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Editorial: Advances in crustacean research from the 10th International Crustacean Congress

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Editorial on the Research Topic
Advances in crustacean research from the 10th International Crustacean Congress

Introduction

Crustaceans are among the most abundant and diverse organisms on Earth. Due to their diversity and abundance and their occurrence in the terrestrial, freshwater, groundwater, marine and fossil environments, crustaceans are an integral part of ecosystems and ecosystem functioning. They are at the forefront of international studies of neurobiology, aquaculture, toxicology, biosecurity, biodiversity, evolution and many more. Crustaceans can also provide a signal for environmental change aiding the management of fisheries and other anthropogenic activity.

Every four years, the Crustacean Society (TCS) hosts an International Crustacean Congress (ICC), where international delegates share research covering a broad range of disciplines related to our world's Crustacea. In May 2023, the International Society of Invertebrate Reproduction and Development (ISIRD) and TCS jointly held the 10th ICC for the first time in Aotearoa New Zealand, hosted by the Museum of New Zealand Te Papa Tongarewa and the National Institute of Water & Atmospheric Research (NIWA).

The program was dedicated to the dissemination of all aspects of crustacean research and to promoting the exchange of information and ideas related to carcinology.

Summary of the topic papers

This Research Topic hosts some of the general proceedings of the conference and the results highlight the significance and importance of understanding the diversity and function of a globally critical group of organisms.

In this Research Topic, 11 papers by 42 authors collaboratively address issues related to a variety of crustacean topics. The papers covered a number of different groups of crustaceans; from peracarids to decapods and in a range of habitats, from freshwater to the deep-sea. Questions address environmental/climate factors such as the Southern Oscillation Index as drivers of

macrobenthic crustacean distribution, abundance and species richness in New Zealand estuaries (Lam-Gordillo et al.). Climate change as a driver of habitat change is also considered by Katharoyan et al. who examine its effects on South African mangrove and salt marsh crab populations. Freshwater prawns are considered in a study examining the cell metabolism of freshwater prawns providing a baseline for further cell culturing of crustaceans, with implications for fisheries and population sustainability (Sudarshan et al.). Aspects of crustacean larval biology are considered in an examination of how even at a larval stage the presence of marine protected areas can influence the abundance and resilience of crustacean communities (Landeira et al.). The influence of the immediate environment around crustaceans on their behaviour is examined concluding that fiddler crabs can learn complex routes in returning to their homebases (Chatterji and Layne). Fishery associated crustacean research was covered in the ICC10 congress proceedings, represented here by a study of artisanal fisheries in Northern Patagonia, concluding that there is a necessity to monitor the effects of seasonal variations on the reproductive cycle of crabs (Hamamé et al.). Geburzi et al. discuss the use of crustacean specific molecular probes (ultraconserved elements) in conservation genetics and evolutionary studies in both the shallow water and deep-sea environments. This approach provides opportunities to include poorly preserved and rare specimens in these types of studies. Different aspects of the deep-sea crustacean biology are considered by examining the connectivity between deep-sea biogeographic provinces (e.g. by the study of the tanaid superfamily Neotanaoidea), highlighting complex and generally understudied processes in the deep-sea (Theil and Błażewicz). Continuing the deep-sea focus, Casaubon and Riehl describe specific morphological measurement techniques to help understand functional morphology of deep-sea isopods collected from Icelandic waters. This Research Topic concludes with taxonomic descriptions of two new species: a ghost shrimp of the family Callianopsidae which is recorded for the first time from the waters off Aotearoa New Zealand (Schnabel and Peart), and a new species of *Pentaceration* isopod from the family Paramunnidae, also from the waters off Aotearoa New Zealand (Peart and Schnabel).

Gaps and perspectives

The global importance of the rich, unique and valuable biodiversity of crustaceans in ecosystems and global fisheries is undeniable. Unfortunately, it is this abundance, diversity and complexity that causes the most difficulties in studying these environments. Proportionally we know so little of the cell structure, functional morphology, biochemical responses, ecotoxicology and systematics of the crustaceans. It is essential to continually have conferences such as the International Crustacean Congress to inform and promote the world of crustacean research to try and fill these gaps.

Author contributions

RP: Conceptualization, Funding acquisition, Project administration, Writing – original draft, Writing – review & editing. KS: Conceptualization, Funding acquisition, Project administration, Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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