

DEMOGRAPHY AND TREND OF A LOCAL GRIZZLY BEAR POPULATION IN A SOURCE-SINK LANDSCAPE. ^{TWS}

R.D. Mace and J.S. Waller
Wildlife Division, Montana Fish, Wildlife and Parks
490 N. Meridian Road, Kalispell, MT 59901

Demographic characteristics and local population trend of grizzly bears (*Ursus arctos horribilis*) were studied in the Swan Mountains of western Montana during 1987-1996 using capture and telemetry methods. We captured 50 grizzly bears in 108 capture episodes (1 bear/72 snare-nights). Using radio collared bears only, there were between 19 and 30 bears in the 1,457 km² study area each year (~1.6 bears/100 km²). Density of bears in a 692 km² high-use area termed the Core Area averaged 2.5 bears/100 km². Twenty-eight cubs were produced from 17 litters for a mean litter size of 1.64 ± 0.12 cubs/litter. The reproductive rate for female cubs was estimated to be 0.389 ± 0.104 . We obtained 170 bear/years of censored telemetry data from all classes of radioed grizzly bears, 25 of which died. The observed annual total mortality rate of 13.4 percent for all classes was higher than those found in expanding brown bear populations. Most mortalities occurred in roaded areas near private lands at the edge of the study area (Rural Zone) that exhibited a lower bear density than the Core Area. Dispersal movements of young females were confined to areas near the natal home range, away from the Rural Zone, while young males were more likely to utilize the Rural Zone. Using a derivation of Lotka's equation, our estimate of lambda during the entire study was 1.009 (95 percent confidence interval = 0.896 - 1.096). There was a 59 percent probability that the population was stable to increasing, a 55 percent probability that the population was increasing, and a 41 percent probability of population decline. The spatial occupancy of the Core Area suggested that the study area was at or near capacity under present landscape conditions. Differential bear densities within the study area, movement patterns, spatial occupancy, and vital rate characteristics suggested a "source-sink" situation.