

DEMOGRAPHY AND HABITAT USE OF DESERT-DWELLING
MOUNTAIN SHEEP IN THE EAST CHOCOLATE MOUNTAINS,
IMPERIAL COUNTY, CALIFORNIA

BY

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ABSTRACT

I undertook a two year study in June 1992 to describe the demography and habitat use of desert-dwelling mountain sheep (Ovis canadensis nelsoni) inhabiting the East Chocolate Mountains, Imperial County, California. For demographic parameter description I collected data using ground observations, remote cameras, and helicopter surveys on 25 adult mountain sheep (17 females, 8 males) that had been captured and fitted with radio-collars in 1992. I used Bailey's (1952) method to estimate the population of males and females, in 1992 and 1993. Telemetry data indicated the presence of two female sub-populations. Based upon ground observations and on helicopter surveys conducted in 1993, I estimated this population to be 206 animals with a 95% confidence interval of 149-327 animals. Adult sex ratios (68-80 males:100 females) derived from the 1993 data were similar to those recorded for other un hunted populations of desert-dwelling mountain sheep. The 1993 lamb (14-44:100 females) and yearling (0-16:100 females) ratios suggest modest lamb production and low recruitment. Adult survivorship for this population is high.

For diurnal habitat use studies I collected aerial radio-telemetry location data, from June 1992 to December 1993, on 25 (17 females, 8 males) mountain sheep. in the East Chocolate Mountains, Imperial County, California. I empirically derived a 95% circular probability error polygon (CEP) of 1 km for telemetry data collected in the study area. The CEP (3.14 km²) around each telemetry point was the fundamental unit for habitat analyses, which used vector- and raster-based Geographical Information System (GIS) data processing. The selected eight habitat

variables were evaluated by gender for three seasons of the year: hot/dry, hot/wet, and cool. Females avoided the lowest and highest elevation and slope classes, selected upland vegetation in all seasons, used rough terrain, and avoided flat landscapes. Males used all elevation classes in proportion to their availability except mid-elevation habitats which they avoided. Males avoided extremely flat and extremely rough terrain classes and used all other in proportion to availability. Males selected upland habitats in all seasons. Neither gender showed selection or avoidance of any aspect class. All sheep were found closer to water sources, and escape terrain, and farther from areas of human disturbance than would be expected by random movement on the landscape. Females were located farther from areas of human disturbance than males but did not differ from males in their distance from drinking water or escape terrain. I used Cunningham's (1989) habitat evaluation model to rate habitat quality of areas with the highest observed sheep densities. The model rated these habitats to be only "fair" quality.