and 888±32.2 mOsm/kg H_2O at 35 ‰S. We conclude that osmoregulatory capability in northern *M. olfersii* is independent of long-term temporal and spatial variation, suggesting gene flow among polymictic populations dependent on a common larval pool, intermixed in coastal waters. Nevertheless, on resampling the Guaecá River 30 years later, *M. olfersii* was no longer found, having been replaced by *M. acanthurus*, revealing local loss of biodiversity.

Keywords: ecological physiology, osmoregulation, population biology.

Financial support: CNPq, CAPESand FAPESP.

Area: Physiology & Toxicology

DIVERSITY OF THE GENUS *Aegla* LEACH, 1920 (ANOMURA, AEGLIDAE) IN A HIGHLY ENDEMIC REGION

MOLLMANN, V.H.S.*; BARTHOLOMEI-SANTOS, M.L. & SANTOS, S.

Universidade Federal de Santa Maria (UFSM), Laboratório de Diversidade Genética e Laboratório de Carcinologia, Brasil.

* Corresponding author: victorhugomollmann2010@gmail.com

Aegla Leach, 1820 is a genus of freshwater anomurans encompassing 92 described species dispersed in rivers, streams, and caverns of Chile, Argentina, Bolivia, Paraguay, Uruguay, and Brazil; the latter concentrates the greater diversity of species, mainly in its southern region. However, the number of *Aegla* species is probably much higher, given that some species were unveiled to be cryptic complexes, as *Aegla paulensis*, *Aegla longirostri*, *Aegla platensis,* and *Aegla uruguayana*. Prior studies identified the region comprising the northeast of the state of Rio Grande do Sul and southeast of the state of Santa Catarina (Brazil) as being a priority area for *Aegla* conservation, due to high species richness, phylogenetic diversity, elevated endemism, and threats to habitat. This region has Protected Areas (PAs) which could improve the habitat conservation of streams and creeks inside its borders and beneficiate the *Aegla* species. Beforehand, it's important to understand the diversity and treats to the genus, for later establish preservation efforts and policies. Using the *COI* mitochondrial gene for DNA *barcoding* and the morphology to identify the species, we assessed the richness of *Aegla* in this priority region. We sampled eglid specimens in 33 sites distributed in *ca*. 9.000 km² area in the study region specified above, inside and in the surroundings of four large PAs, covering the major range of several species described for southern Brazil. We have found *Aegla* individuals at 29 of 33 sampling sites. Morphologically, we identified 15 different species. On the other way, species delimitation algorithms based on the *COI* alignment highlighted hidden diversity among *Aegla* in our study area and retrieved eight known species besides impressive 23 new ones, divided into three cryptic groups: eight possible species in *Aegla jarai* complex, three in *Aegla franciscana* complex, one in *Aegla camargoi* complex, and 11 possible new taxonomic units which haven't fitted with no other group. Most of these species have a restricted distribution and were sampled only in one or a few sites. Our results indicate that the diversity of the genus *Aegla* is still largely unacknowledged and reinforces the need for more studies and conservation efforts.

Keywords: *barcoding*, cryptic complex, protected areas.

Financial support: CNPq and CAPES.

Area: Genetics & Conservation

TWO NEW SPECIES OF *Hyalella* SMITH, 1874 (AMPHIPODA: HYALELLIDAE) FROM CAVES OF SÃO PAULO STATE, SOUTHEAST BRAZIL

PENONI, L.R.[1,*]; BICHUETTE, M.E.[2] & BUENO, A.A.P[1]

[1] Universidade Federal de Lavras (UFLA), Laboratório de Carcinologia, Departamento de Ecologia e Conservação, Programa de Pós-Graduação em Ecologia Aplicada, Brazil;
[2] Universidade Federal de São Carlos (UFSCar), Laboratório de Estudos Subterrâneos, Departamento de Ecologia e Biologia Evolutiva, Brazil.

* Corresponding author: ludrpenoni@yahoo.com.br

The diversity of the amphipod genus *Hyalella* Smith, 1874 has grown substantially in the past decade, but there are still many new species to be described. Restricted to the American continent, the genus can be found in all types of freshwater environments, including caves. Differently from other amphipods and even other invertebrates that have colonized the subterranean habitats, recently discovered cave *Hyalella* species do not present the classic troglomorphic adaptations, which indicate they might be troglophile – facultative cave species, with populations occurring inside and outside of cave habitats. Here we present two new *Hyalella* species found in caves of Parque Estadual Intervales (PEI), a state park in São Paulo state, Brazil, collected for the park's management plan project under the authorization of COTEC/FF – SISBIO 20165. Selected specimens of two populations of the genus were mounted on permanent slides, the appendages were photographed and drawings of the structures were prepared using CorelDRAW X7. One species is found at Jane Mainsfield cave; its main features are: antenna 1 shorter than half of antenna 2, maxilla 1 with 9 serrate setae apically on outer plate, 2 accessory setae on right mandible molar process, gnathopod 1 with polygonal pattern on propodus postero-distal corner and dactylus, and comb scales on disto-anterior margin and gnathopod 2 with polygon pattern on disto-posterior corner. The other species is found at Gruta do Minotauro cave; its main features include maxilliped heavily setose, with the outer margin of palp's articles loaded with long simple, pappose and papposerrate setae, gnathopod 2 palm transverse with a few short simple and cuspidate setae, uropods 1 and 2 with some scattered short simple setae, and uropod 3 short, subequal in size to the telson. Both species have normal eyes, the male uropod 1 inner ramus has no curved seta, and there are no distinguishable troglomorphisms.

Keywords: amphipods, morphology, Parque Estadual Intervales, taxonomy.

Financial support: VALE/FAPEMIG (LRP) and Fundação Florestal (MEB).

Area: Taxonomy & Phylogeny

A NEW SPECIES OF *Hyalella* SMITH, 1874 (AMPHIPODA: HYALELLIDAE) FROM PARQUE ESTADUAL TURÍSTICO DO ALTO RIBEIRA – PETAR/SÃO PAULO, BRAZIL

PENONI, L.R.[1,*]; LOURES, C.M.D.[2]; BICHUETTE, M.E.[3] & BUENO, A.A.P.[1]

[1] Universidade Federal de Lavras (UFLA), Laboratório de Carcinologia, Departamento de Ecologia e Conservação, Programa de Pós-Graduação em Ecologia, Brazil[2] Universidade Estadual Paulista Júlio de Mesquita Filho (UNESP), Brazil; [3]Universidade Federal de São Carlos (UFSCar), Laboratório de Estudos Subterrâneos, Departamento de Ecologia e Biologia Evolutiva, Brazil.

* Corresponding author: ludrpenoni@yahoo.com.br

The amphipod genus *Hyalella* is exclusive to the Americas and Brazil holds most of its known diversity. The genus can be found inhabiting a variety of freshwater environments, outside (epigean species) and inside caves (hypogean species). Here we present a new species of *Hyalella* that is found on a cave of Parque Estadual Turístico do Alto Ribeira – PETAR, only this species presents no visible adaptation to the life in subterranean habitats. Collections were a part of the management plan project, with the authorization of COTEC/FF – SISBIO 20165. The new species main features include antenna 1 longer than the flagellum of antenna 2, aesthetascs occurring on flagellum from the article 7 distally; maxilla 1 with 8 serrate seta apically on outer plate and palp relatively long, longer than half the distance between base of palp and base of setae on outer plate; maxilliped palp heavily setose on inner margin of articles 1–3; gnathopods 1 and 2 with polygonal pattern on the disto-posterior margin; pleopods longer than uropod 1, with long rami, bearing several plumose setae; uropod 1 without a curved seta on the inner ramus; uropod 2 longer than peduncle of uropod 1; uropod 3 with cuspidate seta on the peduncle and the ramus, ramus with an excavation close to the apex, bearing up to 2 setae; telson with up to 9 cuspidate setae with accessory seta apically and 3 plumose seta laterally on each side; epimeron 1 and 3 postero-distal margin subacute, epimeron 2 postero-distal margin acute. This new species is found at the Temimina II cave, but the observed animals all have normal eyes and pigmentation. There are other hypogean species of *Hyalella* found at PETAR, *Hyalella epikarstica* Rodrigues, Bueno and Ferreira, 2014 and *H. caeca* Pereira, 1989, both with visible adaptations to the underground.

Keywords: amphipods, morphology, Parque Estadual Turístico do Alto Ribeira, taxonomy.

Financial support: VALE/FAPEMIG (LRP) and Fundação Florestal (MEB).

Area: Taxonomy & Phylogeny

PHYLOGENETIC RELATIONSHIPS OF MOLE CRABS OF THE GENUS *Emerita*, DERIVED FROM MITOCHONDRIAL DNA, IN SANDY BEACHES OF MEXICO ATLANTIC COAST

GONZÁLEZ-TREVIÑO, A.*; DUARTE, J.; ARDISSON, P.-L.; RODRÍGUEZ-CANUL, R. & HERRERA-DORANTES, M.T.

Centro de Investigación y de Estudios Avanzados IPN, Departamento de recursos del Mar, México.

* Corresponding author: alejandro.gonzalezt@cinvestav.mx

Mole crabs are abundant crustaceans that inhabit the intertidal zone of sandy beaches worldwide. However, their phylogeny is poorly understood due to the small number of studies that have been conducted. Due to the lack of phylogenetic analyses, the group remains dynamic, which means the reassignment of species from one genus to another within the same family is frequent. In the present study, we examine, for the first time, the phylogenetic diversity, relationships, and genetic variation of the genus *Emerita* in marine ecoregions of the Atlantic coast of Mexico using mitochondrial DNA. Two hundred forty individuals were collected from 16 locations distributed in six biogeographic ecoregions. The DNA extraction was performed Using QIAamp Fast DNA Tissue kit with 10-50µg of tissue from the telson. The Polymerase Chain Reaction was performed using COI primers (AF215-AF216) and 16S rRNA region (16sa-16sb). The resulting sequences will be aligned using the software Clustal W and CodonCode to support the manual alignment, afterwards the aligned sequences will be analyzed with the Phangorn package from R to select a nucleotide substitution model that fits, to predict the rate of substitutions per site. Finally, we will get Neighbor-Joining and Maximum Likelihood phylogenetic trees to analyze the relationship between OTUs, using the same Phangorn package. We expect a high phylogenetic variability within the extensive and heterogeneous study area for the two examined *Emerita* species, hoping to confirm the phylogenetic relationship of the genus on this Atlantic coast.

Keywords: *Emerita*, mitochondrial DNA, mole Crab, phylogeny.

Financial support: Cinvestav Benthos Laboratory Fund.

Area: Taxonomy & Phylogeny

FIRST RECORD OF BILATERAL HYPERTROPHY IN *Uca rapax* (DECAPODA OCYPODIDAE) IN LAGUNA MADRE, TAMAULIPAS, MEXICO

GONZÁLEZ-TREVIÑO, A.[1,*]; LEIJA TRISTÁN, A.[2] & HERRERA-BARQUIN, H.[3]

[1] Centro de Investigación y de Estudios Avanzados IPN, Laboratorio de Bentos, México;
[2] Universidad Autónoma de Nuevo León, Departamento de Ecología, Laboratorio de Ecología Pesquera, México;
[3] Universidad Autónoma de Nuevo León, Departamento de Ecología, Laboratorio de Ictiología, México.

* Corresponding author: alejandro.gonzalezt@cinvestav.mx

Ocypodid crabs of the genus *Uca* presents a marked sexual dimorphism, which is easily visible as the male develop a major claw which can reach up to one third of its total weight, while the other claw (minor) remains reduced (heterochely). The major claw represents a secondary sexual character which plays a major role in the species sexual selection and male-male intersexual competition. The minor claw is also important for feeding and dig burrows with improved efficiency. An adult male of *Uca rapax* (Crustacea: Decapoda: Ocypodidae) was found with both claws hypertrophied (two major claws) in a muddy beach on the Laguna Madre, Tamaulipas, Mexico, which is presented as the first record for Mexico with this morphological condition. In the present study, we described the major claw abomination and stablished the relationship that this condition may have with some environmental constraints from the area we found this *Uca rapax* individual, which is highly impacted due to pollutants such as hydrocarbons, pesticides, organochlorines, among others, changing the hormonal levels and causing abnormalities in the ontogeny, maturation, or sex-determining processes that, ultimately, could be the cause for this aberration.

Keywords: bilateral hypertrophy, ecotoxicology, fiddler crabs, *Uca*.

Financial support: Departamento de Ecología Funds.

Area: Ecology & Biodiversity

POPULATION STRUCTURE OF *Talitroides topitotum* BURT, 1934 (CRUSTACEA: AMPHIPODA: TALITRIDAE) IN SANTA MARIA, CENTRAL REGION OF RIO GRANDE DO SUL, BRAZIL

BRISOTTO, G.[1,*]; AYRES-PERES, L.[2] & SANTOS, S[1]

[1] Universidade Federal de Santa Maria (UFSM), Laboratório de Carcinologia, Brasil;
[2] Instituto Federal Farroupilha *Campus* São Vicente do Sul, Brasil

* Corresponding author: glauciabrisotto@gmail.com

Talitroides topitotum (Talitridae) is one of the representatives of the Amphipoda order that has adapted to the terrestrial environment. This research aimed to evaluate the population structure of this talitrid and to correlate morphometric data and reproductive aspects of the population. The study was carried out in the central region of Rio Grande do Sul, Brazil, between June 2020 and May 2021. For this purpose, specimens were collected monthly with pitfalls exposed for 48 hours. The animals were sexed, photographed, and measured (body length, cephalic length, and marsupium length - mm). Ovigerous females had all their eggs counted and measured. In addition, we correlated the mean size data and the sampling latitudes of *T. topitotum* from this and other studies. In total, 492 individuals were collected, of which 62 were ovigerous females, 188 non-ovigerous females, and 242 juveniles. No male was sampled. There was a significant correlation between body and head length and body and marsupium length in ovigerous females. We found no correlation between morphometric data and female fertility. Although not significant, there was a positive correlation between the average size of talitrids and latitude in the correlation analysis. The population in this study can be considered young, suggesting a newly introduced population into the environment. Body size can be inferred from head size, and marsupium size from body size, as both are strongly correlated. The fact that there is no relationship between size and fecundity may be related to environmental factors, as they can affect the group's reproduction. Regarding the relationship between size and latitude, more studies should be conducted with a larger sample to verify whether the relationship is significant or not.

Keywords: cephalic length, morphometry, talitrids, terrestrial amphipod.

Financial support: CAPES and CNPq.

Area: Ecology & Biodiversity

TRAP TO CONTROL THE INVASIVE SWIMMING CRAB *Charybdis hellerii* (A. MILNE-EDWARDS, 1867) (CRUSTACEA, DECAPODA, PORTUNIDAE)

STANSKI, G.[1,*]; SAAD, J.E.[2]; ROCHA, C.M.C.[3]; PINHEIRO, M.A.A.[4] & BOOS, H.[5]

[1] EBM Olímpio Falconieri da Cunha, Brazil; [2] Instituto Politécnico de Setúbal, Portugal; [3] UNIVALI, Brazil; [4] Universidade Estadual Paulista (UNESP), Instituto de Biociências, Campus do Litoral Paulista, São Vicente, Brazil; [5] Centro Nacional de Pesquisa e Conservação da Biodiversidade Marinha do Sudeste e Sul (ICMBio/CEPSUL), Itajaí, Brazil.

* Corresponding author: bio.gilson@hotmail.com

The arrival of *Charybis hellerii* in the Americas probably occurred through the larvae transport in ballast water, in ships from Mediterranean ports. On the Brazilian coast, *C. hellerii* was recorded for the first time in 1996 in the northeast region. Due to its relatively long larval life (44 days), which favors dispersal, and a generalist carnivorous diet, *C. hellerii* is characterized as a potentially invasive species to new areas and highlighted as an example of successful introduction of a marine exotic species in the Atlantic. Currently, the species is established and widely distributed along the coast of Santa Catarina and possibly expanding its distribution, which justifies the development of adequate methods for its management and control. Thus, the objective of this research was to analyze the susceptibility of the species to a trap ("pot") previously developed to capture native crab species. During the period from February 2020 to May 2021 three sites were monitored (Farol de Cabeçudas; Ilha de Cabeçudas; and Costão da Preguiça) (26.9°S, 48.6°W) close toits southernmost limit of distribution in the western Atlantic, using between 10 and 40 traps/site. The species native crab *Menippe nodifrons* was the most numerous collected (n = 2,674), followed by *C. helleri* (n = 513), and other species as follow: *Cronius ruber* (n = 112), *Mithrax hispidus* (n = 31) *Achelous spinimanus* (n = 16), *Arenaeus cribrarius* (n = 16), *Callinectes* sp. (n = 10) and *Panulirus laevicauda* (n = 2). Temporally, the highest CPUE (catch per unit effort) of *C. hellerii* was recorded in winter (0.83 ind./trap), with a large number of ovigerous females in September. The locations with the highest number of individuals captured was Ilha de Cabeçudas (n = 245; CPUE = 0.41 ind./trap). Previous studies indicate that this population of *C. hellerii* is established and may act as a centre of dispersal to higher latitudes. Considering that *C. hellerii* is more abundant than the native species, these effects are ongoing and investigations of this invasive alien species (IAS) according to Convention on Biological Diversity (Decision V/8) impacts should be a priority. Although preliminary, the results obtained indicate that the trap "pot" has a good efficiency for capturing the invasive crab *C. hellerii* and this procedure used to a possible population management of this species.

Keywords: alien species, bioinvasion, capture methods, conservation, environmental impact.

Financial support: CNPq (PQ # 305957/2019-8).

Area: Ecology & Biodiversity

MOVEMENT ECOLOGY OF INSHORE DECAPODS

LEES, K.J.*; NADALINI, J-B.; LAVOIE, M-F.; MACGREGOR, K.A. & MCKINDSEY, C.W.

Maurice Lamontagne Institute, Fisheries and Oceans Canada, Quebec, G5H 3Z4

* Corresponding author: Kirsty.lees@dfo-mpo.gc.ca

Acoustic telemetry has dramatically increased the availability of data on the movement ecology of aquatic species. However, despite the commercial and ecological importance of many decapods, their movements and behaviours have received relatively little attention in comparison to finfish. As a result, biological knowledge gaps exist surrounding the scale and frequency of movements, the timing and environmental drivers of key life-history events, and the importance of post-settlement dispersal and connectivity. This limits our ability to understand and mitigate multiple threats, including climate change. During 2021, 3 commercially and ecologically important decapods were tracked (*Homarus americanus n* = 52, *Chionoecetes opilio n* = 26, and *Cancer irroratus n* = 50). Animals were released within a large (~4km × 5km) acoustic telemetry array at a coastal site (depth range ~10 m – 160 m) in eastern Quebec, Canada. Variability in spatial behaviour and the prevalence of recursive movements were investigated to assess spatial overlap between tagged individuals. Hidden Markov models were used to identify environmental drivers of movement such as, temperature, depth, and current speed. We will present an overview of results from year 1 of this multispecies, multiyear project. As well as their broad biological importance, the results from this project will contribute to the sustainable management of inshore fisheries in the area and the establishment of new fishing opportunities for Indigenous communities.

Keywords: acoustic telemetry, decapods, tracking.

Financial support: Fisheries and Oceans Canada.

Area: Ecology & Biodiversity

TAXONOMIC REVIEW OF SELECTED MARINE WIDESPREAD OSTRACOD (CRUSTACEA) GENERA

SANTOS, S.G.; NERY, D.V.; VIEIRA, L.O.M.; ANUNCIAÇÃO; B.L.; MOTA; I.M.V. & BRANDÃO; S.N.*

State University of Santa Cruz, Graduate Program in Zoology, Ostracoda Laboratory, Invertebrate Laboratory, Brazil.

* Corresponding author *brandao.sn.100@gmail.com

Ostracods are small crustaceans that inhabit all kinds of aquatic environments around the world from altitude lakes to the deepest trenches in the ocean. The group is also taxonomically diverse with more than 45,000 species described so far. Because of their mostly calcified carapaces, which accumulate in the sediment and latter in sedimentary rocks, ostracods are commonly used in paleonvironmental and palaeoceanographical reconstructions. However, studies on most ostracod taxa, and their biology and ecology are still urgent. In order to contribute to a better understanding on the ecology and diversity of these amazing animals, herein we revise five common, abundant, cosmopolitan and diverse ostracod genera, which taxonomy still show considerable confusion: *Bairdoppilata* Coryell, Sample & Jennings, 1935, *Cytherella*, *Cytheropteron* Sars, 1866, *Krithe* Brady, Crosskey & Robertson, 1874 and *Polycope* Sars, 1866. Herein, we aim at revising their taxonomy, diversity and geographical and stratigraphical distributions, and therefore contribute to the improvement of palaeoceanographical and paleoenvironmental reconstructions based on ostracods. First of all, published taxonomical and biogeographical information (e.g., taxonomic classification, latitude, longitude, depth, locality…) was compiled on a digital spreadsheet. The information compiled herein was transferred to the World Ostracoda Database and is now freely available on the internet. We compiled 316 (47 recent and 269 subrecent) occurrences of *Bairdoppilata*, a genus with 125 species (106 accepted). The review of the genus *Krithe* resulted in 186 species (161 accepted) and 337 occurrences (32 based on recent specimens and 202 on subrecent specimens). With 706 species (542 accepted), *Cytherella* Jones, 1849 has its distribution worldwide and since the Paleozoic to the Recent. The compilation on *Cytheropteron* resulted on 756 species (447 accepted) and 256 occurrences. *Polycope* can be found in marine and brackish environments around the world, and our compilation resulted in 50 extant and 61 fossil species, and also 372 geographical occurrences based on recent and subrecent specimens. Our future work will include the compilation of ecological data of all recent species within these genera and also taxonomic reviews of key species.

Keywords: Holocene, review, taxonomy.

Financial support: FAPESP, CNPq and UESC (ICB).

Area: Ecology & Biodiversity

FIRST RECORD OF THE GENUS *Harpinia* BOECK, 1876 (AMPHIPODA: PHOXOCEPHALIDAE) FROM THE SOUTHWESTERN ATLANTIC, WITH DESCRIPTION OF THREE NOVEL SPECIES

ANDRADE, L.F.[1,*]; SOUZA-FILHO, J.F.[1] & SENNA, A.R.[2]

[1] Universidade Federal de Pernambuco (UFPE), Laboratório de Carcinologia, Brazil;
[2] Universidade do Estado do Rio de Janeiro (UERJ), Laboratório de Carcinologia, Brazil.

* Corresponding author: lzflp.andrade@hotmail.com

Phoxocephalidae G.O. Sars, 1891 is a benthic marine amphipod family comprising about 380 species worldwide. The family is divided into two subfamilies, Phoxocephalinae G.O. Sars, 1891 and Harpiniinae Barnard & Drummond, 1978, being the latter scarcely studied in the southwestern Atlantic. The material examined was collected by Box Corer at depths ranging from 283 to 998 meters, in the slope of Potiguar Basin, Rio Grande do Norte state, during the project “Avaliação da Biota Bentônica e Planctônica da Bacia Potiguar e Ceará”. For the taxonomic study, appendages and mouthparts were dissected and mounted in glycerin gel slides, drawn under a microscope with camera lucida, and digitized with CorelDRAW 2018. The type-material is stored in 70% ethanol and deposited in the Crustacea Collection of MOUFPE. After sample analyses, three new species of *Harpinia* Boeck, 1876 were identified, providing the first record of the genus from the Southwestern Atlantic, previously known from the North Atlantic, Arctic and Mediterranean Sea. *Harpinia* sp. nov. 1 is diagnosed by: head with lower lateral blunt projection; antenna 2 article 1 not ensiform; gnathopods 1–2 palm defined by a sinuous excavation; pereopod 6 dactylus longer than propodus; and epimeron 3 posteroventrally rounded. *Harpinia* sp. nov. 2 is characterized by: head with dorsal keel; antenna 2 article 1 ensiform; gnathopod 1 palm defined by a u-shaped excavation; coxa 7 posterior margin crenulate; epimeron 3 posteroventral corner as a spine; and uropod 2 outer ramus with subapical nail. *Harpinia* sp. nov. 3 is diagnosed by: head with dorsal keel; antenna 2 article 1 weakly ensiform; gnathopod 2 palm defined by a large excavation producing a spine; epimeron 1 posteroventral corner as a short blunt lobe; epimeron 3 with oblique facial row of setae, posteroventral corner as a large spine. This new finding and recent works show that phoxocephalids are much more diverse than thought, reflecting a taxonomical gap in Brazilian waters, which is being filled as new taxonomy studies are carried out.

Keywords: Amphilochidea, northeastern Brazil, Potiguar Basin, taxonomy.

Financial support: FACEPE (# BFP-0106-1.08/21), PROCIÊNCIA and FAPERJ (# E-26/202.768/2019).

Area: Taxonomy & Phylogeny

METAL CONTAMINATION IN *Callichirus major* (Say, 1818) (DECAPODA: CALLIANASSIDAE) ON TWO BEACHES OF SÃO PAULO STATE, BRAZIL

SILVA, J.J.[1,*]; DUARTE, L.F.A.[2]; TREVIZANI, T.H.[3]; SOUZA, F.V.B.[1] & PINHEIRO, M.A.A.[4]

[1] PPG-BAC (UNESP, IB/CLP); [2] UNISANTOS, Santos (SP), Brazil; [3] Instituto Oceanográfico da USP (IO/USP), São Paulo (SP), Brazil; [4] Universidade Estadual Paulista (UNESP), Instituto de Biociências, Campus do Litoral Paulista, São Vicente (SP), Brazil.

* Corresponding author: julianojosedsilva@gmail.com

Pollution is a major issue in coastal environments, affecting expressively marine life. This study aims to compare metal contamination on two beaches in São Paulo state, Brazil (STS, Santos; and JUR, Juréia Ecological Station), as well as their bioaccumulation in the ghost shrimp *Callichirus major*. Metal contamination was measured in water (sea surface), sediment (15-30cm) and in crustacean tissues (M, musculature; H, hepatopancreas; and G, gonads). Triplicated samples from all these compartments were collected in July 2017 and the metal concentrations (Cu, Cd, Mn, Cr, Pb, Hg and As) were analyzed by an atomic absorption spectrophotometer (in mg/g). Water samples did not indicate metal contamination on both beaches (CONAMA reference values). Most of the STS sediment samples (71.4%) presented five metallic signs (Mn, Cr, Cd, Cu and Hg) and were classified as regular quality, contrasting with three metallic signs in the JUR samples (Mn, Cr and Cu), considered to be of good quality (TEL / PEL reference values). Metallic signs in *C. major* tissues were similar to the sediment (STS: n=5; 71.4%; and JUR: n=4; 57.1%) and 20% lower in JUR than STS. *C. major* tissues have three metals (Cd, Cr and Cu) above the Maximum Tolerated Limit (MTL) established by FAO/WHO (USA) and ANVISA (Brazil) on both beaches. A higher percentage of tissue samples >MTL (92.6%) occurred in STS, and was 1.6 times greater than JUR (59.3%), with cadmium 87.6% greater in STS than JUR. The hierarchy of metal accumulation in tissues was based on the mean percentage of Cd, Cr and Cu, as follows: G (83.6%) > H (59.2%) > M (47.9%). The STS beach had higher levels of metals in sediments, and the consumption of *C. major* by humans can cause health problems. The high contamination on STS was associated with Santos Port and annexed Industrial Complex, while the pristine condition of JUR was guaranteed by the Juréia Ecological Station (JES). The importance of the conservation units is clear to maintain environmental quality and biodiversity conservation.

Keywords: pollution, shrimps, toxicity.

Financial support: CNPq (PQ # 305957/2019-8).

Area: Genetics & Conservation

TWO NEW SPECIES OF *Hyalella* SMITH, 1874 (MALACOSTRACA: AMPHIPODA: HYALELLIDAE) FROM THE STATE OF SANTA CATARINA, BRAZIL

REIS, G.O.[1,*]; ARAUJO, P.B[1] & BUENO, A.A.P.[2]

[1] Universidade Federal do Rio Grande do Sul (UFRGS), Laboratório de Carcinologia, Brazil;
[2] Universidade Federal de Lavras (UFLA), Laboratório de Carcinologia, Brazil.

* Corresponding author: gideoliveirareis@gmail.com

Freshwater amphipods of the genus *Hyalella* Smith, 1874 occur exclusively in the Americas with 90 species described. In Brazil 38 species are recorded, the southern region has the largest number of records, and the state of Santa Catarina has five species recorded. The aim of the study was to describe two new species of the genus *Hyalella* collected in Bocaina do Sul and Campos Novos, both municipalities in the state of Santa Catarina. The two new species differs from other species by the presence of plumose setae on antenna 1 and the pappose and plumose setae on antenna 2; on upper and lower lip there are simple setae; moreover the two new species exhibit pappose bifurcate setae on gnathopods, a new type of setae that hadn't yet been describe; on gnathopods, the dactylus have proximal margin strongly irregular and palm with irregular margin; the coxal plate have pappose setae; on peduncle and inner ramus of pleopods there was the presence of simple setae; in addition to the other characteristics that differentiate, the two new species exhibit microtrichs on antennae 1 and 2, maxilliped, gnathopods 1 and 2, pereopods, uropods and telson. Thus, we increased the knowledge about the genus *Hyalella* with the description of two new species. In addition, this study describes a new type of seta. We expect that this study will be helpful in future studies with *Hyalella* and that the knowledge of more species and distribution will encourage the conservation of freshwater aquatic environments and their fauna.

Keywords: Crustacea, freshwater, peracarid, Southern Brazil.

Financial support: CAPES.

Area: Taxonomy & Phylogeny

HOW TO AVOID BECOMING A ZOMBIE: LOW SALINITY TOLERANCE IN WHITE-FINGERED MUD CRABS AS A MECHANISM TO AVOID CASTRATING PARASITES

POCHTAR, D.L.[1,*], RUIZ, G.M.[2], TEPOLT, C.K.[3], BLAKESLEE, A.M.H.[4], FOWLER, A.E.[1]

[1] Department of Environmental Science and Policy, George Mason University, Fairfax, VA, 22030; [2] Marine Invasions Laboratory, Smithsonian Environmental Research Center, Edgewater, MD 21037; [3] Department of Biology, Woods Hole Oceanographic Institution, Woods Hole, MA, USA; [4] Biology Department, East Carolina University, Greenville, NC 27858

* Corresponding author: dpochtar@gmu.edu

Host-parasite coevolution may influence a host's ability to use environmental refuges to escape parasitism. To test this, we used estuarine populations of hosts (white-fingered mud crabs *Rhithropanopeus harrisii* - *Rh*) and parasites (rhizocephalan barnacles *Loxothylacus panopaei* - *Lp*) from US Atlantic and Gulf coasts. Four distinct regions differed in coevolutionary history: (1) *Lp* absent, *Rh* invasive, (2) *Lp* native, *Rh* native, (3) *Lp* invasive, *Rh* native and (4) *Lp* absent, *Rh* native. Differences in *Rh* and *Lp*'s low salinity tolerance may allow lower salinities to act as a refuge against infection, and adult *Rh* salinity tolerance may be related to the coevolution history of the host-parasite interaction. We exposed 8 populations (2 from each of the 4 regions) of *Rh* to salinities (0.1, 0.25, 0.5, 1, 2, 5, 10ppt) for 4 weeks to calculate survival and non-lethal measures of stress. All *Rh* were dissected to calculate energy and reproductive storage capacity. We hypothesized that *Rh* populations with the longest coevolution with *Lp* would exhibit the highest tolerances to the lowest salinities tested. This work will provide a novel understanding of the trade-offs that exist between biotic and abiotic selective pressures in shaping host adaptation and ecology in complex coastal ecosystems.

Keywords: environmental refuge, host-parasite coevolution.

Financial Support: Smithsonian Institution's Graduate Student Fellowship.

Area: Others

INSULIN-LIKE PEPTIDES: LIMB REGENERATION AND MOLT REGULATORS

KOZMA, M.T.*; PÉREZ-MORENO, J.L.; THOMAS, D.F. & MYKLES D.L.

Colorado State University, Fort Collins, Colorado, USA.

* Corresponding author: mihika.kozma@colostate.edu

Crustaceans molt to grow and to regenerate. Molting is orchestrated by many factors, such as signal peptides secreted at various life stages and condition of the animals. In decapod crustaceans, neuropeptides secreted from the X-organ/sinus gland complex influence molting by regulating the Y-organ (YO). Biosynthesis of ecdysteroids by the YO progresses the molt cycle. While the role of neuropeptides (e.g., molt inhibiting hormone, MIH) is well known in the regulation of ecdysteroidogenesis, others are understudied. One such class of hormones is the insulin-like peptide (ILP) superfamily. Several findings suggest ILPs are a critical part of the crustacean molt cycle: First, an insulin receptor (InsR) is expressed in the YO transcriptome of the blackback land crab *Gecarcinus lateralis*. Eyestalk ablation leads to down-regulation of InsR in the YO. This effect was blocked by rapamycin, indicating mTORC1 mediated regulation of InsR expression. Second, growth factor signaling pathways such as MAPK and P13K/Akt/mTOR mediate insulin/ILP action in other crustacean organs. In insects, activation of MAPK pathway leads to ecdysteroidogenesis. *G. lateralis* YO shows differential expression of 66 genes related to the MAPK signaling pathway across the molt cycle, along with differential gene expression of molecules from the P13K/Akt/mTOR signaling pathway. Third, a homolog of the *Drosophila* leucine-rich repeat G protein-coupled receptor, Lgr3 was detected in the *G. lateralis* YO transcriptome. Lgr3 is a target for an ILP secreted by damaged imaginal discs of *Drosophila* and its activation halts progression of molt. In decapods, damage to regenerating limb buds in early premolt halts molt cycle progression until the damage is repaired. It is possible that this process may be mediated by ILPs much like in insects. Taken together, these findings indicate regulation of YO ecdysteroidogenesis by ILPs. In this study, the ILP superfamily of genes expressed in crustacean transcriptomes are characterized through phylogenetic inference. YO transcriptomes from different molt stages and intermolt eyestalk ganglia (X-organ/sinus gland complex included) transcriptome from *G. lateralis*, and limb bud transcriptomes from *Uca pugilator* were included in the analysis. Several ILPs subtypes were identified in transcriptomes originating from different crustacean organs, providing candidates for further examination in molt regulation and limb regeneration of decapod crustaceans.

Keywords: ILP, insulin, limb regeneration, molt.

Financial support: NSF (# IOS-1922701).

Area: Others

SPATIAL DISTRIBUTION AND BETA DIVERSITY OF BENTHIC MACROINFAUNA IN SANDY BEACHES OF THE ATLANTIC COAST OF MEXICO

DUARTE, J.[1,*]; GÓNZALEZ-TREVIÑO, A.[1]; HERRERA-DORANTES, M.T.[1]; GUERRA-CASTRO, E.[2]; DEFEO, O.[3]; GUALITO-RODRÍGUEZ, A.S.[1] & ARDISSON, P.-L.[1]

[1] Departamento de Recursos del Mar, Centro de Investigación y de Estudios Avanzados del IPN, México;
[2] Escuela Nacional de Estudios Superiores (ENES, Mérida), UNAM, México;
[3] Universidad de la República, Montevideo, Uruguay.

* Corresponding author: julio.duarte@cinvestav.mx

Sandy beaches benthic communities have discontinuous distribution, restricted latitudinally or biogeographically. The present study analyzes geographic variations in macroinfaunal assemblages of sandy beaches of the Atlantic coast of Mexico. Data from 648 quantitative intertidal quadrants (0.5 m^2) from 16 locations in six marine ecoregions were obtained to identify trends in macroinfaunal assemblage structure. Sampling was carried out in February and March 2020-2021, yielding 14,013 individuals of 42 different taxa. The taxa numerically dominant were Arthropoda (Peracarida: 83%), followed by Annelida (Polychaeta: 13%), and Mollusca (Bivalvia: 4%). Significant geographic differences in benthic assemblage structure were found among ecoregions (PERMANOVA: *F*= 8.9317; P= 0.001*). NMDS ordination evidenced differences in the faunal resemblance between terrigenous and carbonate sediment-influenced ecoregions. The spatial species diversity analysis using the additive partitioning approach [βsor (Sorensen dissimilarity index) = βsim (turnover) + βnes (nestedness)] for multi-location dissimilarity, estimated an overall beta-diversity value for the total area: βsor= 0.819. However, when beta-diversity was partitioned into its turnover and nestedness components, the spatial turnover was responsible for most of the beta-diversity structure in the macroinfaunal assemblages: βsim= 0.716 vs. βnes= 0.103. The higher dissimilarity in the structure of the assemblages occurred between the Cancunean Neritic ecoregion and the rest of the ecoregions (95%) (carbonate sediment origin). In the Gulf of Mexico, the higher dissimilarity occurred between the Campeche/Yucatanean Inner Neritic (carbonate-sediment origin) ecoregion and the Veracruzan Neritic - Western Gulf Neritic ecoregions (75%) (terrigenous-sediment origin). We concluded that macroinfaunal assemblages in sandy beaches of the Atlantic coast of Mexico are mainly structured by species replacement; furthermore, the assemblage structure might be influenced by the sedimentary origin (carbonate, terrigenous) of the studied locations. These factors could act as barriers conditioning the regional assembly structure.

Keywords: Atlantic-Ocean, benthic-macroinfauna, Beta-diversity, Mexico.

Financial support: Cinvestav Benthos Laboratory Fund.

Area: Ecology & Biodiversity

DISTRIBUTION AND ZOOGEOGRAPHICAL AFFINITIES OF MOLE CRABS *Emerita*, *Lepidopa* AND *Albunea* (ALBUNEIDAE AND HIPPIDAE) IN SANDY SEDIMENTS OF MEXICO ATLANTIC COAST

DUARTE, J.[1,*]; GÓNZALEZ-TREVIÑO, A.[1]; HERRERA-DORANTES, M.T.[1]; GUERRA-CASTRO, E.[2]; DEFEO, O.[3]; GUALITO-RODRÍGUEZ, A.S.[1] & ARDISSON, P.-L.[1]

[1] Departamento de Recursos del Mar, Centro de Investigación y de Estudios Avanzados del IPN, México; [2] Escuela Nacional de Estudios Superiores (ENES, Mérida), UNAM, México; [3] Universidad de la República, Montevideo, Uruguay.

* Corresponding author: julio.duarte@cinvestav.mx

Members of the superfamily Hippoidea are specialized burrowing crabs that live in sandy sediment habitats, predominantly in tropical and subtropical regions. In the Atlantic coast of Mexico, the scientific knowledge on their geographic distribution and state of their populations remains poorly known. This study reports the geographic distribution of mole crabs *Albunea*, *Emerita*, and *Lepidopa* collected from three sampling surveys in the Atlantic coast of Mexico that comprised 102 locations (Cinvestav Benthos Laboratory Fund). These surveys yielded 1,425 individuals (ind) from the states of Tamaulipas, Veracruz, Tabasco, Campeche, Yucatan, and Quintana Roo belonging to six species: *Albunea paretii* (1 ind), *Emerita benedicti* (503 ind), *E. talpoida* (894 ind), *Lepidopa benedicti* (16 ind), and *L. boykoi* (11 ind). We recorded new localities and range extensions for all species. *A. paretii* was the widespread species within the western Atlantic region, and mainly occurred in three biogeographic provinces (Carolina, Caribbean, and Brazilian), with only one record off Tabasco. Species of the genus *Emerita* were registered in high numbers in the Carolina and Caribbean Provinces. *E. benedicti* distribution ranged from Tamaulipas to Tabasco and *E. talpoida* occurred from Campeche to Quintana-Roo. Species of the genus *Lepidopa* presented a sympatric biogeographic distribution with *Emerita*, but with fewer records. *L. benedicti* ranged from Tamaulipas to Tabasco and *L. boykoi* was restricted to Veracruz and Tabasco. This is the first attempt to delimit the geographic distributions of mole crabs belonging to the superfamily Hippoidea, historically underestimated and underrepresented in sampling surveys conducted on the Atlantic Coast of Mexico.

Keywords: *Albunea*, distribution, *Emerita*, *Lepidopa*, zoogeography

Financial support: Cinvestav Benthos Laboratory Fund.

Area: Ecology & Biodiversity

FIRST ZOEAL STAGE MORPHOLOGY OF THE SNAPPING SHRIMP *Alpheus cristulifrons* RATHBUN, 1900 (CARIDEA: ALPHEIDAE)

PASINATTO, K.* & TEROSSI, M.

Laboratory of Carcinology, Institute of Biosciences,
Federal University of Rio Grande do Sul (UFRGS), Brazil.

* Corresponding author: kcpasinatto@gmail.com

Larval morphology can provide data for many taxonomic, systematic and ecological studies. Although *Alpheus cristulifrons* Rathbun, 1900 is a shrimp species widely distributed in western Atlantic, from eastern USA to Rio de Janeiro (Brazil), including Caribbean Sea islands, Atol das Rocas, and Fernando de Noronha Archipelago, its larval morphology is unknown. Thus, the present study aimed to describe the first larval stage (zoea I) of *A. cristulifrons* from Fernando de Noronha Archipelago, Pernambuco, Brazil. One ovigerous female was collected manually at Porto Santo Antônio Beach in July 2019 and kept alive until the hatching of larvae. The parental female was preserved in 80% ethanol, while the larvae were fixed in 10% formalin. Larvae were dissected under a stereomicroscope and drawn, measured, and analyzed under a microscope with the aid of a *camera lucida*. Although the zoea I of *A. cristulifrons* has characteristics in common with the zoea I described to 20 congeners species (only extended development considered), it can be morphologically separated from the others by to have 3 simple setae on the exopod of the maxillule (*versus* 1, 2 or 3 in the others, but never 3 simple setae, sometimes denticulate or plumoserrulate setae) and 8 setae on the basis of the first maxilliped (*versus* 0, 2, 4, 5, 7 or 9 setae in the others). Some characters are exclusive of *A. cristulifrons* with other species: 2 setae in the coxa of the maxillule with *A. strenuus*, 8-segmented exopod of the antenna with *A. bouvieri* and *A. formosus*, 5-segmented endopod of the second maxilliped and 6-segmented endopod of the third maxilliped with *A. bouvieri.* The zoea described here have the simple dorsal setae on the pleon, recently described for another 3 species (*A. bouvieri*, *A. formosus* and *A. malleator*) from Brazilian coast, but perhaps this character has not yet been analyzed in other species. This study provided the 23rd description of zoea for the genus *Alpheus* (8th to Brazil), increasing the knowledge about the genus for the Atlantic.

Keywords: Alpheidae, Zoea I, Atlantic, morphological characters.

Financial support: CAPES, CNPq and CNPq Universal # 421193/2018-2.

Area: Reproduction & Development

A REVISION OF THE GENUS *Sinopotamon* BOTT, 1967 (BRACHYURA: POTAMIDAEAB), FRESHWATER CRABS ENDEMIC TO CHINA, WITH DESCRIPTIONS OF TWO NEW GENERA

WANG, R.; PAN, D.* & SUN, H.*

Jiangsu Key Laboratory for Biodiversity and Biotechnology, College of Life Sciences, Nanjing Normal University, 1 Wenyuan Rd, Nanjing, 210023, China.

* Corresponding author: sunhongying@njnu.edu.cn; dapan@njnu.edu.cn

The systematics of the problematic potamid genus *Sinopotamon* Bott, 1967 is revised using morphological and molecular data. The species in this genus are assigned to four separate genera: Gen. nov. 1, Gen. nov. 2, *Longpotamon* Shih, Huang & Ng, and *Sinopotamon* (Bott, 1967). A new monotypic genus, Gen. nov. 1, is proposed for *Sinopotamon parvum* (Dai, Song, Li, Chen, Wang & Hu, 1985). A new genus, Gen. nov. 2, is established with *Sinopotamon baokangense* (Chu, Sun & Sun, 2018) as type species, and including other two species, *Sinopotamon cochlearidigitum* Dai, Chen, Zhang & Lin, 1986 and *Sinopotamon introdigitum* Dai, Chen, Zhang & Lin, 1986. Crabs of these four genera can be distinguished from each other in the combination of character (adult size, carapace, cheliped fingers, cheliped carpus, and male first gonopod). The total-evidence approach based on 23 nuclear markers, 2 mitochondrial markers, and 35 morphologcial characters supports the polyphyly of *Sinopotamon*, and supports the establishment of these two new genera. The distribution of Gen. nov. 1 and Gen. nov. 2 are restricted within southwest Guizhou and northern Hubei, respectively. The latter genus overlaps with *Longpotamon* in the northern Hubei and adjacent provinces.

Keywords: Gen. nov. 1, Gen. nov. 2, revision, *Sinopotamon*.

Financial support: National Natural Science Foundation of China (# 31471972 and # 32170454) to SHY.

Area: Taxonomy & Phylogeny

SPATIOTEMPORAL DIVERSIFICATION OF THE CHINA ENDEMIC FRESHWATER CRAB GENUS *Sinopotamon* BOTT, 1967 (DECAPODA: BRACHYURA: POTAMIDAE)

WANG, R.; PAN, D.; SHI, B.; LI, M.; HAO, X. & SUN, H.*

Jiangsu Key Laboratory for Biodiversity and Biotechnology, College of Life Sciences, Nanjing Normal University, 1 Wenyuan Rd, Nanjing, 210023, China.

* Corresponding author: sunhongying@njnu.edu.cn.

The phylogeny of the freshwater crab genus *Sinopotamon* Bott, 1967, which is the most species-rich genus in East Asia, has been a hotspot in recent research. The phylogenetic relationship in the previous works suffers the missing of certain key taxa and the absence of nuclear molecular markers. In this study, we performed a comprehensive phylogenetic analysis of the genus *Sinopotamon sensu lato*, with extensive sampling in both geographic and taxonomic coverage (covering 85% of the known species assigned to genus *Sinopotamon*), using a total-evidence approach in light on 23 nuclear markers (containing both exons and introns), and 2 mitochondrial markers (COI, and 16S) and 35 morphological characters. The results produced a well-supported phylogeny demonstrating the genus is polyphyletic; four main clades were identified, which is congruent with the previous studies but with new findings. A novel fossil-calibrated timetree and biogeographical analyses estimated that *Sinopotamon* most likely originated from the Sichuan Basin and surrounding mountains approximately 20 Ma (Early Miocene) instead of the 5.3 Ma (Early Pliocene) inferred from the previous study, which coincides with the formation of the Yangtze River system in Pre-Miocene. The diversification analyses found a well-supported diversification rate shift in *Sinopotamon* s. l. at 8 Ma, which probably driven by the global Neogene climate cooling. The diversification rate of *Sinopotamon* sudden thermal increase in the late Miocene / early Pliocene (6.6 / 5.2 Ma) and middle Pleistocene (1.25 Ma), suggests that the alternating predominance of East Asian winter and summer monsoon during this period (7.1-3.5 Ma) and the mid-Pleistocene transition (MPT) seem to have influenced the diversification within the *Sinopotamon*. This study updates our understanding of the origin, dispersal and diversification of the genus *Sinopotamon*.

Keywords: diversification, freshwater crabs, phylogeography, *Sinopotamon*.

Financial support: National Natural Science Foundation of China (# 32170454 and # 31471972) to SHY.

Area: Taxonomy & Phylogeny

STUDY ON SHELL UTILIZATION PATTERN OF TWO SYMPATRIC HERMIT CRAB SPECIES ON THE ROCKY INTERTIDAL REGION OF VERAVAL, GUJARAT, INDIA

PATEL K. J.[1,*], VACHHRAJANIK. D.[1] & TRIVEDI, J.N.[2]

[1] The Maharaja Sayajirao University of Baroda, Department of Zoology, Marine Biodiversity and Ecology Laboratory, Vadodara-390002, Gujarat, India; [2] Hemchandracharya North Gujarat University, Department of Life Sciences, Animal Taxonomy and Ecology Laboratory, Patan-384265 Gujarat, India.

* Corresponding author: kjpatel8460@gmail.com

The present study illustrates the shell utilization and resource partitioning of two rocky shore inhibiting sympatric hermit crab species *Clibanarius rhabdodactylus* and *C. ransoni* with reference to gastropod shell species (shell shape), shell size, and shell availability. Hermit crab specimens were collected by handpicking method from January to March 2021 from rocky shore of Veraval, Gujarat state, India. Hermit crabs were removed from the occupied shell and their weight and size (shield length) were measured. The gender of occupant hermit crab was identified and categorised into male, non-ovigerous female and ovigerous female. Different morphological characters of occupied gastropod shell-like shell length, shell aperture length and width, shell volume and shell dry weight were measured. Males of both the hermit crab species were significantly larger in size as compared to females. *Clibanarius rhabdodactylus* and *C. ransoni* were occupying 29 shells and 28 species of gastropod shells respectively among which >75% occupied shells were comprised of *Cerithium caeruleum, Lunella coronata*, *Turbo bruneus*, *Tenguella granulate* and *Pollia undosa*. *Cerithium caeruleum* was found to occur in high abundance as compared to other gastropod species in the study area which may also influence the shell utilization of hermit crab species. Males and non-ovigerous females of the hermit crab species utilized almost all shell species, while ovigerous females used only a few shell species. Significant relationship was observed between different morphological characters of the occupant crab species (shield length and weight) and occupied shells (shell total length, shell aperture length, shell aperture width, shell dry weight and shell volume). Shell partitioning in terms of occupied shell species, shape and size was evident between male and female of both hermit crab species. The present study revealed shell occupation pattern of *C. rhabdodactylus* and *C. ransoni* is highly influenced by the diversity, morphology and availability of gastropod shells in the study area.

Keywords: resource partitioning, sympatric species, shell availability, shell occupation.

Financial support: First author is supported by SHODH fellowship for doctoral research.

Area: Ecology & Biodiversity

PERCEPTIONS OF CLIMATE CHANGE IMPACTS ON THE MANGROVE CRAB, *Ucides cordatus* (LINNAEUS, 1763) (BRACHYURA: OCYPODIDAE), ACCORDING TO CRAB GATHERERS IN CANANÉIA (SP), BRAZIL

NOVAES, M.C.L.C[1,*]; SOUZA, F.V.B.[2]; PINHEIRO, M.A.A.[1,2,3] & BERCHEZ, F.A.S.[4]

[1] Programa de Pós-Graduação em Ecologia, Evolução e Biodiversidade - UNESP, IB/Rio Claro, Brazil; [2] Programa de Pós-Graduação em Biodiversidade de Ambientes Costeiros, IB/Litoral Paulista, SP, Brazil. [3] Universidade Estadual Paulista (UNESP), Instituto de Biociências (IB), Campus do Litoral Paulista (CLP) – Grupo de Pesquisa em Biologia de Crustáceos (CRUSTA), São Vicente, SP, Brazil; [4] Universidade de São Paulo (USP), IB / Campus Universitário, São Paulo, Brazil.

* Corresponding author: carolina.las-casas@unesp.br

Ucides cordatus (Linnaeus, 1763) is an endemic mangrove crab that might have its population biology affected by Global Climate Changes (GCC). Spatial distribution of this species can be affected by sea level rise, with recruitment occurring towards more emerged areas adjacent to mangroves, generally occupied by urbanization. This hydric dynamic promotes reduction of the mangrove area, reduces the environment disponible to juvenile settlement, which would harm the income and vulnerability of crab gatherers. The mangroves of Cananéia municipality are located in the southern part of São Paulo State (Brazil) and present high extraction of *U. cordatus*, due to its large extension and conservation. Individual interviews were carried out by the authors with 22 local crab gatherers to investigate the perception about GCC and their impacts on *U. cordatus* during the period comprising from February to June 2018. The results suggest that fishers have detected climate-related changes in their environment such as temperature increase (air and water) and changes in wind patterns. The majority (91%) of these crab gatherers were men, with age ranges from 30 to 60 years-old (mean ± standard deviation: 49 ± 11 yo), 68% of them are economically dependent on the artisanal fishery based on *U. cordatus* gathered. The crab gatherers have a high level of knowledge of many mangrove situations only by observation, some of them posteriorly confirmed by researchers and find in the literature. Despite this fact, just 27% of the interviewed claim to understand that rising sea levels and warming of the water have caused changes in the life cycle of the *U. cordatus*. Most of these fishermen (58%) believe that the main consequence may be increased mortality of juvenile crabs in mangroves, revealing the need to carry out a broader and interdisciplinary approach to support management, climate change policies, and guarantee the sustainability of mangrove socio-ecological systems.

Keywords: artisanal fisheries, ethnobiology, local communities, traditional knowledge.

Financial support: CAPES (MCLCN fellowship grant), PROPG UNESP (grant to field works) and CNPq (PQ # 305957/2019-8).

Area: Others

ANNOTATED CHECKLIST OF MARINE AMPHIPODS (CRUSTACEA: AMPHIPODA) OF INDIA

THACKER, D.R.[1,*]; PATEL, K.J.[2] & TRIVEDI, J.N.[1]

[1] Hemchandracharya North Gujarat University, Department of Life Sciences, Animal Taxonomy and Ecology Laboratory, Patan-384265 Gujarat, India; [2] The Maharaja Sayajirao University of Baroda, Department of Zoology, Marine Biodiversity and Ecology Laboratory, Vadodara-390002, Gujarat, India.

* Corresponding author: dimplethacker789@gmail.com

The present study provides a comprehensive and taxonomic validated list of marine amphipods of India. The data was compiled from accessible peer-reviewed scientific literature published on marine amphipods of India (1885 to 2021). The species records published in grey literature, popular articles and reports in local newsletters were not considered in the present study. The classification of amphipods was adopted from World Amphipod Database. The occurrence data of the species was classified according to the coastal states of India as well as according to the ecoregions identified by Spalding et al. 2007. A total of 236 species belonging to 119 genera and 50 families are recorded from India. At the family level diversity, 3 families have ≥15 species, 8 families have ≥7 species and 39 families have <7 species. Maximum number of species has been recorded from the South Indian ecoregion (129 species) followed by the Eastern India ecoregion (79 species), Western India ecoregion (54 species), the Andaman and Nicobar Islands ecoregion (14 species), Northern Bay of Bengal ecoregion (4 species) and the Maldives ecoregion (2 species). In State-wide diversity, the highest number of species are reported from Tamil Nadu (164 species, 90 genera, 40 families) followed by Kerala (53 species, 39 genera, 28 families), Gujarat (25 species, 17 genera, 14 families), Odisha (18 species, 16 genera, 13 families), Andaman and Nicobar Islands (14 species, 14 genera, 13 families), Andhra Pradesh (10 species, 9 genera, 7 families), Maharashtra (4 species, 4 genera, 4 families), West Bengal (4 species, 4 genera, 4 families), Lakshadweep Islands (2 species, 1 genus, 1 family). This database will provide baseline information for future studies on marine amphipods of India.

Keywords: biodiversity, checklist, ecoregions, taxonomy.

Area: Taxonomy & Phylogeny

POPULATION ASPECTS *Ucides cordatus* (L. 1763) IN LAGAMAR PARANÁ - SÃO PAULO

RAMOS, G.C.[1,*]; GONÇALVES, G.A.R.[1]; METRI, C.B.[1]; METRI, R.[1] & COTTENS, K.F.[2]

[1] Universidade Estadual do Paraná (UNESPAR- Paranaguá);
[2] Instituto Chico Mendes de Conservação de Biodiversidade.

* Corresponding author: gabycosta.gg29@gmail.com

Ucides cordatus is a semi-terrestrial crustacean endemic of mangroves, acting as a major resource for the livelihood of riverside communities. The Monitora Protocol (ICMBio) was created with the objective of standardize the population monitoring populations in protected areas in Brazil. *U. cordatus* were studied in Lagamar of Paraná (PR) and São Paulo (SP) states. Monitoring was carried out in 6 areas in PR: Paranaguá a non-protected area (25.511408'S, 48.494045'W), and three protected areas: ESEC Guaraqueçaba (25°18.793'S, 48°21.682'W), RPPN Papagaio da Cara Roxa (25°18.268'S, 48°25.464'W), PARNA Superagui (25°18.550'S, 48°10.168'W), two protected areas in APA of Guaratuba: Cabaraquara (25°49.732'S, 48°34.931'W) and Embocui (25°53.558'S, 48°38.044'W). In SP were studied: a non-protected Icapara (24°41.631'S, 47°28.120'W) in Iguape, and Nobrega (25°00.954'S 47°55.116'W) and a protected area PE Ilha do Cardoso (25°04.773'S, 47°56.972'W), both in Cananéia. Each area was subdivided into two physiognomies (fringe and basin) and squares of 5x5m each delimited the sample area in November 2021. Inside the square, crab galleries were classified and quantified in open, closed and abandoned. Differences were observed in the proportions of open and closed galleries between the states, where PR showed 1,999 open galleries, and SP 615 galleries ($F = 34.4$, $p = <0.01$). For the closed galleries, a greater predominance was observed for SP with 1,085, and PR with 959 ($F = 73.9$, $p =< 0.01$). The densities of *U. cordatus* don´t differ between states ($F = 0.5$, $p = 0.49$), range from 0.99 to 3.15ind./m² in PR, and in SP from 1.47 to 3.60ind/m². Among the PR sites, ESEC stood out with the highest density (3,15 ind./m²) and Cabaraquara with the lowest (0,99 ind./m²). In SP, Icapara is the place with the highest density (3,60ind./m²) and Nobrega the lowest (1,47 ind./m²). Density patterns between physiognomies were observed only when states and locations were not considered ($F= 8.8$ $p = < 00.1$), showing higher values of density for basins (2,12/m^2) than the fringes (1,78/m^2). In PR, the parameters were better in protected areas. The higher density in basis is well documented in the literature, but the predominance of open galleries in PR must be more investigated.

Keywords: abundance, protected areas, uçá-crab.

Financial support: Associação MarBrasil, Programa Petrobrás Socioambiental, Fundação Araucária.

Area: Others

REPRODUCTIVE POTENTIAL OF THE LAND CRAB, *Johngarthia lagostoma* (H. MILNE EDWARDS, 1837), IN TRINDADE ISLAND, BRAZIL

OLIVEIRA, M.A.M.[1,*]; JOÃO, M.C.A.[2] & PINHEIRO, M.A.A.[1,2]

[1] Universidade Estadual Paulista (UNESP), Instituto de Biociências, Campus do Litoral Paulista, São Vicente, Brazil; [2] Programa de Pós-Graduação em Ecologia, Evolução e Biodiversidade, UNESP IB/Rio Claro, Brazil.

* Corresponding author: antonia.machado@unesp.br

Johngarthia lagostoma is an endemic land crab widely regarded in ecological terms and found in four Atlantic Ocean islands. Within Brazilian territory, *J. lagostoma* is considered an 'endangered '(EN) species, due to habitat suppression and wildlife introduced to these islands. This project evaluates the reproductive potential of *J. lagostoma* in Trindade Island, Brazil, based on their reproductive efforts and fecundity. Ovigerous females had their size (CW, carapace width) measured with precision calipers (0.05mm) and their wet weight registered on a digital scale. Afterwards, the egg mass was removed and the specimens were weighed again. The difference between total ovigerous female weight and their weight without eggs (WNE) represents the egg mass wet weight (EMw). Reproductive effort (RE) was quantified through the percentage in which egg weight corresponds to the total female weight and represented by the following equation: RE=(EMw/WNE)x100. Fecundity was estimated through a volumetric method. Each egg mass was transferred to a container with water (5L) and submitted to constant aeration, where five subsamples (2mL) were taken. Egg number (NE) was quantified through the volume of each subsample, with subsequent extrapolation towards the total volume. The RE and NE values were used as dependent variables in regression analyses and CW as an independent variable. A total of 43 females were analyzed, in which CW and RE ranged from 55.3 to 100.1mm CW (75.8±12.6 mm CW) and from 7.3 to 14.2 RE% (10.5±1.5 RE%), respectively. The RExCW relationship ($RE=124,71LC^{-0,57}$) has a negative correlation ($r=-0.59$; $p<0.001$), with the decrease in reproductive effort in relation to increasing size. However, this function did not fit properly ($R^2=0.34$). For fecundity analysis ($n=42$) the variables CW and NE ranged from 50.4 and 95.7mm CW (74.0±12.5 mm CW) and from 17,500 to 160,000 eggs (77,866±42,122 eggs). The NExCW relationship ($NE=0.35CW^{2.83}$) shows a positive correlation ($r=0.85$; $p<0.0001$) and fits properly ($R^2=0.72$). These obtained mathematical models will expand the information regarding J. lagostoma and their reproduction. Furthermore, they can be used to improve how this species is handled in Trindade Island.

Keywords: conservation, egg, ocean island, reproduction.

Financial support: CNPq (Crabs Project # 404224/2016; PQ # 305957/2019-8; and PIBIC # 711/2020).

Area: Reproduction & Development

TEMPORAL VARIATIONS AND THE INFLUENCE OF ENSO AND ENVIRONMENTAL PARAMETERS ON THE ABUNDANCE OF *Artemesia longinaris* SPENCE BATE, 1888 IN SOUTHEASTERN BRAZIL

PERROCA J.F.[1,*]; RODRIGUES FILHO, J.L.[2]; FRANZOSO, A.[3] & COSTA, R.C.[1]

[1] Laboratory of Biology of Marine and Freshwater Shrimps (LABCAM) – Biological Sciences Department, Faculty of Sciences, UNESP, 17033-360, Bauru, Brazil. [2] Laboratory of Ecology – Department of Fisheries Engineering and Biology, UDESC, 88790-000, Laguna, Brazil. [3] Zoology Department, Bioscience Institute, UNESP, 18618-000, Botucatu, Brazil.

* Corresponding author: juliaperroca@gmail.com

The shrimp *Artemesia longinaris* became an important economic resource in a multispecies fishery in southeastern Brazil after the collapse of pink shrimp stocks. To understand temporal variations in its abundance and the influence of environmental parameters on its populations, we sampled seven years, monthly, in Ubatuba Bay between 1995 and 2017. Hauls (half an hour by site – 18,000 m^2 / trawl) were performed with the aid of a shrimp fishing boat equipped with double rig nets in four sites: S1 (15 m), S2 (10.4 m), S3 (3 m) and S4 (9.2 m). In each haul, values of bottom water temperature, salinity, organic matter content (OM), and granulometry (Phi) were sampled. A total of 51,784 individuals of *A. longinaris* were captured. To asses temporal variation, we fitted $CPUE_n$ negative binomial GAMs with a factor-smooth interaction between months and ENSO variables and an additive term to sites. The effect of dropping terms was explored. All fitted models used link function identity and ARMA correlation structure. *A. longinaris* best model (Deviance explained = 47.2%) showed that abundance is significantly higher in January and February, increasing in periods of neutrality and weak El Niño. Abundance was higher in S1, decreasing in shallower sites. Ecological models were fitted with all the environmental parameters sampled plus rainfall (global model) and the effect of dropping terms was observed. Models with $\Delta AICc < 2$ were considered the best models. *A. longinaris* top ranked model contained the variables OM, Phi, and temperature (Deviance explained: 21.7%). Abundance was higher in lower temperatures (20°C), in Phi 4.5, and decreased with OM > 10%. The increase in abundance in lower temperatures is associated with the intrusion of the South Atlantic Central Water in the summer, which decreases bottom water temperature. The preference for silt and clay sediment is common to Penaeidae.

Keywords: artisanal fisheries, ENSO, species conservation.

Financial support: FAPESP (# 2019/01308-5, # 2018/13685-5, # 2017/00826-7, #2004/07309-8, # 1998/07090-3, # 1997/12108-6, # 1997/12106-3, # 1997/12107-0, # 1995/02833-0) and CNPq (# 406006/2012-1, # 306672/2018-9).

Area: Aquaculture & Fisheries

SPHEROID ECTOPARASITIC ISOPODS (EPICARIDEA: DAJIDAE) ATTACHED TO THE EXTREMITIES OF BRACHYURAN CRAB HOSTS – NOVEL MORPHOLOGY AND POSITION FOR “BACKPACK ISOPODS"

WILLIAMS, J.D.[1,*]; BOYKO, C.B.[1,2] & MORITAKI, C.A.[3]

[1] Department of Biology, Hofstra University, Hempstead, NY 11549, United States; [2] Division of Invertebrate Zoology, American Museum of Natural History, New York, NY, 10024, United States; [3] Toba Aquarium, 3-3-6 Toba, Toba, Mie 517-8517, Japan.

* Corresponding author: biojdw@hofstra.edu

Parasitic isopods are very diverse and found on a wide range of hosts from barnacles to fish and in habitats from the intertidal to the deep sea. Dajids (Epicaridea: Dajidae) are a group of parasitic isopods known from copepod intermediate hosts and malacostracan definitive hosts including shrimp and brachyuran crabs. These “backpack isopods” are typically dorsoventrally flattened and attached to the dorsal carapace of their hosts where they pierce the exoskeleton and feed on hemolymph. However, newly discovered species in two genera attach to the antennules of crab hosts and exhibit a unique morphology: the female is spheroid or balloon-shaped and houses a dwarf male within the marsupium. Parasitic isopods exhibiting this spheroid morphology and position on host antennules were previously unknown in epicarideans and only rarely reported for other parasites such as copepods. We present data on two new species of *Akrophryxus* Williams & Boyko, 2020 enveloping the antennules of the crabs *Pycnoplax surugensis* (Rathbun, 1932) from the Pacific coast of central Japan (~200 m) and *Parapalicus armatus* Castro, 2000 from the South China Sea (~410 m). The three species of *Akrophryxus* now known are documented to parasitize hosts belonging to three different heterotreme brachyuran families (Ethusidae, Goneplacidae, and Palicidae). We also report on the first described cryptoniscus larval stage for any species in the genus, filling in some details on the life history of the group. Finally, we present data on a new hyperparasitic cryptoniscoid, the first described from any dajid host and one that is a putative egg predator. Our findings indicate the morphological boundaries of parasitic isopods are broader than previously known and many new species remain to be described, especially among the cryptic hyperparasites.

Keywords: *Akrophryxus*, Cryptoniscoidea, cryptoniscus, hyperparasitism, Isopoda.

Financial support: NSF.

Area: Taxonomy & Phylogeny

A NEW DEEP-SEA CUMACEAN SPECIES (CRUSTACEA: PERACARIDA) FROM ARGENTINA, AND THE TAXONOMIC STATUS OF *Platytyphlops orbicularis* (CALMAN, 1905)

ROCCATAGLIATA, D.[1,2,*]; DOTI, B.L.[1,2] & PEREIRA, E.[1,2]

[1] CONICET – Universidad de Buenos Aires, Instituto de Biodiversidad y Biología Experimental y Aplicada (IBBEA), Buenos Aires, Argentina; [2] Universidad de Buenos Aires, Facultad de Ciencias Exactas y Naturales, Departamento de Biodiversidad y Biología Experimental, Buenos Aires, Argentina.

* Corresponding author: rocca@bg.fcen.uba.ar

Calman (1905) described the cumacean *Platyaspis orbicularis* (currently in the genus *Platytyphlops*) based on an immature specimen collected on West Ireland at 699 m depth, which lacks the abdomen and most of the thoracic segments. A few years later, Calman (1912) reported four specimens of *P. orbicularis* from the east coast of USA (613-1015 m) and published a full description of the female. Lastly, this species was cited from Faroe Islands (810 m) and Biscay Bay (470-1739 m). Herein, a new species of *Platytyphlops* is reported from off the coast of Buenos Aires Province at 1011-1712 m depth, based on material collected by the Atlantis II 60 survey (1971) and the Talud I Argentine expedition (2012). Specimens of *P. orbicularis* from off the coast of Ireland and Biscay Bay were also examined. The new species reported here differs from the specimens from Ireland/Biscay Bay (characters between parentheses) as follows: (1) carapace without submedian carinae (with submedian carinae); (2) pereopod 5 as long as pereonite 5 in adults (much shorter than pereonite 5); (3) antennule main flagellum with 5-6 articles plus a minute distal one in adult males (with 4 articles plus a minute distal one); (4) adult total length ~17 mm (~10 mm). In addition, the specimens from Argentina herein reported correspond quite well with Calman's 1912 description. This fact suggests that the specimens reported by Calman from USA probably do not belong to *P. orbicularis*.

Keywords: Cumacea, Lampropidae, Mar del Plata submarine canyon, *Platytyphlops* n. sp.

Financial support: CONICET (PIP # 11220200102070CO).

Area: Taxonomy & Phylogeny

DOES SHADING AFFECTS FIDDLER CRABS MICROHABITAT SELECTION?

SANCHES, F.H.C[1,2,*]; DE GRANDE, F.R. [2,3]; COSTA, T.M.[2,3] & BARRETO, R.E.[2,4]

[1] Institute of Marine Science, Federal University of São Paulo (IMar/UNIFESP), Laboratory of Ecology and Coastal Management (LEGEC), Santos, SP, Brazil; [2] Postgraduate Program in Biological Sciences (Zoology), Biosciences Institute, São Paulo State University (UNESP), Botucatu, SP, Brazil; [3] Biosciences Institute, São Paulo State University (UNESP) – Coastal Campus, Laboratory of Ecology and Animal Behavior (LABECOM), São Vicente, SP, Brazil; [4] Department of Structural and Functional Biology, Institute of Biosciences of Botucatu, UNESP, CAUNESP, Botucatu, SP, Brazil.

* Corresponding author: fabiohcsanches@yahoo.com.br

In biologically diverse ecosystems, an essential process to support competing species to coexist is ecological differentiation. Habitat heterogeneity is, hence, important in establishing species abundance and richness, favoring the coexistence of species due to habitat partition. In this context, we considered shading as a proxy to elucidate the role of habitat heterogeneity in the habitat partition among closely related species. In this study, we investigated shading effects in microhabitat selection of two species of fiddler crabs (*Leptuca leptodactyla* and *Leptuca uruguayensis*). We performed a field experiment consisted in modulating the luminous intensity in 4 different degrees of shading (non-shaded areas as control; 20%; 50%; and 80% of shade), and observed the changes in proportion between *L. leptodactyla* and *L. uruguayensis* throughout time (total of 13 months). Indeed, the most shaded treatment influenced fiddler crab species proportion over time. The proportion of *L. leptodactyla* in relation to *L. uruguayensis* decreased from ~ 78% to ~ 36% after 13 months in the 80% of shading level treatment, while for the shading of 50% (from ~ 73% to 61%) and 20% (from ~ 72% to 67%) it was similar to the control group (from ~ 88% to 75%). Therefore, the coexistence between *L. leptodactyla* and *L. uruguayensis* is influenced by the diversification of microhabitat characteristics (habitat heterogeneity), since the first one was more associated with non-shaded/ warmer areas while the second to the shaded/ cooler ones. We conclude that biologically diverse ecosystems, such as intertidal regions from estuaries, can support the coexistence between closely related species by reducing the competition due to habitat partition.

Keywords: heat stress, interspecific competition, luminous intensity, spatial distribution, thermoregulation

Financial support: FAPESP (# 2010/09763-9; # 2015/50300-6) and CNPq (# 140515/2014-3).

Area: Ecology & Biodivertsity

CHECKLIST OF BRACHYURAN CRABS (CRUSTACEA: DECAPODA) OF BARBADOS, WEST INDIES

PARASRAM, N.[1,*]; SANTANA, W.[2] & VALLÈS, H.[1]

[1] The University of the West Indies (UWI), Cave Hill Campus, Department of Biological and Chemical Sciences, Barbados; [2] Universidade Regional do Cariri (URCA), Laboratory of Systematic Zoology (LSZ), Carto, CE, Brazil.

* Corresponding author: nadeshinie.parasram@mycavhill.uwi.edu

Biodiversity inventories in “hotspots” areas are especially important for monitoring and conservation purposes. In Barbados, a small coral limestone island (432 km^2) in the southeast Caribbean, the most recent comprehensive survey of brachyuran crabs was conducted more than one hundred years ago (Barbados-Antigua Expedition 1918). Here we provide an updated taxonomic checklist of brachyuran crabs of semi-terrestrial, estuarine, and shallow (< 4m deep) nearshore marine habitats, sampled at 48 sites in Barbados between September 2018 and September 2021. Crabs were collected either by hand or with various types of traps. A total of 1,885 specimens were collected, with 58 species identified that are distributed into 10 superfamilies, 18 families, and 43 genera. The superfamilies with the highest number of species identified were Majoidea (20 spp.), followed by Grapsoidea (12 spp.), Portunoidea (11 spp.), Xanthoidea (7 spp.), Eriphioidea (2 spp.), Ocypodoidea (2 spp.), Calappoidea (1 sp.), Dromioidea (1 sp.), Leucosioidea (1 sp.), and Pinnotheroidea (1 sp.). The genera *Achelous* De Haan, 1833, *Charybdis* De Haan, 1833, *Cyclograpsus* H. Milne Edwards, 1837, *Pitho* Bell, 1835, *Thoe* Bell, 1835, and *Uhlias* Stimpson, 1871 are here reported for the first time for Barbados. Seventeen (17) species are first records for Barbados, thus extending their geographic ranges. We also found one distinct morphotype from the genus *Callinectes* Stimpson, 1860, that may prove to be new for science.

Keywords: biodiversity, brachyuran crabs, caribbean Island, checklist, taxonomy.

Financial Support: Campus Graduate Research Awards of the University of the West Indies, Cave Hill, Barbados.

Area: Ecology & Biodiversity

USE OF *Pleurotus ostreatus* POST-CULTIVATION SUBSTRATE(SMS) IN *Macrobrachium amazonicum* WEIGHT GAIN

MOREIRA, P.G.[1,*]; CASTRO, C.P.[2]; BUENO, A.A.P.[3] & DIAS, E.S.[4]

[1,3] Federal University of Lavras (UFLA), Laboratory of Carcinology, Brazil;
[2,4] Federal University of Lavras (UFLA), Laboratory of Microbiology, Brazil.

* Corresponding author: paula_stark@hotmail.com

Pleurotus ostreatus (shimeji) is an edible mushroom produced on a large scale in Brazil, due to its easy production. The production of edible mushrooms generates waste called SMS (Spent Mushroom Substrate). There is concern regarding the destination of this substrate in nature, but on the other hand, several works have addressed the insertion of this SMS in animal feed, since it has several interesting properties from nutritional and pharmacological perspective. The aim of this study was to evaluate the weight gain of prawn with the SMS of *P. ostreatus*. For this experiment, we prepared two substrate formulations, using agro-industrial by-products: S1 (25% soybean hulls and 75% sugarcane bagasse, dry matter (DM)=90.53%; crude protein (CP)=4.74%; and S2 (25% bean straw and 75% parchment, DM=91.65; CP=2.62%). Four treatments were carried out: T0, control treatment (cellulose 7%); T1 (SMS-S2 7%); T2 (SMS-S1 7%) and T3 (commercial rabbit feed). The experiments consisted of 3 acclimatized aquariums, each containing 10 animals per plot, constant temperature of 23oC and 12h day/12h dark. At the beginning and the end of each treatment, we weighed the animals, calculated the average for each aquarium. There was weight loss of the animals in all the treatments. In relation to the total average of each treatment in T1, there was a fed of 0.021g, even the substrate S2 had lower nutritional levels than S1 due to the high fiber content and low CP. In T0, the mean weight of all animals at the end of treatment was 0.389g. In T1, the mean weight of all animals at the end of treatment was 0.417g, which was the highest average of the experiment. In T2, the mean weight of all animals at the end of treatment was 0.387. In T3, the mean weight of all animals at the end of treatment was 0.356. This study shows that it is possible to replace commercial rations with an SMS formulation. There is no significant difference between the treatments, and this shows us that the ration consisting of SMS can be a great alternative for the use of the residue and can replace the commercial ration.

Keywords: aquaculture, nutrition, prawn, spent mushroom substrate.

Financial support: UFLA and CNPq.

Area: Aquaculture & Fisheries

HOW TO BECOME A CRAB: PHENOTYPIC CONSTRAINTS ON A RECURRING BODY PLAN

WOLFE, J.M.[1,*]; JULIUS, J.C.[1]; LUQUE, J.[1,2]; KEILER, J.[3]; HOPKINS, M.J.[4]; ORTEGA-HERNÁNDEZ, J.[1] & BRACKEN-GRISSOM, H.D.[2]

[1] Harvard University; [2] Florida International University;
[3] University of Rostock; [4] American Museum of Natural History.

* Corresponding author: jowolfe@g.harvard.edu

A fundamental question in integrative biology is whether phenotypes can be predicted by ecological or genomic rules. At least five cases of convergent evolution of the crab-like body plan (with a wide and flattened shape, and a bent pleon) are known in meiurans (brachyurans and anomurans) as “carcinization.” The repeated loss of this body plan has been identified as “decarcinization.” Here, we present preliminary data aiming to resolve the history of crab evolution from multiple angles. We introduce new approaches to quantify carcinization and decarcinization. For this objective, we have deployed micro-computed tomography to build 3D models of exemplar meiuran taxa that will span the disparity of body forms. A suite of landmarks and semi-landmarks are applied to describe the shapes of the carapace and pleon, with the goals of determining (1) if instances of convergent evolution occupy the same areas of morphospace, and (2) if the evolution of carapace and pleon shape are phenotypically integrated, i.e. these body regions evolved in a correlated fashion. We also briefly synthesize our recent molecular phylogenetic approaches to meiuran relationships, and some advantages (and limitations) of the fossil record in resolving crab phylogeny. Together, these data will provide a backbone to assess the pattern of crab shape evolution, and potentially the predictability of phenotypes beyond crustacean model systems.

Keywords: carcinization, convergent evolution, geometric morphometrics, phylogeny.

Financial support: NSF-DEB # 1856679.

Area: Taxonomy & Phylogeny

BERGMANN-RENSCH CONTINUUM UNDER SHELL: GENDER-SPECIFIC TREND IN RESPONSE TO LATITUDINAL GRADIENT

VALE, V.F.V.[1]; FREIRE, F.A.M.[1] & ALENCAR, C.E.R.D.[2,*]

[1] Universidade Federal do Rio Grande do Norte (UFRN), Laboratório de Biologia, Ecologia e Evolução de Crustáceos (LABEEC), Natal, Brazil; [2] Universidade Regional do Cariri (URCA), Laboratório de Crustáceos do Semiárido (LACRUSE), Crato, Brazil.

* Corresponding author: valeriavale@ufrn.edu.br; carlosce2002@gmail.com

Body size shapes the life history of taxa as a response to environmental variations, physiological and sexual fitness-related traits. Two macroecological rules shed light on body size variation in geographic space: the Bergmann's and Rensch's rules. Bergmann's rule posits that organisms are larger in high latitudes. Rensch's rule states that in closely related species, sexual size dimorphism increases when males are larger. Therefore, latitude can magnify the effect of sexual dimorphism, even when it is not evident in an intrapopulation character. Thus, the relationships between rules are not fixed trends, but rather, constitute a continuum of possibilities and different scenarios can be hypothesized, especially in invertebrates. Although evaluated in isolation in some Decapoda, in hermit crabs, whose species have a wide geographic distribution, are exposed to limiting factors such as type and availability of obligatory shelter (the shells of gastropods), ectothermic regulation and sexual selection with body bias in males, these rules are still a challenge. The objective of this study was to evaluate the validity of Bergmann's and Rensch's rules in mean body size variation among populations of hermit crabs of the genus *Clibanarius*: *C. antillensis*, *C. sclopetarius* and *C. symmetricus* along their distribution. This investigation involved meta-analysis of data from specialized literature alongside primary data by means of traditional morphometry on intersexual mean body size data of the three species. Type II regression models were designed to evaluate the rules separately and together. We observed that surprisingly, a specific divergence in female size was detected in response to latitude. We suggest that decreased selective pressure with increasing latitude, higher productivity, plus distinct energy expenditure from somatic growth, reproduction and, life history tactics may influence the bias of these rules. Furthermore, variation in females body size is modulated by selection for fecundity. This is the first work that may bring insights to test mechanisms to answer how the body size of a shelter-dependent organism varies across geographic space, and possibly, how they should respond to climate changes.

Keywords: allometry, ecogeographic rules, hermit crabs, sexual size dimorphism.

Financial support: CAPES.

Area: Ecology & Biodiversity

MICROPLASTIC IN *Ucides cordatus* (BRACHYURA: OCYPODIDAE) IN THE ESTUARINE COMPLEX OF PARANAGUÁ

LOPES, E.N.[1]; GONÇALVES, G.A.R.[1]; CORDEIRO, A.G.[1]; METRI, C.B.[1] & METRI, R.[1]

[1] Universidade Estadual do Paraná (UNESPAR), *Campus* Paranaguá, Laboratório de Ecologia e Conservação, Brasil.

* Corresponding author: bethrkdm@gmail.com

Globally, 400 million tons/year of plastic products are produced, which lead to the generation of waste that is often incorrectly discarded. Approximately 80% of plastic pollution produced on land ends up in marine environments. Most marine organisms are affected by this residue, either by ingestion or entanglement. Plastic debris is gradually fragmented through mechanical and natural processes and thus can enter the food chain as microplastics (MP). *Ucides cordatus* is an endemic crustacean of mangroves, with extreme socioeconomic importance, source of food and income for traditional communities. To record MP in the digestive system of *U. cordatus* in the estuarine complex of Paranaguá (CEP), southern Brazil, collections took place in four mangroves, three within Protected Areas and one in the vicinity of the urban area and the port of Paranaguá. The specimens were dissected to remove the stomach and intestine, which were macerated and submerged in 50 ml of 10% KOH for 24 h at 60ºC with recurrent agitation. After digestion, samples were filtered through 28 µm QUANTY filter paper, dried and observed under stereomicroscope. All procedures were performed in clean environment and with sanitized instruments and blank control was used to detect possible external contamination. Of the 28 individuals analyzed, 23 (82%) had some type of MP, classified as fibers and/or fragments. Fibers accounted for 94% of the total, especially blue fibers. Fibers are cited as the most ingested particles by invertebrate and vertebrate organisms, as they are the most abundant microplastic category in the oceans. Their possible sources are textiles and the fishing industry. There was no significant difference between the four locations ($p=0.939$), with a general average of 1.35 MP/ind ranging from 0 to 7 MPs/ind, showing that the entire area of the Paranaguá estuarine complex is affected by this type of pollutant. According to some studies, most items that make up the marine litter in the bottom sediment of the CEP are made up of plastics. The intense tide movement promotes the transport of MPs in the water column, homogenizing this pollutant, without disregarding local sources of contamination observed in mangroves, such as garbage disposal.

Keywords: crustacean, pollution, plastic.

Financial support: Fundação Grupo Boticário and Associação MarBrasil.

Area: Ecology & Biodiversity

SEX RATIO AND POPULATION STRUCTURE OF THE SHRIMP *Litopenaeus Schmitti* (BURKENROAD, 1936) (DECAPODA: PENAEIDAE) IN CANANÉIA, SOUTH COAST OF SÃO PAULO STATE, BRAZIL

BARIOTO, J.G.[1,*]; RODRIGUES, G.F.B.[1]; COSTA, R.C.[2] & CASTILHO, A.L.[1]

[1] Universidade Estadual Paulista (UNESP), *Campus* Botucatu, Laboratório de Biologia Aquática (LABIAQUA), Brasil; [2] Universidade Estadual Paulista (UNESP), *Campus* Bauru, Laboratório de Biologia do Camarões Marinhos e de Água Doce (LABCAM), Brasil.

* Corresponding author: jg.barioto@unesp.br

The present study analyzed the sex ratio, sexual maturity, and population structure of the *Litopenaeus schmitti* in Cananéia, on the south coast of São Paulo state. The collections took place monthly, from July 2012 to May 2014, with a shrimp boat equipped with "double rig" nets, in seven sampling stations for 30 minutes each. Shrimp were identified for sex and measured for carapace length (CL) and stage of gonadal development. The sex ratio was estimated as the quotient between the number of males and the total number of individuals, and the population structure was analyzed through histograms containing the number of individuals in demographic groups about the size of classes (2 mm). The size at which 50% of the population is considered reproductively active (CL50%) was determined using the proportion of juveniles and adults by size classes of 1 mm carapace length. From 1102 individuals sampled (598 females and 504 males), the CL ranged from 16.7 to 39.6 mm (males) and from 16.7 to 44.9 mm (females), with the sex ratio shifted in favor of females (p=0.005) (binomial test). The sex ratio was also biased in favor of females in the 32 to 42 mm size classes and in favor of males in the 28 mm class. The estimated average size at which half of the population reached sexual maturity was 24.7 mm for males and 26.7 mm for females. Several factors can cause the imbalance in the 1:1 sex ratio, such as differential birth rates, migration, and differential behavior, among others. The larger size in females is related to their reproduction (greater carapace length corresponds to greater oocyte production). In addition, Cananéia has particular environmental characteristics and is one of the most protected areas in the state of São Paulo, harboring white shrimp in both juvenile and adult stages, which demonstrates the need to develop protection strategies aimed at making fishing as sustainable as possible.

Keywords: Penaeoidea, reproduction, recruitment, white shrimp.

Financial support: CAPES # 88887.509444/2020-00.

Area: Reproduction & Development

MARINE INTERACTIONS UNDER PRESSURE: PLANKTONIC CRAB LARVAE RESPONSE TO A POTENTIAL PREDATOR IS ALTERED IN LOW PH CONDITIONS

PARDO, J.C.F.[1,2,3,4]; ARVIGO, A.L.[1,2]; MIYAI, C.A.[1,5] & COSTA, T.M.[1,2,5,*]

[1] Biosciences Institute, São Paulo State University (UNESP), Coastal Campus, 11330-900, São Vicente, SP, Brazil; [2] Postgraduate Program in Biological Sciences (Zoology), Botucatu Biosciences Institute, São Paulo State University (UNESP), 18618-000, Botucatu, SP, Brazil; [3] Centre for Coastal Research (CCR), Department of Natural Sciences, University of Agder (UiA), P.O. Box 422, NO-4604 Kristiansand, Norway; [4] Norwegian Institute for Water Research (NIVA), Jon Lilletuns vei 3, 4879 Grimstad, Norway; [5] Aquaculture Center (CAUNESP), São Paulo State University (UNESP), Jaboticabal, SP, 14884-900, Brazil.

* Corresponding author: tania.costa@unesp.br

Coastal and marine habitats have been changing due to anthropogenic pressures and climate change factors. The way species interact may be consequentially impacted at different levels. The increasing atmospheric CO2 is acidifying (i.e., lower pH conditions) coastal waters and disrupting the chemosensation of several groups. Despite recent efforts to better understand the impact of climate change on coastal communities, we still lack information on how the predator-prey interactions will be affected. In this study, we have evaluated a risk-induced trait response (tail flicking behaviour) of a planktonic crab larvae to a potential fish predator under a low pH scenario. First, we have analysed their avoidance response (i.e., number of tail flicks) to different potential fishes and conspecific (ovigerous female crab) odours. Prey intensified their swimming avoidance response to both conspecific and predator odours, but not to all predators. Later, crab larvae were exposed to one of the responsive predator odours under a predicted acidified scenario for the late 21st century. We have observed a similar behavioural response for both control (saltwater) and predator odour under acidified conditions. Thus, acidification seems to affect the chemosensation of our prey model and, consequently, the interplay with a potential predator. By not distinguish between non-harmful and harmful stimuli, organisms may increase their metabolic rate in an energy-consuming activity, reducing the energy available for other physiological processes and bringing a cascade of ecological impairments.

Keywords: chemical cues, fiddler crab, predator-prey interaction, ocean acidification, zoea.

Financial support: FAPESP.

Area: Ecology & Biodiversity

FIRST REPORT OF THE GENOME SIZE FOR THE BRAZILIAN CRAB *Trichodactylus fluviatilis* LATREILLE, 1828 (BRACHYURA: TRICHODACTYLIDAE) INHABITING FRESHWATER ECOSYSTEMS

BARIOTO, J.G.[1,*]; MORAES, I.R.R.[1]; ROMAGNOLI, G.G.[2] & CASTILHO, A.L.[1]

[1] Universidade Estadual Paulista (UNESP), *Campus* Botucatu, Laboratório de Biologia Aquática (LABIAQUA), Brasil; [2] Universidade do Oeste Paulista (UNOESTE), *Campus* Jau, Faculdade de Medicina, Brasil.

* Corresponding author: jg.barioto@unesp.br

Among genetic studies, the genome size assessment appears as a resource for populational, biogeographic, and evolutionary interpretations, since it evaluates the information contained in the chromosomes from a quantitative perspective, measuring the weight of nuclear DNA in picograms (PG). Therefore, the objective of this work was to provide new data on the genome size of the freshwater crab species *Trichodactylus fluviatilis* Latreille, 1828 in the Botucatu Cuesta region, Capivara River basin. The animals were sampled using baited traps and active search at the Edgardia Farm (22º49' S, 48º23' W), which is part of the Environmental Protection Area (APA) Corumbata, Botucatu, and Tejubá. The collected individuals were transported alive to the laboratory and remained so until the process of describing the genome size through flow cytometry analysis began. The material used came from the cheliped muscle tissue of crabs. To estimate the DNA content, all analyses were performed with a sperm sample of *Astyanax lacustris* (Lütken, 1875), used as a calibration standard. Altogether, 11 individuals were evaluated. The c-value ranged from 8.0 to 9.2 pg. The unpublished results represent the first record for the family Trichodactylidae Milne-Edwards, 1853, and indicate a high value when compared to species already analyzed belonging to the infraorder Brachyura Linnaeus, 1758, and to the freshwater environment (mean = 6.65 pg). Regarding population patterns and the life history of species with genome size as a modulating factor, there seems to be a trend involving a higher c-value in species that have "K strategists" and abbreviated or direct embryonic development traits, such as in the case of *T. fluviatilis*. However, little has been recorded in the literature on the genome size of Decapoda's crustaceans, especially those inhabiting the freshwater environment, which further highlights the importance of the present record. All the new genome information obtained represents greater knowledge and a basis for new evolutionary interpretations.

Keywords: conservation, C-value, Decapoda, flow cytometry.

Financial support: CAPES # 88887.509444/2020-00 and FAPESP # 2016/20177-0.

Area: Genetics & Conservation

USING AN INTEGRATIVE APPROACH TO ASSESS HABITAT TRANSITIONS AND PHYLOGENETIC RELATIONSHIPS WITHIN BRACHYURA

BALLOU, L.[1,*]; WOLFE, J.[2]; LUQUE, J.[2]; WATSON-ZINK, V.[3] & BRACKEN-GRISSOM, H.[1]

[1] Florida International University (FIU), U.S.A.; [2] Harvard University, U.S.A.;
[3] University of California, Davis, U.S.A.

* Corresponding author: lballou@fiu.edu

The Brachyura, i.e., “true” crabs, represent one of the most diverse infraorders of life. Members within Brachyura exhibit exceptional morphological and physiological variations and have successfully adapted to living across a wide variety of habitats including marine, freshwater, and terrestrial systems. Many questions remain regarding the relationships within this clade as well as the timing and patterns of such habitat transitions. In this study, we use an integrative approach combining molecular, fossil, and eco-physiological evidence. We explore the evolutionary relationships within Brachyura representing 344 taxa and 87 families. Ten genes were utilized (bp 7,516) to construct a phylogenetic hypothesis via Maximum Likelihood (IQ-Tree) and Bayesian Inference (MrBayes). Thirty-six select fossils were integrated into BEAST2 analyses to provide divergence estimates across taxa which will be subsequently compared to (n=>300) fossils within the Paleobiology Database. Additionally, species were assigned terrestrial gradation values based upon previous literature in order to trace patterns of habitat transitions within Brachyura. Preliminary results build upon our current knowledge of familial relationships across the Infraorder, with the inclusion of several distinct terrestrial transitions. Notably, Heterotremata is recovered as polyphyletic with families Hymenosomatidae, Potamonautidae, and Gecarcinucidae forming a monophyletic sister to Thoracotremata. Freshwater groups Pseudothelphusidae and Trichodactylidae were recovered as sister to Retroplumidae and Orithyiidae, respectively. Terrestrial transitions were predominantly found within Thoracotremata and primary freshwater crabs.

Keywords: Brachyura, fossils, phylogeny, terrestrialization.

Financial support: National Science Foundation, Division of Environmental Biology DEB (# 1856679 and # 1856667).

Area: Others

CHARACTERIZATION OF MrRas IN THE PRAWN *Macrobrachium rosenbergii* AND LENTI-VIRAL TRANSDUCTION OF MUTATED Ras INTO EMBRYONIC PRIMARY CELLS

GURUCHARAN, S.[1]; WEIL, S.[1]; ROTEM-DAI, N.[2]; MANOR, R.[1]; GREENSHPAN, Y.[2]; SHARABI, O.[2]; AFLALO, E.D.[1,6]; OFIR, R.[3,4]; ROSENTAL, B.[2,3]; GAZIT, R.[2,3,5] & SAGI, A.[1,5,*]

[1] Ben-Gurion University of the Negev, Department of Life Sciences, Israel; [2] Ben-Gurion University of the Negev, The Shraga Segal Department of Microbiology, Immunology, and Genetics, Faculty of Health Sciences, Israel; [3] Ben-Gurion University of the Negev, Regenerative Medicine and Stem Cell Research Center, Israel; [4] Masada National Park, Dead Sea and Arava Science Center, Israel; [5] Ben-Gurion University of the Negev, National Institute for Biotechnology in the Negev, Israel; [5] Achva Academic College, Department of Life Sciences, Israel.

* Corresponding author: sagia@bgu.ac.il

Crustacean cell line immortalization has gained a lot of attention in recent decades for both scientific and applied reasons. Our goal here is to affect the proliferation rates and reach immortalization in primary cells isolated from embryos of the giant freshwater prawn *Macrobrachium rosenbergii* by lenti-virus administration of the *Ras* proto-oncogene. Under a normal signaling cascade *Ras* is involved in various cellular pathways such as cell growth, differentiation, and survival. *In silico* screening of *M. rosenbergii* transcriptomic libraries for the *Ras* gene shows its expression at very early stages of embryo development. In humans, mutation in *Ras* have been reported in numerous types of cancer and in arthropods, a specific mutated *Ras* was used to obtain a cell line. We used the same mutated Ras that was previously used in *Drosophila*, known as RasV12 (mutation of the 12th amino acid from glycine to valine) which was transfected into *M. rosenbergii* embryonic cells in primary cell culture using lentivirus packaged with a plasmid having *RasV12* and *WSSV IE1* (White Spot Syndrome Virus) promoter. The cells were successfully transduced (14%) as evidenced by FACS and reporter genes visualized by confocal microscopy. The transfected cells proliferated five times more than the non-transfected cells after 18 days in culture. The *RasV12* gene was successfully inserted into the genome and its expression was recorded. However, it seems that despite its successful insertion, expression and the proliferation of cells in culture, the use of a single oncogene was not sufficient to immortalize cells of the *M. rosenbergii* embryonic primary cell culture.

Keywords: lentivirus, primary cell culture, proto-oncogene.

Area: Others

MULTILOCUS PHYLOGENY OF THE ENDEMIC CHINESE FRESHWATER CRABS GENUS *Tenuipotamon* SENSU LATO REVEALS A DISTINCT SPECIES DIVISION AND PRONOUNCED EFFECT OF SKY ISLANDS

SHI, B.[1]; ZHANG, K.[1]; GU, T.[1]; PAN, D.[1,*]; YEO, D.C.J.[2,3]; NG, P.K.L.[3] & SUN, H.[1,*]

[1] Jiangsu Key Laboratory for Biodiversity and Biotechnology, College of Life Sciences, Nanjing Normal University, Nanjing 210023, China; [2] Department of Biological Sciences, National University of Singapore, 16 Science Drive 4, Singapore 117558, Republic of Singapore; [3] Lee Kong Chian Natural History Museum, National University of Singapore, 2 Conservatory Drive, Singapore 117377, Republic of Singapore.

* Corresponding author: sunhongying@njnu.edu.cn; dapan@njnu.edu.cn

Naturally fragmented islands of forests isolate terrestrial species, reducing dispersal distances and geographical ranges, and often resulting in adaptive evolution and local diversification. The Hengduan Mountains region (HMR) in southwestern China has massive “sky island” mountains and valleys with high altitudes, complex topology and fragmented discontinuous landscapes, hosting isolated patches of montane habitats and harboring exceptional species diversity and endemicity. Studies documenting the impact of sky Islands on the diversification dynamics of freshwater organisms in Asia, however, are scarce. To explain the crucial role of the sky Islands in species diversification, we used the Chinese freshwater crab genus *Tenuipotamon* sensu lato, which is endemic to HMR and occurs in the montane and stream habitats of this ecosystem. The biogeographical relations were reconstructed using whole mitogenomes and four nuclear genes from 21 species. We also combined the 3D landscape data with phylogenetic information, to understand whether and how the sky Islands facilitated species diversification. *Tenuipotamon* s. l. is here shown to be not monophyletic and can be divided into two groups, with six species needing to be referred to a new genus. The 3D landscapes analyses and molecular dating indicated that the vicariance events of *Tenuipotamon* s. l. correlate well with the early uplifts of the Hengduan Mountains during the Late Oligocene. Furthermore, the isolated habitats of montane archipelagos and the Asian monsoon intensification promoted *in situ* diversification of *Tenuipotamon* s. l. In summary, we highlight that habitat fragmentation (sky Islands isolating mechanisms) and new ecological opportunities (contributed by the intense Asian monsoon events) facilitated the local diversification of *Tenuipotamon* s. l.

Keywords: freshwater crab, speciation, sky Islands, phylogeny, taxonomy.

Financial support: National Natural Science Foundation of China to SHY (# 32170454 & # 31772427).

Area: Taxonomy & Phylogeny

PATTERNS OF GENOME SIZE VARIATION IN CARIDEAN SHRIMPS: A NEW DATA FOR NONGAMBARELLOIDES *Synalpheus* GENUS

MORAES, I.R.R.[1,*]; PARDO, L.M.[2]; YASUI, G.S.[3] & CASTILHO, A.L.[1]

[1] Universidade Estadual Paulista (UNESP) Botucatu, Laboratório de Biologia de Invertebrados Aquáticos, Brazil; [2] Universidad Austral de Chile, Instituto de Ciencias Marinas y Limnológicas, Chile; [3] Universidade de São Paulo, Departamento de Reprodução Animal, Brazil.

* Corresponding author: isabela.moraes@unesp.br

Genome size (GS) or DNA nuclear content is used and applied in many groups of animals and plants to estimate quantitatively the information found at genes and chromosomes in eukaryotes, it is considered a useful index for making inferences about evolutionary models and life history in animals, including taxonomic, biogeographical, and ecological scenarios. However, patterns of GS variation and their causes in crustaceans are still poorly understood. This study aimed to describe the GS of five Neotropical *Synalpheus* nongambarelloides shrimps (*S. apioceros* Coutière, 1909*, S. minus* (Say, 1818)*, S. brevicarpus* (Herrick, 1891)*, S. fritzmueller* (Coutière, 1909), and *S. scaphoceris (*Coutière, 1910) and compare the C-values of all Caridea Infraorder in terms of geography and phylogenetics. All animals were sampled in the coast of São Paulo State, Brazil and GS was assessed by flow cytometry analysis (FCA). To contrast the shrimp traits with GS, phylogenetically controlled analysis (PICs) of the Bayesian phylogeny from a genetic data (mitochondrial locus COI from Genbank) was performed. The C-values ranged from 7.89 picograms (pg) in *S. apioceros* to 12.24 pg in *S. scaphoceris*. Caridean shrimps had higher GS than other Decapoda crustaceans. The results reveal a tendency of obtaining larger genomes in species with direct development in *Synalpheus* shrimps. In addition, a tendency of positive biogeographical correlation with Caridea Infraorder was also observed. The selection model phylogenetically analysis included the CL (carapace length), CL + hemisphere, and CL + Latitude as the best models for explaining the variation in GS in *Synalpheus.* Pagel test showed a high phylogenetic signal in GS ($\lambda = 0.99$). The PICs regression between GS and CL showed a negative relationship. This study provides remarkable and new protocol for FCA, which led to the discovery of new information regarding GS of caridean shrimps, especially for Neotropical *Synalpheus*, which represents the second-largest but poorly studied group in the Caridea Infraorder.

Keywords: C-value, DNA content, Decapoda, snapping shrimp.

Financial support: CAPES PRINT **#** 88881.310767/2018-01; CAPES PROEX # 23038.000802/2018-25.

Area: Ecology & Biodiversity

DO DIVERGENCES IN THE CLIMATIC NICHE SUPPORT DIFFERENTIATION AMONG LINEAGES OF THE PEPPERMINT SHRIMP *Lysmata wurdemanni*?

CALIXTO-CUNHA, M.*[,1]; ALVES, D.F.R.[1] & ALMEIDA, A.C.[1]

[1] Universidade Federal de Uberlândia (UFU), Laboratório de Ecologia de Ecossistemas Aquáticos (LEEA), Instituto de Biologia, Brasil.

* Corresponding author: marinaccunha@gmail.com

Characterizing species' niches and understanding how they conserve or diverge can improve inferences about species' ecological boundaries and speciation mechanisms. The speciation processes may generate cryptic species complexes once they do not always promote perceived phenotypic dissimilarity. Recent empirical studies suggest that *Lysmata wurdemanni* should be treated fairly as a species complex, in which there may still be between five and eight cryptic species. The objective of this study is to evaluate the similarity and equivalence of the ecological niches among three of these potential cryptic species in the *L. wurdemanni* complex, considering that the hypothesis of ecological niche conservatism postulates that closely related species share ecologically similar environments. For this, we developed ecological niche models (ENM) to evaluate whether there is niche overlap (Schoener's D and Hellinger's I indices) among the three different populations of *L. wurdemanni ss*: Florida east (Fle), west (Flw) and Gulf of Mexico (GoMex). We obtained the distribution data and climatic variables from databases (GBIF/OBIS and Bio-Oracle, respectively). We used only environmental variables that showed collinearity greater than |0.75| and were common to all models. Niche overlap analysis for Fle – Flw and Fle – GoMex showed low values (Fle – Flw: D=0.11, I=0.25, Fle – GoMex: D=0.05, I=0.14), while Flw – GoMex presented intermediated values (D=0.40 I=0.52). All pairs of compared niches showed equivalence (Fle – Flw: p = 0.93; Fle – GoMex: p = 1; Flw – GoMex: p = 0.91). So, the three populations occupy the same environmental spaces. When we evaluated the niches' similarities, considering the entire background around the occurrence points, we observed that only Flw and GoMex populations (D: p < 0.01; I: p = 0.04) are similar and, therefore, conserved their niches. Already Fle, differs from the others (Fle - Flw: p = 0.17; Fle - GoMex: p = 0.44Our results indicate that the Fle population occupies a niche with different properties and, therefore, corroborate previous results, which consider this population different from the others (morphologically and genetically). Our evidences reinforce the existence of different lineages in the *L. wurdemanni* complex and the relevance of ecological characteristics in an integrative taxonomy approach.

Keywords: cryptic species, phylogeny, tropical American clade.

Financial support: CAPES.

Area: Ecology & Biodiversity

ABUNDANCE OF THE INVASIVE CRAB *Charybdis hellerii* IN THE ESTUARINE COMPLEX OF PARANAGUÁ, PR

PINTO, K.C.S.[1,*]; CORDEIRO, A.I.A.[1]; RAMOS, G.C.[1]; BARROS, A.C.[1]; LACERDA, M.B.[2] & METRI, C.B.i[1]

[1] Laboratory of Ecology and Conservation, State University of Paraná;
[2] Laboratory of Ecology and Conservation, Center for Marine Studies, Federal University of Paraná.

* Corresponding author: Kevlyn.carols@gmail.com

Charybdis hellerii is a crustacean of the Portunidae family, considered a fast-breeding invasive crab, which arrived in Brazil through ports via cargo ships. The present study evaluated the occurrence of this crustacean in Ilha da Banana (25°25'18.39"S; 48°24'29.52"W) and Ilha das Cobras (25°28'48.97"S; 48°25'55.90"W), both located in the Estuarine Complex of Paranaguá (CEP). Samples were manually collected by active search (turning rocks) from October 2014 to December 2021 by 5 collectors (from December 2017). After collection, the samples were frozen and sorted in the laboratory, where the organisms were identified, measured and weighed. Over the 7 years of monitoring, 119 samples were taken, totaling 2,948 individuals of *C. hellerii*, with the highest abundances of adult males (55.7%), followed by adult females (30.83%), young females (7 .29%) and young males (6.11%), with a sex ratio of 1.6 males for each female. A total of 532 ovigerous females were observed, corresponding to 58.53% of the sampled adult females. The average size of the carapace width was 50.51mm (±10.72mm; maximum 80.95mm; minimum 18.72mm). The recorded data demonstrate that the largest number of samples was collected on Banana Island, during winter and spring. In this place there is a wide area of loose rocks that is exposed at low syzygy tides, which clearly influences the higher density of these organisms. The average frequency of individuals per collection was 47.4, however the trend of capture per collection has shown a slight increase over the years. It was observed that *C. hellerii* occurs in sympatry with the native crab, *Menippe nodifrons*, and it is important to monitor both populations for inferences about the possible effects of the introduction of the invasive crab on native species. *Charybdis hellerii* has an established population in the region with significant numbers of young and adult males, young, adult and ovigerous females throughout the year.

Keywords: invasive species, Portunidae, south of Brazil.

Financial support: Terminal de Contêineres de Paranaguá (Licensing operating license # 1356/2016).

Area: Others

PRESENCE OR ABSENCE OF REPRODUCTIVE ACCESSORY GLANDS IN CRABS

GARCIA-BENTO, M.A.[1,*]; LÓPEZ-GRECO, L.S.[2] & ZARA, F.J.[1]

[1] UNESP - FCAV, Laboratório de Morfologia de Invertebrados, Jaboticabal – SP, Brazil; UNESP, Instituto de Biociências de Rio Claro, Brazil; [2] UBA, Consejo Nacional de Investigaciones Científicas y Técnicas. Instituto de Biodiversidad y Biología Experimental y Aplicada. Facultad de Ciencias Exactas y Naturales. DBBE. Buenos Aires - AR.

* Corresponding author: maria.alice@unesp.br

This work compares the pattern of sperm storage and fluid seminal production in primitive crabs (Podotremata) and in true crabs (Heterotremata and Thoracotremata), to discuss the sperm storage models and the implications of the morphology and absence/presence of accessory glands among crabs. In primitive crabs no different vas deferens regions or accessory glands are found and the spermatophore is a long coenospermic cord. However, the male produces different types of secretion with several functions, such as spermatozoon protection, aid during transfer, and sperm storage. In females, the spermatozoa are stored immersed in male secretion, and in some species, the sperm plaque is present. In true crabs, the vas deferens is commonly divided into anterior (AVD), middle (MVD), and posterior (PVD) regions, with each region producing different types of secretions with different functions. In Heterotremata the accessory glands are usually absent and the seminal fluid containing the round coenospermic or even cleistospermic spermatophores act to protect and transfer spermatozoa. However, in a few Heterotremata studied, the accessory glands are present and seem responsible for the sperm packets in females, as reported in Majoidea and Trychodactylidae. In Portunoidea, despite of glands absence, the vas deferens shows outpockets that increase the seminal fluid volume producing the sperm plug. In all Thoracotremata, the accessory glands highlight the end of MVD and the beginning of PVD. The seminal fluid transferred to seminal receptacle is a mix between spermatozoa/spermatophores and glands secretion and no packets or plugs are found. Based on the studied species, the structure of the vas deferens and the presence or absence of glands indicate that both Podotremata and Thoracotremata depicts the same morphology and function among their superfamilies while Heterotremata is morphologically more variable at family level. In conclusion, the vas deferens morphology and their functions can be helpful for phylogenetic analyses within Brachyura.

Keywords: accessory glands, Brachyura, reproductive system, vas deferens.

Financial support: DR – CNPq # 140236/2019-8 (MAGB); FAPESP # 2010/50188-8 and # 2018/13685-5.

Area: Reproduction & Development

MORE AND SMALLER CRABS: IMPLICATIONS OF WARMING ON THE MORPHOMETRIC AND REPRODUCTIVE TRAITS OF *Carcinus maenas*

MONTEIRO, J.N.[1,*]; BUENO-PARDO, J.[3]; PINTO, M.[1];
PARDAL, M.A.[2]; MARTINHO, F.[2] & LEITÃO, F.[1]

[1] CCMAR- Centre of Marine Sciences, Universidade do Algarve, Campus de Gambelas, 8005-139 Faro, Portugal; [2] CFE - Centre for Functional Ecology, Department of Life Sciences, University of Coimbra, Calçada Martim de Freitas, 3000-456 Coimbra, Portugal; [3] Centro de Investigación Mariña, Universidade de Vigo, Future Oceans Lab, Lagoas-Marcosende, 36310 Vigo, Spain.

* Corresponding author: jnmonteiro@ualg.pt

Sea surface temperature (SST) is one of the main driving forces of biological processes of marine species. In this study, we analyze differences in maximum carapace width (CW), size at maturation, and duration of the season of ovigerous females of the green crab *Carcinus maenas* Linnaeus, 1758 (BRACHYURA: PORTUNIDAE) along a latitudinal/temperature gradient. Thus, an extensive review of bibliographic data was performed on studies published between 1962 and 2020, gathering data of *C. maenas* from 59 different populations, spreading over 105 degrees of latitude and 14.2 ºC of SST. In addition, crab data were sampled at five different lagoons and estuaries along the continental Portuguese coast. The relationship between *C. maenas* biological traits differences along SST geography gradients were analyzed for understand the role of SST in biological traits among locations. The relationship between SST and the maximum CW of crabs was only statistically significant for males. Although the relationship between maximum CW and SST of the females was not statistically significant, the CW of females at maturity was statistically related to SST changes. Results extrapolating for each local projected temperature increase caused by climate change (RCP 4.5 and RCP 8.5 scenarios), suggest an effect on morphometric and reproductive traits of *C. maenas* across regions. These changes comprise an overall reduction in *C. maenas* body size affecting its fecundity, an enlargement of the reproductive season, a shortening in duration of larval developmental time, and a decrease of the relative size of crabs at maturation.

Keywords: carapace width, climate change, European green crab, sexual maturation, temperature.

Financial support: CRUSTAPANHA, CLIMFISH, CLIMAPESCA, MYTAG and RENATURE.

Area: Ecology & Biodiversity

EXPLOITED LAND CRABS FROM GENERA *Cardisoma* AND *Ucides*: A SCIENTOMETRIC APPROACH

CARVALHO, C.[1,*]; ALMEIDA, E.V[2]; MACEDO, M.L.C.[2] & KEUNECKE, K.A.[1]

[1] Universidade Federal Rural do Rio de Janeiro (UFRRJ), Depto. de Biologia Animal;
[2] Universidade Federal do Rio de Janeiro (UFRJ), Laboratório de Carcinologia.

* Corresponding author: carvalho.c89@gmail.com

Cardisoma and *Ucides* crabs inhabit tropical and subtropical coastal ecosystems along the Western Atlantic, Indian and Pacific Oceans. The species *C. crassum*, *C. guanhumi*, *U. cordatus* and *U. occidentalis* occur exclusively in the Americas and have economic and social importance to traditional populations. However, the number of scientific studies carried out with varies greatly. Thus, the aim of this study is to perform a scientometric analysis of *Cardisoma* and *Ucides* that are distributed along the Americas. A bibliographic survey (1945 to 2021) was carried out using SciELO, Scopus and ISI Web of Science. Keywords used were the names of the species. A total of 355 papers were identified (after screened) and the most-studied species are *U. cordatus* (n=240) and *C. guanhumi* (n=92) both with overlapping geographic distribution in the Western Atlantic. The least studied species, *C. crassum* (n=6) and *U. occidentalis* (n=17) are distributed along the Eastern Pacific, these crabs were studied in Ecuador, Mexico and Peru, the same countries where the authors were affiliated. Information about these species is very limited but greater efforts have been made in the last 20 years. Around 95% of the studies with *U. cordatus* were carried out in Brazil, of which more than 70% have authors with exclusively Brazilian affiliation. From the 2000 to 2021 stands out the number of publications with uçá crab around 9x higher than 1960's to 1990's. The uçá-crab fishery occurs in almost entire Brazilian coast and represents an expressive economic activity in several states. *Cardisoma guanhumi* was studied mainly in USA, Brazil (principally Northeast region), Puerto Rico and Venezuela, the same nationalities as the institutions of most authors. Themes of biology (cellular, molecular, histology and physiology) and ecology represented more than 50% of the articles on *Ucides* and *C. guanhumi*. Other themes varied between species, e.g. aquaculture (n=2, *U. cordatus*), ethnobiology (n=2, *C. guanhumi*; n=21, *U. cordatus*), and fisheries (n=1, *U. occidentalis*; n=13, *U. cordatus*). Few publications deal exclusively *Cardisoma* and *Ucides* fisheries, in general, this information are diffused in ethnoknowledge and bioecology studies.

Keywords: conservation, fisheries, Gecarcinidae, Ocypodidae, scientometry.

Financial support: Fundo Brasileiro para a Biodiversidade (FUNBIO).

Area: Ecology & Biodiversity

FIRST LOOK AT THE RESULTS OF THE GUAIAMUM PROJECT: BIOECOLOGY AND ETHNOBIOLOGY FOR CONSERVATION

ALMEIDA, E.V.[1]; MACEDO, M.L.C.[1]; CARVALHO, C.[2,*];
GOMES, Y.M.[1]; KEUNECKE, K.A.[2] & SCHMIDT, A.J.[3]

[1] Universidade Federal do Rio de Janeiro (UFRJ), Laboratório de Carcinologia;
[2] Universidade Federal Rural do Rio de Janeiro (UFRRJ), Departamento de Biologia Animal;
[3] Universidade Federal do Sul da Bahia (UFSB), Centro de Formação em Desenvolvimento Territorial

* Corresponding author: carvalho.c89@gmail.com

Cardisoma guanhumi (Brachyura: Gecarcinidae) is a semi-terrestrial crab, also known as “blue land crab” or “guaiamum”, occurring from Florida to Southern Brazil and living above the intertidal zone. This species is critically endangered in Brazil and in the Bacia do São João EPA (Rio de Janeiro State) occurs an important remaining population. This region is the focus of the Guaiamum Project: Bioecology and Ethnobiology for Conservation (FUNBIO), which aims to study several aspects including fishery, ethnobiology, genetics, life cycle issues and population biology. In the first survey we identified 25 fishing spots from the lower estuary (urban area) to about 15 km upstream, including margins of mangroves, restinga forest, secondary rainforest fragments, buffalo pastures and around human residences. In August 2021, 11 fishing spots were chosen for population analysis. Transects were established parallel to the river and, in each one, 5 squares of 5x5 m were randomly distributed. Burrows were classified as actives (opened or closed) or inactive ones, with the opening of the crab galleries properly measured. In each square we placed 3 to 5 PVC-tube traps (the most used trap in the region). The lower estuary had the highest number of active burrows (1.2±0.2 burrows.m-2), however, with smallest burrows (44.2±0.3 mm) when compared to upper estuary (more pastures and forests), where the largest burrows occur (52.8±5.8 mm; $F=39.4$; $p<0.001$). Despite the differences in burrow sizes, there was no significant difference among crab mean sizes (CW, carapace width) ($F=0.436$; $p=0.647$) from lower, middle and upper estuary (62.6±2.5 mm, 60.7±2.1 mm and 62.3±4.7 mm, respectively). The largest crab caught was an 83.0 mm (CW) male. About 11.2 % of burrows were inactive and 23.2 % were closed, probably for ecdysis. The sex ratio (M:F) was 1.00:1.10. The project will continue until 2023 specially to support the local management plan for the exploitation of the species.

Keywords: blue land crab, *Cardisoma guanhumi*, conservation, Southeast Brazil.

Financial support: Fundo Brasileiro para a Biodiversidade (FUNBIO).

Area: Ecology & Biodiversity

RELATIVE GROWTH AND SEXUAL MATURITY OF THE SPIDER CRAB *Libinia spinosa* GUÉRIN, 1832 (BRACHYURA: MAJOIDEA: EPIALTIDAE), FROM SOUTHEASTERN BRAZILIAN COAST

SANTOS, M.P.[1]; FRANSOZO, V.[2]; GONÇALVES, G.R.L.[1];
COSTA, R.C.[3] & NEGREIROS-FRANSOZO, M.L.[1]

[1] Universidade Estadual Paulista (UNESP), *campus* Botucatu, Laboratório de Biologia de Invertebrados Aquáticos, Brasil; [2] Universidade Estadual do Sudoeste da Bahia (UESB), *Campus* Vitória da Conquista, Laboratório de Zoologia, Brasil; [3] Universidade Estadual Paulista (UNESP), *Campus* Bauru, Laboratório de Biologia de Camarões, Brasil.

* Corresponding author: mateus-pereira.santos@unesp.br

We have investigated the relative growth and sexual maturity (gonadal and morphometric) of *L. spinosa*. The crabs were sampled at Ubatuba from January to December of 2000, by fishing boat equipped with trawling fishing gear, provided with a double-rig net, during shrimps' fishery. In laboratory, the individuals were sexed, classified according to gonadal conditional and their body dimension were mensurated (CW= cephalothorax width; AW= abdomen width; CPL= major cheliped propod length). We obtained a total of 662 individuals (324 males and 338 females). Based on allometric growth, males were grouped in juveniles (MJ), adolescents (MAd) and adults (MA) by relationship CPL *vs*. CW, showing a positive allometric growth for all groups. For females, the relationship AW *vs*. CW allowed segregating juveniles (FJ) from adults (FA), evidencing a positive allometric growth for FJ; while for FA, isometric growth. The morphometric maturity evidenced for MAd varies from 33.7 mm to 34.5 mm and for MA and FA, the size in which 50% of them reach the morphometric sexual maturity was L_{50} = 50.1 mm and L_{50} = 37.3 mm, respectively. For males and females, gonad maturity was L_{50} = 33.7 mm and L_{50} = 36.9 mm, respectively. In females, both morphometric and gonad maturity occurred at a similar size, whereas in males the gonad maturity is acquired prior to morphometric maturity. Through the relative growth analyses, we found a group of adolescent males (prepuberal phase), which showed mature gonads, suggesting that they were able to copulate with the females. This fact can indicate distinct reproductive strategies for this species in comparation to others, since this behavior could prevent competition with adult males. However, this theory should be tested, in laboratory, to a better comprehension of the reproductive behavior of *L. spinosa.*

Keywords: allometry, development gonadal, males morphotypes, sexual maturity, sizeMat.

Financial support: CNPq.

Area: Reproduction & Development

DENSITY AND EXTRACTIVE POTENTIAL OF 'UÇÁ'-CRAB, *Ucides cordatus* (LINNAEUS, 1763) IN MANGROVES OF THE 'TODOS OS SANTOS' BAY, BAHIA, BRAZIL

MOTA, T.A.[1,*]; SACRAMENTO, L.S.[1]; PINHEIRO, M.A.A.[2]; EVANGELISTA-BARRETO, N.S.[1] & ROCHA, S.S.[1]

[1] Universidade Federal do Recôncavo da Bahia (UFRB), *Campus* de Cruz das Almas, Brazil.
[2] Universidade Estadual Paulista (UNESP), IB / *Campus* do Litoral Paulista, São Vicente, Brazil.

* Corresponding author: ssrocha@ufrb.edu.br

Ucides cordatus (Linnaeus, 1763) is one of the main fishery resources of the 'Todos os Santos' Bay (BTS), state of Bahia, Brazil. This study evaluated the population structure, crab density (ind.m^{-2}), abundance and fishery potential of this crab species in nine mangrove areas of BTS, during the dry and rainy seasons. Five sample quadrats (5x5 m) were randomly arranged in fringe zone of the mangroves studied, recording inside each of them the number and diameter of active burrows (open with biogenic activity and closed ones), variables related with tree species (diameter at breast height and density) and flood level. Crab density was indirectly estimated by counting open and closed galleries. The diameter of open galleries was converted into carapace width (CW) to characterize the *U. cordatus* population structure. The percentage of galleries in the dry period (58.4%) was significantly higher than in the rainy period (41.6%). Crab density ranged from 0.32 to 2.63 ind.m^{-2} (mean ± sd: 1.3 ± 0.7 ind.m^{-2}) with a higher mean during the dry period ($t = 0.02$; $p < 0.05$). Mean density differed significantly among mangrove sampling areas, regardless seasonal period. Mean body size (CW) in BTS was 52.4 ±16.7 mm, with specimens significantly larger during dry period ($t= 0.01$; $p < 0.05$) and significant differences among areas ($F = 4.57$; $p = 000.1$). Non-commercial size animals (CW < 60.0 mm) were more abundant (65.7%) in BTS than those with commercial size (34.3%). The density and flood level presented a negative correlation ($r = -0.51$; $p < 0.05$). On the other hand, significant positive correlation were verified between flood level and CW ($r = 0.40$; $p < 0.05$). *Ucides cordatus* population parameters differed significantly among BTS sampling sites due to the heterogeneity of the mangroves. This study represents the first assessment of 'uçá'-crab population in BTS mangroves, and demonstrates the need for the adoption of management practices as indicated by the National Management Purpose for the Sustainable Use of 'Uçá'-Crab in Brazil.

Keywords: crab, fishery, management, population.

Financial support: CNPq (# 441389/2017-1; and PQ # 305957/2019-8) and CAPES (# 88882.424479/2019-01).

Area: Ecology & Biodiversity

CRUSTACEANS INHABITING SAND REEFS OF *PHRAGMATOPOMA CAUDATA* (SABELARIIDAE) IN RIO GRANDE DO SUL, BRAZIL, WITH TWO NEW RECORDS FOR THE STATE

ZANINI-BENTANCUR, F.[1] & TEROSSI, M.[1,2]

[1] Laboratory of Carcinology, Department of Zoology, Institute of Biosciences, Federal University of Rio Grande do Sul (UFRGS). Av. Bento Gonçalves, 9500, Agronomia, 91501-970, Porto Alegre, Rio Grande do Sul, Brazil; [2] Graduate Program in Animal Biology (PPGBAN)

* Corresponding author: fzaninisb@gmail.com; mterossirm@gmail.com

A fauna survey study addressing all the crustaceans associated with the sand banks of *Phragmatopoma caudata* in southern Brazil, relating the temperature, number of species and comparisons with previous studies was carried out. Four field expeditions were made on two beaches in Torres/RS from August/2018 to May/2019. All adults were identified using morphology and some juveniles were identified using molecular data (16S mtDNA gene). A total of 8,765 individuals were captured, with 5,178 in Prainha and 3,587 in Praia dos Molhes. These crustaceans belong to 12 species: four species were abundant (*Apohyale media*, *Pachycheles laevidactylus*, *Amphibalanus improvisus* and *Pachygrapsus transversus*), while three were considered of low relative abundance (*Jassa* sp., *Excirolana armata* and *Caprella penantis*) and five were considered rare (*Menippe nodifrons*, *Idotea balthica*, *Danielethus crenulatus*, *Eriphia gonagra* and *Megabalanus coccopoma*). Seasonal variation in abundance of some species were observed, temperature differences can explain some occurrences. This study is the first that reports barnacles associated to sand banks of *P. caudata* and it is also the first record of *Eriphia gonagra* and *Menippe nodifrons* on the coast of Rio Grande do Sul. We demonstrated that the crustaceans found in Rio Grande do Sul are composed by a mixed fauna, including tropical and temperate species.

Keywords: associated fauna, Amphipoda, Balanomorpha, Decapoda, Isopoda.

Financial support: BIC/UFRGS, CNPq.

Area: Ecology & Biodiversity

FIRST RECORD OF *Atlantoscia inflata* CAMPOS-FILHO & ARAUJO, 2015 (ISOPODA: ONISCIDEA: PHILOSCIIDAE) IN NORTHEASTERN BRAZIL

COSTA, V.F.S.[1,*]; PEREIRA, C.A.S.B.[3]; BEZERRA, L.E.A.[1,2] & GRANGEIRO, D.C.[4]

[1] Universidade Federal do Ceará (UFC), Programa de Pós-Graduação em Sistemática, Uso e Conservação da Biodiversidade (PPGSIS), Fortaleza, Ceará, Brazil; [2] Instituto de Ciências do Mar (LABOMAR), Universidade Federal do Ceará (UFC), Fortaleza, Ceará, Brazil; [3] Universidade Federal do Piauí (UFPI), Programa de Pós-Graduação em Biodiversidade e Conservação, (PPGBC), Floriano, Piauí, Brazil; [4] Universidade Estadual do Piauí (UESPI), *Campus* Professor Barros Araújo, Laboratório de Biologia, Picos, Piauí, Brazil.

* Corresponding author: yderley@gmail.com

The family Philosciidae, Kinahan 1857 includes about 110 genera of terrestrial isopods distributed in Australia, South Asia, Africa, Europe and the Americas. In South America 31 genera are recorded, and for Brazil 14 genera are known, including *Atlantoscia* Ferrara & Taiti, 1981. *Atlantoscia* is composed of seven species: *A. antennamaculata* Campos-Filho, Cardoso & Araujo, 2018, *A. australis* Campos-Filho, Cardoso & Araujo, 2018, *A. floridana* (Van Name, 1940), *A. inflata* Campos-Filho & Araujo, 2015, *A. meloi* Campos-Filho & Araujo, 2015, *A. petronioi* Campos-Filho, Contreira & Lopes-Leitzke, 2012 and *A. sulcata* Campos-Filho, Lisboa & Araujo, 2013. In Brazil, *A. inflata* is recorded in the South region for the states of Paraná and Rio Grande do Sul and in the Southeast region for the state of São Paulo. The material was collected in September 2021 in the Maciço de Baturité, an area of high topographic elevation (822 m) with a subhumid climate, in the municipality of Guaramiranga, in the state of Ceará. The specimens were obtained by manual collection using a sieve, tray and brushes and were preserved in 70% alcohol. The material was observed under the stereomicroscope, specialized bibliographies were consulted, the appendages were mounted on slides and were analyzed under the optical microscope. The species, identified as *A. inflata*, resembles *A. floridana* in the shape of the endopod of pleopod 1 of the male, but differs by having a lobe on the distal portion of the external margin, absent in *A. floridana*, and by the pattern of coloration. *A. inflata* can be distinguished from other congeners by the shape of the exopod of pleopod 1 of the male. This is the first record of *A. inflata* for northeastern Brazil, in the state of Ceará.

Keywords: Ceará, distribution, Maciço de Baturité, terrestrial isopods.

Financial support: FUNCAP, PROAP.

Area: Taxonomy & Phylogeny

REPRODUCTIVE PERFORMANCE OF *Macrobrachium acanthurus* (Wiegmann, 1836) (CRUSTACEA, PALAEMONIDAE) FEMALES SUBJECTED TO UNILATERAL EYESTALK ABLATION

RODRIGUES, M.M.[1]; LÓPEZ-GRECO, L.S.[2]; ALMEIDA, L.C.F.[3]; MIRANDA, E.K.S.[3] & BERTINI, G.[3]

[1] Instituto Federal do Espírito Santo (Ifes), Laboratório de Carcinicultura, Brasil; [2] Universidad de Buenos Aires (UBA), Laboratorio de Biología de la Reproducción y el Crecimiento de Crustáceos Decápodos, Argentina; [3] Universidade Estadual Paulista (UNESP), Laboratório de Biologia e Cultivo de Crustáceos, Brasil.

* Corresponding author: maria.maschio@ifes.edu.br

Macrobrachium acanthurus is intensively explored in artisanal fishing in Brazil in the Ribeira de Iguape basin being captured both for human consumption and for the market of living baits for recreational fishing, which are common activities in the region. One of the essential factors in shrimp farming is knowledge about the reproductive biology, with fecundity (number of eggs) and fertility (number of hatched larvae) being key to evaluate the potential of a species for commercial culture. The eyestalk ablation technique is known to induce maturation and spawning in many commercial penaeid shrimp productions around the world, although it is also associated with lower offspring quality. The present study investigated the effects of eyestalk ablation on the reproductive performance of females from the native caridean shrimp *M. acanthurus*. The reproduction parameters fertility, fecundity, egg volume, larvae size, loss of embryos and number of females with viable eggs/larvae were evaluated. Females presenting carapace length of 12–15 mm and spent stage of gonadal development were divided into two groups, one undergoing unilateral eyestalk ablation and the other remaining intact. The specimens were kept in aquarium until ovarian maturation, then brought together with males for mating (proportion of two females for each male). Fecundity and fertility were greater in intact females (1,741 eggs and 1,045 larvae) than in ablated ones (1,373 eggs and 741 larvae). Ablation also reduced the percentage of females with viable eggs (68% intact versus 49% ablated) and larvae (82% intact versus 64% ablated), besides increasing the loss of embryos. Egg volume and shape (ellipsoid) and larvae size were similar, as was the duration of embryonic development. The results of this study suggest that, although ablated females exhibit a high rate of survival, their reproductive performance is reduced; therefore, the ablation technique is not recommended in *M. acanthurus* farming, so as to protect the animals from physiological stress.

Keywords: captivity, cinnamon river prawn, fecundity, fertility, spawning.

Financial support: FAPESP.

Area: Reproduction & Development

THE INFLUENCE OF WAVES AND SEASONALITY IN PERACARIDA OF ROCKY SHORES ON THE NORTH COAST OF THE STATE OF SÃO PAULO

MORETTI, P.*; SPINELLA, I.F. & LEITE, F.P.P.

Universidade Estadual de Campinas (UNICAMP),
Laboratório de Interações em Comunidades Marinhas,Instituto de Biologia.

* Corresponding author: paulamoretti@live.com

Amphipoda, Isopoda and Tanaidacea are crustaceans of the superorder Peracarida that dominate phytal communities in abundance and number of species and are therefore used as models for ecological studies. Abundance and diversity patterns can be determined by factors such as exposure to waves and seasons. This work investigated how hydrodynamics and the months of the year influence communities associated with the same substrate. We analyzed the composition and abundance of Peracarida in the macroalgae *Bostrychia* in two rocky shores with different wave exposures (sheltered and an exposed) in Praia das Cigarras, São Sebastião, São Paulo. Monthly (February – July/2021) 5 replicates of 100 cm² of the macroalga were sampled of each rocky shore. The samples were fixed in 70% alcohol, the fauna was separated and the wet weight (g) of each substrate sample was obtained. Abundances, richness and densities of species were compared using 2-way ANOVA (exposure and months). A total of 2887 Peracarida were collected, in which: 2725 Amphipoda, 145 Isopoda and 8 Tanaidacea. Only two families were present in Amphipoda, which were Talitridae: *Chelorchestia darwini* (49) and Hyalidae: *Parhyale hawaiensis* (972) *Ptilohyale littoralis* (368), *Apohyale media* (724); *Serejohyale youngi* (137) and *Hyale macrodactyla* (96). Exposure and months (p=<0.001) influenced the macroalgae biomass, the abundance and richness of Peracarida, both more abundant on the sheltered rocky shore on winter, but only months were decisive when we tested density (p=< 0.001). The impact of waves possibly makes it difficult to species that do not have strategies for permanence in places with higher hydrodynamics to establish. A negative correlation (Pearson: -0.43, p=<0.001; -0.51 p=<0.001) showed that the higher the air and water temperature, the lower the density of Peracarida. This correlation corroborates the higher densities of this group in months such as autumn and winter. It is known that the increase in temperature directly affects the development and reduces the growth of amphipods. Likewise, there is a positive correlation (0.41, p=<0.001) between the amount of substrate and the abundance of Peracarida, in which the highest biomass averages are in milder temperatures, like autumn.

Keywords: abiotic effects, Talitroidea.

Financial support: CAPES, CNPq.

Area: Ecology & Biodiversity

POPULATION STRUCTURE AND RELATIVE GROWTH OF THE BURROWING SHRIMP *Neocallichirus maryae* KARASAWA, 2004 (CRUSTACEA: AXIIDEA: CALLICHIRIDAE) ON A SANDY BEACH OF THE NORTHEASTERN COAST OF BRAZIL

ALBUQUERQUE, M.E.K. & BOTTER-CARVALHO, M.L.*

Universidade Federal Rural de Pernambuco (UFRPE),
Laboratório de Ecologia do Bentos Costeiro (LEBENC), Brazil

* Corresponding author: monicabotter@yahoo.com.br

The group of burrowing shrimps is represented by the infraorders Axiidea and Gebiidea and includes crustaceans Decapoda that are commonly known as “ghost shrimps” and “mud lobsters”. Those groups live buried and have an important ecological role as ecosystem engineers, since their digging the benthos, they can influence all the community structure around their galleries through changes on biogeochemical characteristics of the sediment. *Neocallichirus maryae* is an axiidean that have distribution along the tropical and subtropical Atlantic Occidental Ocean, since Florida, Bahamas, Antilhas, Colombia, Jamaica, Venezuela, Belize and Brazil. Despite *N. maryae* had demonstrate a huge potential as bioturbator, there is few research focus on the population biology of this species. This work purpose is analyses in first-hand the population structure and relative growth of *Neocallichirus maryae*. The animals were collected on Mangue Seco beach, during low tide, between September/18 and November/19, with “yabby-pump”. At laboratory, the samples were sexed considering the first pleopod characteristics and biometric measures were taken with a digital caliper, using Biffar’s morphometric standards. Were taken measurements of the cefalotorax length (CL), total length (TL) and major cheliped length (MCL). The allometric expression Y=ax^b was utilized to determine the type of growth; positive allometric if b>1,10, isometric if b is between 0,9 and 1,10 or negative allometric if b>1,10. The MCW was used as independent variable. A total of 441 animals were collected, of which 178 were males and 263 females, of which 32 were ovigerous females (sex ratio male:female; 0,68 male: 1 female; $p<0.001$). Major sizes of CL and TL were achieved by females while major sizes of MCL were achieved by males. The regression between CLxTL showed isometric growth among adult individuals for both sexes; among juveniles’ males showed negative allometric and positive allometric among females. The regression between CLxMCL, among females, showed allometric positive for both phases, juveniles males showed isometric growth and adult individuals showed positive allometric growth.

Keywords: Axiidea, burrowing shrimp, population structure, relative growth.

Financial support: CNPq.

Area: Ecology & Biodiversity

A NEW SPECIES OF *Macrothrix* (CRUSTACEA, BRANCHIOPODA, MACROTHRICIDAE) FROM THE NEOTROPICS WITH DESCRIPTION OF THE *MARTHAE*-GROUP

BERTINI, G.[1*]; FREITAS, D.F.B.[1]; PERBICHE-NEVES, G.[2] & SOUSA, F.D.R.[3]

[1] Universidade Estadual Paulista (UNESP) - Campus de Registro, Laboratório de Biologia e Cultivo de Crustáceos (LABCRUST), Brasil; [2] Universidade Federal de São Carlos, São Carlos, SP, Laboratório de Plâncton, Departamento de Hidrobiologia, CCBS Brasil; [3] Universidade Federal de Jataí - UFJ, Laboratório de Taxonomia Animal, Unidade Acadêmica Especial de Ciências Biológicas, Brasil.

* Corresponding author: giovana.bertini@unesp.br

Publications of the last three decades demonstrated the existence of some compact species groups within the *Macrothrix* Baird genus (Cladocera: Macrothricidae). Many species were included in *hirsuticornis*-group, *laticornis*-group, *rosea-triserialis*-group and *paulensis*-group, but not in *Macrothrix marthae* group. It has a peculiar set of morphological traits not observed in any other species, so far. Studying material from Ribeira de Iguape River, Brazil, we found some individuals that resemble *M. marthae*, which represent a new species described herein. *Macrothrix lourdesae* sp. nov shares with *M. marthae* similar morphology of Inner Distal Lobe setae and the same modifications on the fourth and fifth limbs. The main difference between them is related to the number of setae in the exopodite of the third limb. Observing the high number of morphological traits shared, it is possible to indicate that *M. lourdesae* sp. nov and *M. marthae* form a separate species group within the genus.

Keywords: Cladocera, postabdomen, Valo Grande, Ribeira de Iguape River.

Financial support: FAPESP.

Area: Taxonomy & Phylogeny

A COMPARATIVE STUDY OF *Ptilohyale littoralis* STIMPSON, 1853 AND *Parhyale hawaiensis* DANA, 1853 (AMPHIPODA: HYALIDAE) IN DISTINCT YEARS

MORETTI, P.[1]; SPINELLA, I.F.[1] & LEITE, F.P.P.[1]

[1] Universidade Estadual de Campinas (UNICAMP),
Laboratório de Interações em Comunidades Marinhas, Instituto deBiologia.

* Corresponding author: paulamoretti@live.com

Hyalidae amphipods are small crustaceans present on rocky shores commonly associated with a large number of biogenic substrates throughout the year, becoming one of the most diverse groups of benthic fauna and a food source for fish and other crustaceans. Previous studies have reported their occurrence on rocky shores such as *Parhyale hawaiensis* (Dana 1853), *Apohyale media* (Dana 1853) and, more recently on the northern coast of São Paulo, *Ptilohyale littoralis* (Stimpson, 1853), a species native to the Northwest Atlantic. Recent studies have shown that the population of *P. littoralis* is occupying regions that were previously dominated by *P. hawaiensis*, suggesting a potentially invasive species. It is understood that invasive species are better competitors and their food niche are wide- ranging, among other factors. In these cases, to estimate its growth/extinction, populations have been analyzed mainly by demographic parameters, such as seasonal abundance. Therefore, the aim of this study was to do quantitative survey of the *P. littoralis* and *P. hawaiensis* and compare it with data from 2017 in order to assess the condition of the population currently. Monthly (February – July/2021) 4 squares of 100 cm² of the macroalgae *Bostrychia* were sampled on two rocky shores at Praia das Cigarras (São Sebastião), where *P. littoralis* was previously found. The samples were fixed in 70% alcohol and species were separated. In addition, we sampled *Bostrychia* of beaches nearby (Caçandoca, Lagoinha, Santa Rita, Praia Grande, Toninhas, Praia Vermelha do Sul, Praia Vermelha do Norte, Perequê-Acu and Galhetas) and we sampled other macroalgae on the sublittoral fringe region (*Sargassum*, *Ulva*, *Padina*, *Dichotomaria*) to assess a possible extension of their niche and distribution. No individuals of *P. littoralis* were found in other type of macroalgae or beaches. However, *P. littoralis* populations at both sampling points increased compared to 2017, although the analyzes did not point to a significant increase yet, while *P. hawaiensis* populations decreased significantly from one year to the other in both sampled points (ANOVA, p=<0.001). Despite the results, it is important to continue monitoring to make inferences about its introduction and dispersion, due to the fact that this population is growing.

Keywords: Peracarida.

Financial support: CAPES and CNPq.

Area: Ecology & Biodiversity

ACUTE TOXICITY OF AMMONIA ON JUVENILES AND ADULTS OF *Potimirim* sp. (HOLTHUIS, 1954)

MIRANDA, E.K.S.[1,*]; GARÇON, D.[2]; RODRIGUES, M.M.[3] & BERTINI, G.[1]

[1] Universidade Estadual Paulista (UNESP) - Campus de Registro, Brasil;
[2] Universidade Federal do Triângulo Mineiro (UFTM) – Campus Universitário de Iturama, Brasil;
[3] Instituto Federal do Espírito Santo (IFES) – Campus Piúma, Brasil.

* Corresponding author: esthephany.ks.miranda@unesp.br

Potimirim sp. *is a* small freshwater shrimp that have favorable characteristics for exploitation in the ornamental species market. Therefore, the objective of this study was to determine the acute toxicity of ammonia through the median lethal concentration (LC_{50}-96h) and the safe concentration of ammonia in the juvenile and adult stages of *Potimirim* sp. The shrimps were captured in the Ribeira de Iguape River and transported to the laboratory. The bioassays were carried out in 1L boxes of water with concentrations of 0, 30, 60, 90, 120, 150 and 180 mg L^{-1} of total ammonia. Mortality of specimens was observed every hour for the first 8 hours, then every 12 hours. The temperature, pH and dissolved oxygen were evaluated daily and the concentrations of total ammonia and nitrite at the beginning and at the end of the experiment. The experimental design was completely randomized and carried out in triplicate. The LC_{50} after 96 h of exposure was calculated using linear regression ($p \leq 0.05$). The water parameters and nitrite concentration were all close to those indicated for the species. The LC_{50}-96h determined for the juveniles were of 42.7 mg L^{-1} of total ammonia, with a safe concentration of 4.27 mg L^{-1} in 25.4°C and pH of 6.3. While for the adults it was 32.9 mg L^{-1} of total ammonia with a safe concentration of 3.3 mg L^{-1} in 28.3°C of temperature and pH of 6.5. The lower LC_{50} value for adults observed in relation to juveniles occurred due to the higher temperature and pH during the execution of the experiments with adults, which causes the concentration of unionized ammonia, the most toxic portion of ammonia, to increase in the system. In general, it can be said that *Potimirim* sp. it has good resistance to total ammonia, which is beneficial for its production in aquaculture systems.

Keywords: aquariophilia, freshwater shrimp, native species.

Financial support: FAPESP.

Area: Aquaculture & Fisheries

MICROPLASTICS AND PHYSIOLOGY OF SHRIMPS: SIGNS OF MORE HARMFUL EFFECTS ON DILUTED WATER

LEITE, H.S[1*]; COSTA, J.R.[2]; RAMAGLIA, A.[2]; GIMILIANI, G.[3] & AUGUSTO, A.[1]

[1] Universidade Estadual Paulista (UNESP), Campus Litoral Paulista, UNESP, Laboratory of Sustainable Aquaculture, Brazil; [2] Universidade Estadual Paulista (UNESP), Aquaculture Center, Brazil; [3] Universidade de São Paulo (USP), Energy and Nuclear Research Institute, Brazil.

* Corresponding author: hellen.siqueira@unesp.br

Microplastics are present in all the aquatic environments, since marine until freshwater can affect biological aspects of the animals. We evaluated the effects of microplastics on the physiology of the freshwater shrimp (*Macrobrachium potiuna*) and another diaspora found in brackish water (*Macrobrachium amazonicum*). *M. potiuna* was collected in Itanhaém-SP and *M. amazonicum* from an estuarine population in nurseries (CAUNESP). The composition of the microplastic was determined by pyrolysis coupled with mass spectrometry. The animals were exposed for 10 days to different microplastic concentrations (0mg/L, 0.4mg/L, 4mg/L and 40mg/L), maintained in different salinities (*M.potiuna*: freshwater; *M.amazonicum*: 10 and 20S). Subsequently, metabolism was evaluated in closed respirometric chambers. Ammonia excretion was evaluated by colorimetry. Atomic ratio O:N calculated to determine the oxidized energy substrate. Microplastic effects were evaluated by ANOVA of 1 (*M.potiuna*), 2 Factors (*M.amazonicum*) followed by SNK. The components identified in microplastics were hydrogen chloride, benzene, toluene, anthracene and methyl acrylate. In *M. potiuna* oxygen consumption decreased in all microplastic concentrations (~20%), but in *M. amazonicum* decreased only in 10S (~70%). Microplastics can cause physical damage to the gills of both species, although it is more striking in diluted waters, and may affect the availability of ATP for the maintenance of homeostasis and salt absorption. Ammonium excretion in *M.potiuna* increased only in the concentration of 0.4mg/l (~240%) in *M. amazonicum* occurred in all treatments (up to 200%), suggesting that protein catabolism or absorption rate may be more affected in this species. Only *M. potiuna* changed the oxidized energy substrate (carbohydrates for proteins) due to the presence of microplastics, suggesting changes in biochemical pathways. We conclude that the presence of microplastics affects important aspects of the energy physiology of both species. However, this contaminant can have a marked effect on diluted water. Studies of the effects of microplastics on crustaceans of different salinities are essential, as in limnetic environments they are often more scarce compared to coastal ones.

Keywords: contaminant, crustaceans, salinity.

Financial support: FAPESP # 2021/08500-9.

Area: Physiology & Toxicology

A NEW SPECIES OF *Capitetragonia* PEARSE, 1953 (ISOPODA, BOPYRIDAE) ASSOCIATED TO THE SNAPPING SHRIMP *Alpheus brasileiro* ANKER, 2012 (DECAPODA, ALPHEIDAE) FROM BRAZIL

RIBEIRO, F.B.[1,2]

[1] Universidade Federal do Rio Grande do Sul (UFRGS), Programa de Pós-Graduação em Biologia Animal, Laboratório de Carcinologia, Brazil; [2] Universidade do Estado do Mato Grosso (UNEMAT), Faculdade de Ciências Agrárias e Biológicas, Brazil.

* Corresponding author: fbribeiro.bio@gmail.com

Bopyridae Rafinesque, 1815 are the most speciose group of parasitic isopods, being all ectoparasitic on decapod hosts. Among subfamilies within Bopyridae, Bopyrinae Rafinesque, 1815 is constituted by 27 genera of exclusive parasites of caridean shrimps. The genus *Capitetragonia* Pearse, 1835 was recognized as the senior synonym of *Probopyria* Markham, 1985 and is currently represented by three species, *Capitetragonia alphei* (Richardson, 1900), *C. asperotibialis* Pearse, 1953 and *C. elliptica* (Markham, 1992). The former is recorded from Brazil in the states of Maranhão, Paraíba and Santa Catarina parasitizing *Alpheus heterochaelis* Say, 1818, *A. normanni* Kingley, 1898, *A. viridari* (Armstrong, 1949) and *Alpheus* sp. The present study provides the description of a new species of *Capitetragonia* parasitizing the snapping shrimp *Alpheus brasileiro* Anker, 2012. Specimens were obtained from two beaches in the west coast of the state of Ceará. The material examined is deposited in the Carcinological Collection at Departamento de Zoologia of the Universidade Federal do Rio Grande do Sul (DZ UFRGS). The appendages were dissected and mounted on micropreparations. Drawings were obtained with the aid of a *camara lucida* fitted on a stereomicroscope and compound microscope. Illustrations were prepared using nanquim ink and scanned. The female is similar to *C. alphei*, but differs mainly in having head subquadrate, eyes and maxilliped palp with nine setae and a more acute spur. The male paratype is very similar to *C. alphei*, but differ mainly in the presence of eyes. Studies on bopyrid taxonomy are gaining forces in Brazil in the last years and to date, 22 genera and 27 bopyrid species are recorded from Brazilian waters. However, the Brazilian diversity of bopyrid fauna is still underestimated. *Capitetragonia* sp. nov. is the fourth species of the genus found parasitizing Alpheidae, in the present case, *A. brasileiro*. The other species were associated with other alpheid species. The broad distribution of the host species on the Brazilian coast suggests the likelihood that their parasites can also have a much wider distribution than currently reported.

Keywords: Bopyrinae, caridean shrimps, distribution, parasitism, taxonomy.

Financial support: CAPES.

Area: Taxonomy & Phylogeny

DO FIDDLER CRABS USE VISION TO GUIDE THEMSELVES UNDER WATER? THE EFFECT OF THE VARIATION OF THE TIDES IN ANTIPREDATORY RESPONSES OF *Leptuca thayeri*

PAULA, C.A.[1].*; ARVIGO, A.L.[2]; MIYAI., C.A.[3] & COSTA, T.M.[1, 2, 3]

[1] Universidade Estadual Paulista (UNESP), Campus do Litoral Paulista. Laboratório de Ecologia e Comportamento Animal (LABECOM), Brasil; [2] Universidade Estadual Paulista (UNESP), Instituto de Biociências, Campus de Botucatu, Brasil; [3] Universidade Estadual Paulista (UNESP), Centro de Aquicultura (CAUNESP), Brasil.

* Corresponding author: caioagst2311@gmail.com

The prey/predator relationship is an important ecological interaction, mediated by sensory pathways, through mechanical, chemical and visual clues. For terrestrial and semi-terrestrial animals' vision is a relevant source of information and may indicate a risk of predation. Tidal variation can interfere with the visual perception of the fiddler crabs, since it is known that these crabs have activity both at high and low tide. Thus, our study sought to evaluate the effect of tides on the defensive behavior of the fiddler crab *Leptuca thayeri*, exposed to the visual stimulus of a natural predator, the little blue heron (*Egretta caerulea*). To achieve this goal, we used four treatments with the submerged crabs, and the same four with the crabs out of water: 1) little blue heron model, 2) empty water gallon, 3) mangrove tree branch, and 4) control treatment, totaling eight treatments with seven replicas in each treatment. The response variables evaluated were: displacements between quadrants; latency to stimulus arrival; latency to stimulus pendulum movement; freezing movement; time remaining frozen; and distancing from stimulus source. Footage of 10 minutes was taken, with 5 basal minutes (pre-stimulus) and 5 final minutes (post-stimulus). Our results show that vision probably does not play a major role in the composition of the defensive response, or because crabs do not recognize the models chosen as a risk signaling, or because these animals use different stimuli to identify a potential risk of predation.

Key-words: defense mechanisms, intertidal, visual clues.

Financial support: FAPESP # 2020/15680-0 and # 2020/03171-4.

Area: Ecology & Biodiversity

NEW SPECIES OF TERRESTRIAL CRUSTACEAN FROM NORTHEASTERN BRAZIL (ISOPODA: ONISCIDEA)

PEREIRA, C.A.S.B.[1]*; COSTA, V.F.S.[2]; LIMA, L.R.C.[3] & GRANGEIRO, D.C.[4]

[1] Universidade Federal Piauí (UFPI), Programa de Pós-Graduação em Biodiversidade e Conservação (PPGBC), *Campus* Amílcar Ferreira Sobral, Floriano, Brazil; [2] Universidade Federal do Ceará (UFC), Programa de Pós-Graduação em Sistemática, Uso e Conservação da Biodiversidade (PPGSIS), Fortaleza, Ceará, Brazil; [3] Universidade Estadual do Piauí (UESPI), *Campus* Professor Barros Araújo, Picos, Brazil; [4] Universidade Estadual do Piauí (UESPI), *Campus* Heróis do Jenipapo, Campo Maior, Brazil.

* Corresponding author: carlosbioo26@ufpi.edu.br

To date, four species of terrestrial isopods are known from the state of Piauí: *Calycuoniscus goeldii* (Lemos de Castro, 1967) (Dubioniscidae), *Ctenorillo tuberosus* (Budde-Lund, 1904) (Armadillidae), *Trichorhina brasilensis* Andersson, 1960 (Platyarthridae) and *Porcellionides pruinosus* (Brandt, 1833) (Porcellionidae). From material collected in Campo Maior, Piauí was possible to identify a new species of *Trichorhina* Budde-Lund, 1908. The new species can be recognized by eyes with three ommatidia, antenna long and robust, maxillula outer endite composed of 3+5 teeth (three of inner set pectinate), telson not elongated and rounded tip, and the shape of the male endopod 1. *Trichorhina* sp. n. differs from all triocellated by the composition of the teeth of the maxilula. Four species of *Trichorhina* with three ommatidia are known, only *T. curupira* Campos-Filho, Araujo & Taiti, 2014 occurs in Brazil (Pará). And differs from *T. mulaiki* by: 1. flattened and rounded telson shape (versus slightly flattened with pointed apex); 2. yellowish pigmentation (versus dark brown). From *T. curupira* by: 1. antenna long and robust, second flagellar joint not as long as first (versus slightly elongated and with second flagellar joint longer than first); 2. coxal plates of pereonites 6-7 with conspicuous spikes (versus slightly conspicuous). 3. epimera of pleonites 1–2 well developed (versus little developed). 4. telson short (versus wide). From *T. triocelata* by: 1. cephalothorax not involved by pereonite 1 (versus partially involved); 2. absence of bristle tuft in pereopod dactyl (versus presence); 3. light brown color with pattern of strong spots lighter on head and pereon and weaker on pleon (versus whitish); 4. pleon deeply not embedded in pereon (versus embedded). And of *T. triocis* by: 1. cephalic lobes absent (versus with); 2. epimera of pleonites 1–2 convex (versus straight); 3. telson not elongated (versus elongated). This is the second record of *Trichorhina* for the state of Piauí.

Keywords: new species, terrestrial isopods, *Trichorhina*, Piauí.

Financial support: CAPES and PROAP.

Area: Taxonomy & Phylogeny

THE MORPHOLOGY AND EVOLUTION OF COMPOUND EYES ACROSS EXTANT AND FOSSIL CRABS

LUQUE, J.[1,2,*]; BRACKEN-GRISSOM, H.D.[2]; BRIGGS, E.G.[3]; JENKINS, K.M.[3]; LINDGREN, J.[4]; ORTEGA-HERNANDEZ, J.[1]; PALMER, R.A.[5]; PORTER, M.L.[6] & WOLFE, J.M.[1]

[1] Harvard University; [2] Florida International University; [3] Yale University; [4] Lund University; [5] University of Alberta; [6] University of Hawaii at Manoa.

* Corresponding author: jluque@fas.harvard.edu

Image-forming compound eyes are such a valuable adaptation that similar visual systems have evolved multiple times across panarthropods. However, the origin and evolution of such eye types remain poorly constrained, and the eyes of most extant families are understudied. Moreover, fossils preserving compound eyes—especially internal neural tissues—are rare, and information about visual systems is seldom placed in a broader phylogenetic context. True crabs, or Brachyura, are ideal study organisms to explore questions related to compound eye evolution because they are one of few groups of arthropods where all four of the known compound eye types occur (i.e., apposition, parabolic, refractive, and reflective superposition eyes). In addition, some details of the eye form can be compared across extant and fossil groups while inferring their visual ecology. We investigated the utility of crab eye structures and ommatidia morphology for assessing ecology and resolving phylogenetic relationships, by integrating new data from fossil and extant taxa across the brachyuran tree of life. We applied geometric morphometric techniques to our morphological data, demarcating two distinct ommatidial morphologies: square facets and packing typical of reflecting superposition (‘mirror’) eyes, and hexagonal facets and packing typical of larval and postlarval apposition eyes. Our findings suggest that the plesiomorphic ‘mirror’ eyes seen in most decapod crustaceans and the phylogenetically least inclusive brachyuran groups (e.g., homolodromioids, dromioids, and homoloids) have been lost in the most recent common ancestor of the more inclusive podotremes (e.g., raninoids and cyclodorippoids) and eubrachyurans. This supports a paraphyletic podotreme grade as consistently recognized in recent molecular and morphological phylogenies. The exceptional preservation of eyes in several Cretaceous species including corneal elements, sometimes in combination with soft neural tissues (e.g., optic lobes), illuminates the role of development and ecology in shaping vision, and highlights the advantage of mapping optical characters in a phylogenetic context at different taxonomic and time scales.

Keywords: apposition, Brachyura, Cretaceous, phylogeny, superposition.

Financial support: NSF-DEB # 1856679.

Area: Taxonomy & Phylogeny

ALLOMETRY AND MORPHOLOGICAL VARIATIONS OF *Aegla jacutinga* (DECAPODA; ANOMURA)

SILVA, P.F.*; BEZERRA, A.O.; MARÇAL, I.C. & TEIXEIRA, G.M.

Universidade Estadual de Londrina (UEL), Laboratório de Estudos de Invertebrados Aquáticos e Simbiontes, Departamento de Biologia Animal e Vegetal, Londrina, Paraná, Brasil.

* Corresponding author: priscilafrazato@gmail.com

The decapod crustaceans of the genus *Aegla* represent the only taxon of the Infraorder Anomura completely adapted to freshwater habitats. There are currently 93 *Aegla* species described, and these descriptions are generally based on conspicuous morphological characteristics of adult males. The number of species is growing rapidly, and more species with very similar morphology being described, making diagnoses difficult and increasing insecurity for the correct identification of new populations. The objective of this work was to analyze the relative growth and morphological variations between demographic groups of *Aegla jacutinga* Marçal e Teixeira, 2020, a recently discovered species. The collections were carried out in the years 2019 and 2020 in the type locality, Jacutinga River, municipality of Londrina, Paraná. A total of 661 specimens were obtained. Identification of morphological maturity and morphotypes among adult males was performed using allomentrics analysis. Ten demographic groups were used for analysis of morphological variations: non-sexed juveniles (JNS); Small Young Females (FJP); Large Young Females (FJG); Small Adult Females (FAP); Large adult females (FAG); Small Young Males (MJP); Large Young Males (MJG); Small morphotype I males (MIP); Large morphotype I males (MIG); Males morphotype II (MII). It was possible to notice that in all demographic groups there were variations in the morphological characteristics compared with the diagnostic characteristics of the description of *A. jacutinga*. However, some characteristics remain constant or show little variation across all size classes, such as: lateral view of the face, which in most cases has a ventral portion larger than the dorsal portion; the subrostral process, which is well developed; and epigastric lobes, which are pronounced. It was also possible to notice that the characteristics tend to be more constant in some demographic groups according to their size stage, for example, in MIP and MIG, and mainly in MII. These results reinforce the importance of using extensive paratypic series that represent all demographic groups, as well as the importance of supporting molecular analyzes and the need to search for new morphological characters that complement the diagnoses of the species

Keywords: crustaceans, limnic environment, relative growth.

Area: Taxonomy & Phylogeny

NEW SPECIES OF *Aegla* (CRUSTACEA, ANOMURA) DISCOVERED IN THE TIBAGI RIVER BASIN, PARANÁ, BRASIL

ARANTES, T.*; MARÇAL, I.C.; PÁEZ, F.P.; SILVA, M.C.M.S.;
FRAZATO, P. & TEIXEIRA, G.M.

[1] Universidade Estadual de Londrina (UEL), Laboratório de Estudos de Invertebrados Aquáticos e Simbiontes, Departamento de Biologia Animal e Vegetal, Londrina, Paraná, Brasil.

* Corresponding author: tiago.arantes18@uel.br

There are 61 species of *Aegla* recorded in Brazil and seven occur in the Tibagi river basin. However, many streams are in urban zone, pastures, and agricultural matrices. As a result, about 70% of species are under threat, requiring urgent conservation measures. For this, a premise is the correct identification of the species. The objective of this work was to expand the knowledge about the richness and distribution of *Aegla* in the Tibagi river basin. The collections were carried out in two streams in the municipality of Curiúva, in the central-eastern region of the state of Paraná, Brazil. Identification was performed based on morphological and molecular data (mitochondrial gene - COI). The new species has a rostrum triangular, extending beyond distal apex of compound eyes, carinate along the entire length; subrostral process well developed, occupying proximal half of subrostral margin, anterior and posterior margins forming obtuse angle; epigastric prominences pronounced; protogastric lobes pronounced; epibranchial area strongly elongated; proximal dorsal margin of dactylus with moderate size lobe; palmar crest rectangular, outer surface slightly excavated, margin serrated; outer surface of carpus with carpal ridge high; ventromesial border of cheliped ischium with 3 to 5 tubercles; anteromesial region of third thoracic sternite tapered; anterolateral angle of second abdominal epimeron unarmed; anterior margin of second abdominal epimeron almost straight. Molecular analyzes suggest that *A. lata* is closer to *Aegla n. sp*, when compared to other species from the Tibagi River Basin. The streams where the specimens of the new species were found are in agricultural and urbanized areas. Therefore, we suggest that *Aegla* n. sp. be classified as “Endangered” (EN). The unique combination of morphological characters found in *Aegla n. sp*. indicate the discovery of a new species for the Tibagi river basin. These studies demonstrate that it is necessary to encourage research to properly inventory and describe the richness of aeglids in this watershed, in addition to assessing the risk of extinction of the species and the conservation status of their respective habitats.

Keywords: Aeglidae, crustacean, diversity, morphology, molecular analysis.

Area: Taxonomy & Phylogeny

VARIATIONS IN GROWTH INVESTMENT BETWEEN CLADES OF THE SPECIES COMPLEX *Lysmata* RISSO, 1816 – *Exhippolysmata* STEBBING, 1915 (CRUSTACEA; DECAPODA; CARIDEA)

SILVA, J.J.[1,*]; CUNHA, M.C.[1] & ALMEIDA, A.C.[1]

[1] Universidade Federal de Uberlândia, Laboratório de Ecologia de Ecossistemas Aquáticos (LEEA), Instituto de Biologia, Brazil.

* Corresponding author: julianojosedsilva@gmail.com

The genera *Lysmata* and *Exhippolysmata* form a monophyletic clade within the family Lysmatidae and show similarities in their reproductive system characterized by simultaneous protandric hermaphroditism. There are four natural clades grouped by phylogenetic analysis in this species complex: tropical American (TA), morpho-variable (MV), cosmopolitan (CS), and cleaners (CL). We assessed in this study if (1) the CL clade shows a lower investment in somatic growth (GI) and asymptotic size (AS), since it presents a lifestyle with reduced sexual competition, and (2) if there are differences for both GI and AS according to the different sexual phases (Male - FM, Hermaphrodite - FH). For this, we used secondary data obtained from the bibliographic survey carried out with the descriptors *Lysmata* and *Exhippolysmata*. Of the 85 articles obtained, 30 presented data on size and sexual phase for 18 species. To compare the GI between clades and sexual phases, we performed a GI index (ranged from 0 – highest GI, to 1 – lowest GI) reached by dividing the minimum and maximum sizes found for each species from the data obtained in the survey and compared them using ANOVA. To verify differences in AS in different clades we performed a Kruskal-Wallis test. Only the clade CS differed from the others ($F = 3.22$; $p = 0.03$), showing lower investment in growth. For the sexual phases, only the clade TA showed differences in investment between the male (lower GI index) and hermaphrodite (higher GI index) phases ($F = 3.94$; $p = 0.01$). Regarding AS ($X^2 = 10.95$, $p = 0.01$), MV reached larger values than TA (Pair-wise = 0.02) and CS (Pair-wise = 0.01). The paired lifestyle, here represented by CL clade, seems not to be the main regulator of somatic growth, since there was no significant difference compared to the other clades. Then, it is possible that the body size of individuals has changed as a function of others factors such as environmental resources and conditions, or phylogenetics tendencies.

Keywords: body size, Lysmatidae, sexual phases, sociobiology.

Financial support: CNPq.

Area: Ecology & Biodiversity

PARTICIPATIVE MONITORING OF POPULATION PARAMETERS OF SALTMARSH´S BIOENGINEER CRAB *Neohelice granulata* (BRACHYURA: VARUNIDAE) IN URUGUAY

DELGADO, E.[1,*]; NOVO, C.[1]; CASTRO ,Y.[2]; VILLAMIL, E.[2]; PADILLA, P.[2] & FERNÁNDEZ A.[1]

[1] University of Republic, Regional University Center of the East;
[2] Las Vegas and Solís Neighborhood Commission.

* Corresponding author: edelgado@cure.edu.uy

The Ramsar Convention entered into force in Uruguay in 1984 and currently has only 3 sites designated as Wetlands of International Importance. Increased coastal urbanization and scarce national conservation policies caused a decrease in wetlands areas. In this context, the scientific knowledge that allows the conservation and management of saltmarshes' bioengineer species become relevant. Estuarine, bioengineer and semi-terrestrial crabs, *Neohelice granulata* are typical inhabitants in Uruguayan Atlantic saltmarshes. Its burrowing behavior generates direct and indirect effects on the coverage and sediment budget and burrows also act as traps for pesticides and organic matter. Most of the bioengineer crab populations are found close to urban tourist locations where anthropogenic activities are causing the decline of ecosystem services. The local community (Las Vegas and Solís Neighborhood Commission) prompted the conservation of crabs and saltmarshes in the Solís Chico stream. Through a co-construction process between the academy and local population and Municipal Government financial support, 3 conservation crabs areas were selected (site 1 to 3 at increasing distance from the mouth and with different anthropogenic pressures and impacts) and monthly, (January 2021 to January 2022) participatory monitoring (non-extractive) was realized. Ten quadrants (0.5m x 0.5m) randomly distributed in each site were used to count and classify the active burrow´s width (Large: >4 cm; medium: 4 >x> 2 cm; small: < 2 cm; Total N= 4004 burrows). Active burrows were identified by the presence of crabs, imprints of chelae, or sediments recently removed. Each quadrant was photographed and georeferenced. Mean burrows density differed significantly between sites and months (ANOVA: $F_{24, 351}$= 5.2; p<<0.01), and sites 1 and 2 (closer than the mouth) showed a higher density. Large, medium, and small burrows were presented in all sites. Mean density of large ($F_{24, 350}$ =4.85, p<<0.01), medium ($F_{24, 351}$ =3.77, p<<0.01) and small ($F_{24, 350}$ =3.94, p<<0.01) burrows, differed significantly between sites and months. Preliminary analysis suggested could be a non-extractive and easy methodology that allows generating crab populations indicators in vulnerable saltmarshes for community and decision-makers use. A wider series of data is needed to obtain strong conclusions.

Keywords: bioengineer crabs, citizen science, saltmarshes.

Financial support: Municipal Government of Canelones, Uruguay.

Area: Others

MARINE ISOPODA LATREILLE, 1817 TYPE COLLECTION FROM THE NATIONAL MUSEUM/UFRJ

FERNANDES, A.C.S.[1,*]; AYRES DA SILVA, M.S.[1] & SEREJO, C.S.[1]

[1] Museu Nacional/UFRJ, Laboratório de Carcinologia, Departamento de Invertebrados, Brasil.

* Corresponding author: agathacristhian96@gmail.com

The order Isopoda encompasses about 10.000 species across the planet and can be found widely in marine, terrestrial and freshwater environments. The Crustacean Collection of the National Museum, Federal University of Rio de Janeiro (UFRJ) is one of the most relevant in Brazil, especially within the Superorder Peracarida, due to several specialists who worked within the Carcinology Laboratory over the last 70 years. Nowadays, the order Isopoda is represented by 4.454 batches, surpassed only by the order Decapoda, which includes 6.789 batches. The marine isopod type-species represented in the Carcinology Collection are herein cataloged, followed by the formulation of a database with photographic and bibliographic records of the species. A single specimen of each of the type material vial was photographed. The original description literature was achieved by searching online scientific databases and also in the National Museum Library. Currently, 75 batches of marine isopods were cataloged, divided into 3 suborders, 12 families, and 22 genera. The most representative families Bopyridae and Corallanidae are represented by six species each; Cymothoidae and Gnathiidae (Suborder Cymothoida) by three species each; Microcerberidae (Suborder Microcerberida) by four species; and; Janiridae (Suborder Asellota) by three species. At the same time, the most frequent genera are *Excorallana* and *Coxicerberus*, represented by six and four species, respectively. The isopod type collection includes 26 holotypes, 1 neotype, and 49 paratypes published mainly by authors such as Alceu Lemos de Castro and Idalina Brasil-Lima, who together described 74% of the isopod type species collection of the National Museum. In this context, this study is an effort to continue the digitalization of the Crustacean Collection of the National Museum as an important step for the modernization of this database together as a tool to promote free access to the data contained in the collection. Open data largely contributes to the diffusion of scientific knowledge investment and promotes connection with society.

Keywords: isopod, marine, type collection.

Financial support: CNPq and CAPES.

Area: Taxonomy & Phylogeny

COPEPOD BODY SIZE LATITUDINAL PATTERNS AND THEIR ENVIRONMENTAL DRIVERS IN THE SOUTH ATLANTIC

BECKER, E.C.[1], MACEDO-SOARES, L.C.P.[1]; MARCOLIN, C.[2]; BRANDÃO, M.C.[1]; STEMMANN, L.[4]; MAZZOCCHI, M.G.[3] & FREIRE, A.S.[1,*]

[1] Universidade Federal de Santa Catarina (UFSC), 88010-970, Campus Universitário, Florianópolis, SC, Brazil;
[2] Universidade Federal do Sul da Bahia UFSB), Instituto de Humanidades, Artes e Ciências, Porto Seguro, Brazil;
[3] Stazione Zoologica Anton Dohrn (SZN), Ecologia Marina Integrata, Napoli, Italy.

* Corresponding author: freireandreas@gmail.com

The importance of environmental drivers on copepod body size structure is poorly understood in the South Atlantic Ocean (SAO), a highly under-sampled ocean. Yet, little is known to which degree copepods body size changes can be generalized across family level. We investigated the body size distribution of the most abundant copepod families and compared their environmental responses, to test if body size follows Bergmann's rule by increasing contribution of smaller organisms in warmer localities. We hypothesize that the additional influence of particular oceanographic features, disrupt this pattern in the SAO. Temperature and salinity decreased from tropical to polar waters, while oxygen and the depth chlorophyll-a maximum increased. Small copepods were the most abundant families, especially along the Brazil Current (BC), presenting narrow body size range but widespread distribution. A clear shift in the community occurred southward to the Subtropical Confluence Zone (SCZ-47°S), together with the dominance of Oithonidae. Large-sized families (>1mm) had wide body size ranges, but narrower latitudinal distribution (except Calanidae), and reached higher abundances between SCZ and Antarctic Circumpolar Current. Generalized linear mixed models showed that the latitudinal patterns in copepod size have a strong taxonomic signal. Although most copepods contain, to some extent, a latitudinal decreasing size pattern towards high latitudes and low temperatures, following Bergmann's rule, the relationship between body size and environmental drivers were different among families. Our findings indicate that the relative abundance of copepodites increased out of BC influence (>40°S). In this region, Clausocalanidae and Centropagidae but especially Calanidae copepodites contributed disproportionately to the copepod biomass. Most copepod family abundance or biomass peaked in the southern limit of the warm BC (25°-30°S), at the SCZ, and in the rich subantarctic waters at the Drake passage. Regional oceanographic processes strengthen these relationships due to seasonal food availability during summer, and coupled with their life history strategies, could reveal finer details about the influence of environmental drivers on the copepod size latitudinal patterns.

Keywords: Bergmann's rule, body size, copepods, temperature.

Financial support: CNPq, CAPES, European Union's Horizon 2020, EMBRC-France and ANR.

Area: Ecology & Biodiversity

CRITICAL THERMAL MAXIMA AND OXYGEN CONSUMPTION AS TOOLS TO INVESTIGATE THERMAL PLASTICITY IN *Macrobrachium petronioi* (DECAPODA: PALAEMONIDAE), FROM ITANHAÉM RIVER/SP - BRAZIL

PANIZZA, G.R.* & DUARTE, R.M.

Universidade Estadual Paulista (UNESP), Campus Campus do Litoral Paulista.
Laboratório de Ecofisiologia e Toxicologia Aquática (LECTA).

* Corresponding author: g.ramos.panizza@gmail.com

In natural environment, prawns are an important source of food for fishes and perform a crucial work as organic matter consumers, owing to its detritivore's behavior. Riparian habitants use shrimps as food, and as live bait, for themselves or to sell it to fishermen. *Macrobrachium petronioi* (Pitu) (Decapoda: Palaemonidae), it's a common shrimp that inhabits Brazilian's rivers and streams and can be found in the blackwaters of Preto River (Itanhaém/SP – Brazil). Prawns are ectothermic organisms and doesn't metabolically control its body temperature facing changes in environmental temperatures. Thus, to investigate if global climate events can offer risks to *M. petronioi* to increases in temperature, two experiments where set, in three different acclimation temperatures (22, 26 and 30°C): Firstly, the determination of routine oxygen consumption (MO_2) using hermetic chambers; and secondly, the critical thermal maxima (CTMax) using a thermal bath. From the subtraction of the acclimation temperature and the CTMax, the thermal safety margin (TSM) was also obtained. The MO_2 of *M. petronioi* significantly increased (P = 0,002) among 22ºC (0.196 $mgO_2\ g^{-1}\ h^{-1}$) to 30ºC (0.266 $mgO_2\ g^{-1}\ h^{-1}$), while no differences were seen compared to 26ºC (0.229 $mgO_2\ g^{-1}\ h^{-1}$). In addition, CTMax did not change significantly between 22ºC (36.7°C) to 26°C (36.0°C); however, the increment to 30°C (37.4°C) increased CTMax (P = 0,012). TSM significantly decreased with the enhance of temperature ranging from 14.3, 9.63, and 7.46ºC in temperature acclimation of 22ºC, 26ºC and 30ºC, respectively (P = <0,001). Our findings indicate that the upper thermal limits and the aerobic metabolism of *M. petronioi* are directly increased by the increment in 8ºC in water temperature. In addition, the considerable reduction in TSM seen in *M. pretonioi* at 30ºC also suggest that this species might be physiological vulnerable to further increases in temperature in blackwaters of Rio Preto.

Keywords: ecophysiology, global warming, metabolism, shrimp, temperature.

Financial support: PROPe.

Area: Ecology & Biodiversity

SEXUAL SHAPE DIMORPHISM IN *Fredius ibiapaba* SANTOS *et al.*, 2020 (DECAPODA, PSEUDOTHELPHUSIDAE)

PINHEIRO, A.P.[1]*; MARTINS, C.A.M.[1]; ARAÚJO, J.G.[1]; NASCIMENTO, W.M.[2]; CORDEIRO, G.A.S.[1]; ALCÂNTARA, C.J.F.[1]; ALENCAR, D.R.[1]; NOBRE, P.H.P.[1]; NASCIMENTO, C.A.[3] & SANTOS, L.C.[1]

[1] Universidade Regional do Cariri (URCA), Laboratório de Crustáceos do Semiárido, Brasil;
[2] Universidade Federal de Pernambuco (UFPE), Laboratório de Biologia de Crustáceos, Brasil;
[3] Universidade Federal do Sul da Bahia (UFSB), Laboratório de Carcinologia e Biodiversidade Aquática, Brasil.

* Corresponding author: allysson.pinheiro@urca.br

The geometric morphometric technique is an effective tool in morphological investigation in decapod crustaceans, being used in investigations of ontogenetic allometry, intra and interspecific variation, fluctuating asymmetry, longitudinal gradients and sexual dimorphism. We investigated the presence of variation in the shape of the carapace and the major chela of the freshwater crab *Fredius ibiapaba*, under the hypothesis of variation between sexes, characterizing sexual shape dimorphism. For this, we obtained digitized images of the carapace of 60 specimens (30 males and 30 females), of which we used 56 specimens (30 males and 26 females) to investigate the variation of the major chela. We digitized 7 landmarks and 3 semi landmarks to obtain the carapace shape and 8 landmarks and 7 semi landmarks to obtain the major chela shape. We submitted the shape configurations obtained for the carapace and the major chela, separately, to a Generalized Procrustean Analysis (GPA), then we submitted the shape data of each structure, obtained from the GPA, to a regression analysis. To test our hypothesis, we submitted the residual data from the regression of each body structure to a Discriminate Function Analysis (DFA) with 10.000 permutations, obtaining the values of the Procrustes distance for each structure. Females presented a wider carapace in the posterior region, less convex laterally and with a more inflated anterior region than males (Procrustes distance = 0.033; $P < 0.05$). In addition, we observed that the major chela is wider in males (Procrustes distance = 0.022; $P < 0.05$). Thus, our results confirmed our hypothesis, revealing sexual shape dimorphism in *F. ibiapaba*. The carapace with a wider posterior region in *F. ibiapaba* females is associated with the reproductive strategy of Brachyura crabs, favoring greater fecundity for females. While the robust chela in males of the species indicate selection of this trait, associated with reproductive success.

Keywords: Brazilian semiarid, freshwater crabs, geometric morphometrics, neotropical crabs.

Financial support: FUNCAP.

Area: Ecology & Biodiversity

SEX-RATIO IN BRAZILIAN CARCINOLOGY: OBSTACLES TO EQUITY

MORAES, I.R.R.[1,*]; CUNHA, A.M.[2]; HORCH, A.P.[3]; COLAVITE, J.[4]; PERROCA, J.F.[5]; MIAZAKI, L.F.[5]; MOREIRA, G.R.[3]; SEGER, M.H.[3] & TEROSSI, M.[3]

[1] Universidade Estadual Paulista (UNESP), Botucatu, Brasil; [2] Universidade Federal de Pernambuco (UFPE), Recife, Brasil; [3] Universidade Federal do Rio Grande do Sul (UFRGS), Porto Alegre, Brasil; [4] Universidade de São Paulo (USP), São Paulo, Brasil; [5] Universidade Estadual Paulista (UNESP), Bauru, Brasil.

* Corresponding author: isabela.moraes@unesp.br

Women's participation in scientific knowledge is marked by marginalization and exclusions. In Brazilian carcinology, women do not advance in their careers as much as men despite their activities in research. The first objective here was to analyze the female representation in the scientific production between 1960 and 2020 in the main crustacean journals (Crustacean Research; Crustaceana; Journal of Crustacean Biology; Nauplius) and in the abstracts of the Crustacean Brazilian Congress proceedings (CBC 2000/2018). Our preliminary observation indicated that men represent almost 75% of all scientific authorship. Publications exclusively composed of men (56.3%) exceed those of women (8.3%) and mixed-gender (22.8%). Gender could not be identified in 12.6% of the publications. Regarding CBC abstracts, the proportion is 17% (only men), 14% (only women) and 66% (mixed-gender). Despite that, men are the last author in at least 60% of abstracts analyzed. The second objective was to investigate the profile of Brazilian carcinologists. Thus, 192 women who research (132) or researched (60) carcinology in Brazil answered a structured questionnaire via Google forms. The results showed that 30% of them could leave the Academy because of moral or sexual harassment. At least 50% felt differences in gender treatment at the workspace. "Mansplaining," "manterrupting," and misogynistic comments are among the most cited complaints, and in 56% of cases the behavior was displayed by the advisor himself. Despite all harassment suffered, it was not denounced by 90% of women. The reasons indicated are the fear of retaliation, discredit, and impugnment of the aggressor. Considering the above, these preliminary results help us to understand the gender issues in Brazilian carcinology, providing insights that could facilitate the proposal of future egalitarian gender politics.

Keywords: crustacea, feminism, representativeness, research.

Area: Others

COLOR VARIATION IN *Macrobrachium jelskii* (MIERS, 1877) UNDER LABORATORY CONDITIONS

ARAÚJO, J.G.[1,*]; NASCIMENTO, W.M.[2]; MARTINS, C.A.M[1]; CORDEIRO, G.A.S.[1]; ALCÂNTARA, C.J.F.[1]; NOBRE, P.H.P.[1]; NASCIMENTO, C.A.[3]; MUNIZ, J.I,[1] & PINHEIRO, A.P.[1]

[1] Universidade Regional do Cariri (URCA), Laboratório de Crustáceos do Semiárido, Brasil; [2] Universidade Federal de Pernambuco (UFPE), Laboratório de Biologia de Crustáceos, Brasil; [3] Universidade Federal do Sul da Bahia (UFSB), Laboratório de Carcinologia e Biodiversidade Aquática, Brasil.

* Corresponding author: juliana.araujo@urca.br

The color variation in the crustaceans in different substrates is associated with camouflage. In our study, we investigated the color variation in the freshwater shrimp *Macrobrachium jelskii*. For this, we collected *M. jelskii* specimens in the Thomas Osterne reservoir, municipality of Crato, state of Ceará, Brazil, and forwarded to Laboratório de Crutáceos do Semiárido of the Universidade Regional do Cariri. We used six aquariums (40×30×30) in the experiment, with closed circulation system equipped with UV filter and SUMP filter (90×40×40). We divided the aquariums into three treatment groups (T1: red substrate; T2: black substrate; T3: white substrate), with two replicates for each group. Illumination was 12 hours of white light and 12 hours of darkness. We fed the shrimps *ad libitum* with food with 47.5% crude protein, twice per day. For the experiment, we photographed 30 specimens in dorsal view. Then, we distributed five specimens in each aquarium, totaling 10 specimens per treatment. After 30 days, we photographed the specimens under the same settings used before the experiment. We used ImageJ software to obtain the RGB values (red, green, blue) of the dorsal region. We used a Principal Component Analysis and PERMANOVA to analyze the grouping of specimens according to color substrate, before and after the experiment. Before the experiment, *M. jelskii* pigmentation was homogeneous ($P > 0.05$), with overlap between groups (PC1 = 81.21; PC2 = 17.76%). After the experiment, the RGB of *M. jelskii* varied according to each substrate (PC1 = 88.35%; PC2 = 11.30%), differing between the white and black substrates ($F = 25.781$; $R2 = 0.58$; $P < 0.05$), and white and red ($F = 11.157$; $R2 = 0.38$; $P < 0.05$), not differing between black and red substrate ($P > 0.05$). *Macrobrachium jelskii* adjusted its pigmentation to different substrates, this mechanism could be favoring the camouflage of the species in different habitats.

Keywords: freshwater shrimp, pigmentation, RGB.

Financial support: FUNCAP.

Area: Ecology & Biodiversity

ASSESSING THE RENSCH'S RULE FOR THE MANGROVE CRAB *Ucides cordatus* (LINNAEUS, 1763) (DECAPODA: BRACHYURA: OCYPODIDAE)

MUNIZ, J.I. [1,*]; ARAÚJO, J.G.[1]; VIRAÇÃO, T.S.D.[1]; GALVÃO, H.M[2].; PINHEIRO, A.P.[1]; ALENCAR, C.E.R.D[1].

[1] Universidade Regional do Cariri (URCA), Laboratório de Crustáceos do Semiárido (LACRUSE), Brasil; [2] Universidade do Estado do Rio Grande do Norte (UERN), Brasil.

* Corresponding author: joseiagomuniz@gmail.com

Rensch's Rule is a correlation of the animal's body size, or organisms' sexual trait within sexual dimorphism, in which predicts that species which have larger males than females result in wider variation in size between gender. If females are larger, the inverse of the rule will be true. The aim of the present study was to test whether the Rensch´s rule applies to the mangrove crab *Ucides cordatus*, a species with a wide distribution in the western Atlantic, an important protagonist of the Neotropical mangrove fauna, and of great economic interest. The capture of males is the basis of the fishermen's economy and appreciated in the food sector of the Brazilian coast. A systematic review and metaregression of mean body size of males and females was conducted. Type II regressions analyzing Male vs. Female and separately SSD (Male-Female) *vs.* Female relationships were performed. The species showed the inverse of the Rensch's Rule. In general, invertebrates and, arthropods follow the inverse of Rensch's Rule. However, in this species the bias of sexual dimorphism of size, agonism, territorialism and robust secondary sexual characters predominates in males, which fits the hypothesis of sexual selection by female choice. We highlight two main factors that may be associated with the tendency of inverse of Rensch´s rule for uçá crab. The first may be associated with parental care of eggs by females. Larger females have a larger abdomen area for extrusion and parental care of eggs. Thus, the number of eggs is directly associated with their size, so larger females produce more viable offspring with the body trait to be passed on to the next generation. Even under sexual selective pressure of female choice over males, larger females are selected in the next generation by a selection bias for fecundity. Another factor can be directly associated with an artificial selective pressure by fisheries activities. Larger males are the focus of the fisheries, causing a selection for crabs with smaller average size. The aforementioned acting factors may contribute alone, or synergistically, to the observed trend.

Keywords: macroecology, sexual size dimorphism, uçá crab.

Financial support: FUNCAP.

Area: Ecology & Biodiversity

HETEROCHELY AND LATERALITY IN *Fredius ibiapaba* SANTOS, TAVARES, SILVA, CERVINI, PINHEIRO & SANTANA, 2020 (BRACHYURA: PSEUDOTHELHUSIDAE)

NOBRE, P.H.P.[1,*]; ARAÚJO, J.G.[1]; MUNIZ, C.A.M.[1]; NASCIMENTO, W.M.[2]; NASCIMENTO, C.A.[3]; ALCÂNTARA, C.J.F.[1]; PINHEIRO, A.P.[1] & SANTOS, L.C.[1]

[1] Universidade Regional do Cariri (URCA), Laboratório de Crustáceo do Semiárido, Brasil;
[2] Universidade Federal de Pernambuco (UFPE), Laboratório de Biologia de Crustáceos, Brasil;
[3] Universidade Federal do Sul da Bahia (UFSB), Laboratório de Carcinologia e Biodiversidade Aquática, Brasil

* Corresponding author: paulohenriquenobre01@gmail.com

Morphometric studies carried out with Brachyura chelipeds show that some species show variations in shape and size between the right and left chelipeds. This variation, called heterochely, can culminate in one cheliped larger than the other, resulting in different ecological functions performed by each cheliped. In addition, some species have a lateral tendency to display the larger cheliped called laterality handedness. Knowledge about heterochely and laterality handedness in freshwater crabs of the Pseudothelphusidae family is restricted to *Kingsleya castrensis*. Therefore, we investigated the presence of heterochely and laterality handedness in *Fredius ibiapaba*, an endemic species from Northeast Brazil. For this, 108 specimens of *F. Ibiapaba* were analyzed (42 adult males; 29 adult males; 15 juvenile males; 22 juvenile females) deposited at the Semiarid Crustacean Laboratory of the Universidade Regional do Cariri (LACRUSE/URCA). We measured in each specimen: carapace width (CW), right propodal length (RPL), right propodal height (HPH), right propodal width (HPW), left propodal length (LPL), left propodal height (LPH) and left propod width (LPW). Student's t test was used to verify the morphometric variation between the right and left chelipeds and the X^2 test to verify the presence of laterality handedness of the greater cheliped. As a result, we observed heterochely in adult males ($t = 2.62$; $P < 0.05$), adult females ($t = 2.38$; $P < 0.05$) and in juvenile males ($t = 3.61$; $P < 0.05$), juvenile females did not show heterochely ($t = 1.15$; $P > 0.05$). In addition, *F. ibiapaba* presents laterality handedness with a tendency to right-handedness ($P < 0.05$). Heterochely is usually associated with specialization of ecological functions. Generally, the greater cheliped is associated with agonistic disputes, while the lesser cheliped is used for feeding. These results reveal that *F. Ibiapaba* may present ecological specialization of larger and smaller chelipeds.

Keywords: Brazilian semiarid, endemic species, freshwater crab, Ibiapaba plateau.

Financial support: FUNCAP.

Area: Ecology & Biodiversity

THE PRAWN *Macrobrachium jelskii* (MIERS, 1877) FROM BRAZILIAN SEMIARID FOLLOWS THE RENSCH'S RULE?

MUNIZ, J.I.[1,*]; ARAÚJO, J.G.[1]; ALENCAR, D.R.[1]; VIRAÇÃO, T.S.D.[1]; SOBRAL, S.D.C.[1]; SILVA, T.A.[1]; RODRIGUES, L.S.[1]; PINHEIRO, A.P.[1] & ALENCAR, C.E.R.D.[1]

[1] Universidade Regional do Cariri (URCA),
Laboratório de Crustáceos do Semiárido (LACRUSE), Brasil.

* Corresponding author: joseiagomuniz@gmail.com

Sexual Size Dimorphism (SSD) is related to the difference in size between females and males of a species. One way to investigate this phenomenon is through Rensch's Rule, which states that the size of the male varies relatively more than to the females, when the male is the largest size genus in a species. The prawn *Macrobrachium jelskii*, has an exclusively freshwater life cycle, a wide distribution in South America, and an SSD bias for females. However, no large-scale studies covering multiple watersheds have been conducted until present. Thus, this study aims to test whether populations of *M. jelskii* from the Brazilian semi-arid region follow Rensch's Rule. The mean Carapace Length (CC) data were obtained from the material present in the collection of the Laboratório de Crustáceos do Semiárido - LACRUSE, using digital pachymeter of 0.01 mm precision, and sexed based on the presence of the male appendix in the second pair of pleopods. Populations were analyzed for the states of Ceará, Paraíba, Pernambuco, and Piauí covering a spatial range of 5 degrees latitude. A type II, Reduced Major Axis regression was used to test the Rensch's Rule. The inverse of Rench's Rule was detected, i.e., the larger the females, the lower the SSD. We believe that this result may be related to the females needing a larger size to hold their eggs (increased functional area). In this scenario, smaller males may demonstrate greater reproductive success in populations of the species, being able to copulate a greater number of females through faster swimming, thus prioritizing a selection bias of fecundity for females. Therefore, larger studies can contribute to better observation of SSD for the species, checking whether this trend is present only in the semi-arid or throughout its geographical distribution.

Keywords: camarão-sossego, macroecology, sexual size dimorphism.

Financial support: FUNCAP.

Area: Ecology & Biodiversity

DISTRIBUTION OF *Aegla* (CRUSTACEA, ANOMURA) IN PARANÁ STATE, BRASIL

SILVA, M.C.M.S.*; PÁEZ, F.P.; MARÇAL, I.C.;
FRAZATO, P.; ARANTES, T. & TEIXEIRA, G.M.

Universidade Estadual de Londrina (UEL), Laboratório de Estudos de Invertebrados Aquáticos e Simbiontes, Departamento de Biologia Animal e Vegetal, Londrina, Paraná, Brasil

* Corresponding author: clara.mendonca2020@uel.br

This study addresses the distribution of *Aegla* in Paraná State, Brazil. Records obtained from the literature, information provided by different research groups, and the analysis of the collection of the Museum of Zoology of the State University of Londrina were used. The genus is composed of 93 described species, of which 61 occur in Brazil and 17 in the state of Paraná. In addition, there are at least six new species in the process of description, distributed in the Tibagi, Piquiri, Iguaçu and Paraná 3 basins, which also had their records considered in this survey. The Tibagi basin has the highest richness, with nine species, followed by the Iguaçu basin, with five species. The Cinzas, Piquiri and Pirapo hydrographic units have only one species each, that is, the lowest richness among the Paraná basins. Regarding the of occurrence records, Tibagi with 55, Ribeira with 42 and Iguaçu with 51 stand out. It is important to point out that the units with lower occurrence records may be underestimated, given the need for studies in these areas. Another point of interest is the fact that the species *Aegla schmitti*, *Aegla parana* and *Aegla castro* had highest number of records (32, 29 and 17 respectively) and are better distributed across the state, most likely due to be species complex as indicated by some molecular analyses. Thus, species with a wide distribution tend to be fragmented into a greater number of species with more restricted distributions, as taxonomic research advances. This will have key implications for identifying the degree of threat and developing conservation strategies. This study demonstrates that, although the state of Paraná has a great richness of Aeglids, this is a small portion of what we still must discover.

Keywords: Aeglidae, crustacean, Paraná basin, preservation, South America.

Area: Taxonomy & Phylogeny

NEW OCCURRENCE OF *Fredius ibiapaba* SANTOS, TAVARES, SILVA, CERVINI, PINHEIRO & SANTANA, 2020 (BRACHYURA: PSEUDOTHELPHUSIDAE) ENDEMIC SPECIES FROM IBIAPABA PLATEAU, CEARÁ, BRAZIL

ARAÚJO, J.G.[1,*]; NOBRE, P.H.P.[1]; MUNIZ, C.A.M.[1];
NASCIMENTO, C.A.[2]; NASCIMENTO, W.M.[3] & PINHEIRO, A.P.[1]

[1] Universidade Regional do Cariri (URCA), Laboratório de Crustáceos do Semiárido, Brazil;
[2] Universidade Federal do Sul da Bahia (UFSB), Laboratório de Carcinologia e Biodiversidade Aquática, Brazil;
[3] Universidade Federal de Pernambuco (UFPE), Laboratório de Biologia de Crustáceos, Brazil.

* Corresponding author: juliana.araujo@urca.br

The Neotropical region has a great diversity of freshwater crabs belonging to the Pseudothelphusidae and Trichodactylidae families. In Brazil, most Pseudothelphusidae occur in the North region, presenting a restricted distribution pattern, with a high degree of endemism. However, recently some species have been described in humid forests in Northeast Brazil. *Fredius ibiapaba* Santos, Tavares, Silva, Cervini, Pinheiro & Santana, 2020 is an endemic species from the Ibiapaba Plateau, with current distribution restricted to humid forests in the municipality of Ipu, state of Ceará. Possessing a distribution area is still little known. Here, we recorded the presence of *F. Ibiapaba* in the Parque Estadual das Carnaúbas, municipality of Granja, state of Ceará, northeast of Brazil. We collected the specimens by the active search method, performed by five researchers. After collection, we transported the specimens to the Semiarid Crustacean Laboratory (LACRUSE) of the Universidade Regional do Cariri (URCA). We found two specimens of *F. ibiapaba*, a female and an adult male, inside burrows in moist soil. The sampling site were situated at an altitude of 760 m, and approximately 121 km away from the type locality, located in the municipality of Ipu. Our results reveal a new occurrence record for *F. ibiapaba*, expanding its geographic distribution area. Our results suggest that the actual distribution area of the species is still poorly known, revealing the need for further studies. In addition, our results can support conservation actions.

Keywords: freshwater crab, endemic species, neotropical crab.

Financial support: FUNCAP.

Area: Ecology & Biodiversity

LARVAL DISTRIBUTION OF *Clibanarius* sp. (ANOMURA: DIOGENIDAE) IN ONE OF THE LARGEST ESTUARIES IN THE WORLD

CARDOSO, L.I.M.*; RODRIGUES-INOUE, A.C.M; MARTINELLI-LEMOS, J.M.

Universidade Federal do Pará (UFPA), Belém, Pará.
Núcleo de Ecologia Aquática e Pesca da Amazônia (NEAP),
Grupo de Pesquisa em Ecologia de Crustáceos da Amazônia (GPECA), Brazil.

* Corresponding author: lucas.cardoso@icb.ufpa.br

There is little information about larval ecology of *Clibanarius* sp. Dana, 1852 on the Amazon Continental Shelf (ACS). Ocean currents, food limitation, salinity and temperature have been the physicochemical factors correlated with variations in the larval density of marine decapods. So, the objective of this work was to estimate the density and the larval distribution of *Clibanarius* sp. along the ACS in periods of lower and higher flow of the Amazon River. Sampling was carried out at six locations, approximately 300km from the Coast of Marajó Island (23, 53, 83, 158, 198 and 233 km), by means of superficial and oblique trawls, using a 200 µm mesh plankton net, in October/13, January/2014, October/14, January/2015 (months with lower river flow), and July/2013, May/14, July/14, (months with higher river flow). Abiotic data (salinity and estimate of the concentration of chlorophyll-*a* were recorded with a CTD profiler (Hydrolab DS 5). Zoea were collected in all months, in five stages (Z1 to Z5), but without showing statistically significant differences in the mean larval density in relation to months (KW-H=0.309; p=0.958) and types of trawling (KW-H=876; p=0.320). Regarding the locations, there was absence of larvae in the estuarine and intermediate plume waters (53 and 198km distance from the coast), with zoea being found in the sampling sites with the influence of the external plume and open ocean (KW-H=9.111; p=0.027). The mean (± standard deviation) larval density of *Clibanarius* sp. per sampling site was 0.0538 larvae.m^{-3} (±0.0940) at 83 km from the coast, 0.005 larvae.m^{-3} (±0.0066) at 158, 0.0035 larvae.m^{-3} (±0.0067) to 233 km. Regarding abiotic factors, a positive correlation was observed among larval density and salinity (R= 0.29; p=0.008) and a negative correlation with chlorophyll-*a* (R= -0.24; p=0.031), evidence that corroborates salinity and chlorophyll-*a* influence the larval distribution of these anomurans on the Amazon Continental Shelf.

Keywords: Amazon, Decapod, ecology, zooplankton

Financial support: INCT AMBTROPIC-CNPq and PROPESP-UFPA.

Area: Ecology & Biodiversity

WHERE ARE THE WOMEN SCIENTISTS?

GOMES, K.M.* & REIS, G.O.

Universidade Federal do Rio Grande do Sul (UFRGS),
Laboratório de Carcinologia, Brazil.

* Corresponding author: k.marttinez@gmail.com

The scarcity of representation and recognition of women's work in science is nothing new/ recurrent. In recent years, this scenario has gradually changed, but we still perceive this problem. This project started after students searched the internet for scientists and found mostly men as examples. So, where are the women scientists? The aims are to know more about women scientists and their work, mainly women who develop research with crustaceans. In addition, to bring academic knowledge closer to students of public education. Public system students (8th year) from the city of Alvorada, state of Rio Grande do Sul-Brazil, prepared questions they would like to ask women scientists. Thus, the students created a form via Google Forms to be disseminated to those women who wished to respond. The questions include both the personal aspect, such as: age, skin color, whether or not they have children, as well as the inspiration to follow a scientific career, workload, first discovery in science, among others. This project is in progress, the form is being answered by women scientists, while students are getting to know important names of national and international researchers in the field of carcinology, such as Georgina Bond-Buckup and Mary Jane Rathbun.

Keywords: education, public education system, science teaching, woman carcinologist.

Area: Others

EVOLUTION OF THE CRUSTACEAN BODY PLAN: TOOLS TO EXPLORE EVOLUTIONARY MECHANISMS

MCCARTHY-TAYLOR, J.B.[1,2,*]; BABBITT, C.[3]; KELLY, S.R.[2]; VANHOOK, A.M.[1,4,5]; MARQUES-SOUZA, H.[1,4,6]; SERANO, J.M.[1,4,7] & PATEL, N.H[1,2,4,8]

[1] Department of Integrative Biology, University of California, Berkeley, CA, USA; [2] Marine Biological Laboratory, Woods Hole, MA, USA; [3] Biology Department, University of Massachusetts, MA, USA; [4] Department of Molecular and Cell Biology, University of California, Berkeley, CA, USA; [5] Science signaling, AAAS, Washington, DC, USA; [6] Institute of Biology, University of Campinas, Campinas, Brazil; [7] Independent Scholar, USA; [8] Department of Organismal Biology and Anatomy, University of Chicago, IL, USA

* Corresponding author: jmccarthy@mbl.edu

Pancrustacea (Arthropoda) a group that encompasses Crustacea and Hexapoda, demonstrate a remarkable diversity of body plans, especially in regards to the functional and morphological variability in their appendages. This appendage diversity has been highlighted across Malacostraca and Branchiopoda crustaceans. Extensive studies in the amphipod (Malocostraca), *Parhyale hawaiensis*, have provided powerful insights into the mechanisms of limb patterning through the studies of Hox gene function via CRISPR-Cas9 gene editing. With these tools we aim to examine other amphipod species, such as *Caprella mutica*, which sharply deviates from the typical amphipod body plan. Comparing the typical amphipod body plan of *Parhyale* to the unique body plan of *Caprella*, will give us further insights into the roles that Hox genes and other early patterning genes have played in the evolution of the crustacean body plan. Additionally, we aim to examine the brine shrimp (Branchipoda), *Artemia franciscana*, as they demonstrate an advantageous evolutionary relationship within Pancrustacea. Via *in situ hybridization* and RNAi knockdowns, we hope to elucidate the role of posterior Hox genes and their role in limb repression in the body plan of Hexapoda. Using these molecular tools, we are able to further understand the evolutionary basis of development in various species of Arthropoda.

Keywords: abdomen, amphipod, branchiopod, Hox, *In situ Hybridization.*

Area: Others

MORPHOLOGY OF A NEW SPECIES OF *Streblocerus* (CLADOCERA, MACROTHRICIDAE)

ELMOOR-LOUREIRO, L.M.A.[1,2,*] & SOUSA, F.D.R.[2]

[1] Independent researcher; [2] Laboratório de Taxonomia Animal, Universidade Federal de Jataí, Goiás, Brasil.

* Corresponding author: elmoor.loureiro@gmail.com

Among the macrothricids, members of *Streblocerus* Sars 1862 might be easily identified because of their divergent antennules. In the Neotropics, there are reports of three species: the endemics *S. pygmaeus* Sars, 1901 and *S. superserricaudatus* Smirnov, Alvarez & Castillo, 1995, and some populations of the putative cosmopolitan *S. serricaudatus* (Fisher, 1849), whose terra typica is in Palearctic zone. Analyzing a Brazilian *S. serricaudatus*-like population, we found that it belongs to a new species, agreeing with the non-cosmopolitanism concept in Cladocera. The material was collected from a small pond in Cambará do Sul Municipality, Rio Grande do Sul state, and studied on the phase-contrast microscope. The labrum of *Streblocerus* sp. nov. has lateral horns. The third endite of the first limb has two setae bearing long and sharp lateral spines. The second limb bears eight scrapers-like setae armed with denticles, with a soft seta near to the base of scaper 8. *Streblocerus* sp. nov. differs from *S. pygmaeus* and *S. serricaudatus* because it bears clustered denticles on the preanal margin of the postabdomen. From the *S. superserricaudatus*, it differs in having a not prominent preanal margin and presence of short clustered denticles. In conclusion, our findings confirm that Neotropical fauna of Cladocera is still underestimated.

Keywords: Branchiopoda, endemism, morphology.

Area: Taxonomy & Phylogeny

EFFECT OF MICROPLASTICS EXPOSURE ON *Procambarus clarkii* GIRARD, 1852 (DECAPODA: CAMBARIDAE) AND *Leptuca pugilator* BOSC, 1801 (DECAPODA: BRACHYURA)

SILVEYRA, G.R.[1,*], SILVEYRA, P.[2], VATNICK, I.[3], MEDESANI, D.A.[1] & RODRÍGUEZ, E.M.[1]

[1] Dept. of Biodiversity and Experimental Biology, FCEN, University of Buenos Aires, Institute of Biodiversity, Experimental and Applied Biology (IBBEA), CONICET-UBA, Ciudad Universitaria, Pab. II, C1428EGA, Buenos Aires, Argentina; [2] Dept of Environmental and Occupational Health, Indiana University Bloomington, School of Public Health, Bloomington, IN 47401, USA; [3] Dept. of Biology, Widener University, Chester, PA 19809, USA.

* Corresponding author: gab.silveyra@bg.fcen.uba.ar

With the increasing reliance on plastics as an everyday item, the environmental implications of plastics are a growing concern. Over time, UV radiation and mechanical abrasion generate fragmentation of plastics into very small pieces called microplastics (MP, plastic particles <5 mm). Consequently, these MP enter the marine environments, and due to their size and abundance, MP become bioavailable via ingestion in marine organisms, potentially causing oxidative stress. The present study was aimed at evaluating the *in vivo* effect of MP exposure on lipidic peroxidation and antioxidant levels, in two crustacean species: *Procambarus clarkii* (*P. clarkii* - crayfish) and *Leptuca pugilator* (*L. pugilator* - crab). Adult crayfish and crabs were exposed for one month to microfiber MP (Fluoresbrite Microparticles – Poly science®) at concentrations of 1000 or 5000 particles/mL. During the assay animals were maintained under controlled feeding, aeration, temperature, and photoperiod conditions. At the end of the exposure, hepatopancreas (HP) and hemolymph (HL) samples were harvested for analysis of oxidative damage and total antioxidant levels using colorimetric assay kits (Cayman®). Significant differences were observed in lipid peroxidation levels in HP, estimated by TBARS, in animals exposed to MP at the lowest concentration in *P. clarkii* and at the highest concentration in *L. pugilator* compared to control groups. A marked increase in antioxidants levels was also observed in the HL at both concentrations in *P. clarkii*, and at the highest MP concentration in *L. pugilator*. We conclude that MP exposure at the highest concentration tested is able to cause oxidative damage in two representative decapod crustaceans' species. The current study represents a contribution to deepen the knowledge of the complex effects that take place by effect of MP exposure in crustaceans.

Keywords: antioxidant levels, crab, crayfish, lipid peroxidation, microplastics.

Financial support: Grant from ANPCYT, Argentina (PICT # 2016-0040).

Area: Physiology & Toxicology

CLOVE OIL AS ANAESTHETIC FOR AMAZON RIVER PRAWN

ISAAC, A.B.J.[1,2]; SILVA, R.B. [1,2]; TOLEDO, L.C.S. [1,2]; VASCONCELOS, G.T.[1,3]; VALENTI, W.C[3] & BARRETO, R.E.[1,3,*]

[1] Universidade Estadual Paulista (UNESP), Instituto de Biociências de Botucatu, Brazil;
[2] These authors contributed equally to the study; [3] Centro de Aquicultura da UNESP (CAUNESP), Brazil

*Corresponding author: rodrigo.egydio@unesp.br

In this study, we evaluated clove essential oil (*Eugenia caryophyllus*) as an anesthetic for Amazon River prawn *Macrobrachium amazonicum* (Heller, 1862) juveniles. Specimens of prawns were individually introduced into containers containing 25, 50, 100 or 200 mg/L of clove oil alcoholic solution (n = 10 / each condition), and we evaluated the time required for anesthetic induction (absence of movements, equilibrium, and reaction to tactile stimulation). After that, the animals were removed from the container to be measured in terms of mass (mean ± SD = 1.24 ± 0.28 g) and length (mean ± SD = 5.25 ± 0.42 cm) and inspected for the presence of body movements. Ideally, they must have no movement to allow manipulation (the handleable stage). Then, they were individually moved to aquaria for assessing the recovery (resume equilibrium and reaction to tactile stimuli). We observed a negative correlation between the concentration of clove oil and the time to sedation (r^2 = -0.51; P<0.0001; Regression), indicating that the higher the dose, the faster the time to achieve sedation. We also observed that at the dose of 25 mg/L, 7 out of 10 prawns showed movements during biometry, while only 1 animal at the doses of 50 and 100 mg/L and none at the dose of 200 mg/L. This proportion observed for the 25 mg/L dose is significantly higher than the others, which are equal to each other (Goodman test; P < 0.05). We observed a positive correlation between the concentration of clove oil and recovery time (r^2 = 0.75; P<0.0001; Regression), indicating that the higher the dose, the longer the time to recover from sedation. We concluded that the 25 mg/L dose does not promote good manipulability, the 200 mg/L dose had a prolonged recovery time (greater than 5 min), and the doses of 50 and 100 mg/L were suitable concentrations.

Keywords: anaesthesia, animal welfare, clove oil, essential oil, prawn.

Financial support: FAPESP (# 2021/05735-5; #2021/05768-0; and # 2021/05772-8).

Area: Aquaculture & Fisheries

MOVEMENTS OF THE SESSILE HERMAPHRODITE AND DWARF MALES OF THE TURTLE BARNACLE *Chelonibia testudinaria*

CHAN, B.K.K.*

Biodiversity Research Center, Academia Sinica, Taiwan.

* Corresponding author: chankk@gate.sinica.edu.tw

Previous barnacle reproductive models considered dwarf males of androdioecious barnacles cannot grow up to large size, being able to change sex, and can only attaching on the hermaphrodite for mating. The present study examines the reproductive system of the androdiecious turtle barnacle *Chelonibia testudinaria* and investigates whether dwarf males can grow up to large size and translocate to facilitate mating. A one-year monitoring was conducted to observe the growth and movement of dwarf males of *C. testudinaria*. Results showed that dwarf males attained its basal area 25 times greater than the initial basal area in the start of the experiment. There were three different types of dwarf male growth patterns. Type A dwarf males translocated while growth, and finally its base completely detached from the hermaphrodite. Those dwarf males then moved farther from the hermaphrodite after detached from the hermaphrodite. Type B dwarf males grew up but did not translocate and attached on the surface of hermaphrodite. Type C dwarf males grew up to large size, blocked the operculum of hermaphrodite and resulted in the death of hermaphrodite. The rate of increase in basal area was significantly different among the three types of dwarf male growth patterns. Type A and B dwarf males further develops its ovary and became hermaphrodites and had fertilized embryos in the mantle cavity. Movement direction of dwarf males is achieved from greater growth of the specific shell plates that faces to the direction of translocation. Results of the present study suggests growth patterns and movement of dwarf males can affect its reproductive success. Further studies in barnacle reproductive modelling should consider these patterns in the assumption generations.

Keywords: androdioecious, barnacles, dwarf males, movement.

Financial support: Funding in Academia Sinica, Taiwan.

Area: Ecology & Biodiversity

TEMPORAL COMPARISON OF SEXUAL MATURITY OF *Callinectes ornatus* (LATREILLE, 1817) (BRACHYURA, PORTUNIDAE) IN UBATUBA BAY (23º26'37.2" S,45º03'25.9" W)

DE LUCCA, G.*[,1]; PERROCA, J.F.[1]; FREIRE, F.A.D.M.[2]; FRANSOZO, A.[3] & COSTA, R.C.[1]

[1] Universidade Estadual Paulista (UNESP), Campus Bauru, Laboratório de Biologia de Camarões Marinhos e de Água Doce; [2] Laboratory of Biology, Ecology and Evolution of Crustaceans (LABEEC), Department of Botany and Zoology, UFRN, Lagoa Nova University Campus, 59078-970, Natal/RN; [3] Departamento de Zoologia, Instituto de Biociências, UNESP, Campus de Botucatu/SP - Brasil.

* Corresponding author: 17gabrilucca@gmail.com

The swimming crab *Callinectes ornatus* is very abundant on the Brazilian coast, especially in São Paulo. It's the most incidentally caught species by the shrimp trawling fleet in shallow marine areas. Long-term analyses allow the identification of the presence or absence of variations in species population dynamics patterns. Thus, with the aid of a shrimp fishing boat equipped with double rig nets, we sampled in Ubatuba Bay - SP, for 12 months in the periods of 1998/99, 2013/14, 2016/17, and six months in 2021/22. Carapace width (CW in mm), sex, and gonadal stage were all obtained in the laboratory. For each sampling period and each sex, we calculated the gonadal sexual maturity through the LC_{50} method. We compared the values found for each period through binomial Generalized Linear Models, in which the proportion of adult and juvenile individuals was the response variable and the explanatory variables the medium point between the class intervals with an interaction between the periods (I to IV). The sexual maturity of females did not differ between sampling years, which ranged from 42.23 to 43.86. Males ranged from 49.71 to 52.31, with a significant difference in period IV (39.77). This finding may be explained by the recruitment period since the data from the last sample period focuses on the Second Half of 2021, which is a period that historically has a higher number of juveniles. It's also probably due to the change in sedimentation found in the region over time, mainly as the late effects of El Nino. In 2015/2016 a strong one El Nino occurred in the region since 1950. As this species needs the substrate for their livelihood, the variation may have triggered changes in the local population. It's also worth noting that fishing should always be taken into consideration since many individuals are removed from their environments.

Keywords: crab, long-term, sexual maturity, Ubatuba region.

Financial support: FAPESP # 2019/01308-5 and Thematic Biota # 2018/13685-5.

Area: Reproduction & Development

INVESTIGATING IMPACT POTENTIAL AND INVASION RISK OF NON-NATIVE CRAYFISHES IN TROPICAL FRESH WATERS

ZHONG, E.K.[1]; TOH, E.X.P.[1] & YEO, D.C.J.[1,2,*]

[1] National University of Singapore (NUS), Department of Biological Sciences, Singapore;
[2] National University of Singapore (NUS), Lee Kong Chian Natural History Museum, Singapore.

* Corresponding author: darrenyeo@nus.edu.sg

Assessing the influence of the aquarium trade on introduction success and the effects of environmental change on facilitating establishment and spread in waterbodies are important challenges in predictive risk assessments in invasion ecology. This applies particularly to emerging aquatic invasive species originating from the aquarium/ornamental pet trade that can engender significant impacts on the biodiversity and structure and functioning of recipient ecosystems. In tropical Singapore, two species of potentially invasive non-native crayfish, the red swamp crayfish (*Procambarus clarkii*) and the redclaw crayfish (*Cherax quadricarinatus*), are among the most popular species in the local aquarium trade, with the latter already established in the wild mostly in higher pH artificial reservoirs (cf. freshwater crabs and other native fauna in natural acid-water forest streams). In this study, we investigated experimentally the effects of pH on per capita impacts of *P. clarkii* and *C. quadricarinatus*, and the functionally equivalent native lowland freshwater crab (*Parathelphusa maculata*) using comparative functional response (FR). Through combining derived functional response ratios (FRR) with life history traits and propagule pressure measures, we then contrasted population-level relative impact potential (RIP) and relative invasion risk (RIR) of all three species across pH treatments (pH 7.0 emulating reservoirs, pH 6.0 emulating freshwater streams). All species to displayed destabilizing Type II FRs, with FRR for both crayfishes significantly greater than that of the freshwater crab, and *P. clarkii* dominant at pH 6.0. Within *P. clarkii*, the RIP and RIR were higher at pH 6.0 than at pH 7.0, while between crayfishes, the RIP and RIR of *P. clarkii* were greater than those of *C. quadricarinatus* at both pH treatments. A concurrent survey of aquarium shops across Singapore also revealed potential for high propagule pressure via aquarium trade releases of *P. clarkii*. Our study highlights the need to assess degrees of impact and invasion risk of potential invasive species on native species and ecosystems, for example, by incorporating such metrices alongside abiotic parameters that may influence spread and establishment.

Keywords: comparative functional response, invasive species, relative impact potential, relative invasion risk.

Financial support: National University of Singapore and Mandai Nature Fund.

Area: Ecology & Biodiversity

IS *Allosquilla africana* (MANNING, 1970) (STOMATOPODA: TETRASQUILLIDAE) A WIDELY DISTRIBUTED BUT RARE SPECIES? SOME CONSIDERATIONS USING AN INTEGRATIVE TAXONOMICAL APPROACH

GOMES, P.[1,*]; LOBO-ARTEAGA, J.[1,2] & BARTILOTTI, C. [1,2]

[1] Instituto Português do Mar e da Atmosfera (IPMA), Rua Alfredo Magalhães Ramalho, 6, 1495-006 Lisboa, Portugal; [2] Centro de Ciências do Mar e do Ambiente (MARE), Universidade Nova de Lisboa, Campus de Caparica, 2829-516 Caparica, Portugal.

* Corresponding author: pedro.gomes@ipma.pt

The genus *Allosquilla*, belonging to the family Tetrasquillidae, was erected by Manning (1977) and it is currently represented by two species: *Allosquilla africana* (Manning, 1970) and *Allosquilla varicosa* (Komai & Tung, 1930). According with the available references, only a few specimens of the species *A. africana* were found to date. Although, considering their records, it seems widely distributed, from the type locality in the Eastern Atlantic Ocean, in the Niger Delta (Gulf of Guinea), to the Mediterranean Sea, where it is present in the Aegean Sea, as well as in the Adriatic Sea. A new specimen of *A. africana* was collected in 2018 in the Portuguese southern coast, off Algarve region (Northeastern Atlantic), at 460-544 meters depth. The specimen was identified through integrative taxonomy, with morphological characters and genetic data. A portion of tissue was used to extract DNA, the marker cytochrome *c* oxidase subunit I was amplified and sequenced. Since no genetic information from closely related species is available, enlightening its phylogenetic relationship within the superfamily Lysiosquilloidea, the barcode sequence of the specimen collected was compared with those available in the public libraries. Preliminary results suggest that genus *Allosquilla* is more closely related with Nannosquillidae, considering the proportion of the ischium in the merus length of the raptorial claw, although, more morphological and molecular data are needed to take conclusions. The presence of *A. africana* in Portuguese waters, despite its rare occurrence, led us to formulate the hypothesis of a continuum in the distribution of the species, from the central Eastern Atlantic to the central Mediterranean Sea.

Keywords: DNA barcode, molecular phylogeny, morphological identification, Nannosquillidae.

Financial support: PNAB, MarBIS and MARE from FCT/MCTES (UIDB/04292/2020).

Area: Taxonomy & Phylogeny

OCEAN TEMPERATURE AND DENSITY DEPENDENCE AS KEY DRIVERS OF THE POPULATION DYNAMICS OF AN INTERTIDAL CRAB AT THE BRAZILIAN OCEANIC ISLANDS

MACEDO, T.P.[1]; ZHAO, Q.[2]; COSTA, N.V.[3] & FREIRE, A.S.[1*]

[1] Universidade Federal de Santa Catarina (UFSC), Depto. Ecologia e Zoologia, Lab. Crustáceos e Plancton, Brazil; [2] University of Missouri, School of Natural Resources, Columbia, Missouri, USA; [3] Universidade Federal de Santa Catarina (UFSC), Depto. de Oceanografia, Brazil.

* Corresponding author: freireandreas@gmail.com

Understanding how climatic and density-dependent processes affect demography is crucial for predicting population responses to climate change. For marine invertebrates with complex life cycle such as decapod crustaceans, increasing temperatures might affect survival and development of early pelagic stages, whereas high density can increase competition and thus reduce growth and fecundity of older life stages. In this study, we investigate the effects of warm ocean events, body size and density on the population dynamics of the intertidal Sally lightfoot crab (*Grapsus grapsus*) at the Brazilian oceanic islands. Firstly, we assessed the trends of marine heatwaves (MHW) and positive temperature anomalies (ΔSST+) at the equatorial St Peter and St Paul (SPSP) Archipelago and Rocas Atoll and the subtropical Trindade Island. We then jointly analysed short-term count, capture-recapture and fecundity data, and long-term population monitoring data (2003-2019) using an integrated population model. Warm ocean events have become more frequent and intense only at the equatorial islands. Increasing MHW frequency is likely to favour recruitment for the high-density SPSP population, while more severe events should cause negative impacts. Conversely, no climatic effects were observed for the low-density Rocas population, which has the largest crabs. Despite a lack of warming in Trindade, this subtropical population with intermediate density and body size was negatively affected by ΔSST+. Our findings revealed population-specific responses to climate change when accounting for local life history and ecology. Thus, combined effects between environmental and density-dependence on marine invertebrate populations should be broadly considered for conservation and management decisions.

Keywords: climate vulnerability, crustacean, demography, integrated population models, marine heatwaves.

Financial support: CNPq and CAPES.

Area: Ecology & Biodiversity

SEXUAL MATURITY OF *Grapsus grapsus* (LINNAEUS, 1728), IN TRINDADE ISLAND (TRI) AND SAINT PETER AND SAINT PAUL ARCHIPLEAGO (SPSP)

MARTINS, V.S.[1]; MACEDO, T.P.[1]; JOÃO, M.C.A.[2]; PINHEIRO, M.A.A.[2] & FREIRE, A.S.[1,*]

[1] Universidade Federal de Santa Catarina (UFSC/ CCB/ ECZ), Lab. Crustáceos e Plâncton, SC, Brazil;
[2] Universidade do Estadual Paulista (UNESP/ IB/CLP), Grupo de Pesquisa em Biologia de Crustáceos (CRUSTA), SP, Brazil.

*Corresponding author: freireandreas@gmail.com

In the South Atlantic Ocean, the *Grapsus grapsus* crab occurs only on the rocky shores of Brazilian oceanic islands. In this work, we compared the sexual maturity between populations of *G. grapsus* from SPSP (~0°5'N) and TRI (~20°S), located in different meteo-oceanographic systems. Sexual maturity (SM) combines morphological transformation and physiological development. The transition between juvenile and adult phases can be identified by changes in body growth rates (morphological maturity – MM) and the establishment of gamete production (physiological maturity – (PM). Maturity is influenced by the environment temperature and population density. Data were obtained in 2019 and 2020 in TRI, and from 2003 to 2005 in SPSP, through manual capture of crabs. The measurements of carapace width (CW), length of the cheliped propod in males (PL) and the abdomen width in females (AW) (0.05 mm) were obtained. The sex, stages of gonadal development and presence of ovigerous mass were registered. Females' MM is reached with a higher value in TRI (40.87 mm CW, n=375) than in SPSP (33.8 mm CW, n=315), although the smallest ovigerous female has an approximate value (~31 mm CW) on both islands. In TRI, males show an initial allometry change at 39.76 mm CW and definitive at 49.69 mm CW (n=350), greater than in SPSP, where the published results show changes at 28.8 mm and 51.4 mm CW (n=370). PM was also achieved in a smaller size in both sexes in SPSP (~ 40 mm CW) than TRI (~ 50 mm CW). These results indicate that TRI crabs reach sexual maturity with a larger size than in SPSP. The higher temperature and density of crab populations in SPSP may pressure an earlier sexual maturity in females and males in relation to TRI. Future studies of the populations of Atol das Rocas and Fernando de Noronha, also located close to the equator, may help to understand the species maturity patterns.

Keywords: maturity, oceanic island, relative growth, reproduction.

Financial support: CNPq, CAPES and FAPESP.

Area: Reproduction & Development

MOLECULAR PHYLOGENY REVEALS PARAPHYLY OF THE GENUS *Benthana* BUDDE-LUND, 1908 (ISOPODA: ONISCIDEA: PHILOSCIIDAE)

ZIMMERMANN, B.L.[1]; CAMPOS-FILHO, I.S.[2,*]; ARAUJO, P.B.[3]; BARTHOLOMEI-SANTOS, M.L.[4] & SANTOS, S.[4]

[1] Instituto Federal do Rio Grande do Sul, Departamento de Ensino, Brazil; [2] University of Cyprus, Department of Biological Sciences, Laboratory of Terrestrial Biodiversity, Cyprus; [3] Universidade Federal do Rio Grande do Sul, Departamento de Zoologia, Laboratório de Carcinologia, Brazil; [4] Universidade Federal de Santa Maria, Departamento de Ecologia e Evolução, Laboratório de Diversidade Genética, Brazil.

* Corresponding author: ivanklin.filho@gmail.com

Although new data and methodologies are gaining ground in the field of taxonomy, the vast majority of terrestrial isopod species are still described based on morphology alone. The genus *Benthana* was recently revised and currently comprises 28 species recorded from southern South America. However, the wide geographic distribution of some of the species, allied to few diagnostic characters, raises doubts about the validity of the described species. In this context, this study aims to test the applicability of DNA Barcoding to verify if there is congruence between the morphological and molecular identification of these animals. In addition, the presence of *Wolbachia* bacteria was investigated, since the infection can influence host genetic variability of mitochondrial DNA. We analyzed 72 individuals belonging to 13 species of *Benthana* from the scientific collection of the Carcinology Laboratory of the Federal University of Rio Grande do Sul. DNA extractions were performed using a PureLink Genomic DNA kit (Invitrogen) and samples were amplified using the COI gene. We obtained 24 sequences belonging to ten *Benthana* species. The phylogenies generated by Bayesian and ML methods generated trees with very similar topologies, both highlighting that *Benthana* comprise a paraphyletic group. Even at a specific level paraphyletic taxa were observed, as in the case of *B. sulcata* and *B. taeniata*. The presence of *Wolbachia* was not detected in any of the tested individuals. Both species delimitation methods used (ASAP and GMYC) showed the presence of eight molecular entities within *Benthana*. Regarding genetic distances, we observed low intraspecific distances (zero to 0.72%) and very high interspecific distances (16.3 to 43.8%). Our results show that molecular analysis does not corroborate the current taxonomy of *Benthana*. Thus, it is necessary to reassess the systematics of the genus based on integrative taxonomy.

Keywords: Brazil, COI, integrative taxonomy, terrestrial isopods, *Wolbachia*.

Financial support: CNPq (Edital MCT/CNPq Nº 2018 – Universal).

Area: Taxonomy & Phylogeny

PHYLOGENETIC AND PHYLOGEOGRAPHIC STRUCTURE OF CRABS OF GENUS *Macrophthalmus* (BRACHYURA: OCYPODIDAE: MACROPHTHALMINAE) FROM NORTHERN ARABIAN SEA

AZIZ, U.[1]; SAHER, N.U.[2,*]; ODHANO, S[2].; NAZ, F.[3] & KAMAL, M.[3]

[1] A.P.W.A Govt. College for Women, Karimabad, Karachi, Pakistan; [2] Centre of Excellence in Marine Biology, University of Karachi, Pakistan; [3] Institute of Marine Sciences, University of Karachi, Pakistan; [4] Department of Biotechnology, University of Karachi, Pakistan.

* Corresponding author: noorusaher@gmail.com

Macrophthalmus belongs to subfamily Macrophthalminae of family Ocypodidae, a dominant group of crabs inhabiting the intertidal zone along Indo-West Pacific regions. The sentinel crab of genus Macrophthalmus are highly diversified brachyuran of sandy and muddy habitats. These crabs are macrobenthic in nature and profound effects on many ecosystem processes and functions through their biogenic activities, including biogeochemical transformations included in fundamental importance to the marine food web. Studies showed that they play significant roles in the carbon, sulfur, iron, and nutrient cycling in the marine sediment systems, especially in intertidal sediments. Present study was conducted to analyze the phylogenetic and phylogeographic structure of crab of genus *Macrophthalmus* (Brachyura, Ocypodidae, Macrophthalmidae). To understand whether there is genetic structure genomic DNA was isolated from the muscle tissue of the legs by using commercial genomic DNA purification kit. A region of approximately 550 base pairs (bp) of gene was selected for amplification with polymerase chain reaction (PCR). Genetic analyses were conducted utilizing mitochondrial partial rDNA gene collected from Pakistan along with the data collected from NCBI (various localities including India, Iran, Iraq, and Kuwait). Brachyuran crabs have pelagic larvae which restrict the genetic barrier. To understand whether there is genetic differentiation between the species and populations, maximum likelihood (ML) analysis, nucleotide diversity, number of haplotypes, and haplotype diversity (h) for each population were estimated. According the procured sequences, the results showed that there was very little genetic differentiation between the populations along the distributional range. It was also concluded that Northern Arabian Sea provides a barrier free environment for the dispersal of larvae. The further detailed study can unfold some more interesting fact that's indicated during the analyses.

Keywords: Indo-West, NCBI, nucleotide diversity, maximum likelihood (ML) analysis, sentinel crab.

Area: Taxonomy & Phylogeny

DIVERSITY COMPONENT DETERMINATION FOR BENTHIC CRAB AND THEIR INTERACTIVE REGIME IN MANGROVE COASTAL AREAS OF PAKISTAN

SAHER, N.S.[1,*]; SIDDIQUI A.S.[1] & QURESHI, N.A.[2]

[1] Centre of Excellence in Marine Biology, University of Karachi, Pakistan;
[2] Govt. College University, Allama Iqbal Road, Faisalabad, Pakistan.

*Corresponding author: noorusaher@gmail.com

The subsistence of benthic crab with mangroves forest is conspicuous in tropical and subtropical intertidal provinces of the world and such association keeps up rich faunal resources and plays an imperative part in marine food web. The species diversity, abundance and distribution, of mangrove benthic crab fauna and their relationships with respective environmental conditions are the main indicative components that provide understanding about the status, structure and function of any ecosystem. As these crabs are the prominent features of the ecosystem and their distribution is interrelated to a wide variety of environmental conditions but exclusively correlated with the sediment structures and characteristics. The continuous interactions mainly for food and refuge with habitat have a significant impact on energy flows through recycling of soil nutrients and granular composition. The present study reveals the interaction and associated responses of distribution and diversity of crab species in accordance to habitat environmental factors (salinity, oxygen, temperature, substrate structure, crab burrow density, burrow diameter, porosity and total organic matter) along the Pakistan coast. The samples of sediments and crabs were collected from the fourteen stations of nine mangrove areas through line-transect method at three different tidal heights from low tide to high tide levels. The analyses of mean, median, standard deviation, skewness and kurtosis were analyzed for the degree of relatedness with the habitation. The collected biotic components were initially subjected to calculate the ecological indices (Diversity, Equitability and Species richness) before data were analyzed for principal component analyses and cluster study. A total of twenty-three crab species belong to seven families were identified from the collected samples. The density distribution of benthic crabs ranged between 4 to 612 ind.m^{-2}. The cluster analysis revealed the two main basic clusters for fourteen variables as selected for the study. The biotic factors (diversity, equitability and richness of species) closely related and clustered with the burrow density, mean and median sediment grain size. The inter cluster and intra cluster distance were also calculated. Principal Component Analysis (PCA) was also performed to synthesize the level of interaction and relevancy of benthic crabs with the components and environmental factors.

Keywords: Benthic crabs, Diversity, Granulometry, Component analyses, Pakistan Mangrove.

Area: Ecology & Biodiversity

NEW SPECIES OF PROSEKIINI LEISTIKOW, 2001 (ONISCIDEA: PHILOSCIIDAE) FROM PERU

OCAMPO-MACEDA, A.T.[1,*]; RUELAS-CABANA, C.M.[1];LÓPEZ-OROZCO, C.M.[2] & CAMPOS-FILHO, I.S.[3]

[1] Universidad Nacional de San Agustín de Arequipa, Museo de Historia Natural, Perú; [2] Universidad de Cartagena, Grupo de Investigación en Biología Descriptiva y Aplicada, Campus San Pablo, Colombia; [3] University of Cyprus, Department of Biological Sciences, Cyprus.

* Corresponding author: anatteresaocampomaceda@gmail.com

Philosciidae are the second most diverse family of Oniscidea, comprising more than 500 species in more than 110 genera. The family is considered an important faunistic component of the edaphic fauna to the decomposition of the organic matter in tropical forests. Currently, the family Philosciidae includes two recognized subtribes, Ischiosciini and Prosekiini. The subtribe Prosekiini comprises 46 species in six genera, i.e., *Andenoniscus* (3 spp.), *Androdeloscia* (29 spp.), *Erophiloscia* (5 spp.), *Metaprosekia* (4 spp.), *Prosekia* (3 spp.), and *Xiphoniscus* (2 spp.), with their representatives distributed in tropical areas along the Neotropical region. To date, in Peru, only 24 species of terrestrial isopods are known. After the examination of a large collection of Oniscidea from Nuevo Sucre, department of Loreto, eight species of the tribe in the genera *Androdeloscia* (4 spp.) and *Xiphoniscus* (4 spp.) were recognized as new to science. The genus *Xiphoniscus* represents the first record for the country and considerably extends the knowledge of its distribution. Moreover, the new species of *Xiphoniscus* allow to propose a more accurate diagnosis to the genus based in the morphological complexity of coxal plate II, with multiple stages of development, and revealing new characters of the male pleopod 1 endopod. The new species of *Androdeloscia* provide new morphological data of the genus and represent the first record of the genus for the department of Loreto. Regarding the habitat diversity and the latitudinal extension of Peru, the present work underlines the importance of taxonomic research in the country for future conservation strategies.

Keywords: *Androdeloscia*, *Xiphoniscus*, Tropical Amazon Rainforest, Nuevo Sucre.

Financial support: Universidad Nacional de San Agustín de Arequipa, Universidad de Cartagena, University of Cyprus.

Area: Taxonomy & Phylogeny

FILLING THE VOID: THIRTY-FOUR NEW SPECIES OF *Ischioscia* VERHOEFF, 1928 (ONISCIDEA, PHILOSCIIDAE) FROM COLOMBIA

LÓPEZ-OROZCO, C.M.[1]; CARPIO-DÍAZ, Y.M.[1]; CAMPOS-FILHO, I.S.[2,*]; OCAMPO-MACEDA, A.T.[3]; NAVAS-S., G.R.[4]; BERMÚDEZ, A.[1] & NEITA-MORENO, J.C.[5]

[1] Universidad de Cartagena, Grupo de Investigación en Biología Descriptiva y Aplicada, Campus San Pablo, Colombia; [2] University of Cyprus, Department of Biological Sciences, Laboratory of Ecology and Biodiversity, Cyprus; [3] Universidad Nacional de San Agustín de Arequipa, Museo de Historia Natural, Perú; [4] Universidad de Cartagena, Grupo de Investigación Hidrobiología, Campus San Pablo, Colombia; [5] Instituto de Investigación de Recursos Biológicos Alexander von Humboldt, Entomología, Colombia.

*Corresponding author: ivanklin.filho@gmail.com

The Philosciidae is one of the most diverse families of Oniscidea comprising more than 500 species in more than 100 genera. In the Neotropical region, the genus Ischioscia is sparsely inventoried in tropical areas of Central and South Americas. Currently, it includes 29 species, of which only five are recorded from Colombia. After the examination of a large collection of Oniscidea deposited in the scientific collections of the University of Cartagena, Institute Alexander von Humblodt, and Institute of Natural Science of the National University of Colombia, 34 species of the genus were recognized as new to the science, expanding its distribution to the lowlands of the Colombian Caribbean, and Tropical Dry Forest areas. In Colombia, the genus occurs mainly in the highlands, especially along the Andes Cordillera. The genus is mainly defined by the dorsal-flattened shape of the cephalon, noduli laterales not discernible, male pereopod 1 bearing wide and dense field of setae (sometimes enlarged and reaching the carpus and propodus of the pereopod 3), male pereopod 7 ischium bearing sternal fringe of setae, and shape of the male pleopod 1. All these characters are present in the taxa. Moreover, the new species greatly differs from the already described species, and among them, in the wide field of dense setae of the male pereopods 1-3, male pereopod 7 merus sometimes with lobe, and especially in the shape of the male pleopod 1. Most of the new species were recorded in high altitudes, over 1,000 meters a.s.l., along the Andean Cordillera. This work highlights the importance of biological collections as storage of information of biological entities and its history, and also it stresses out the importance of biodiversity researches. Regarding the distribution of the genus, including the new species, further molecular analyses should be considered in order to test the distribution patterns of the genus. Considering the territorial extension, ecosystems diversity and geological composition of the country, both biodiversity of the genus as for other Oniscidea representatives are still far to be complete.

Keywords: terrestrial isopods, Ischiosciini, Tropical Dry Forest, Biological Collections.

Financial support: Universidad de Cartagena, Instituto Alexander von Homboldt, ONISILOS research program 2018 (Cyprus).

Area: Taxonomy & Phylogeny

GENUS *HYALELLA* IN URUGUAY: MOLECULAR DIVERSITY AND PROVISIONAL NEW SPECIES

WALLER, A.[1,*]; VERDI, A.[1] & TOMASCO, I.[2]

[1] Universidad de la República, Facultad de Ciencias, Sección Entomología;
[2] Laboratorio de Evolución, Uruguay.

* Corresponding autor: anawaller@gmail.com

Hyalella is the only genus of epigean freshwater amphipods present in South America. The bibliographic research shows that 70% of the species descriptions are based only on morphological characters. Recent studies that incorporate molecular data have contributed to identifying many cryptic species and a high level of morphological convergences in species complexes from North America and the South American highlands which highlights the need to integrate genetic and morphological data for the delimitation of the species of this genus. In this study, we evaluate for the first time the molecular diversity of *Hyalella* sp. in Uruguay based on four independent molecular markers. Thus, we place *H. curvispina* in the context of the previously proposed phylogenetic hypothesis for the genus. Phylogenetic analyses show that the "curvispina complex" is polyphyletic and suggest the region's colonization implied at minimum two migratory events whose dating coincides with paleogeographic data from the area. In addition, we find two provisional new species. The results obtained are analyzed comparatively with previous studies to help understand the mechanisms of differentiation and speciation of the genus, which seems to have a strong tendency towards morphological convergence.

Keywords: curvispina complex, molecular markers, molecular species delimitation, phylogeny.

Financial support: Agencia Nacional de Investigación e Innovación (POS NAC # 2019 1 157755).

Area: Taxonomy & Phylogeny

TANAIDACEANS FROM SOUTHERN PORTUGAL: AN OVERVIEW WITH NEW SPECIES AND FIRST RECORDS OF *Apseudopsis*

CARVALHO, A.N.[1,2,*]; PEREIRA, F.[1]; LOBO-ARTEAGA, J.[3,4]; BARTILOTTI, C.[3,4]; LABRUNE, C.[5]; PILÓ, D.[1,6]; ESQUETE, P.[7] & GASPAR, M.B.[1,6]

[1] Instituto Português do Mar e da Atmosfera (IPMA), Centro de Olhão, Portugal; [2] Universidad de Cádiz, Campus de Excelencia International del Mar (CEIMAR), Spain; [3] Instituto Português do Mar e da Atmosfera (IPMA), Centro de Algés, Portugal; [4] Centro de Ciências do Mar e do Ambiente (MARE), Universidade Nova de Lisboa, Portugal; [5] CNRS, Sorbonne Université, Laboratoire d'Ecogéochimie des Environnements Benthiques, Banylus-sur-mer, France ; [6] Centro de Ciências do Mar (CCMAR), Universidade do Algarve, Portugal; [7] Centro de Estudos do Ambiente e do Mar (CESAM), Universidade de Aveiro, Portugal.

*Corresponding author: andre.carvalho@ipma.pt

Overall, 25 species of the genus *Apseudopsis* have been described worldwide, of which 17 occur in the temperate Northern Atlantic, and 10 are circumscribed to the Mediterranean Sea. However, the real number of Tanaidaceans species is clearly underestimated, justifying the need of frequent updates of the available databases. In southern coast of Portugal, specimens of the genus *Apseudopsis* have been commonly and recurrent identified as *Apseudopsis latreillii* (Milne Edwards, 1828), mainly due to the lack of specific literature for this geographical area. In 2019 a new species *Apseudopsis formosus* Carvalho, Pereira & Esquete, 2019 was described, and five *Apseudopsis* species were reported for the first time in southern Portugal, highlighting the co-occurrence of congeneric species in this area. Despite passive dispersion could be occurring, the new records of these species may just reflect the lack of taxonomic studies and bibliographic support. Indeed, since no previous studies confirm the presence of these species, it is unknown if these distributions correspond to a recent range expansion or, if these species have been misidentified, and therefore overlooked. Considering these questions, a thorough integrative taxonomical approach, combining morphology with a molecular analysis, is being used to identify and describe potential new *Apseudopsis* species, and compare different specimens from southern coast of Portugal and southern coast of France. The present study provides valuable baseline data for future research and prompts an updating of the genus *Apseudopsis*, highlighting the relevance of biodiversity in transitional ecosystems and improving the current knowledge on this abundant and ecologically relevant group from southern Portugal.

Keywords: Apseudomorpha, Biodiversity, Integrative taxonomy, Molecular analyses.

Financial support: SNMB-Sul IV (MAR-02.01.02-FEAMP-2021), MarBIS and MARE (FCT/MCTES-UIDB/04292/2020).

Area: Taxonomy & Phylogeny

NEW SPECIES AND NEW RECORDS OF *Androdeloscia* LEISTIKOW, 1999 (ONISCIDEA: PHILOSCIIDAE) FROM COLOMBIA

LÓPEZ-OROZCO, C.M.[1]; CARPIO-DÍAZ, Y.M.[1]; CAMPOS-FILHO, I.S.[2,*]; NAVAS-S., G.R.[3]; BERMÚDEZ, A.[1] & NEITA-MORENO, J.C.[4]

[1] Universidad de Cartagena, Grupo de Investigación en Biología Descriptiva y Aplicada, Campus San Pablo, Colombia; [2] University of Cyprus, Department of Biological Sciences, Cyprus; [3] Universidad de Cartagena, Grupo de Investigación Hidrobiología, Campus San Pablo, Colombia; [4] Instituto de Investigación de Recursos Biológicos Alexander von Humboldt, Entomología, Colombia.

* Corresponding author: clopezo1@unicartagena.edu.co

The genus *Androdeloscia*, family Philosciidae, includes 29 species distributed in the Neotropical countries of Bolivia, Brazil, Colombia, Guatemala, Mexico, Venezuela, and Peru. Currently, only one species is recorded from Colombia, i.e., *Androdeloscia colombiana*. After the examination of a large collection of Oniscidea deposited in the collections of the University of Cartagena, Institute Alexander von Humblodt and Institute of Natural Science of the National University of Colombia, 17 species of the genus were recognized as new to the science. The specimens were recorded in highlands, Tropical Dry Forest and Andean Forest areas from 13 departments of the country, with an altitudinal range from 0 and 2,800 m a.s.l.. The present work considerably expands the knowledge of the distribution of the genus for the country and Neotropical region. Moreover, it expands the morphological diversity of the apical structure of the male pleopod 1 endopod, mainly used for species recognition. The morphological variation in the male reproductive apparatus is well-known in Oniscidea and it represents an interspecific competition for females. This work stress the importance of investments in biodiversity researches, in order to assess future conservation efforts.

Keywords: Woodlice, Prosekiini, Tropical Dry Forest, Andean Forest.

Financial support: Universidad de Cartagena, Instituto Alexander von Homboldt, ONISILOS research progeam 2018 (Cyprus).

Area: Taxonomy & Phylogeny

NEW SPECIES AND NEW RECORDS OF THE FAMILY SCLEROPACTIDAE VERHOEFF, 1938 (ISOPODA, ONISCIDEA) FROM COLOMBIA

CARPIO-DÍAZ, Y.M.[1]; LÓPEZ-OROZCO, C.M.[1]; CAMPOS-FILHO, I.S.[2,*]; NAVAS-S, G.R.[3]; BERMÚDEZ, A.[1] & NEITA-MORENO, J.C.[4]

[1] Universidad de Cartagena, Grupo de Investigación en Biología Descriptiva y Aplicada, Campus San Pablo, Colombia; [2] University of Cyprus, Department of Biological Sciences, Cyprus; [3] Universidad de Cartagena, Grupo de Investigación Hidrobiología, Campus San Pablo, Colombia; [4] Instituto de Investigación de Recursos Biológicos Alexander von Humboldt, Entomología, Colombia.

* Corresponding author: clopezo1@unicartagena.edu.co

Scleropactidae comprises more than 100 species in more than 25 genera mainly distributed in Circumtropical areas. In the Neotropical region, the family is one the most diverse and, together with Philosciidae, constitutes an important component along humid forests. Despite the high diversity of Scleropactidae, only 14 species are known from Colombia. After the examination of a large collection of Oniscidea from many habitats in the Colombian departments of Amazonas, Bogotá D.C., Boyacá, Bolívar, Caquetá, Cundinamarca, Nariño, Putumayo, Quindío, Santander, Tolima, Valle del Cauca and Vaupés, deposited in the Collection of Crustaceans of the Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Biological Collection of the Universidad de Cartagena, and the Collection of Terrestrial Invertebrates of the Instituto Alexander von Humboldt, 25 species were recognized, 15 of which are new to science. The new species are placed in the genera *Colomboniscus* (2 n. spp.), *Colomboscia* (3 n. spp.), *Scleropactes* (3 n. spp.), *Sphaeroniscus* (5 n. spp.), *Amazoniscus* (1 n. sp.) and *Circoniscus* (1 n. sp.). Moreover, *Colomboniscus tristani*, *Amazoniscus schmidtii* and *Circoniscus ornatus* have their distribution extended, and it constitutes the first record for the country. Regarding the territorial extension of the country and its habitat complexity, the diversity of the family is still far to be complete. Also, the present work highlights the importance of taxonomic studies. The knowledge of biodiversity is the first step to other fields of science, and it allows for better conservation strategies.

Keywords: Andean Forest, *Colomboscia, Sphaeroniscus*, Woodlice.

Financial support: Universidad de Cartagena, Instituto Alexander von Homboldt, ONISILOS research program 2018 (Cyprus).

Area: Taxonomy & Phylogeny

THE GENUS *Schizidium* VERHOEFF, 1901 (ONISCIDEA, ARMADILLIDIIDAE) FROM CYPRUS

CAMPOS-FILHO, I. S.[1*], DIMITRIOU, A. C.[1], GEORGIOU, A.[1], TAITI, S.[2,3] & SFENTHOURAKIS, S.[1]

[1] University of Cyprus, Department of Biological Sciences, Laboratory of Ecology and Biodiversity, Cyprus; [2] Istituto di Ricerca sugli Ecosistemi Terrestri, Consiglio Nazionale delle Ricerche, Sesto Fiorentino (Florence), Italy; [3] Museo di Storia Naturale dell'Università di Firenze, Sezione di Zoologia "La Specola", Florence, Italy.

* Corresponding author: ivanklin.filho@gmail.com

Armadillidiidae are the fifth most diverse family of Oniscidea, comprising more than 250 species in 14 genera. The genus *Schizidium* comprises 26 species distributed along eastern Mediterranean countries but it is probably not a monophyletic taxon. Cyprus is the third largest island within the Mediterranean, with an area of ca. 9,250 km^2. Most of the island is of volcanic origin (first appearance above sea level ca. 20-15 Mya) and is composed of two mountain ranges, Troodos in the central-western part, and Pentadaktylos in the north-northeastern part. Until today, only *S. fissum* was recorded from Cyprus. A large collection from many habitats along the island revealed the presence a new *Schizidium* species. The new species is recorded from Cedar Valley and Kampos, while *S. fissum* is distributed in several habitats of the island. In order to explore the genetic diversity within the island and evaluate the morphology-based taxonomy of the two species in the genus, three mitochondrial (COI, 16S and 12s) and one nuclear (protein coding Sodium-Potassium Pump, NAK) makers were sequenced. Morphological and molecular data confirm the taxonomic validity of both *S. fissum* and *Schizidium* n. sp. Moreover, molecular analysis of *S. fissum* revealed the presence of two distinct genetic clades with well-defined geographic boundaries, corresponding to the two mountain ranges of the island. The present work stresses the importance of integrative approaches in Oniscidea systematics in order to gain a better understanding on evolutionary dynamics of terrestrial isopod lineages and for a more efficient species delimitation, using also all other available evidence, such as paleogeography.

Keywords: island diversity, Palearctic region, terrestrial isopods.

Financial support: ONISILOS research program 2018; Project EXCELLENCE/0918/0161 co-financed by the European Regional Development Fund and the Republic of Cyprus through the Research and Innovation Foundation.

Area: Taxonomy & Phylogeny

EFFECTS OF CHRONIC CADMIUM EXPOSURE ON THE ENERGY BALANCE OF THE WHITELEG SHRIMP *Litopenaeus vannamei*

COSTA, J.R.[1,*]; RAMAGLIA, A.[1]; BORGES, E.P.[1]; LEITE, H.S.[2]; LOUZÃ, A.[3]; CAPPARELLI, M.V.[4] & AUGUSTO, A.[1,2,3]

[1] Centro de Aquicultura da UNESP/CAUNESP, Brasil; [2] Instituto de Biociências, Campus do Litoral Paulista, UNESP, Laboratório de Aquicultura Sustentável, Brasil; [3] Instituto de Biociências de Botucatu, IBB/UNESP, Brasil; [4] Instituto de Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México, Mexico.

* Corresponding author: juliana.r.costa@unesp.br

Cadmium (CD) is a metal not essential to organisms. It is present in rechargeable batteries and batteries and its inappropriate disposal has increased the concentration of this pollutant in coastal environments. Although there are many studies on the effects of this metal on biochemical and genetic levels, little is known about its effects on the physiology and growth of aquatic animals. Therefore, our goal was to evaluate the effects of cadmium on the physiology of whiteleg shrimp (*Litopenaeus vannamei*), a kind of global economic interest. The animals were kept for 30 days in a controlled environment (cadmium-free water: 0mg/L) or with cadmium (0.1mg/L cadmium). Daily ingested energy was quantified and channeled to growth, metabolism, nitrogenous excretion, exuvia and feces. The type of energy substrate oxidized by the animals was also evaluated. Metabolism was evaluated by the consumption of oxygen from animals kept in closed chambers and the excretion of ammonia by colorimetry. The energy values were quantified in adiabatic pump and the type of energy substrate by the Oxygen/Ammonia atomic ratio. The effects of metal were evaluated by the T test followed by the SNK. There was mortality (30%) only in animals exposed to cadmium. Most of the ingested energy was channeled into metabolism (~40%) in both treatments. Animals exposed to cadmium channeled more energy to growth (~32% of the ingested energy) than control animals (~20%). About 30% of the ingested energy was channeled to other functions such as defecation, nitrogen excretion and feces. Regardless of treatment, the animals oxidized mainly lipids and proteins. We conclude that chronic exposure to Cd increases mortality in *L. vannamei*. In addition, the high energy channeling for growth suggests that metal can interfere with the growth of individuals and its potential effect as an endocrine disruptor needs to be investigated. These effects may interfere with the development, reproduction and ecological relationships of the species in its ecosystem.

Keywords: Physiology, Crustaceans, Shrimp, Heavy Metal, Pollution.

Financial Support: CAPES # 88887.639412/2021-00; FAPESP # 2019/26801-6.

Area: Physiology & Toxicology

CONTRIBUTIONS TO TERRESTRIAL ISOPODS (ONISCIDEA) FROM BRAZILIAN CAVES

CAMPOS-FILHO, I.S.[1,*]; SFENTHOURAKIS, S.[1]; GALLO, J.[2]; GALLÃO, J.E.[2]; CARPIO-DÍAZ, Y.M.[3]; LÓPEZ-OROZCO[3], C.M.; BORJA-ARRIETA[3], R.; ARAUJO, P.B.[4]; TAITI, S.[5,6] & BICHUETTE, M.E.[2]

[1] University of Cyprus, Cyprus; [2] Universidade Federal de São Carlos, Brazil; [3] Universidad de Cartagena, Colombia; [4] Universidade Federal do Rio Grande do Sul, Brazil; [5] Consiglio Nazionale delle Ricerche, Italy; [6] Museo di Storia Naturale, Sezione di Zoologia "La Specola", Italy.

* Corresponding author: ivanklin.filho@gmail.com

Terrestrial isopods (Oniscidea) comprise about 4,000 species in more than 500 genera and 38 families, occurring in almost all terrestrial habitats. Along the total carbonate karst regions of South America, Brazil hosts about 22,000 caves distributed in 39 geomorphological groups. To date, more than 70 species of terrestrial isopods are known from Brazilian caves, 36 of which are considered to be troglobitic. A large collection of Oniscidea from several caves in the states of Bahia, Goiás, Mato Grosso, Mato Grosso do Sul and São Paulo have been examined. Twenty-one species have been recognized, 15 of which are considered to be new to science. *Diploexochus* n. sp. 1, *Gabunillo* n. sp., *Novamundoniscus* n. sp. 1, *Venezillo* n. sp. 1, *Venezillo* n. sp. 2, *Venezillo* n. sp. 3, *Venezillo* n. sp. 4, and *Venezillo* n. sp. 5 are recorded from Bahia; *Novamundoniscus* n. sp. 2 from Goiás; *Circoniscus* n. sp., *Metaprosekia* n. sp., *Novamundoniscus* n. sp. 3, *Novamundoniscus* n. sp. 4, *Trichorhina* n. sp. from Mato Grosso; and *Diploexochus* n. sp. 2 from Mato Grosso do Sul. Moreover, *Benthana olfersii*, *B. taeniata*, *Ctenorillo ferrarai*, *Cubaris murina, Venezillo congener*, and *Porcellionides pruinosus* have their distribution extended. Only *Gabunillo* n. sp. is considered to be a troglobite, while all the remaining species are troglophiles. The subterranean environments are well known to experience stable environmental conditions, offering refuges to this fauna, especially in xeric areas. Most of the Brazilian caves are outside of conservation areas, and in the last years these peculiar environments have been suffering with serious threats, i.e., mining, deforestation, husbandry in surrounding habitats, and alteration of the Brazilian environmental law by the Decree 10.935. Despite the low representation of strict cave-dwelling species, the present work underlines the importance of cave habitats to total fauna diversity, stressing the importance of caves in conservation strategies.

Keywords: cave-dwelling, Neotropical. terrestrial isopods.

Financial support: ONISILOS research program 2018 (Cyprus), CNPq and FAPESP.

Area: Taxonomy & Phylogeny

THE SUN GOES DOWN AND THE SUNSCREEN CAUSES EFFECTS

CESAR-RIBEIRO, C.; SANTANA, D.C.N.; FUKUSHIMA; L.; PAULY, G.F.E. & ABESSA, D.M.S.

Universidade Estadual Paulista (UNESP), Instituto de Biociências,
Campus do Litoral Paulista, São Vicente (SP), Brazil

* Corresponding author: caiocribeiro@hotmail.com

Chemical sunscreens are the most commonly marketed sunscreens, using the combination of oxybenzone, avobenzone, octisalate, octocrylene, homosalate, and octinoxate. The release of these lipophilic and often persistent compounds into surface waters may risk aquatic organisms. The present study investigated the acute effects of used UV sunscreen on the crustacean *Daphnia magna*. 48 h acute toxicity tests with neonates were performed following the ABNT guideline with four replicates per treatment group and five organisms per replicate. All tests were conducted in a climate chamber at 26 ± 1°C with a photoperiod of 16:8 h light: dark. Immobilization/mortality was recorded after 24 and 48 h and analyzed to calculate LC50 values. The website ATT BIOQUEST (LC50 calculator) was used for statistical analysis. The LC50-48 h calculated was 120.8 mg/L, demonstrating higher concentrations than the literature found to fresh water indicating toxic effects to aquatic life. Despite the attention to the impacts of sunscreen chemical ingredients on aquatic environments and their impact on aquatic ecosystems, clear labeling standards, public education and outreach can reduce chemical UV filter use, but it requires ongoing effort and may have global reach. A precautionary approach would be most effective if supported by broad-scale, consistent regulatory policies and labeling standards that limit sunscreen ingredients that can cause ecotoxicological effects.

Keywords: *Dapnhia magna*, ecotoxicology, sunscreen.

Financial support: FAPESP, CNPq

Area: Physiology & Toxicology

THE SALINITY CAN BE RESPONSIBLE FOR THE HIGHER GROWTH OF ESTUARINE POPULATIONS OF AMAZON RIVER PRAWN (*Macrobrachium amazonicum* HELLER, 1862)?

BORGES, E.P.[1,*]; RAMAGLIA, A.C.[1] & AUGUSTO, A.[1,2]

[1] Centro de Aquicultura, UNESP, Campus Jaboticabal, Brasil; [2] Instituto de Biociências (IB), UNESP, Campus do Litoral Paulista, São Vicente (SP), Brasil.

*Corresponding author: emanuelle.borges@unesp.br

The shrimp *Macrobrachium amazonicum* is a native species with wide distribution and potential for aquaculture. Studies show that the total body length of individuals collected in the estuary can be up to 70% greater than those inhabiting freshwater in the wild or in shrimp ponds. We hypothesized that this characteristic may be due to the higher energy expenditure with osmoregulation in freshwater at the expense of growth. In order to investigate this hypothesis, we evaluated the osmoregulatory capacity in adults and quantified the energy ingested and channeled to metabolism, growth, exuviae, nitrogen excretion and feces of juveniles and adults kept in fresh or brackish water (10 or 20S) for 10 and 30 days. Osmolality differed between salinities, being higher in 20S (649 ± 22.68 mOsm/kg/H_2O). The strong osmotic gradient maintained in adult animals exposed to freshwater (418.71 ± 9.86 mOsm/kg/H_2O) supports the higher oxygen consumption at this salinity (about 40 mgO2.ind^{-1}.day^{-1}). Metabolism was responsible for the largest share of energy expenditure in all salinities (~45 to 122% of daily energy intake), being higher in juveniles kept in freshwater. However, the energy channeled to growth has not changed, although there is a tendency to be higher in freshwater. The energy lost in the exuviae of adults kept in freshwater was higher than in the other treatments (7.53% of the energy ingested). The energy lost in the excretion of ammonia and feces corresponded to about 15% of the energy ingested and, in general, there were no significant differences. The results show that the higher growth of *M. amazonicum* in brackish water seen in nature does not imply greater channeling of energy for this function. On the other hand, our hypothesis that there is a high oxygen consumption in freshwater seems plausible for juveniles. We conclude that the energy distribution for the different functions of *M. amazonicum* is minimally altered by exposure to different salinities, which should reflect its ability to invade and inhabit different saline gradients in nature.

Keywords: Energy Budget, Physiology, Salinity, Shrimp.

Financial support: FAPESP (# 2018/04006-7).

Area: Aquaculture & Fisheries

ENVIRONMENTAL VARIABILITY ON THE AMAZON CONTINENTAL SHELF AND ITS RELATION TO SOUTHERN BROWN SHRIMP *Penaeus subtilis* (PÉREZ-FARFANTE, 1967) CATCHES

MARTINS, D.E.G.[1,*]; SILVA, K.C.A.[1]; ALVES-JÚNIOR, F.A.[2]; CINTRA, I.H.A.[1]; CAMARGO-ZORRO, M.[3] & SOUZA-FILHO, P.W.M.[4]

[1] Universidade Federal Rural da Amazônia (Belém, CEP 66000-000, Brasil); [2] Centro Universitário Brasileiro (UNIBRA) (Recife, CEP 50050-230); [3] Instituto Federal de Educação, Ciência e Tecnologia da Paraíba. (Cabedelo, CEP 58000-000, Brasil); [4] Instituto Tecnológico Vale (Belém, 66055-090, Brasil)

* Corresponding author: deborah.martins@ufra.edu.br

The Amazon River mouth is part of one of the most important penaeid shrimp fishing areas in the world. This study aims to evaluate the degree of association between environmental variables and southern brown shrimp *Penaeus subtilis* catch volumes on the Amazon continental shelf. The environmental variables, obtained by remote sensing, and fishery data, collected between 2000 and 2004, were integrated in a Geographical Information System (GIS). The values of catch per unit effort (CPUE, in $kg.h^{-1}$) of the industrial fishing fleet were correlated to Amazon River discharge, sea surface temperature (SST) and chlorophyll-*a* concentration using correspondence analysis. The Amazon River discharge was typically marked by periods of maximum discharge, between April and June, and periods of minimum discharge, between October and December. The CPUE also presented seasonality, reaching greater values in the first semester. We observed higher values of CPUE associated with smaller values of SST and higher values of chlorophyll-*a* concentration. CPUE was associated with SST and chlorophyll-*a* concentration, variables that express a strong influence from the Amazon River discharge. Thus, we observed three periods with different levels of production: February to April; May to July; and August to September, being in these months, the highest production and fishing activities observed from *P. subtilis* in Amazon Province.

Keywords: Amazon River discharge, Amazon Province, CPUE, Geographical Information System.

Area: Aquaculture & Fisheries

FIRST ASSESSMENT OF THREE KING CRABS SPECIES (CRUSTACEA: LITHODIDAE) COLLECTED UNDER THE REVIZEE PROGRAM IN BRAZILIAN AMAZON PROVINCE

MARTINS, D.E.G.[1,*]; CINTRA, I.H.A.[1]; SILVA, K.C.A.[1]; KLAUTAU, A.G.M.[3] & ALVES-JÚNIOR, F.A.[2]

[1] Universidade Federal Rural da Amazônia (UFRA), Instituto Socioambiental e dos Recursos Hídricos. (ISARH) (Belém, CEP 66000-000, Brasil) - Laboratório de Crustáceos (Labcrus), Belém, Pará, Brazil. (Belém, CEP 66000-000, Brasil); [2] Centro Universitário Brasileiro (UNIBRA), Recife, Pernambuco, Brazil. (Recife, CEP 50050-230); [3] Instituto Chico Mendes de Conservação da Biodiversidade-ICMBio, Centro de Pesquisa e Conservação da Biodiversidade Marinha do Norte, Belém, Pará, Brasil. (Belém, CEP 66000-000, Brasil)

* Corresponding author: deborah.martins@ufra.edu.br

Twenty-eight lithodid species are currently known from the Atlantic Ocean, eight of which were reported in Brazilian waters, previously in northeast and southeast regions. Herein, we report new occurrences of three lithodid species: *Lithodes manningi* Macpherson, 1988, *Neolithodes asperrimus* Barnard, 1947 and *Paralomis granulosa* (Hombron & Jacquinot, 1846) in Brazilian Amazon province. The species were collected between the States of Amapá and Pará, under the surveys of Revizee Program [Assessment of the Sustainable Potential of Living Resources of the Exclusive Economic Zone] between September 1999 and October 2001, reaching up to 1100 m depth, using a commercial fishing net (otter trawl net with 118 mm mesh aperture). For *L. manningi* herein we report the northernmost record of the species from Brazilian waters; for *N. asperrimus* we report the second finding of species in Brazil, while for *P. granulosa* here is the first record of this species in Brazilian deep waters. These new records are an important contribution to the understanding of distributional patterns of lithodid species and it also increases biodiversity data of crustaceans from the Northern Brazilian region.

Keywords: deep-sea crabs, *Lithodes*, Lithodid crab, *Neolithodes*, *Paralomis*.

Area: Ecology & Bi9opdiversity

POPULATION STRUCTURE OF THE FIDDLER CRAB *Minuca mordax* (SMITH, 1870) IN AN AMAZONIAN ESTUARY (JAPERICA BAY, BRAZIL)

GUIMARÃES, N.C.M.[1,2,*]; SOUZA, D.R.E[1,2].; BRITO, A.J.O.[1,2]; SANTOS, C.R.M[1]. & AVIZ, D.[1]

[1] Museu Paraense Emílio Goeldi (MPEG), Coordenação de Zoologia, Campus de Pesquisa, Laboratório de Invertebrados Aquáticos, Brazil; [2] Instituto Federal do Pará (IFPA), Campus Belém, Brazil.

* Corresponding author: niviacristo@gmail.com

The study investigated the population structure of the crab *Minuca mordax* (Smith, 1870) in mangrove areas in Japerica Bay, northern coast of Brazil. Samples were collected in May/2013 (rainy season) and November/2013 (dry season), in five different areas along a salinity gradient (upper, middle, and lower estuary). All crabs were sampled in six quadrants of 1 m^2 each, for each month and area, in the intertidal zone (a total of 60 samples). In the laboratory, sex, carapace width (CW) and developmental stage (juveniles, adult females and males, and ovigerous females) for each specimen were determined. A total of 306 specimens were collected, of which 2.2% were juveniles (undetermined sex), 48.0% were male and 49.8% were female (2.3% ovigerous). The overall sex ratio was 0.96♂:1♀ and did not deviate significantly ($\chi 2<3.84$; $p=0.75$) from 1:1. However, in some estuarine areas, a male-biased (external estuary) or female-biased (internal estuary) sex ratio was found. Males (mean CW=10.01±3.71 mm) showed a slightly greater size than females (mean CW=9.83±3.05 mm). The CW of juveniles was 5.06±1.70 mm, and 7.46±1.79 mm for ovigerous females. Regarding size classes (CW), a higher frequency of males was observed for classes larger than 18 mm, with significant disproportions. Ovigerous females were recorded during the dry and rainy season, in the middle and lower estuary. Although the species has been registered along the whole estuarine stretch, its higher abundance occurred in areas of the upper estuary, where salinity ranged from 0.0 to 3.0 in the rainy season, and 27.5 to 37.8 in the dry season, during low tide. Significant seasonal variation was not observed regarding crab abundance. The data suggests that although *M. mordax* is a typical species in oligohaline environments, it can occupy habitats that seasonally experience euhaline conditions, such as Amazonian estuaries.

Keywords: mangrove, northern coast of Brazil, Ocypodidae, spatial distribution,

Financial support: CNPq (Conselho Nacional de Desenvolvimento Científico e Tecnológico / Brazil.

Area: Ecology & Biodiversity

BRACHYURAN CRAB ASSEMBLAGES IN A TROPICAL ESTUARY (JAPERICA BAY, BRAZILIAN AMAZONIAN COAST): BIODIVERSITY AND SPATIAL AND TEMPORAL VARIATIONS

SOUZA, D.R.E.[1,2]*; GUIMARÃES, N.C.M[1,2].; BRITO, A.J.O.[1,2]; SANTOS, C.R.M.[1] & AVIZ, D.[1]

[1] Museu Paraense Emílio Goeldi (MPEG), Coordenação de Zoologia, Laboratório de Invertebrados Aquáticos, Campus de Pesquisa, Brazil; [2] Instituto Federal do Pará (IFPA), Campus Belém, Brazil.

* Corresponding author: deboradosremedio@gmail.com

Brachyuran crabs are the most important group of tropical mangroves epifauna, considering the high number of species and their abundances. The present study investigated the structure (richness, composition, and abundance) of brachyuran assemblages along a salinity gradient and two seasonal time periods in Japerica Bay (northern Brazil). Samples were collected in May (rainy season) and November (dry season) 2013, in five different areas along the estuary. All crabs were sampled in six quadrants of 1 m^2 each, for each month and area, in the intertidal zone (a total of 60 samples). Water salinity was measured simultaneously, at the low tide line. Salinity data confirmed the existence of a remarkable salinity gradient along the estuary of Japerica Bay, which was more pronounced in the rainy season (salinity 0 to 19.5) than in the dry season (salinity 27.5 to 37.3). A total of 1,107 specimens were collected, belonging to 16 crab species of four families. Sesarmidae and Grapsidae were mostly associated with middle estuarine areas. In contrast, Ocypodidae and Xanthidae were mostly associated with upper and lower estuarine areas, respectively. The structure of assemblages was different between areas and seasons. Mean richness and abundance were highest in the middle estuary, in both seasons. A significant spatial variation occurred only in the dry season for richness, and in the rainy season for abundance. There was a tendency to increase species richness in the dry season along the entire estuary. These results show that salinity is an important factor causing spatial and temporal changes in the crab assemblages in a tropical estuary. The present findings contribute to ecological studies on crustaceans in Amazonian estuaries.

Keywords: Crustacea, mangroves, salinity gradient.

Financial support: CNPq (Conselho Nacional de Desenvolvimento Científico e Tecnológico) / Brazil.

Area: Ecology & Biodiversity

A NEW TROGLOBITIC SPECIES OF *Bilistra* (ISOPODA, SPHAEROMATIDAE) FROM NEW ZEALAND

MERLO, M.[1]; MILLAR, I.[2]; FERREIRA, R.L.[1]

[1] Universidade Federal de Lavras, Setor de Biodiversidade Subterrânea, Departamento de Ecologia e Conservação, Brazil; [2] Department of Conservation, Nelson, New Zealand (Retired).

* Corresponding author: manuelamerloo@gmail.com

The Sphaeromatidae family is the most specious of the aquatic isopods, with 100 genera and approximately 700 spp. Most of its representatives are small and inhabit marine environments, intertidal and shallow waters including estuaries. The genus *Bilistra* consists of three species that occur in caves in karst areas in the South Island of New Zealand with species that present troglomorphic traits, as body depigmentation and eye reduction, being, thus considered troglobites. *Bilistra aotearoa* n. sp., from the Commentary Cave, located at the Takaka district (Nelson, New Zealand) is described based on morphological analysis, it is distinguished from other species of the genus by pleotelson slightly convex shape and posteroventral margin with a narrow open groove, uropod apices narrowly rounded and eyes reduced. The new species described must also be considered troglomorphic, showing reduced pigmentation and notable eye reduction, although it has a lesser eye reduction in comparison with *Bilistra cavernicola*.

Keywords: Troglomorphic, Taxonom, Freshwater, Cave.

Area: Taxonomy & Phylogeny

TOLERANCE OF *Macrobrachium potiuna* (CRUSTACEA; DECAPODA) TO LOW pH EXPOSURE IN BLACKWATER

SANTOS, N.R.F.[1,*] & DUARTE, R.M.[1]

[1] Universidade Estadual Paulista (UNESP), Instituto de Biociências, *Campus* do Litoral Paulista. Laboratório de Ecofisiologia e Toxicologia Aquática, Brazil.

* Corresponding author: natalia.romano@unesp.br

Global climate change can affect physicochemical properties of water promoting alterations in important parameters, like temperature and pH, that might adversely affect the survivorship of native species. This is particularly concern in freshwater environments with high endemism where the risk of extinction increases substantially. The increase in emissions of CO_2 can direct result in water acidification, promoting severe physiological disruptions in freshwater crustaceans especially in osmotic and ionic homeostasis and in rates of ammonia excretion - the main nitrogen waste product from crustacean's metabolism. In Atlantic Forest, blackwater rivers are naturally acidic and rich in dissolved organic carbon (DOC), which is originating from the decomposition of organic matter (plants and animals). In addition, blackwaters from Atlantic Forest are considered a hot spot of biodiversity with a high endemism of species, like the shrimp *Macrobrachium potiuna* (Palaemonidae; Decapoda) that occurs throughout the basin of the Rio Preto in Itanhaém city (SP). In these regards, the association between naturally low pH and the projections of pH reductions driven by climatic events can bring additional challenges for the species regarding the maintenance of its internal homeostasis, especially under acidic conditions above their limits of tolerance limits that might increase the risk of extinction. Thus, this study evaluated the effects of the gradual acute exposure to low pH on the survivorship and ionoregulatory responses of the adult males of *Macrobrachium potiuna*. The individuals were gradually exposed to different pHs (4.5; 4.0; 3.5; 3.0; 2.5) for two hours in water of Rio Preto - with high DOC - and at each level of pH tested was measured the rates of ammonia excretion and net fluxes of Na+ and Cl-. During the acute low pH exposure, no mortalities of *M. potiuna* adult males were recorded. In addition, only small increases in ammonia excretion were seen in animals exposed to the lowest levels of pH tested, while net losses of Na+ and Cl- in shrimps were not significantly stimulated. Thus, our data demonstrate a high tolerance of adult males of *M. potiuna* to the acute exposure to low pH, which might be associated to the high concentration of DOC in natural waters of Rio Preto.

Keywords: Ammonia excretion, Aquatic acidification, Climate Change, Ionic Balance.

Area: Physiology & Toxicology

ON THE CONSERVATION OF CHILEAN AEGLIDS, PRESENT AND FUTURE

JARA, C.G.*

Instituto de Ciencias Marinas y Limnológicas, Universidad Austral de Chile, Valdivia.

* Corresponding autor: cjarasenn@gmail.com

Chilean aeglofauna is currently composed of 19 species plus 2 subspecies, unevenly distributed along the country. Roughly, *Aegla* species are distributed from river Choapa (31° lat S.) to Isla Duque de York (50°40' lat S), living in a vast array of climatic and environmental scenarios. At the northernmost area (31° to 33° S lat) clima is sub-arid and rivers receive water from snowmelt rather than from rain. At the southernmost area (45° to 50° S) clima is perhumid and rivers receive water mostly from rain. At the northermost área only one species is found, i.e., *A. papudo*, while at the southernmost area only *A. alacalufi* is found. Then, the gratest diversity of *Aegla* species is found between 35 and 45°S, peaking at 40°S with 12 species. From Perez-Losada et al (2002) data it is concluded that about 50% of Chilean *Aegla* species are subject to some threatening factor that affect their conservation. Last decade is particularly distinguished in climatic terms by a severe drought (megadrought) that affects mostly the area between 30° and 35°S lat of Chilean continental territory. That climatic condition threatens directly the survival of most *A. papudo* and *A. laevis* populations. Predictions about the extent and consequences of the Global Climatic Change in the southern cone of South America for the next eigthy years are little favorable for the conservation of most Chilean *Aegla* species.

Keywords: Conservation, Aegla, Chile, megadrought, Global Climatic Change.

Financial support: Personal.

Area: Genetics & Conservation