

New approach for determining conservation threat for species with little data

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University of British Columbia researchers have found a new way to identify which marine species are threatened and what is threatening them, even if these species lack data, a new study published in the journal *Conservation Biology* shows.

"A tremendous challenge in [marine conservation](#) is that the conservation status and locations of high human pressures for so many marine species are still unknown," said Xiong Zhang, lead author and Ocean Leaders Postdoctoral Fellow at UBC's Institute for the Oceans and Fisheries. While [threatened species](#) are typically identified through the International Union for Conservation of Nature (IUCN) Red List assessments, many evaluated marine species have been classified as Data Deficient, while thousands of others have not yet been assessed.

"By quantifying and mapping the combined human pressures on [individual species](#)—using existing, if scarce, data, modeling techniques and expert knowledge—we can address this challenge," Zhang explained.

Scientists have used various methods to bypass the lack of data for [marine species](#), but these UBC researchers were among the first to model threats by estimating cumulative human impact (CHI) at the species-level.

"Our study indicates that modeling and mapping [human impacts](#) can reveal geographic overlaps between locations of seahorse populations and areas of human pressure for data-poor species," said Dr. Amanda Vincent, senior author, and professor in UBC's Institute for the Oceans and Fisheries, and co-founder and Director of Project Seahorse.

Looking specifically at seahorses—a rare and data-poor genus of marine fishes—worldwide, they mapped the human impact of 12 human-created stressors onto 42 seahorse species to predict which data-poor seahorses

might actually be threatened, what is threatening them and which areas are under the greatest threat.

The researchers found that five of 17 seahorse species where the conservation status was previously unknown were actually probably under threat. China, Southeast Asia and Europe were identified as major threat epicentres for seahorses, having the highest level of combined human pressures for populations of 33 seahorse species. While seahorses are threatened by a variety of human activities, the researchers identified non-selective bottom fishing, as well as ocean and nutrient pollution, as putting more severe pressures on global seahorse populations.

Given these results, since all 19 threatened seahorse species—including the five identified by this study—are traded internationally, they need focused attention under agreements like the United Nations Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), especially in China and Southeast Asian countries where seahorses and marine ecosystems are already highly impacted. The researchers also call for local managers to tailor their threat-mitigation plans to focus on particular species, rather than focusing solely on marine ecosystems more broadly, to achieve better conservation outcomes.

"Species-level CHI modelling could provide a new approach to species conservation," said Vincent. "With it, we could estimate conservation status for thousands of Data Deficient species on the IUCN Red List."

More information: Xiong Zhang et al, Using cumulative-human-impact models to reveal global threat patterns for seahorses, *Conservation Biology* (2019). [DOI: 10.1111/cobi.13325](https://doi.org/10.1111/cobi.13325)

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