

An innovative method of estimating weaning age of juvenile Steller sea lions in Alaska and Oregon using mark-resight models

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The frequency of extended lactation periods (*i.e.*, >1 year) in Steller sea lions (*Eumetopias jubatus*; SSL) has been poorly documented. If common, delayed weaning could have implications for SSL population dynamics. We used an extension of capture-resight analyses of known-age (branded) juvenile SSLs on haul-outs off Alaska and Oregon to estimate age of weaning. Our objectives were to 1) Estimate the age-specific proportions of weaned juveniles, 2) Estimate and compare the probability of encountering weaned and unweaned juveniles at winter haul-outs, and 3) Compare results between SSLs in Alaska and Oregon. Sea lions were observed at haul-outs from November – May for 2-5 hrs/day from 2003-2007 (128 days) in Alaska and 4 hrs/day from 2005-2007 (96 days) in Oregon. Haul-outs were continuously scanned, suckling behavior recorded, and sea lions photo-documented to confirm identity. Suckling data were analyzed using capture-resight analysis that allows estimation of the probability an animal is unweaned (probability weaned = 1 – probability unweaned), the conditional probability of observing suckling given the animal was seen, resight probability, and apparent survival (emigration) probability. It was previously assumed that the majority of juvenile SSLs weaned by age 1. Our preliminary results, however, indicate that a maximum of 19% of Alaska (22% Oregon) SSLs were weaned during their first winter, 62% (Alaska; 74% Oregon) were weaned during their second winter, and 91% (Alaska; 86% Oregon) were weaned during their third winter. Although there was variation among locations and cohorts, many juvenile SSLs are still suckling well into their second and even third year, indicating that reproduction in this population might be reduced from its potential if all breeding females were producing surviving pups annually. Population modeling of SSLs must take into account reduced reproductive output indicated by delayed weaning.

Contents

Plenary

Oral

Poster

Contributors

Legal Notices

Help

Exit

