

Seahorse Research in Papua New Guinea

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Papua New Guinea is renowned for its spectacular underwater scenery. It is famous for its huge drop-offs, pristine coral reefs, massive schools of pelagic fish, rare and unusual marine life and then there are the seahorses; these small unusual fish that can be incredibly difficult to find unless one knows where to look...



Pygmy Seahorse (*Hippocampus bargibanti*)

Seahorses are found throughout the oceans of the world except in the coldest seas. The Indo-Pacific region is one of the most important areas for seahorses with a large number of species found in these tropical waters. In Papua New Guinea (PNG), there has been no scientific research undertaken on seahorse populations in its waters, despite the perceived importance of PNG as a biogeographic centre of distribution for tropical marine flora and fauna.

A new study has just commenced in PNG that is investigating seahorse diversity,

distribution and trade in PNG with a particular focus on the Central and Milne Bay Provinces. This 2-year project is being coordinated by Dr Mark Baine, Director of the Motupore Island Research Centre (MIRC), and has been made possible through a grant from the Australia and Pacific Science Foundation. MIRC is part of the School of Natural and Physical Sciences at the University of Papua New Guinea and is situated on Motupore Island (often referred to as the Island of the Sand Spit), which is the largest of four islands in Bootless Bay located just east of Port Moresby.



Motupore Island

Motupore Island is located within the Papuan Barrier Reef and measures approximately 800 x 200 metres (13 hectares) with an elevation of 60 metres. Marine habitats present within the area include mangrove forests, seagrass meadows, a prominent sand spit, rocky shores, soft bottom communities and coral reefs. The waters surrounding the island are shallow with extensive seagrass and coral cover, and as such the presence of seahorses is suspected.

Located a stone's throw from Motupore Island is Loloata Island; a world renowned, tropical diving resort. Loloata Island Resort is also an important partner in the seahorse project and is providing assistance with transport to the barrier reef as well as providing the local diving

expertise of Franco and Yoshi who know the waters of Bootless Bay better than anyone else.

Project Seahorse, an international marine conservation agency that is generously supported by the world famous 'Guylian Chocolates', is providing technical guidance and assistance. In June/July 2006, Dr Keith Martin-Smith – Project Seahorse Principal Scientist, visited Motupore Island and provided training for MIRC staff in seahorse research protocols. Over a 2-week period staff from MIRC were taught a wide range of skills including seahorse biology, identification techniques, underwater visual census and beach seine survey methods, underwater photography and data management.



Estuary Seahorse (*Hippocampus kuda*)

As seahorses can be found in a wide range of habitats, the diving surveys are not just limited to the spectacular coral reefs of Papua New Guinea. Surveys are being conducted in seagrasses, mangrove forests and over muddy/silty bottoms – not considered to be the most exciting locations for scuba divers! Divers conduct a survey by doing a timed swim in a

certain habitat and during that time they record the seahorse and pipefish species they find as well as recording their morphological details. A GPS unit is towed on the surface by one of the divers, recording the track that is surveyed. By correlating the time when a seahorse is spotted with the GPS track, the exact location of the seahorse can be determined. In addition to the underwater visual surveys, a seine net has been designed for dragging through seagrasses and muddy bottoms. So far, this technique has been very effective in capturing pipefish species.



Divers searching the seagrasses for syngnathids

Initial surveys have confirmed that the Pygmy Seahorse (*Hippocampus bargibanti*) and the Estuary Seahorse (*H. kuda*) are both present within Bootless Bay. *H. bargibanti* is only known to occur on gorgonian corals of the genus *Muricella* whilst the preferred habitat of *H. kuda* is known to be seagrasses and mangroves. Other species that have been confirmed to occur in PNG from past records include *H. colemani*, *H. denise*, *H. hystrix*, *H. spinosissimus* and *H. zebra*. Other species that are likely to be present but are yet to be confirmed in PNG waters are *H. angustus*, *H. kelloggi* and *H. trimaculatus*. It is hoped that during the diving and seine net surveys that some of these species will be encountered.



Using a seine net in seagrasses

Although focussing on seahorses, the research is also recording information from the surveys on other members within the Syngnathidae family such as pipefish and pipehorses'. Initial diving and seine netting surveys found several pipefish species including the 'Double Ended Pipehorse or Alligator Pipehorse' (*Syngnathoides biaculeatus*), the 'Bend Stick Pipefish' (*Trachyrhampus bicoarctatus*) and the 'Reeftop Messmate Pipefish Pipefish' (*Corythoichthys haematopterus*).



Seagrass Messmate Pipefish

The final component of the project will examine the trade of seahorses from Papua New Guinea. All seahorses

(*Hippocampus sp*) are listed on Appendix II of CITES (Convention in International Trade of Endangered Species of Wild Flora and Fauna) meaning that international trade in seahorses is strictly regulated. Seahorses are exploited for their medicinal properties, as curios and as live fish for the aquarium trade. There are few data available for seahorse trade in Oceania, outside of Australia and New Zealand. Investigations will be undertaken to determine if seahorses are being caught as bycatch by the local fishing industry and whether trade in the species is occurring.



Sorting through the net catch

This seahorse project will be operating until at least 2008. It is hoped that further funding to expand the seahorse surveys into other areas of Papua New Guinea will be secured.

Would you like to get involved?

As part of the seahorse research, MIRC is seeking assistance from divers that have visited Papua New Guinea in the past or plan to in the near future. MIRC requests any sighting information of seahorses and in particular any photos that divers have taken of seahorses in Papua New Guinea waters. If you have any information or photos that can be used please contact Geua Ganiga (ganigagg@upng.ac.pg).