

No-take marine reserves a no-win for seahorses

September 1 2014, by Marea Martlew



An anglerfish and seahorses. Credit: David Harasti

A UTS study on how seahorses are faring in no-take marine protected areas (MPAs) in NSW has revealed that where finishing is prohibited, seahorses aren't doing as well.

Over four years marine scientist David Harasti has monitored populations of White's seahorse (*Hippocampus whitei*), also known as

the "Sydney seahorse", and their major predators such as octopus, flathead and scorpionfish, at four sites near Nelson Bay in the Port Stephens-Great Lakes Marine Park on the NSW mid-north coast.

Although the benefits of MPAs are well known for increasing fish diversity, abundance and size, this research indicates that establishing no-take marine reserves could instead put threatened seahorse populations at risk and should be used cautiously as a management strategy.

"We found that seahorse and predator numbers were negatively correlated, in other words, White's seahorse numbers were higher outside the no-take sites and predator numbers were higher inside the no-take marine reserve sites," Harasti said.

"When the numbers of predators went up, the numbers of [seahorses](#) went down.

"Within marine reserves there will be winners and losers and it appears seahorses may end up being one of the 'losing' species as a result of increased numbers of predators following the removal of fishing.

"The results from this project were not completely expected as the published literature suggests that seahorses should benefit from the creation of small scale marine reserves. Our results are contrary to what has previously been suggested.



A seahorse in its preferred soft coral habitat. Credit: David Harasti

"This is one of the reasons why we did this project, to test the effectiveness of no-take marine reserves as a tool for seahorse conservation," said Harasti, who recently completed his PhD through the UTS School of the Environment and is lead author of the research findings published in the current edition of the journal *PLOS ONE*.

Harasti's supervisor, Professor Bill Gladstone, Head of the UTS School of the Environment said, "The results of David's research will make us re-think the conservation measures needed to safeguard populations of White's seahorse, and the full range of effects of marine reserves."

Mr Harasti said that the team's other study, into the habitat preferences of the Sydney seahorse, recently published in the *Journal of Fish Biology*, supports using a much broader approach to seahorse conservation than just relying on the establishment of [marine reserves](#).

"We found that seahorses used a variety of habitat types, from sponge gardens to soft corals, and that juveniles prefer different habitats to adults," he said. "They also show very strong site fidelity which means they tend not to move very far. In fact, one individual male was observed

living in the same sponge for 17 months."

"We can only conclude that the declaration of a no-take marine reserve by itself may not be the best option for conserving declining seahorse populations.

"As the White's seahorse only occurs in estuaries from Forster to Wollongong, covering Australia's most densely populated region, the protection of the seahorses' preferred habitats, such as sponge gardens and soft corals, is of critical importance as they rely on these habitats for survival and need them to survive in the future."

Provided by University of Technology, Sydney

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