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SOREX PREBLEI IN THE NORTHERN GREAT BASIN

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Sorex preblei has been described as a rare shrew of the Columbia basin, with a distribution extending as far east as the northwestern Great Plains (Junge and Hoffmann 1981). Its presence in the Great Basin desert is delineated by specimens that have been collected primarily on the periphery of this region (Zeveloff 1988). Other specimens have been collected from the northern, eastern, and western edges of the Great Basin. These include shrews from the northeastern corner of California (Williams 1984), the northwestern corner of Nevada (Hoffmann and Fisher 1978), eastern Oregon (Jackson 1922, 1928, Hansen 1964, Verts 1975), southeastern Washington (Armstrong 1957), west central Idaho (Larrison and Johnson 1981), Montana (Hoffmann et al. 1969, Hoffmann and Fisher 1978), western Wyoming (Hoffmann et al. 1969), and the south shore of the Great Salt Lake in Utah (Tomasi and Hoffmann 1984). There are no records from the Snake River Plain of southern Idaho or from the bulk of the Great Basin Desert in Nevada or Utah south of the 40th meridian.

Herein we report records of *Sorex preblei* from Elko County, Nevada, in the northern Great Basin. These records fill in a major gap in the distribution of the species and offer additional information on their habitat and sympatric associations with other species of *Sorex*.

The northern Great Basin is included in the Great Basin Division of the Intermountain Floristic Region (Holmgren 1972). This area includes the closed river basins of the Humboldt River and the Mary's River as well as the seasonally wet Bonneville Flats and the Snake River Plain. The region has a continental climate of fairly hot summers and cold, snowy winters. Approximately 130 fault-block mountain ranges following a north-to-northeast progression, and high valley floors are the prominent physiographic features. Within the higher valleys and river drainages are mesic to xeric shrublands dominated by *Artemisia* and *Chrysothamnus*. The river bottoms are dominated by more xeric halophytes such as *Sarcobatus* and *Chrysothamnus*.

Collection of *S. preblei* specimens from northern Elko County suggests that this shrew is more common and widespread in the northern Great Basin than previously supposed. A total of 12 specimens of *S. preblei* were collected near Sheep Creek, 10 km west of Haystack Ranch (55 km N of Elko); Sheep Creek drains the Independence Range. Seventy-five sunken pitfall traps were placed in a grid and shrews were sampled from this area from June to October 1984 (Ports and McAdoo 1986). Other *Sorex* include 31 *S. vagrans*, 13 *S. monticolus*, and 7 *S. merriami*. These specimens are housed at the Natural History Museum of Los Angeles and Northern Nevada Community College.

S. preblei was also collected approximately 49 km east of Sheep Creek in the perennial riparian willow and wild rose of the Mary's River. At this locality, approximately 87 km NE of Elko, a single specimen was taken in a snap trap on 12 June 1986. Also collected here were three specimens of *S. vagrans* and one specimen of *S. monticolus*.

These records fill in a distributional gap for *S. preblei* in the Great Basin. The only other record for this species in Nevada is from Washoe County (Hoffmann and Fisher 1978). To the east, *S. preblei* has been collected from the southern shore of the Great Salt Lake, Tooele Co., Utah (Tomasi and Hoffmann 1984). The specimen from the NW corner of Nevada, Washoe County, is approximately

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345 km from the Sheep Creek locality, whereas the Mary's River locality is approximately 233 km from the Great Salt Lake record. To the north, the nearest record of *S. preblei* is from the Jordan Valley, Malheur County, Oregon (Jackson 1922), approximately 223 km away from the north edge of the Great Basin. Both the Independence Range and the Mary's River are on the border of the floristic regions of the Great Basin to the south and the Columbia basin to the north (Holmgren 1972).

Some authors have suggested that *S. preblei* is found in marshy and riparian habitats (Larrison and Johnson 1981), whereas others have stated that this species prefers "arid to semiarid shrub-grass associations or openings in montane coniferous forest dominated by sagebrush" (Tomasi and Hoffmann 1984). Our habitat observations in northeastern Nevada only partially agree with those of Tomasi and Hoffmann (1984).

At the Sheep Creek locality we collected *S. preblei* in a seasonally wet, sagebrush-dominated community. The stream exhibits a snowmelt spring runoff from early spring until early summer, and then it dries up. Big sagebrush (*Artemisia tridentata*), rubber rabbitbrush (*Chrysothamnus nauseosus*), and antelope bitterbrush (*Purshia tridentata*) provide a dense overstory, and a variety of bunchgrass species and forbs provide a stable understory. By the end of summer, the grasses and forbs have seeded and the area is very dry. The elevation at this locality is 2,150 m. The Mary's River locality has a perennial source of water from the Jarbidge Mountains to the north. The soils here tend to be more fertile with extensive meadows, and the dominant vegetation includes willows (*Salix* sp.), Wood's rose (*Rosa woodsii*), greasewood (*Sarcobatus* sp.), and Great Basin wildrye (*Elymus canadensis*). Other grasses and forbs provide an abundant cover in adjacent meadows that are cut seasonally for hay.

Williams (1984) has collected *S. preblei* in similar mixed sagebrush, aspen, and willow riparian habitats in the Warner Mountains of northeastern California.

Six years of shrew trapping by the senior author in wet meadows, montane coniferous forest, and high-elevation mountain brush of northeastern and central Nevada have failed to turn up a specimen of *S. preblei* (Ports and McAdoo 1986). The most likely habitat associations for *S. preblei* in this area seem to be ephemeral and perennial streams dominated by shrubs, primarily below 2,500 m in elevation.

Although sympatry among species of long-tailed shrews is common in the western United States (Spencer and Pettus 1966, Williams 1984), *S. preblei* has rarely been captured in association with other shrews. Junge and Hoffmann (1981) found *S. preblei* associated with its congener, *S. cinereus haydeni*, in coniferous forest–mountain shrub habitats in Yellowstone County, Montana. In California's Warner Mountains, *S. preblei* is sympatric with *S. vagrans* and *S. merriami* in ecotonal habitats of forested riparian and dry shrublands (Williams 1984).

Herein we document the association of *S. preblei* with three other species of *Sorex*. It is difficult to explain why the plant community at Sheep Creek, which is a xeric, ephemeral stream habitat, can support four species of shrews, whereas the more mesic, complex mountain habitat in the Warner Mountains and the perennial riparian habitat on the Mary's River support only three shrew species. Certainly it is unusual to find *S. monticolus* in a low-elevation, sagebrush community; this species is normally associated with more mesic habitats in Nevada (Hall 1946).

Churchfield (in press) suggests that shrews are very flexible in their foraging habits and will decrease their dietary overlap when the number of shrew species in a community increases. Dietary generalists usually are found in greater numbers than dietary specialists in multi-species communities. This may be the case with shrew communities in the Great Basin, but these species assemblages will be explained only with detailed ecological studies examining microhabitats, diets, and life-history patterns, plus comprehensive trapping to insure that all shrew species in a particular area are well documented.

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