



NORTH PACIFIC UNIVERSITIES MARINE MAMMAL RESEARCH CONSORTIUM



Physiological Stress

Non-invasive fecal analyses are arguably the best method for investigating the health in wild endangered Steller sea lions.

Food availability and nutritional stress are suspected to play major roles in the decline of the western population of Steller sea lions, especially for certain age/sex classes at certain seasons. However, lack of effective methods for assessing stress and health of wild sea lions has made it difficult to conclusively link nutritional or other environmental stressors to

population status. Consortium Researchers have been addressing this problem by developing non-invasive techniques for assessing physiological stress of wild Steller sea lions.

What Researchers hope to learn:

Methods for estimating the presence of three stress-related hormones will be developed. A protocol for easily identifying gender from Steller sea lion scat will also be developed.

Development of these methodologies will facilitate the use of noninvasive techniques to gather detailed information on physiologic stress and general health of wild Steller sea lions, thereby identifying the cause of, and the potential solutions to, the environmental factors that are contributing to the Steller sea lion population decline.

Getting the Scoop in the Poop:

The goal of this study will be to explain the major causes of physiological stress in wild Steller sea lions by investigating three new hormonal measures: aldosterone, thyroid hormones, and DHEA (dehydroepiandrosterone). Since all of these hormones are excreted in the bile, they will be measurable in the animal's feces.

Noninvasive fecal analyses are arguably the best method for investigating the health in wild endangered Steller sea lions. Pinpointing the cause of reduced reproduction or increased mortality requires assessment of health and reproductive status, particularly when nutritional stress is a suspected cause. Traditional techniques requiring blood sampling are difficult with wild sea lions because of time constraints and risk of injuring the animal. Fecal analyses avoid these problems by taking advantage of the wealth of biological information available in the scat, coupled with the ease of sample collection available at the various sea lion haul-outs. This enables collection of large numbers of samples by entirely non-invasive means.

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Funding Source:

NOAA and the North Pacific Marine Science Foundation