

## Cody Strathe

# Temporal Effects of Climate and Culture on Harbor seal (*Phoca vitulina*) Populations as Reflected in the Archaeological Record

### Abstract:

The Gulf of Alaska (GOA) ecosystem has experienced dynamic variability over the past 6500 years. This includes changes in biological regimes, tectonic subsidence, sea level, ocean temperature, and prey availability due to recent fishing practices. Human populations effect and are affected by ecosystem change and some archaeological deposits provide time series recordings of these changes in the form of well-preserved stratigraphy, botanical and faunal remains. These data can be used to answer numerous questions about cultural, ecological, and climatological variability over time. Archaeological harbor seal (*Phoca vitulina*) samples from Mink Island (XMK-030) will provide important insight into human procurement methods and information about ecosystem structure and function from 6500 BP - AD 1916 in Amalik Bay, Shelikof Strait, Gulf of Alaska.

The natural and cultural stratigraphy at XMK-030 is well documented through a series of geoarchaeological and sedimentological analysis and the stratigraphic units are well dated allowing for tight temporal control. There are several thousand harbor seal bones from this site, representing multiple individuals from each dated unit. Thus, there is an excellent opportunity to consider species level changes in the context of wider regional and global scale paleoenvironmental events. Osteometric data will be used to determine age and size of individuals selected by human predators, as well as season of harvest. Comparison to modern specimens will address whether or not there have been any significant changes in adult size through the Holocene. Stable carbon and nitrogen analysis of bone collagen from the archaeological seal remains will be used to develop a picture of productivity and trophic level structure that will provide important insight into human procurement methods and ecosystem factors over the past 6500 years in the Shelikof Strait.