



# Using Spatial and Statistical Ecology to Describe Whale Distribution Patterns with Conservation Management Applications

April 12<sup>th</sup> (Tuesday): 4-5pm ET

## Prof. Leigh Torres



Like many large, long-lived animals, whales face increased disturbance from human activities across their habitat range and life history phases. An effective approach to mitigate anthropogenic impacts on whale populations can be to reduce overlap in space and time between whales and human activities, which requires a solid understanding of whale ecology within dynamic marine ecosystems. In this talk, I will present two case studies where we aim to understand the ecological drivers of whale habitat use patterns and effectively predict their distribution to inform management efforts. Off the Oregon, USA coast whale entanglements in fishing gear pose a threat to endangered and threatened populations. I will describe our collaborative efforts to develop fine-scale spatial predictions of whale distributions in Oregon waters and assess dynamic overlap patterns with fishing gear. Results from our work have already influenced regulatory decisions on fishing effort to reduce entanglement risk to whales. In New Zealand, we recently documented a population of blue whales that share a primary foraging ground with industrial activities including oil and gas extraction, shipping traffic, and fishing effort. We analyzed both visual and acoustic observations of whale occurrence to understand the drivers of blue whale distribution patterns and the spatial-temporal lags between oceanographic factors and whale foraging. Ultimately, we develop models to forecast blue whale habitat that allows for dynamic management with up to 3 weeks lead time and are now operationalized via a user-driven application.

Leigh Torres is an Associate Professor at the Department of Fisheries and Wildlife at Oregon State University, where she leads the [Geospatial Ecology of Marine Megafauna Lab](#). Previously, she received her MS and PhD from Duke University, North Carolina. Prof. Torres is a marine ecologist interested in understanding how marine animals, including marine mammals, seabirds and sharks, use their environment in the context of behavior, space and time. Her research often integrates various types of datasets (i.e., sightings, telemetry, survey, historical, and acoustic datasets) across many ecosystems (including near and offshore waters of the US and Latin America, pelagic regions of the Southern Ocean, and sub-Antarctic islands) to develop dynamic habitat use models, with the goal of informing conservation management of protected or threatened species.

Hosted by the [Soft Math Lab](#).

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