



# Marine Intertidal Invertebrates

*Resource Brief*

## Importance

Marine invertebrates provide a critical prey resource for shorebirds, ducks, fish, bears, sea otters, and other marine invertebrate predators. Benthic invertebrates are ecologically diverse in terms of habitat and trophic requirements; have a wide range of physiological tolerances and feeding modes; are relatively sedentary, and have short generation times. Changes in species composition, abundance, contaminant levels, and biomass of intertidal invertebrates can indicate important changes in the coastal ecosystems of which they are a part, and can have effects that cascade to other trophic levels.

## Discussion

Intertidal clam densities at KATM and KEFJ were similar; *Macoma* spp. were most abundant at each park in 2007. However, the number of clams per quadrat varied extensively within and among sites. Other studies indicate clam populations associated with areas of prolonged sea otter foraging are characterized by lower densities and smaller size distributions. However, this study has not yet determined the impact of sea otter predation on prey communities in KATM or KEFJ. The rocky intertidal zone at both parks is dominated by several species of algae, barnacles, and mussels. Preliminary data from KATM indicate a probable increase in percent cover of mussels over the 3 years. However, it is uncertain whether this represents a long-term trend. Cover by other invertebrate species appeared relatively unchanged. Analysis of KEFJ data collected in 2008 is on-going.



James Bodkin, USGS, samples mussels to estimate size distribution and density of this important intertidal prey species.



Jen Coffey, biologist, samples a soft sediment site in KEFJ.

## Long-term Monitoring

Five rocky and soft sediment sites were established in Katmai NPP (KATM) and Kenai NP (KEFJ) in 2006 and 2007, respectively. Annual sampling to estimate sessile invertebrate percent cover, limpet (*Lottia* spp.) size distributions, and the density of larger invertebrates is conducted annually in KATM and KEFJ. Initial sampling for mussel density and size distribution at these rocky sediment sites did not capture larger size classes, which are rare and widely dispersed. Mussels appear to be an important food source for black oystercatchers and sea otters; therefore, a separate sampling protocol was added during the 2008 field season in an attempt to sample these larger size classes. Soft sediment sampling occurs biannually to estimate bivalve species composition, size distribution and density. Soft sediment sampling will be conducted in 2009 at KATM and KEFJ, and will be initiated in LACL.

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