Amphidromous shrimps (Decapoda: Caridea): current knowledge and future research

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Who are they?

Caridean shrimps that migrate between freshwater and marine environments, qualified as amphidromous, live in freshwater as adults, but must reach the ocean as larvae to complete their development before returning to rivers.

Where are they?

Amphidromous shrimps can colonize virtually all freshwater habitats with a connection to the sea across the tropical to warm temperate regions.

Geographic distribution of amphidromous species of atyids Geographic distribution of amphidromous species of Macrobrachium





Amphidromous shrimp are key species for freshwater ecosystems and human societies



... while their biology is overall poorly known!





And yet, they are threatened by human activities...



The assessment of available literature by species of amphidromous shrimp highlighted a severe imbalance, with research on one species (*Macrobrachium rosenbergii*) dominating the literature due to its use in aquaculture, while the majority of other species have been overlooked.

Avenues for future research on amphidromous atyids and non-commercial Macrobrachium:

Reproduction & development: complete the life cycle in the laboratory



- Determine the range of tolerance, the acclimation and resilience capacity of the different life stages
- Transfer the knowledge and techniques from the laboratory rearing to a larger production scale for species with a commercial potential

Tolerance & stress response: assess the sensitivity to variations in environmental factors

- Understand the current geographical distribution
- Predict the evolution of a species distribution in the face of environmental changes

Sensory ecology: identify environmental cues that guide migration

- Determine the key factors (hormones, kairomones, physico-chemical signature of rivers,...) that affect the migration pathways and habitat selection
- Evaluate the impact of anthropogenic sensory pollutants (noise, light, chemical agents)

This conservation physiology approach aims to predict responses to environmental changes and generate conservation and resource management solutions.



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