



PLENTY
IT'S EASY BEING GREEN

The walrus and the researcher

Tracking walrus and what they eat sheds light on the changing Bering Sea ecosystem

By Alisa Opar



From a helicopter swooping low over the Bering Sea, Chad Jay spotted walrus resting on an expanse of sea ice and decided to go after one of them. The pilot dropped off Jay and his companions a good distance away so they could approach their quarry undetected. Drawing near, they paused to unload their equipment and ready their crossbow, and then began the final approach. Suddenly, the large panel of ice the walrus was sitting on began to shift and drift away from the party.

“It started taking our walrus away from us,” recalls Jay. “He went right into the water.”

That creature got away, but Jay’s team hit ten others on the two-week trip last month near St. Lawrence Island, located west of mainland Alaska in the Bering Sea. The group didn’t have malevolent intentions, however: They’re walrus researchers who use a crossbow to implant satellite radio tags that will track the animals for six to eight weeks (when the transmitters naturally fall off). Tagging walrus is the best way to track their movement because they spend about 80 percent of their time underwater, where they feed on benthic organisms like snails and clams that live on the seafloor.

With the transmitters, Jay and his colleagues will collect data on where the walrus are foraging and compare that information to the availability of benthic prey, which may become increasingly scarce if current warming trends continue. (Click [here](#) to go to the Alaska USGS website and see how the walrus are moving.)

The walrus research is just one of the dozens of projects taking place in the oceans during the International Polar Year. Other scientists are investigating sea ice reduction, how contaminants are affecting polar marine ecosystems, and ocean current systems.

Though the main focus of the cruise, a two-week research excursion in March on the 420-foot icebreaker, [Healy](#), was studying walruses, the three dozen scientists onboard also aimed to gain a better understanding of the [Bering Sea ecosystem](#) and how it will be affected if global temperatures continue to rise. Recent studies have [found](#) that a major ecosystem shift is underway—the air and water temperatures are rising, and the makeup of marine organisms is changing.

“One of the concerns is that as sea ice retreats and water temperatures are warming, how will the food web change?” says Lee Cooper, a biogeochemist and the chief scientist for the recent cruise. “Already, there’s some evidence that the food supply for benthic feeding organisms like gray whales, bearded seals, and walrus, is declining.

Scientists don’t entirely understand why crabs and other critters that live on the ocean floor are disappearing, but walruses may soon face more competition for what food there is. In the northern Bering Sea at the continental shelf’s southern boundary lies an area called a cold pool, where cold, dense water effectively prevents fish, like salmon and pollack, from reproducing. That means walruses that forage on the shelf have little competition from fish.

“But lately that pool appears to be eroding away, and salmon and pollack that haven’t been seen as much in the northern Bering Sea are starting to be observed there,” says Cooper. “Fish probably eat a lot of the things on the bottom that walruses eat. It’s entirely likely that we’re seeing a shift in food web and we’re going to see a more fish-dominated web. That brings up concerns about trawling and what areas get opened up for fishing, which could potentially hurt benthic feeders like walruses.”

Another concern is shrinking sea ice. Walruses use sea ice as a platform, resting on it between foraging trips into the relatively shallow waters over the shelf, where the water is only about 60 meters deep.

“When there’s no sea ice to take them out to forage, there’s much less of the shelf they can forage on, and with time they may deplete some of those near-shore resources. That may become a problem for them,” says Jay.

To the north of the Bering Sea, in the [Chukchi Sea](#), researchers have already seen how walruses suffer when ice is reduced. The animals must choose between staying with the ice, which is retreating over deep waters where they can’t forage effectively, or coming to shore, where they’re at risk from people and polar bears.

“We’re not sure exactly what will happen, so we’re trying to gain a better understanding of how walruses respond to reduced sea ice conditions,” says Jay, “and that translates into management conditions.”

The knowledge could be especially useful if walruses are listed as Endangered Species. On February 7, the Center for Biological Diversity filed a [petition](#) with the US Fish and Wildlife Service to protect the Pacific walrus under the federal Endangered Species Act, due to threats from global warming and growing oil and gas development throughout its range.

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