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SEASONAL DIFFERENCES IN ADAPTATION TO
PROLONGED FASTING IN JUVENILE STELLER SEA
LIONS (*Eumetopias jubatus*).

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Five juvenile Steller sea lions (*Eumetopias jubatus*) between the ages of 3 and 4 years were experimentally fasted for 9 to 14 d to assess changes in mass and in key plasma metabolites indicative of biochemical adaptation to fasting. The 5 sea lions lost 20.4 to 35.1 kg each, at a rate of 1 to 2% of their initial body mass per day. Two animals fasted during the natural breeding season (June) exhibited a mean daily mass loss of 1.6 ± 0.1 kg d⁻¹. This was significantly lower than the mean 2.8 ± 0.1 kg d⁻¹ lost by sea lions fasted outside of the normal breeding season in April, October and November ($p < 0.001$). Blood urea nitrogen (BUN) levels decreased significantly in all animals from 7.5 ± 0.4 mM to 4.9 ± 0.6 mM after 2 to 3 d of fasting ($p < 0.001$). The two sea lions studied in June maintained low BUN concentrations throughout the remainder of the study, while the remaining 3 animals showed significant increases after 7 d of fasting. Only the two juveniles fasted during the breeding season maintained a protein sparing metabolism, typical of the species adapted to long-term fasting. With the exception of the smallest female (after 12 d of fasting), ketone body levels ranged from 0.03 to 0.17 mM. Seasonal differences in how sea lions adapt to fasting suggest that these animals would be more severely impacted by limited food resources during the non-breeding season.