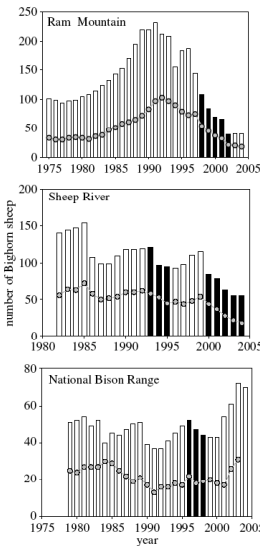


Cats, dogs and sheep.

Long-term research on individually-marked mammals has contributed much to our knowledge of the ecology, evolution and conservation of these economically important animals. Thanks mostly to NSERC, Canada is a world leader in this field, with decades-long monitoring programs on programs on individually marked wolves, caribou, polar bears, squirrels, bighorn sheep and mountain goats. Among other things, long-term monitoring of marked individuals has shed light over the predator-prey relationship. Canadian researchers have shown that wolf predation on woodland caribou increases when clearcuts provide forage to sustain high moose densities, or when roads, pipelines and snowmobile trails allow easier travel by wolves. Because of habitat destruction and artificially enhanced predation, woodland caribou are now a Threatened species in Canada. Long-term research on bighorn sheep has also revealed a complex relationship with cougar predation. In most years, cougars do not prey on bighorns and specialize on deer and elk. Occasionally, however, an individual cougar will ‘discover’ that sheep are highly vulnerable to ambush predation. In Alberta, NSERC-supported research by Marco Festa-Bianchet and a team of international colleagues has shown that individual cougars that specialize on bighorns cause drastic declines in sheep populations, with a substantial risk of extirpation if ‘sheep specialists’ live many years. Usually, however, cougars have no impact on sheep populations. Individual specializations in large predators has many implications for ecology and conservation, and can be applied to the protection of endangered species and livestock. It also illustrates how the balance of predator and prey must be considered over long times and wide areas. In human-altered environments or in small protected areas, a predator-prey balance may be difficult to achieve.



A bighorn lamb wounded by a cougar (photo: M. Festa-Bianchet) and decreases in the number of bighorn sheep in 3 populations during years of ‘specialist’ cougar predation (black bars) (From Festa-Bianchet et al. 2006 – Proceedings of the Royal Society of London B 273: 1537-1543)