(23) NATURAL AND ANTHROPOGENIC EFFECTS ON THE SPATIAL GENETIC STRUCTURE OF MOOSE

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Abstract: Dispersal of individuals can influence population dynamics and the spatial and temporal distribution of a species' genetic variation. Natural landscape features (mountains) as well as anthropogenic barriers (roads) can influence movements at multiple scales from dispersal events to seasonal migration to daily foraging. We evaluated the genetic diversity and connectivity between 2 populations (Anchorage and Kenai Peninsula) within Southcentral Alaska and assessed the fine-scale genetic structure within Anchorage to explore the potential effects the Glenn Highway has on a resident moose population. At the regional scale, moose populations on the Kenai Peninsula were significantly differentiated from the Anchorage population and had significantly lower genetic diversity. In addition, there was little evidence of contemporary gene flow suggesting that these 2 areas may represent demographically independent units. At the local scale, urban Anchorage moose were weakly structured as 2 subpopulations within this apparently contiguous population. The area of contact between the 2 Anchorage subpopulations appears to coincide with a major highway. While the road is not an impenetrable barrier, it has likely reduced dispersal between areas fairly recently. Conversely within the Kenai, high levels of gene flow were detected between its 2 management units and no genetic subdivisions were observed, suggesting Kenai moose are of a panmictic population. Understanding the distribution of genetic diversity and how moose populations are structured can provide valuable information for mitigation strategies on the local scale as well as conservation plans to manage isolated populations at range margins.

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