Sea Otters in Southeast Alaska—What We Know Now

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In 2010 Alaska Sea Grant–funded researchers set out to help Southeast Alaska communities and natural resource agencies understand the impact of sea otters on four commercially important marine species—California sea cucumber, red sea urchin, Dungeness crab, and geoduck clam. Ginny Eckert, a professor in the Fisheries Division of the School of Fisheries and Ocean Sciences, University of Alaska Fairbanks, led the project.

In spring 2014 at the end of the study, scientists reported their results back to Southeast Alaska communities and affected groups: the growing sea otter population eats a significant amount of shellfish and can be linked to depletion of some commercially important species, and an understanding of the food web is key as fisheries and wildlife managers make decisions in the future.

About 400 sea otters were reintroduced into Southeast Alaska in the late 1960s after being harvested during the 18th and 19th century fur trade. The reintroduction was successful. Aerial surveys conducted from 2010 to 2012 by Verena Gill of the US Fish and Wildlife Service, and other management agencies, showed that the Southeast Alaska sea otter population has grown to more than 25,000 animals, is increasing by 12–13% each year, and continues to expand into new areas.

As sea otters proliferated, fishermen and others who depend on the shellfish for a living became less and less happy with the furry creatures. Sea otters are voracious feeders. Adults eat 15 to 25 pounds of food every day—up to 30% of their body weight—and many of their prey species are also targeted by humans. Southeast Alaska shellfish flourished when sea otters were absent, but have declined in their presence. And the longer sea otters have been in an area, the greater the decline of shellfish.

UAF graduate student Sean Larson took advantage of ample management data from the Alaska Department of Fish and Game for sea cucumbers, an important commercial, subsistence, and ecological resource in Southeast Alaska, to evaluate the effects of sea otters on the fishery. In 2013 Larson and his colleagues published a paper showing that the expanding sea otter population depletes sea cucumbers, while commercial and subsistence sea cucumber fishing contributes little to their decline. The study was based in part on the team's telescope observations of thousands of sea otter foraging dives, which showed that sea cucumbers make up about 5% of the sea otter diet.

Unlike sea cucumbers, abundance data for red sea urchins, Dungeness crabs, and geoduck clams are limited. Several Dungeness fishing subdistricts in Southeast Alaska are no longer commercially viable, suggesting impacts from sea otters. Another commercially and culturally important shellfish species, pinto abalone, declined before sea otters colonized, likely from overfishing, and abalone recovery may be limited by sea otters.

UAF graduate student Zac Hoyt studied sea otter recolonization and its direct competition with shellfisheries. Hoyt and the research team conducted a foraging study in the area of most intense fisheries–sea otter conflict, where viewing by telescope they recorded the species brought up by sea otters during more than 6,000 dives. They found that when sea otters first move into an area and their numbers are low, commercially important shellfish can make up the majority of their diet. Sea otters prefer to eat sea urchins, which if available will make up 99% of their diet. Not surprisingly, at sites where there have been lots of otters and the area has been colonized for 15 years or more,

commercial species make up less than 10% of their diet and the diversity of what otters eat is much greater.

To gain local knowledge about sea otters, Alaska Sea Grant Marine Advisory agent Sunny Rice interviewed 36 shellfish harvesters, fishery managers, ecotourism participants, and marine mammal hunters in six Southeast Alaska communities. She asked when they first saw otters and where, what otters were eating, and how the person was impacted. Impacts to Dungeness crabs were mentioned most often by participants, followed by abalone. A decline in their target species was the most commonly reported impact by commercial and subsistence harvesters. Positive impacts cited were improved ecotourism and wildlife viewing opportunities. Data collected from the interviews on otter population expansion provide more detailed information than is available from expensive aerial surveys that have been conducted at irregular intervals.

In May 2014, the researchers gave presentations on the four-year study at workshops in Juneau and Klawock to subsistence users, fishermen, fisheries organization members, and tribal, state, and federal personnel. “We hope this information will be helpful to individuals, communities, and management agencies as they determine how to adapt to the changes brought on by the expanding sea otter population,” Rice said.

Additional funding partners and/or presenters at the workshops were Alaska Conservation Foundation–Alaska Native Fund, Alaska Sea Adventures, North Pacific Research Board, Nuu-chah-nulth Tribal Council Fisheries, Organized Village of Kasaan, Petersburg Marine Mammal Center, Petersburg Vessel Owners Association, Prince of Wales Tribal Sea Otter Commission, Simon Frasier University, Southeast Alaska Regional Dive Fisheries Association, University of California Santa Cruz, and US Geological Survey.

As a follow-up to the four-year study, Alaska Sea Grant is funding research on sea otter harvests and future management of sea otters in Southeast Alaska. Ginny Eckert, professor Stephen Langdon at the University of Alaska Anchorage, and Verena Gill will increase the knowledge base on past otter harvest numbers, locations, participants, use, and how harvest may affect sea otter population expansion. About 10,000 sea otters have been legally harvested in Southeast Alaska since 1998, and harvest is on the increase.