



# NORTH PACIFIC UNIVERSITIES MARINE MAMMAL RESEARCH CONSORTIUM



## ***Assessing Changes in the Productivity of the North Pacific from Body Size & Annual Growth Increments in the Teeth of Northern Fur Seals***

*Body size is one of the most sensitive measures of feeding conditions, and hard parts such as teeth and bones provide an archival record of conditions experienced in the past.*

Growth increments of archived fur seal teeth are being measured to reconstruct relative feeding conditions experienced by young fur seal in the North Pacific since the early 1950s. Body lengths of fur seals harvested on St. Paul Island are also being measured to compare with historical measurements taken since 1911. These two sets of morphometric measurements will provide insights into the conditions currently experienced by fur seals and should provide new insights into the factors that caused the decline of fur seals and are preventing their recovery.

### **What Researchers hope to learn:**

This study will help to resolve whether changes in fur seal growth occurred and whether such changes correlate with the regime shifts reported in the North Pacific.

Measurements of growth will also provide an assessment of population size relative to carrying capacity, and may provide new insights into the factors that caused the decline of fur seals and are preventing population recovery.

### **Project Outline**

Measurements from historical collections of canine teeth will provide insights into relative feeding conditions experienced by young fur seals in the North Pacific Ocean since the early 1950s. Measuring the teeth offers the possibility of reconstructing a continuous time series spanning 5 decades and may provide important insights into whether an ecosystem shift occurred in the 1970s. Measurements of body size will provide important insights into conditions currently experienced by fur seals

Body sizes of subadult males will be measured during the annual St. Paul harvest using a metal caliper placed over the dead animals as they lie belly up on the grass. Lengths will be recorded from the tip of the nose to the tip of the tail, to the nearest centimeter. Teeth will later be removed and aged following the method of Scheffer (1950).

airports. Steller sea lion populations have been increasing in this region. Thus this site represents an ideal opportunity. Measurements of teeth will be done using a dissecting scope configured with a drawing tube placed over a digitizing pad. Each tooth will be placed under the dissecting scope, while the researcher moves a superimposed wireless-mouse (with cross hairs) on the digitizing tablet. The data will be entered automatically into the computer database.

### **Principal Investigators:**

Andrew W. Trites, University of British Columbia

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