

Nutritional stress leading to failure in juvenile recruitment has been one hypothesis pursued in continuing research into the decline of Steller sea lion populations in Alaska. Based on the results of food restriction experiments on captive Steller sea lions, plasma ketone body (b-hydroxybutyrate, b-HBA) concentrations greater than 0.30 mM in conjunction with blood urea nitrogen (BUN) levels below 5.0mM provide a good indicator of fasting in sea lion pups up to 12 months of age. However, juveniles (1 to 3 years of age) do not exhibit these same increases in b-HBA during fasting. Individuals sampled from the Eastern Aleutian Islands, Western Gulf of Alaska, Central Gulf of Alaska and Eastern Gulf of Alaska were included in the western stock data. Southeast Alaska individuals represented the eastern stock. Plasma b-HBA values in the western animals ranged from 0.02 to 0.63 mM in pups 2 to 11 months of age (n=23) and from 0.01 to 0.28 mM in western juveniles (n=23). Only 4 of 23 pups showed b-HBA values indicative of fasting with accompanying BUN levels less than 5.0 mM. Plasma BUN concentrations were significantly higher in juveniles from the western stock (n=18) than in juveniles from the east (n=20, t-test, P=0.019). Six of these western stock juveniles had a BUN concentration greater than 13.0 mM which is higher than plasma levels measured in captive sea lions recently fed fish (9.9 ± 0.9 mM, n=4). This could suggest that juveniles were relying on mobilization of body protein stores for energy as seen during stage III fasting. Only 1 of these eastern juveniles had a similarly high value.

Nutritional Blood Chemistry Provides Clues to the Feeding Status of Young of the Year and Juvenile Steller Sea Lions (*Eumetopias jubatus*)

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