Aging Harbor Seals (*Phoca vitulina*) with Cementum Annuli: Do Incisors Provide a Reliable Estimate of Age?

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Comparison of age structures among populations provides a greater understanding of demographic processes that may contribute to stable, increasing, or decreasing populations; trends that are currently observed among harbor seals in different regions of Alaska. For most species, canine teeth provide the best age estimates, but smaller teeth (premolars/poscanines or incisors) must be used for age estimates of live individuals. Our objective was to determine whether incisors could be used for aging harbor seals. From two known-age and 193 subsistence-harvested seals, we submitted (blind) a canine, 1st postcanine, and incisor to Matson's Laboratory for age estimates using cementum annuli. Annuli were most distinct with more consistent patterns in canines compared with other teeth, likely providing more reliable age estimates. Nonetheless, age estimates of postcanines and incisors were highly correlated with canine ages (r = 0.9830485 and 0.9752055, respectively). Estimates of age for a 3.5-year-old seal were canine age = 5, postcanine = 4, incisor = 3, but age estimates for a 29-year-old seal were less accurate (25, 21, and 17, respectively). A regression of postcanines and incisors on canine ages revealed that for individuals <10 years of age, postcanines showed less variance (*e.g.*, age estimates ± 1-2 years that of canine ages) compared with incisor estimates, which varied by ± 2-3 years. Beyond 10 years, incisor age showed less variance than did postcanine age, overestimating age by 1-3 years (with the exception of the known-aged individual), whereas postcanine estimates were ± 1-4 years that of canine age estimates. If age estimates for a range of ages are needed from live individuals, incisors would be a better choice than postcanines, particularly since the incisor is smaller and extraction is less invasive. If greater accuracy is required for younger animals, postcanines may be a better tooth for age estimates in live-captured harbor seals.

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