

Diverse Migration Patterns and Seasonal Habitat Use of Stone's Sheep (*Ovis dalli stonei*)

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ABSTRACT: We describe temporal and spatial patterns of space-use and migrations by 16 GPS-collared Stone's sheep (*Ovis dalli stonei*) from 9 bands in the Cassiar Mountains of northern British Columbia, Canada. Our objectives were to identify timing of spring and fall migrations, characterize summer and winter ranges, map migration routes and stopover sites, and document altitudinal change across seasons. Our last objective was to assess individual migration strategies based on patterns of geographic migration, altitudinal migration, or residency. Median start and end dates of the spring and fall migrations were 12 and 17 Jun (range: 20 May to 5 Aug), and 30 Aug and 22 Sep (range: 21 Aug to 7 Jan), respectively. Individuals showed high fidelity to winter ranges over the limited duration of the study. Winter and summer ranges of most individuals (n = 15) occurred at moderate to high elevations that varied < 150 m between seasonal ranges. The median distance traveled along geographic migration routes was 16.3 km (range: 7.6–47.4 km). During the spring migration, most geographic migrants (n = 8) used at least 1 stopover site (median = 1.5, range: 0–4), while almost all migrants (n = 11) used stopover sites more frequently in the fall (median=2.5, range: 0–6). We found collared females exhibited 4 different migration strategies which mostly varied across bands. Migration strategies included long-distance geographic migrants (n= 5), short-distance geographic migrants (n = 5), vacillating migrants (n = 2), and abbreviated altitudinal migrants (n = 4). We conclude that female Stone's sheep in the Cassiar Mountains displayed a diverse assemblage of seasonal habitat use and migratory behaviors. By delineating seasonal ranges, migration routes and stopover sites, we identify areas of priority to help inform land-use planning in the region and conservation of native migrations of Stone's sheep.

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