

Abstract:

Recruitment is difficult to estimate but is essential for determining population trend. Recruitment in bears can be estimated from patterns in width of cementum annuli that indicate years with cubs. We evaluated reproductive history estimates from cementum annuli of 19 101 black bears (*Ursus americanus* Pallas, 1780) collected over 20 years to determine the benefits and drawbacks of this technique for management agencies. The technique only worked to estimate reproductive histories for 25% of submitted samples, and 49% of samples with estimates contained uncertain litters. Whether uncertain litters were counted or not caused significant variation in estimates of age at first litter, number of litters per female, and interbirth intervals. Hence, naive treatment of uncertain litters may bias analyses. A data set we optimized to reduce bias showed that litters per female ranged from 0 to 12, mean interbirth interval was 2.07 years, and both increased as females aged. Large samples of teeth collected from harvested bears over multiple decades potentially provides a wealth of information on reproductive parameters at a minimal cost compared with intensive field studies, but until uncertain litters are understood mechanistically and can be better quantified, reproductive estimates from this technique should be interpreted with caution.

URL: <https://www.nrcresearchpress.com/doi/10.1139/cjz-2017-0084>