

Longitudinal change in Steller sea lion diving and physiology

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The ADF&G Foraging Ontogeny Project was developed to examine the combined roles that physiological development, nutritional source and the demand for independent foraging play in the ontogeny of behavior in sea lions during their first winter. To accomplish this, we captured sea lions at 5 months of age and recaptured the same individuals at 10 months. Field work is now complete and laboratory and behavioral analyses are underway. We captured 30 and 39 young-of-year sea lions during November 2005 and 2007, respectively, at 3 haulouts within Prince William Sound, taking morphological measurements, physiological samples and affixing archival time-depth recorders (TDR) to their heads. We re-captured 8 and 12 of these sea lions during April 2006 and 2008, respectively, repeated the measurements and sample collection and recovered the TDRs. Mean increase in mass between November and April, by individual, was 32 ± 15 kg (mean, SD, range 4–56 kg), mean increase in length 16 ± 7 cm (range 1–28 cm) and mean increase in girth 20 ± 10 cm (range 2–38 cm). Between November and April, 90th percentile dive depth decreased for 12 individuals (9 ± 8 m decrease, mean, SD) but increased for 6 individuals (12 ± 9 m increase). The 90th percentile dive duration decreased for 8 individuals (0.2 ± 0.2 min. decrease), increased for 7 individuals (0.4 ± 0.4 min. increase) and did not change for 3 individuals. There is no clear linkage between changes in diving depth and duration and changes in 3 common growth metrics: increase in weight, increase in standard length and increase in girth. More sensitive measures of behavior, including foraging trip distribution, bout organization and dive structure will be included in analyses with age related changes in percent body lipid content and assessment of weaning status of each pup, based on stable isotope ratios of carbon and nitrogen, to assess the driving factors behind changes in fine scale diving behavior in young sea lions.

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