



Alagnak

Aniakchak

Katmai

Kenai Fjords

Lake Clark

## Sea Otter

Resource Brief  
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### Importance

Sea otters are a “keystone” species that can dramatically affect the structure and complexity of their nearshore environment. Sea otters prey on sea urchins (‘grazers’) that feed on kelps resulting in top-down cascading effects on the nearshore community structure. Heavy predation on sea urchins greatly alters the abundance and composition of lower trophic levels (e.g., kelps). Also, sea otters tend to have smaller home ranges in comparison to other marine mammal, require high caloric intake, have an incidence of disease that is correlated with contaminants, and have broad appeal to the public, which make them a prime species for monitoring. In September 2005, the Southwestern Alaska stock of sea otters, which includes the Katmai NPP (KATM) population, was federally listed as threatened.



### Long-term Monitoring

Sea otter monitoring was initiated in 2006 and 2007, respectively, in Katmai NPP and Kenai Fjords NP (KEFJ). Aerial surveys (conducted every three years) are used to estimate population abundance. Data are collected on foraging sea otters to estimate prey size distribution, species composition and energy recovery – the amount of time spent looking for food. Sea otter carcasses are collected from haul out areas and aged to develop age-specific survival estimates based on population models. KATM has several sea otter haul out areas where large numbers of carcasses can be collected to obtain an adequate sample size; however, KEFJ has more limited sea otter haul out areas, making it difficult to implement the full protocol.

### Discussion

Preliminary results of foraging observations illustrate differences in sea otter feeding behavior between the two parks. Mussels are the predominate prey item in KEFJ, whereas clams are the predominate prey in KATM. Foraging success rates were similar between parks through 2010, when lower success rates were observed in KEFJ. This may be due to a disproportionate number of juveniles, known to have lower success rates than adults, being sampled in KEFJ in 2010. Subsequent analyses will account for age differences. Carcass collections in KATM suggest higher mortality of prime age adults than expected (Fig. 1). These proportions are similar to results from areas that have experienced population declines associated with limited food resources.



SWAN biologist observes feeding behavior of sea otters in KEFJ. This information is used to determine prey species and estimate how much energy is spent looking for food.

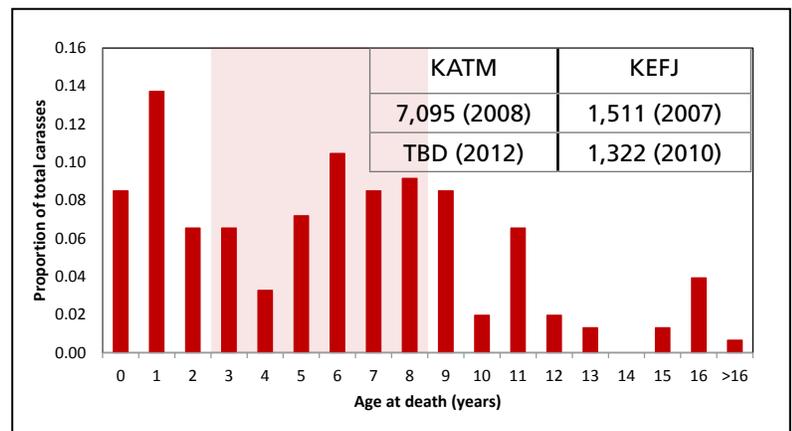


Figure 1. Age at death from carcasses found beachcast in KATM from 2006 - 2010. Age was determined using tooth cementum analysis. The shaded area represents ages considered prime reproductive ages. To date, too few carcasses were found in KEFJ to plot. Table insert shows sea otter population estimates by park from aerial surveys conducted every three years.