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Notes on Distribution of Three Species of Mammals in South Dakota

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No definitive account of the mammals of South Dakota has been published and, therefore, the distribution of species occurring in that state is relatively poorly documented save for several geographically restricted faunal studies (Andersen and Jones 1971, on Harding County, Findley 1956, on Clay County, and Turner 1974, on the Black Hills, for example). Our own work in South Dakota began almost two decades ago, but in recent years has focued primarily on the unique environmental area in southern Bennett County. Three species of mammals for which we have important unpublished distributional records from the state are the eastern mole, the woodchuck, and the plains pocket gopher, and these data are herein reported.

Measurements are given in millimeters and weights in grams. Specimens listed by catalogue number have been examined by the authors and are housed in the following institutions: Museum of Natural History, The University of Kansas (KU); Museum of the High Plains, Fort Hays State University (MHP); Museum of Zoology, University of Michigan (UMMZ); University of South Dakota, Vermillion (USD); National Museum of Natural History, including the collections of the U.S. Biological Survey (USNM). We are grateful to those in charge of these several collections for making specimens available to us for study.

Scalopus aquaticus, Eastern Mole

Two subspecies of *Scalopus aquaticus* occur in South Dakota, only one of which has been reported by name from the state. Jackson (1915) listed specimens of *S. a. machrinoides* from the mouth of the Big Sioux River and from Vermillion, and Findley (1956) also reported material from Vermillion. Additionally, Thurston (1942) noted the occurrence of the species in Minnehaha County and Reagan (1908) recorded it as "Not abundant" on the Rosebud Indian Reservation. Actually, this mole probably occurs in suitable habitat throughout much of the southern part of South Dakota (see Fig. 1), north at least to Minnehaha and McCook counties in the east and possibly to the eastern part of the White River drainage in the west.

Scalopus aquaticus machrinoides Jackson, 1914.—This subspecies is restricted in South Dakota to the southeastern part of the state. Records of occurrence are as follows: Vermillion, Clay County (Jackson 1915:46; Findley 1956:21); Sioux Falls, Minnehaha County (Thurston 1942:113); Canistota, McCook County (USD, specimen examined for us by R. W. Turner); mouth of Big Sioux River, Union County (USNM 1760), and Union County State Park, 9½ mi. N and 7½ mi. E Vermillion, 1200 ft. (KU 101644).

Jackson (*loc. cit.*) noted that specimens from Vermillion available to him were "distinctly paler" than typical *S. a. machrinoides* and in this regard approached *S. a. caryi*, the subspecies to the west. This situation also prevails in specimens we have examined, but they are referable to *machrinoides* on the basis of large size. For example, an adult male (KU 101644) from Union County has the following measurements: total length, 184; length of tail, 35; length of hind foot, 24; greatest length of skull, 37.5; mastoid breadth, 20.0; weight, 118.2. Corresponding measurements of five adult *S. a. caryi* (see following acount), a male and female from Bon Homme County and a male and female from Bennett County, are, respectively: 174, 168, 170, 160, 163; 29, 27, 27, 24, 28; 24.5, 23, 22, 21, 21; 36.0, 35.8, 34.8, 34.5, 34.7; 18.3, 18.5, 17.4, 17.7, 17.7; 82.5, 75.8, 74.4, 69.5, 76.6. As is to be expected, the specimens from Bon Homme County are somewhat larger than are those from Bennett County, indicative of the eastward trend toward larger size across southern South Dakota and indicative also of intergradation between the subspecies *machrinoides* and *caryi*. A specimen taken on 4 June 1965 in Union County was in the process of molting from winter to summer pelage.

Scalopus aquaticus caryi Jackson, 1914.—This small, pale subspecies of the eastern mole has not been reported previously by name from South Dakota. It occurs westward along the southern border of the state (Fig. 1) at least as far as the vincinity of Lacreek National Wildlife Refuge in Bennett County. To the north, it is tempting to speculate that *S. aquaticus* reaches the White River along the valleys of the several streams of that drainage with headwaters in Bennett and Todd counties, but our field work thus far has not revealed it there. In western South Dakota, the distribution is limited to suitable habitats along streams and rivers, and other mesic situations.

Records of occurrence are from Sand Creek Park, 4 mi. NE Springfield, Bon Homme County (KU 101641-43), Rosebud Indian Reservation, Todd County (Reagan 1908:163), and from the following locations in Bennett County: 4 mi. S and 8 mi. E Martin, 3050 ft. (KU 109890); 6½ mi. S and 3½ mi. E Martin (MHP 13126); 7 mi. S Martin, 3100 ft. (KU 109891); 7 mi. S Tuthill (MHP 13127).

Marmota monax, Woodchuck

The woodchuck possibly occurs in many of the easternmost counties of South Dakota and its presence there well may be known to local biologists. Nevertheless, we are unaware of any report of this species from the state in the primary literature of mammalogy, although it long has been known from adjacent parts of Iowa, Minnesota, Nebraska, and North Dakota, and Findley (1956:30) mentioned the possible occurrence of woodchucks in Clay County. In the summer of 1965, Percy L. Clifton, then a field representative of the Museum of Natural

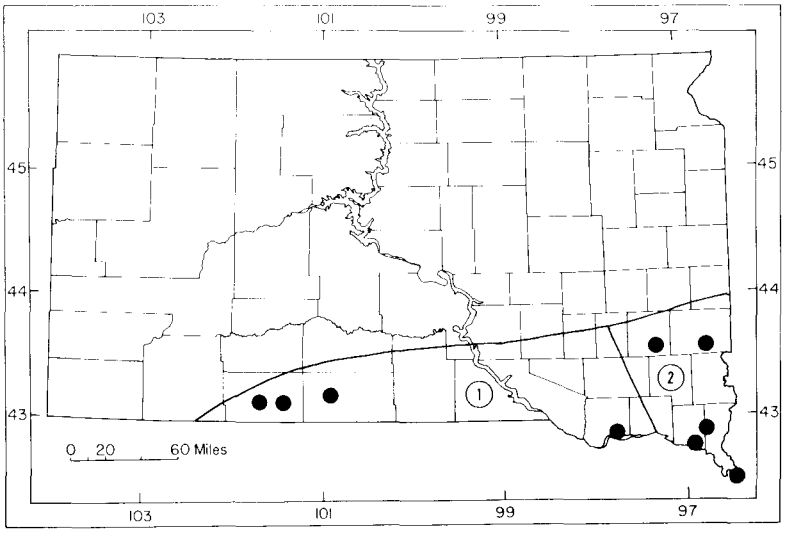

Fig. 1. Distribution in South Dakota of the eastern mole, *Scalopus aquaticus*: 1, *S. a. caryi*; 2, *S. a. machrinoides*. See text for list of records of occurrence, some of which are not plotted because crowding of symbols on the map would have resulted.

History at The University of Kansas, collected one adult female in each of the extreme southeastern and northeastern counties of South Dakota, thus establishing certainly the occurrence of *Marmota monax* in the state. On the basis of their characteristics, and also based on the reported geographic distribution of races in adjacent states, we herein assign the two specimens obtained by Clifton to different subspecies as detailed below.

Marmota monax monax (Linnaeus, 1758).—Even though Jones (1964:121-124) tenatively assigned woodchucks from south of the Missour River in eastern Nebraska to the subspecies *bunkeri*, a specimen from Union County State Park, 9½ mi. N and 7½ mi. E Vermillion (KU 101696), seems best referable to *M. m. monax*. It is noteworthy also that Bowles (1975:63-65) employed the subspecific name *monax* for woodchucks from throughout Iowa and implied that systematic analysis was needed for populations in at least the western part of the range of the species. Because the Missouri River evidently provides no distributional barrier for either of the fossorial species discussed in this paper, and is not a demarcation between subspecies in at least one of those species, it seems unlikely that the river is of import in terms of inhibiting gene flow between populations of *M. monax*.

Selected measurements of the female from Union County, followed by those of a female representing the subspecies *rufescens* from Roberts County (See below), both adults of which the latter is the older on the basis of tooth wear, are as follows: total length, 567, 570; length of tail, 135, 130; length of hind foot, 86,80; condylobasal length, 91.0, 85.5; zygomatic breadth, 62.9, 58.5; mastoid breadth, 44.1, 40.2; length of maxillary toothrow, 20.0, 19.3. The smaller size of the specimen of *rufescens* accords with the description and measurements of that subspecies given by Howell (1915).

Marmonta monax rufescens Howell, 1914.—A specimen from Hartford Beach State Park, on the southern border of Big Stone Lake in southeastern Roberts County (KU 101697), provides the first record from South Dakota of this subspecies (see previous account). P. L. Clifton recorded in his field notes that this female had half-grown young on 22 June 1965 and that woodchucks were commonly observed in the area.

Geomys bursarius, Plains Pocket Gopher

Although the plains pocket gopher long has been known from eastern and southern South Dakota (see Merriam 1895, for example) its distribution in the state has not been well documented. *Geomys bursarius* evidently is restricted in South Dakota (Fig. 2) to the loess, till, and sandy prairie soils of the eastern part of the state and to West River counties in, and to the south of, the White River drainage, as well as in the drainage of the Cheyenne River in the extreme southwestern part of the state. Most other areas in South Dakota are occupied by a competing species of pocket gopher, *Thomomys talpoides*, the distribution of which generally does not overlap that of *G. bursarius*. Three nominal subspecies of the plains pocket gopher occur in South Dakota.

Geomys bursarius bursarius (Shaw, 1800).—Populations of the plains pocket gopher in northeastern and east-central South Dakota are assignable to *G. b. bursarius* on the basis of the currently understood limits of distribution and characters of the several subspecies thought to occur in the state. Differentiation between the subspecies *bursarius* and *majusculus* has not been well documented, however, and the systematic relationship of these two races thus is poorly understood. Bowles (1975:79-81) assigned all *G. bursarius* from Iowa to *majusculus* and Jones (1964:160-163) employed that name for specimens from eastern Nebraska. Adults of *G. b. majusculus*, especially males, are alleged to be larger than those of *G. b. bursarius*; specimens from northeastern South Dakota are somewhat smaller than those from the southeastern part of the state and it is on this basis that they are assigned to the subspecies *bursarius*.

Records of occurrence of this race are as follows: Brookings County: Brookings (USNM 244473), 3½ mi. S and 1½ mi. W Volga (Coffman and McDaniel, 1975:189); Clark County: Clark (USNM 275003); Grant County: 6 mi. N Milbank (KU 101727-31); Kingsbury County: no specific locality (USNM 13735); Marshall County: Ft. Sisseton (USNM 192155, 192159), Roy Lake State Park (KU 101722-26); Minnehaha County: Sioux Falls (Coffman and McDaniel 1975:189), Valley Springs (UMMZ 104661-63); Moody County: Flandreau (USNM 192151), no specific locality (Coffman and McDaniel 1975:189); Roberts County: Lake Traverse (USNM 192161).

Geomy bursarius lutescens Merriam, 1890.—This subspecies, individuals of which are decidedly smaller than those of either *G. b. bursarius* or *G. b. majusculus* and also markedly paler, occurs to the west of the Missouri River in southern South Dakota (Fig. 2). It is known definitely from suitable habitats throughout the White River and Niobrara River drainages and is found also in Fall River County in the Cheyenne River drainage, but is not known to occur elsewhere in areas drained by the Cheyenne. It is of note that a specimen reported as *G. b. lutescens* by Long (1965:163) from along the Redwater River (a northern

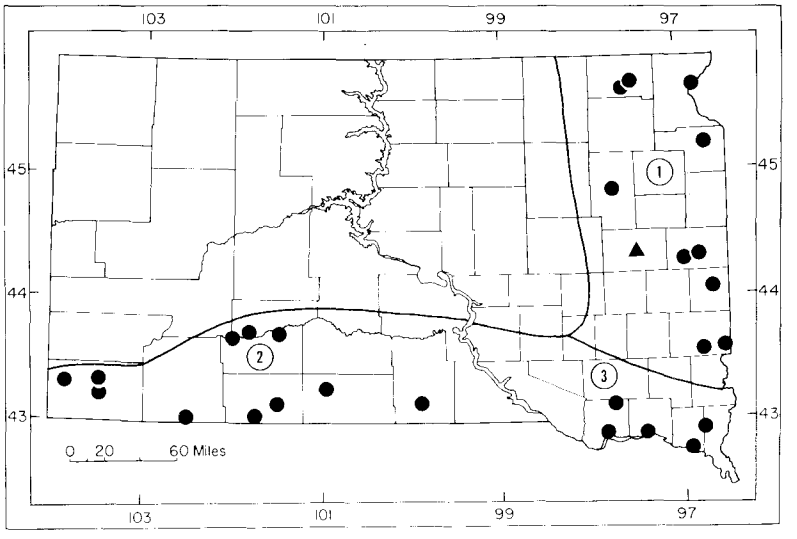

Fig. 2. Distribution in South Dakota of the plains pocket gopher, *Geomys bursarius*: 1, *G. b. bursarius*; 2, *G. b. lutescens*; 3, *G. b. majusculus*. See text for list of records of occurrence, some of which are not plotted because crowding of symbols on the map would have resulted. The one triangle represets a specimen known only to county.

tributary of the Cheyenne) near Beulah, Wyoming, was misidentified and actually represents another genus of pocket gopher (see Turner 1974: 149).

Records of occurrence of *G. b. lutescens* are as follows: Bennett County: 4 mi. S and 8 mi. E Martin, 3050 ft. (KU 113056-57), 7 mi. S and 4 mi. E Martin (MHP 13154-59), 8 mi. S Martin, 3200 ft. (KU 113058-61), 9 mi. S Martin, 3300 ft. (KU 113062-63), 10 mi. S Martin, 3300 ft. (KU 113064), 1¼ mi. N and 2½ mi. W Tuthill (MHP 13152-53), 1½ mi. W Tuthill (MHP 13160); Fall River County: 1 mi. E Edgemont (KU 101963-65), 6 mi. S Hot Springs (UM MZ 97083-84), Hat Creek, 12 mi. S Hot Springs (Turner, 1974: 149); Jackson County: 2 mi. S and 2 mi. E Interior (KU 124979-81), 2½ mi. S and 2½ mi. E Interior (KU 124982-86); Shannon County: Pine Ridge (USNM 65002-03); Tripp County: Dog Ear Lake (UMMZ 74879-80); Todd County: 2 mi. N and 3 mi. W Rosebud (KU 101042-44), Rosebud Agency (USNM 64999-65001); Washabaugh County: flood plain of Bear Creek, near White River (USNM 205908), 20 mi. N Long Valley (KU 101041), 10 mi. N and 4 mi. E Potato Creek (KU 101037-40).

Geomys bursarius majusculus Swenk, 1939.—Specimens from extreme southeastern South Dakota are tentatively assigned to this subspecies because they average somewhat larger than those from farther north that we have referred to *G. b. bursarius*. As noted in the account of the latter, a study of variation among populations of this species in the plains states is needed.

Records of occurrence of this subspecies in South Dakota are: Bon Homme County: Sand Creek Park, 4 mi. NE Springfield (KU 101732-34), Scotland (USNM 54165); Clay County: mouth Vermillion River (USNM 1775/2497), Vermillion (Findley, 1956:32); Union County: Union County State Park, 9½ mi. N and 7½ mi. E Vermillion, 1200 ft. (KU 101735-40); Yankton County: Yankton (USNM 144763).

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