Some maternal Steller sea lion diets elevate fetal mercury concentrations in the western Aleutian Island area of population decline.

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One hypothesis for the lack of recovery of endangered Steller sea lions (SSLs, *Eumetopias jubatus*) in Alaska is low natality. Mercury exposure can be neurotoxic to piscivorous mammals and impact reproduction. Young pups have higher total mercury concentrations ([THg]) in hair than older juvenile SSLs reflecting exposure of pups to mercury *in utero* when lanugo (natal pelage) is grown. We utilized patterns of $\delta^{13}C$ and $\delta^{15}N$ isotope ratios in the vibrissae (whiskers) of young pups to understand how diet variations between gestating females might impact mercury exposure during this critical period of fetal development. Hair was collected from 416 SSL pups (newborn

to 6 weeks old) captured on their natal rookeries in Alaska (USA; n=342) and Russia (n=74) and analyzed on a direct mercury analyzer (Milestone DMA-80). Sections of vibrissa estimated to have grown during late gestation were analyzed for $\delta^{13}C$ and $\delta^{15}N$ to reflect maternal foraging during that period. Hair [THg] was variable among pups, ranging from 1.4 to 73.7 μg/g dwt. The highest [THg] concentrations were above risk thresholds for other mammals and were found in geographic regions showing continued population decline. In the western Aleutian Islands approximately 20% of pups had [THg] above risk thresholds. In this area, pups born with the highest [THg] in their hair (above 40 μg/g) showed significantly higher $\delta^{15}N$ in vibrissa sections grown during late gestation ($F_{2,25}=8.61$, $p=0.0019$) suggesting that their mothers may have incorporated higher trophic level fish into their diet. The wide distribution of both $\delta^{13}C$ and $\delta^{15}N$ seen in late gestation vibrissae segments of these pups illustrates the diverse nature of the isotopic signature of the diet of adult females, whether that be driven by trophic level of the prey species, the geographic location of foraging, or both.

ABSTRACTS

20th BIENNIAL CONFERENCE

ON THE

BIOLOGY OF MARINE MAMMALS

2013

Dunedin, New Zealand
December 9-13