Establishing Priority Sites for Conservation: Can Core Areas Be Used to Address Habitat Concerns for Badgers in Western Canada?

CORINNA S. HOODICOFF[1], KARL W. LARSEN[2], AND RICHARD D. WEIR[3]

[1]University of Victoria, 3800 Finnerty Road, Victoria, BC, V8F 5C2, Canada, email corinnah@telus.net
[2]University College of the Cariboo, 900 McGill Street, Kamloops, BC, V2C 5N3, Canada
[3]Artemis Wildlife Consultants, 4515 Hullcar Road, Armstrong, BC, V0E 1B4, Canada

Abstract: Defining 'critical' habitat for species at risk may be one of the keys to effective conservation planning, but it can be challenging for animals that maintain large home ranges and have general habitat requirements. Identifying areas that are used more intensively (core areas) within a home range could help to locate important resources and priority habitat for conservation.

We studied the attributes of badger (*Taxidea taxus*)[1] home ranges and core areas between 1999 and 2002, in the Thompson River valley near Kamloops, British Columbia (B.C.). A total of 13 badgers were captured and radiotagged. For 8 animals (7 males, 1 female), we estimated home ranges (100% minimum convex polygon, 95% fixed kernel), assessed for aggregation of radiolocations (Clark and Evans 1954; Sinclair 1985), and determined core area boundaries (Powell 2000). We also compared habitat features (vegetation, soils, and prey) within core areas to home ranges at 104 burrows, and to digital resource inventory data.

Badgers used large home ranges that encompassed 12.3–80.4 km^2 (95% fixed kernel), but were not limited to grassland habitat. Five of eight animals exhibited significant use of core areas ($P < 0.10$) that consisted of 2–5 patches and covered 21–33% of each home range area. Each badger selected for unique habitat features inside of core areas. Core areas were located in grasslands, fields, clearcuts, and dense forests. Soils were silt loam, but no other soil characteristics consistently described core areas (G-tests, $P > 0.10$). Generally, more prey sign was detected inside core areas than outside (sign tests, $P < 0.25$); however, not all prey types (ground squirrels, marmots, pocket gophers, mice/voles) occurred within each home range.

Core areas may identify sites important to include in conservation plans; however, we were not able to isolate habitat associated with core areas. We believe this was because badgers were able to exploit different types of habitat despite their specialized adaptations for digging. Rather than simply focusing on preservation of any particular habitat feature, conservation or management plans for this species should include other factors such as breeding opportunities and mortality risks.

Key Words: badger, American badger, *Taxidea taxus*, core areas, habitat, conservation priorities, British Columbia

[1]NatureServe Explorer (version 4.0, July 2004) lists *Taxidea taxus* as the American badger.

Acknowledgments

Funding for this research was provided by the Habitat Conservation Trust Fund, Tolko Industries Ltd. (Louis Creek Division), the Endangered Species Recovery Fund, the B.C. Ministry of Forests, the Natural Science and Engineering Research Council of Canada, B.C. Student Summer Works, Weyerhaeuser Company, and the World Wildlife Fund. We are grateful for the help of H. Davis, I. Adams, E. Lofroth, and many field assistants and volunteers.

References

Clark, P.J. and F.C. Evans. 1954. Distance to nearest neighbour as a measure of spatial relationships in populations. Ecology **35**:445–453.

Powell, R.A. 2000. Animal home ranges and territories and home range estimators. Pages 65–110 in L. Boitani, T. K. Fuller, editors. Research techniques in animal ecology: controversies and consequences. Columbia University Press, New York.

Sinclair, D.F. 1985. On tests of spatial randomness using mean nearest neighbor distance. Ecology **66**:1084–1085.