

Recent study aids understanding of endangered blue whales

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Scientists now can predict where and when blue whales are most likely to be foraging for food in the California Current Ecosystem, which helps in the management of the endangered population, a new study shows.

The statistical model used for the predictions combines long-term satellite tracking data of the whales' movement patterns, with environmental data such as ocean temperatures and depth.

That helps researchers understand how climate variations might affect blue whales over time.

"Most management decisions up to now have been based on locations where the whales tend to be found," said Daniel Palacios of Oregon State University's Marine Mammal Institute. He's lead author of the study.

"But it's not just where the whales are, but also (their) activity – are they actually eating there or simply moving through – that matters.

“This model can tell us which areas are the most important for actual foraging.”

The findings were published recently in the journal “Movement Ecology.”

Blue whales can grow 70 to 90 feet long and weigh 200,000 to 300,000 pounds. Their diet is primarily krill, tiny shrimp-like creatures less than 2 inches in length.

Blue whales are listed as endangered under the U.S. Endangered Species Act and the International Union for Conservation of Nature’s Red List.

An estimated 1,600 of the world’s 10,000 blue whales, known as the North Pacific population, spend time in the waters off the West Coast of the Americas.

The North Pacific blue whale population can travel from the Gulf of Alaska to an area near the equator known as the Costa Rica Dome.

The majority spend the summer and fall in the waters off the U.S. West Coast.

The California Current Ecosystem is the span of waters off the west coast of North America that extends roughly from the border with Canada at the north, to Baja California, Mexico, at the south.

The study focused only on U.S. waters within this ecosystem.

The researchers’ goal for the study was to better understand the blue whale behavior in the context of this ecosystem, by examining the relationship between feeding behavior and ocean conditions during the feeding season.

Little was known about the blue whale until the 1990s, when Bruce Mate, director of OSU’s Marine Mammal Institute, pioneered satellite tracking studies that produced data not previously available.

Researchers found that blue whales were more likely to exhibit foraging behavior in areas known from earlier studies for hosting large whale aggregations, providing an improved understanding of the relationship between environmental conditions and whale habitat use.

The study also supported findings from another recent paper by Palacios and colleagues that showed blue whales rely on long-term memory to find the best places to forage, and return to them year after year.

That makes them susceptible to climatic disruptions to their prey base, as the whales may take some time before they abandon their traditional foraging sites.

Improved understanding of the species-environment relationship, through an ecosystem view of whale behavior, can give researchers a better understanding of how climate change might impact whale feeding, Palacios said.

North Pacific blue whales tend to aggregate in three primary areas: Point Conception and the Santa Barbara Channel in southern California; around the Gulf of Farallones in central California; and between Cape Mendocino and Cape Blanco in northern California and southern Oregon.

Two of those hotspots are in areas of intense commercial shipping traffic near Los Angeles and San Francisco. Blue whale mortality from ship strikes is a growing concern.

“If there are some areas along the coast that are more biologically important for the whales, based on intensified foraging activity, that’s important for management agencies to know, compared to areas where the whales are just passing through,” Palacios said.