

21st Biennial Society for Marine Mammalogy Conference on the Biology of Marine Mammals

13–18 December 2015
Hilton San Francisco Union Square
San Francisco, California, USA



2015. Walcott, S., McHuron, E., Zeligs, J., Skrovan, S., Costa, D., and Reichmuth, C. Whisker growth in two North Pacific pinnipeds: implications for determining foraging behavior from stable isotope analysis. *21st Biennial Conference on Marine Mammals*, San Francisco, United States, 13 December – 18 December. (Presentation abstract).

Whisker growth in two North Pacific pinnipeds: implications for determining foraging behavior from stable isotope analysis

Stable isotope analysis of vibrissae can provide a temporal record of foraging behavior, and is one of the few methods available to measure individual behavior over relatively long time periods. Despite increasing use of this method, an understanding of vibrissal growth dynamics are lacking for most species, yet are necessary for appropriate study design and interpretation of isotope data. Here we present measurements of vibrissae growth in two spotted seals (*Phoca largha*) and five California sea lions (*Zalophus californianus*) using photogrammetry. Data were collected from trained, captive animals for one year, resulting in serial measurements of 154 spotted seal and 202 sea lion vibrissae. Spotted seal vibrissae exhibited an asymptotic growth pattern with asymptotic length of vibrissae reached between 1.5 and 6 months. In contrast, vibrissae of California sea lions grew at a linear rate that varied depending on the length of the individual vibrissa. Growth rates ranged from 0.003 to 0.140 mm/day and were faster for longer vibrissae ($r^2= 0.5$, $p < 0.001$). Over 50% of spotted seal vibrissae were lost and/or actively growing during their annual pelage molt, whereas for California sea lions there was no clear pattern of vibrissae loss and retention was high. The contrasting growth patterns observed for these two species are consistent with previous studies that suggest non-linear growth in phocids and linear growth in otariids. Our results indicate that foraging information contained within spotted seal vibrissae may primarily be limited to the 6 months following the annual pelage molt. In contrast, the vibrissae of California sea lions can be used to assess long-term foraging behavior, but length-dependent growth rates should be considered when ageing individual vibrissa. Overall, these data have important implications for study design and interpretation of stable isotope values to assess foraging behavior of pinnipeds.