

# **Summary of Washington State University Research on Effects of Hunting on Population and Conflicts**

## **Effects of Hunting on Cougar Population Ecology**

**Hilary Cooley, H.S. Robinson, B.T. Maletzke, G.M. Koehler, R.B. Wielgus & others**

This project was part of Hilary Cooley's, Hugh Robinson's, and Ben Maletzke's Ph.D. programs. We compared a heavily-hunted (Kettle Falls WA) and a very lightly hunted population (Cle Elum WA) to test for differences in population demography. We examined male mortality, male immigration, female maternity, cub survival, female survival, and population growth rates to test the "closed population, increased reproduction" or "open population, decreased reproduction" hypotheses of population regulation in large carnivore populations. (See hunting of grizzlies in Completed Projects). High mortality of resident adult males resulted in increasing numbers of potentially infanticidal immigrant males, decreasing numbers of juveniles and females, but no net change in total cougar numbers. Low mortality resulted in high emigration of younger animals, stable numbers of juveniles, females, and males, and no net change in total cougar numbers. Hunting did not reduce total numbers or densities of cougars, as commonly thought, because of male immigration. Lack of hunting did not increase total numbers or densities of cougars, as commonly thought, because of emigration. Hunting caused a shift in the sex and age structure towards younger males and a female population decline. Our results support the open population, decreased reproduction hypothesis of cougar population regulation.

Robinson, H.S., R.B. Wielgus, H.S. Cooley, and S.W. Cooley. 2008. Sink populations in large carnivore management: cougar demography and immigration in a hunted population. *Ecological Applications* (In Press). See [Sink.pdf](#)

Cooley, H.S., Wielgus, R.B., Robinson, H.S., Koehler, G.M., and Maletzke, B.T. 2009. Does hunting regulate cougar populations: a test of the compensatory mortality hypotheses. *Ecology*. 90: 2913-2921. See [Compensatory.pdf](#)

Cooley, H.S., Wielgus, R.B., Koehler, G.M., and Maletzke, B.T. 2009. Source populations in carnivore management: cougar demography and emigration in a lightly hunted population. *Animal Conservation*. 12:321-328. See [Source.pdf](#)

## **Cougar Population Dynamics in the Northwest**

**Catherine Lambert, H.S. Robinson, H.S. Cooley (Cruickshank), D.D. Katnik, R.B. Wielgus & others**

This project was part of Catherine Lambert's M.S. program. We determined cougar reproduction, survival, and population growth rates in the Selkirk Mountains of northern Washington, northern Idaho, and southern B.C. . We also tested the commonly accepted hypotheses that cougar populations are rapidly increasing in the area (as suggested by increased complaints of human-cougar conflicts). Contrary to popular belief – cougar populations were not increasing but were rapidly declining (-20%/year). Increased cougar-human conflicts appear could be due to the very young age structure (no dominant adult males left) caused by excessive hunting. Effects of Hunting on Cougar/Human Conflicts

## **Effects of Hunting on Cougar/Human Conflicts**

**Ben Maletzke, G.M. Koehler, H.S. Cooley, & R.B. Wielgus**

This project is on-going as part of Ben Maletzke's Ph.D. program. Heavily hunted and white-tailed deer occupied areas appear to show much greater incidences of cougar-human conflicts (cougar complaints, cougar use of human occupied areas; attacks on humans, pets, and livestock) than lightly hunted, white-tail free areas. We hypothesize that heavy hunting of resident adult cougars in such areas results in high rates of immigration and settling by sub-adult males and that these males use human-occupied and white-tailed deer areas, and cause more attacks than adults. Results to-date indicate that un hunted, older, resident cougars have stable home ranges and avoid human-occupied areas whereas hunted, younger, immigrant cougars have unstable home ranges and use human-occupied areas. Heavy hunting and white-tailed deer expansion appears to exacerbate, not alleviate, cougar/human conflicts.