

Who's been eating all those sea otters?

At first, the researchers themselves couldn't quite believe their prime suspect in the case of the missing sea otters.

Killer whales have shared the Aleutian Islands with the otters for millennia, but a group of scientists now charges that the whales have lost so much of their usual prey that they're switching to otters and devastating the population.

"I can't imagine anticipating this would happen," says James Estes of the U.S. Geological Survey. Yet in the October 16 SCIENCE, he and his colleagues propose that the relatively rare killer whales, perhaps only 150 in the region, have driven otter numbers from some 53,000 to only 6,000 in less than a decade.

The population crash could be from as few as four killer whales' switching to an all-otter diet, the researchers calculate. A single whale could consume 1,825 otters

Richard Bushick



Otters have protected kelp forests by keeping ravenous sea urchins in check.

per year. That's not likely, Estes clarifies, but the number shows the killing power of the whales.

If suspicions prove correct, the otter-whale tale would provide a rare documented link between goings-on in deep water, where the whales spend most of their time, and shallow kelp forests, where otters rule. Without otters to keep sea urchins in check, the kelp forests are now being devoured, Estes warns. Ecologists study these ecosystems separately, but Mother Nature apparently does not read the texts.

Estes' team has dismissed many proposed explanations for the otter decline. The animals still reproduce at the usual rate and do not seem to be relocating. They look too fat and healthy to be suffering from food shortages, and veterinary pathologists found no signs of an epidemic or widespread environmental contaminant.

Researchers first witnessed whale attacks in the early 1990s. "In one case, a whale just came up and opened his jaws and swallowed the otter," Estes says. Another whale stirred up a wave that washed otters off rocks into the jaws of waiting killers. Other whales leapt from the water and slammed onto otters, stunning them before gulping them down.

Researchers' suspicions grew when they



Graeme Ellis

Killer whales, running short of sea lions and seals, may now be eating otters.

noticed that otter populations dropped rapidly in a whale-accessible area but held steady in a bay that the whales can't reach.

Estes suggests that killer whales were driven to eat otters by the decline in Steller sea lions and harbor seals. Just what caused those species to wane is a matter of debate ranging from overfishing to a slight rise in water temperature.

The whale-otter story sounds reasonable to kelp-forest ecologist Michael Foster from Moss Landing (Calif.) Marine Laboratories. "It is startling," he says. However, Californians probably won't see the same attack on their kelp forests, he adds, because species besides the otter seem to control urchins.

Marine ecologist Mark E. Hay of the University of North Carolina at Chapel Hill was also "pretty convinced" by the idea that whales are killing Aleutian otters, even if their ecosystems seem separate. "Many of us think these links may be going on all around us," he says, "but it's hard to see."
—S. Milius

Marginal groups thrive on the Internet

More than 30,000 different Internet newsgroups now exist, allowing members to send and receive messages on interests that range from the mundane to the weird. Membership in online groups may prove particularly helpful, at least in promoting self-acceptance and social support, for individuals whose unconventional traits or behaviors make it difficult to find compatriots in daily life, a new study finds.

Internet newsgroup users of this ilk include people with epilepsy, incest survivors, and sexual sadists. If the findings hold up, they will indicate that people viewed as cultural outsiders can form stable, emotionally supportive online groups.

"Whatever position one takes regarding the values of the various [online groups], the psychological effects of virtual group participation are nonetheless real," contend Katelyn Y.A. McKenna and John A. Bargh, both psychologists at New York University. "In all likelihood, they will be an increasingly common feature of life in the age of the Internet."

McKenna and Bargh monitored participation in 12 Internet newsgroups during a 3-week period. They selected four

groups that focus on mainstream interests (such as politics), four that concern culturally undesirable but conspicuous conditions (such as obesity), and four that focus on culturally "marginalized" but concealable behavior (homosexuality, illicit drug use, sexual bondage, and sexual spanking).

Four judges rated original messages and the responses as positive or negative. The judges agreed on most of their ratings.

Online gatherings mattered most to participants in "marginalized but concealable" groups, the scientists contend in the September JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY. Members of those groups posted messages far more frequently, often after receiving positive feedback online, than members of the other groups did.

The scientists then sent electronic questionnaires to individuals recruited from marginalized-concealable Internet groups. A total of 103 participants in the homosexual, sexual-bondage, and sexual-spanking groups responded—a majority of those contacted. In addition, 49 "lurkers," people who read messages on these sites but did not post, completed

the electronic questionnaires.

Another 59 posters to newsgroups concerned with marginal political and ideological beliefs returned questionnaires, often only after the researchers convinced them that the project was not part of a government plot. These groups cater to people concerned with government cover-ups, extraterrestrial visitors, white supremacy, and citizen militias. Eighteen lurkers on these sites also responded.

Compared with lurkers, active participants in all these groups considered newsgroup membership far more important in their lives, valued other members' opinions more, and spent more time in the newsgroup. Many participants said that as a result of newsgroup membership, they had revealed to friends or family what had been embarrassing secrets about themselves.

"This is the sort of work that needs to be done, examining different types of Internet users and different effects of computer use," remarks psychologist Robert Kraut of Carnegie Mellon University in Pittsburgh. Kraut, who also studies cyberspace travelers (SN: 9/12/98, p. 168), suspects that all sorts of people who have difficulty finding others to identify with—from night-shift workers to the physically disabled—will benefit from virtual groups.
—B. Bower