Sea Otters

This session focused on sea otter populations off California, Washington, and Southeast Alaska. The objectives of this session were to: 1) briefly review the history, population structure, demography, threats, trends, and status of each population relative to carrying capacity, 2) explore the role of sea otters in their ecosystems, and 3) gain insights regarding sea otter interactions with fisheries resources in Southeast Alaska.

Sea otters in many areas have rebounded from near extinction due to hunting prior to 1911. The North Pacific population of sea otters is currently estimated at 125,000 animals. Sea otters were hunted to near extinction prior to 1911, but successful translocations from the Aleutian Islands 50 years ago to locations in California, Washington, British Columbia, and Southeast Alaska have contributed greatly to their recovery. The California population extends from Half Moon Bay in the north to Santa Barbara in the south and appears to be approaching carrying capacity. Expansion of the California population beyond that range is limited by shark-related mortality and food availability. The Washington population occurs along the outer coast from Pillar Point east of Cape Flattery to Point Grenville. Sea otters in the northern portion of the range in Washington may be approaching carrying capacity but the current estimated carrying capacity is not a reliable metric because the population continues to be growing at about 9% per year. Densities are highly variable, with large rafts numbering more than 600 animals sighted regularly in the southern portion of their range. Otters occur throughout Southeast Alaska and, similar to populations in California, have extremely small home ranges (on the order of a few hundred meters). All three populations are comprised of distinct meta-populations with variable growth rates dependent primarily on food availability. Recognizing the appropriate spatial scales for these meta-populations in each region has been a research focus and, along with accurate estimates of abundance, will enable more effective sea otter management and conservation.

All three sea otter populations are threatened by disease, predation, entanglements in fishing gear, (illegal) intentional takes, contaminants, and oil spills. In Southeast Alaska, the population is also subject to harvest by Alaska Natives. In Southeast Alaska, conflicts with commercial and subsistence fisheries for geoducks, Dungeness crab, sea cucumbers, red sea urchins, and other invertebrates are a significant and growing concern. Also noted were emerging concerns regarding sea otter conflicts with the Dungeness crab fishery off Washington.

Ecological interactions are primarily focused on foraging, with common prey items including crabs, urchins, sea stars, abalone, clams, and octopi. Sea otter foraging affects prey populations in terms of their size distribution, abundance, and biomass, which are generally at levels below that found in similar habitats without sea otters. Sea otters have also been found to have beneficial ecological effects on kelp and other macrophyte communities. Sea otters are well-known to prey on sea urchins that would otherwise over-graze kelp. Sea otters have also been documented to prey on large crabs in the Elkhorn Slough (CA), which would otherwise limit the abundance of mesograzers (isopods and sea hares) that fed on epiphytic algae growing on seagrasses. The presence of sea otters in Elkhorn Slough has led to the resurgence of seagrass communities, which in turn have limited shoreline erosion. Healthy kelp forest and other macrophyte communities create an underwater structure that provides structural complexity, habitat diversity, species diversity, refugia, a complementary source of primary productivity, and food web subsidies. Kelp forests in particular can also influence ocean hydrodynamics and are significant sources of carbon sequestration.

Interactions of sea otters with fishery resources in Southeast Alaska is a growing concern. Presenters\ referenced the decline in abundance and size of commercially important fishery resources, particularly Dungeness crab, sea cucumbers, geoducks, and red sea urchins, in areas where sea otters are abundant. The abalone fishery was completely closed; other dive fisheries have been impacted from 39-66%. There are no accurate estimates of impacts on the Dungeness crab fishery but they are thought to be increasing. This has resulted in increased fishery closures and the relocation of fishermen to other areas, leading to increased competition and calls for directed harvest of sea otters. Subsistence fisheries for Dungeness crab, clam, shrimp, and octopus are also being impacted by sea otters.

Proposals for addressing shellfish-sea otter conflicts include a recent state resolution to amend the MMPA to use the Alaska Native exemption for controlling local sea otter populations. Another option being discussed is the development of tribally-led sea otter harvest management plans aimed at keeping sea otters out of important shellfish areas. From 2012-2014, skins harvested from high sea otter abundance areas outside Sitka were used by the Alaska Native Sustainable Arts Program, sponsored by Sealaska Heritage, to teach skin sewing skills. Although the intent of that program was not to address shellfish conflicts, there is indication that abalone and sea urchins are starting to return in areas where sea otters were harvested. Further analyses are needed to determine whether there is a connection between the directed harvest of sea otters by Alaska Natives and the recovery of shellfish resources. There was also discussion of a workshop in the Fall of 2018 amongst stakeholders and scientists to explore options under the MMPA for addressing conflicts; the Commission expressed its support for helping to convene such a workshop. An updated abundance estimate of sea otters in Southeast Alaska was also noted as a high priority, and the FWS and USGS indicated their intention to conduct a comprehensive survey of sea otters in the coming year(s), contingent on funding.

The changing oceanographic conditions discussed previously in the meeting have also affected sea otter populations. Ecological effects have included an explosion in sea urchin abundance in the center of the California population's range, leading to an unexpected increase in prey resources and a corresponding increase in sea otter growth rates. Sea otters are very susceptible to toxins from harmful algal blooms (HABs) due to the large amounts of shellfish they consume (and associated parasites). Domoic acid, in particular, seems to have long-term chronic effects. The documented increase in domoic acid-related infections in the California population may impact growth rates negatively once the short-term increase in urchin abundance is over. In SE Alaska, the tribes have formed a local network to collect and analyze tissue samples and generate weekly reports on the presence of HABs. Such a network might help to address concerns regarding biotoxins in other areas of Alaska, such as the Bering Strait region.