

Echoes of the hunt? An inter-continental comparison of patterns of growth and determinants of size of brown bears in Canada and Sweden.

Andreas Zedrosser¹, Marc CAttet², Jon Swenson³, and Gordon Stenhouse⁴

¹University of South-Eastern Norway

²University of Saskatchewan

³Norwegian University of Life Sciences

⁴fRI Research

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Abstract

Comparing life history traits among populations that have been separated genetically for several hundred thousand years, but live in similar habitats on different continents, may help us understand how ecological and anthropomorphic factors shape life histories. We compared patterns of growth in body length and mass, and the influence of population density, habitat quality (NDVI), and reproduction on age-specific length and mass of male and female brown bears between Alberta, Canada, and Sweden. We found that Swedish females were significantly smaller in both length and mass than Alberta females. Swedish females also reached primiparity earlier and at a smaller mass and length. However, there were no continental differences in the patterns of growth in males. We found strong positive effects of NDVI, but only weak negative effects of population density on female mass and length in both areas. Generally, especially mass of Alberta females was more strongly affected by NDVI and density than for Swedish females. Reproduction had stronger negative effects on female mass in Alberta than in Sweden. We found no effects of NDVI and population density on male mass and body length in both areas. The larger variation in female growth and size between the areas, in contrast to males, may be related to differences in female reproductive investment due to differences in population trends, i.e., earlier reproduction in increasing populations or populations below carrying capacity, or to different selection pressures in the past, potentially due to human persecution. Swedish females exhibited characteristics typical of increasing populations, whereas Alberta females exhibited characteristics typical of stable or decreasing populations. The difference in reproduction investment means that Swedish bears can be harvested at higher rates, whereas Alberta bears must be managed more conservatively.

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