

Motion-Sensitive Collars: A Technological Breakthrough

Motion-sensitive radio collars were first developed and used on wild neonatal ungulates in the late 1970s. The mechanism involved in their use is an interval timer, which doubles the pulse rate whenever the motion-free time equals that interval. For the Yellowstone study, the interval timer was set for 2 hours of inactivity.

The first collars often were clumsy packages whose useable life span was only a few weeks. Development of a sturdier package with a longer life span however, presented a trade-off with the potential of the collar to constrict the neck of a rapidly growing calf.

In 1989, the senior author initiated one of the first studies of neonatal caribou mortality in Denali NP, involving the use of the collars with a 1-year life span. The design used on Yellowstone elk calves is the culmination of advances in design. These collars are light, the material is elastic, 2 rip-out folds allow for rapid expansion, and a cotton section of the collar provides for deterioration and an eventual breakaway mechanism.

Yellowstone elk calves wore working collars for 1.5 to 2.0 years with no evidence of chafing or discomfort. At the end of that time, the collars deteriorated and dropped off. We compared survival rates of collared and un-marked calves (from calf/cow ratios) and found that radio-collared calf survival rates were higher, indicating that collaring of calves does not lower their probability of survival over that of un-marked calves.