

**Seasonal change a stronger influence than growth upon Steller sea lion behavior during their first winter**Rehberg, Michael J<sup>1</sup>; Rea, Lorrie D<sup>2</sup>*(1) Alaska Department of Fish and Game, Division of Wildlife Conservation, 525 West 67th Avenue, Anchorage, Alaska, 99518, USA**(2) Alaska Department of Fish and Game, Division of Wildlife Conservation, 1300 College Road, Fairbanks, Alaska, 99701, USA*

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Behaviors of foraging marine predators are shaped by physical ability, foraging necessity and the environment with which they interact. We studied this interaction for 20 young-of-year Steller sea lions over their first winter in Prince William Sound, Alaska (November-April, 5–10 months age) by examining the roles of physiological development and nutritional source in development of their diving behavior. During this 143 day period (median, range 133-157), we measured changes in morphological and physiological parameters, estimated weaning status using stable isotope signatures along the vibrissae and recorded diving and haulout behavior using time-depth recorders. Sea lions of both sexes experienced similar rapid growth through their first winter (mass gain  $30 \pm 13$  kg, lipid mass gain  $18 \pm 9$  kg), with increased lipid mass contributing 58% (median, range 0-100%) of this growth. Such rapid growth is not surprising because, using visual observations and stable isotope trends, we determined all sea lions were suckling throughout their first winter. Weak interactions between physical development and diving performance during this season suggested pups were not pushing their abilities in order to forage. Most activity budget and dive characteristics were not correlated with growth, increased buoyancy due to lipid gain did not predict changes in dive ascent or descent rates and most dives ( $85 \pm 15$ ) remained below cADL. Nonetheless, pup behavior appeared to respond to seasonal environmental cues, with a strong, significant midwinter peak in activity. These peaks in time spent submerged, vertical travel rates and dive characteristics, along with strong significant focus on nocturnal behavior, mirrored behaviors of older, more likely foraging, sea lions in the same season. Because evidence from fatty acid and stable isotope analyses indicated a shift in potential nutritional sources by winter's end, such behavioral changes may indicate increased attempts at independent prey capture by these unweaned pups.

# ABSTRACTS

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