

Sustainability of a tropical shrimp fishery: can genetic research give additional clues?

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Shrimps are one of the most important fishery resources in economic value and constitute around 18% of the world's traded fishery exports. As such, tropical shrimp fisheries provide an important source of food and income for many people, particularly in developing countries. However, due to the widespread overexploitation, the destructive way of fishing (bottom-trawling), and the high quantities of bycatch, these fisheries are generally regarded as unsustainable. In order to preserve stocks and the ecosystems they reside in, shrimps have to be exploited in a sustainable way. This insight has led the fishery for the Atlantic seabob shrimp *Xiphopenaeus kroyeri* in Suriname (South America) to take measures to improve the fisheries' sustainability. Thanks to these efforts, the industrial seabob fishery in Suriname has been granted with the Marine Stewardship Council (MSC) label for sustainable fisheries. Nevertheless, to come to an ecosystem-based fisheries management for the seabob fishery, important knowledge on the phylogenetics and population genetic structure of the seabob shrimp in Suriname is lacking.

For instance, genetic studies on the species in Brazil indicated a more complex phylogeny than previously thought, including the presence of cryptic species. In the present study, integrative taxonomy is applied to infer the phylogeny of the seabob shrimp. Therefore, a combination of genetic markers (mitochondrial and nuclear genes) and phenotypic characteristics is applied.

Additionally, the Surinamese are not the only ones targeting the seabob shrimp. Fishermen in the neighbouring countries, Guyana and French Guiana, are also targeting this valuable marine resource. To what extent Suriname shares its seabob stock with its neighbours is unknown. Therefore the population genetic structure and gene flow of the seabob population(s) are analysed by using highly polymorphic microsatellite markers.

Results of this research can guide management decisions to come to an ecosystem approach to fisheries, and will ultimately lead to a more sustainable use of marine resources in Suriname.

Keywords: sustainable fisheries; phylogenetics; population genetics; tropical shrimps