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Whale of an appetite

Orcas are preying on the sea otters of the Aleutians

KILLER whales appear to have acquired a taste for Alaskan sea otters—and as a result are transforming the coastal ecology of the region. Marine biologists believe that a small band of the voracious predators has devoured more than 40 000 otters since the early 1990s, nearly wiping out otter colonies in parts of the Aleutian Islands.

Orcas usually ignore sea otters, preferring seals and sea lions, which are much larger and provide lots of calories with each blubbery bite. To a killer whale, otters are like “hairy popcorn”, says Paul Dayton, a marine ecologist at the Scripps Institution of Oceanography in La Jolla, California. “The whales must be hurting to eat them.”

Nevertheless, orcas are now eating otters, claims James Estes, a marine ecologist at the University of California, Santa Cruz. Estes and his colleagues first saw an orca attack an otter in 1991. Since then, a dozen more attacks have been recorded.

Estes has also documented a sharp fall in otter numbers in recent years. About 90 per cent of them have vanished from a 1000-kilometre stretch of the central Aleutians. “The magnitude and spatial scale of this decline probably is unprecedented for any carnivore,” says Estes, who reports his team’s work in *Science* (vol 282, p 483).

Estes ruled out disease, toxic pollutants and starvation as causes for the otters’ plight. He then noticed that otters were thriving in a protected bay inaccessible to orcas. “At first I didn’t think it was possible, but we gradually realised that at least some killer whales had switched to preying on sea otters.”

Estes estimates that there are about 150 orcas in the central Aleutians, enough to account for the otters’ decline. “But it’s

conceivable, and not unlikely, that it’s one small group of animals,” he says. As few as four orcas could have wreaked this havoc by each gulping down about 2000 otters per year.

The orcas’ new menu has set off a startling cascade. Populations of sea urchins, the favoured diet of otters, have exploded. As a result kelp beds, on which urchins dine, are disappearing. Kelp is the base of the coastal food web and provides habitat for countless fishes, says Estes. Its loss may affect seabirds, bald eagles, and other nearshore species.

“This is the kind of thing a lot of us have worried about,” says Mark Hay, a marine ecologist at the University of North Carolina in Chapel Hill. “Just a few top predators can alter their habits and have astounding effects on an entire ecosystem.”

It is not clear why killer whales have switched prey, but Estes points to a collapse in the populations of northern sea lions and harbour seals in the region during the past two decades. Biologists are still not sure of the reason for this collapse, but a report published in 1996 by the US National Research Council blames overfishing, warming of the North Pacific and whaling as the most likely causes.

Other experts say Estes’s conclusions about the orcas’ dietary shift are highly plausible. “I wouldn’t put it past them,” says John Ford, director of marine mammal research at the Vancouver Public Aquarium in British Columbia. “They are very adaptable, stealthy, and innovative predators.”

Orcas have even attacked moose in shallow waters, Ford says, and in Argentina have been known to beach themselves to grab sea lion pups. **Robert Irion, Santa Cruz**

Farmer’s friend

GRASSES that grow wild across Kenya can double yields of maize, Africa’s most important grain crop. Trials in which the grasses were grown alongside maize have proved so successful that they are about to be repeated in three other African countries.

The grasses do battle with the stem borer, a caterpillar that decimates maize yields in millions of fields across eastern and southern Africa. When planted around the edges of fields, some species attract the moths that lay stem borer eggs, then secrete a gum that kills the caterpillars. They also attract the borer’s worst foe, a parasitic wasp.

Other grasses, if planted between rows of maize, keep the moths away by giving off an unpleasant smell. The grasses also fend off a second major threat to maize crops, a weed called *Striga* that attaches itself to the plants’ roots. Between them, *Striga* and stem borers typically cause a 40 per cent loss of maize.

Scientists at the research station at Mbita Point on the shores of Lake Victoria have tested four of these grass species—Sudan (*Sorghum vulgare*), napier (*Pennisetum purpureum*), silver-leaf (*Desmodium uncinatum*) and molasses (*Melinis minutiflora*)—on 150 Kenyan farms. They proved so successful that the British-based Gatsby Charitable Foundation, which funded the research, is extending the programme to Uganda, Tanzania and Ethiopia.

“These grasses are the same ones that farmers used to grow for fodder,” says **Zeyaur Khan**, the project’s coordinator.

Fred Pearce

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