

**Comparing health and diet-related factors in an increasing and a declining population of harbor seals (*Phoca vitulina*) in Alaska: insight into causes of the decline?**

Blundell, Gail<sup>1</sup>; Hoover-Miller, Anne<sup>2</sup>; Pendleton, Grey<sup>1</sup>; Tuomi, Pam<sup>2</sup>; Karpovich, Shawna<sup>3</sup>; Atkinson, Shannon<sup>4</sup>

(1) Alaska Dept. of Fish & Game, Division of Wildlife Conservation, P.O. Box 110024, Juneau, AK, 99811-0024, USA

(2) Alaska SeaLife Center, 301 Railway Ave., Seward, AK, 99664, USA

(3) Alaska Dept. of Fish & Game, Division of Wildlife Conservation, 1300 College Rd., Fairbanks, AK, 99701, USA

(4) University of Alaska Fairbanks, School of Fisheries and Ocean Sciences, 17101 Pt. Lena Loop Rd., Juneau, AK, 99801, USA

Corresponding author: [gail.blundell@alaska.gov](mailto:gail.blundell@alaska.gov)

We investigated whether health, diet, and body condition could explain differences in population trends for harbor seals (*Phoca vitulina*) captured at two sites in Alaska. After a long period of decline beginning in the 1970s, resulting in a >65% reduction in numbers of seals in Prince William Sound (PWS), the most recent 5-yr trend (2002-06) noted an increasing trend at a rate of 3.3%/year. Harbor seals in Glacier Bay (GB) experienced a steady decline (>63%), which continued from 1992 through the most recent published counts (2007-08) at a rate of 8.2%/year at a glacial site and 12.4%/yr at terrestrial sites in the Bay. We live-captured and sampled 241 seals in PWS from 2003-05 and 338 seals in GB from 2004-07. Physical examination of seals captured in both study areas revealed no health concerns that accounted for differing population trends. We further assessed health via blood chemistry, diet via stable isotopes, and body condition via %fat from deuterium oxide equilibration and/or morphometric indices. Most differences in health variables between regions were driven by interactions with age-class or sex. The differences in mean values for health parameters between regions were not biologically significant and do not suggest compromised health in the declining GB population. Seals in PWS had diets that were higher in pelagic fishes and reflected feeding from a higher trophic level. Nonetheless, growth at age curves (age estimates from tooth cementum annuli relative to curvilinear length) showed that GB males grew faster and larger than PWS males, but females had similar growth rates and asymptoted at comparable sizes. Although diets differed between regions, body condition did not differ for either sex, and size at full growth was similar or greater in GB, indicating that GB seals did not have nutritional deficiencies that compromised growth or contributed to population declines.



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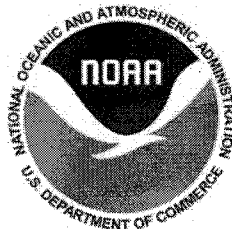
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