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INDIVIDUAL RODENT MOVEMENTS IN UPPER SONORAN DESERT OF CENTRAL NEVADA

Most studies of distances traveled by animals suffer from the impossibility of being certain that an animal cannot travel farther than one imagines. Even investigations on islands or in other physically limited sites are apt to be biased by the limits themselves, and thus can be extended to larger areas only at peril of underestimation. For this reason, it seems imprudent—and probably delusive—to calculate “average” distances unless one can be sure that the greatest distances moved by animals will in fact be recorded, or at least recognizes the inadequacies accepted. The maximum distances known to have been moved, however, are useful in judging the adequacy of experimental design in investigating the significance and actual validity of such ideas as home range, and in studies of habitat utilization.

During a study of habitat selection by kangaroo mice (*Microdipodops megacephalus* and *M. pallidus*) conducted in central Nevada in 1960 and 1961, all rodents caught at surveyed points were marked by toe-clipping and released at the traps, in an effort intended to reveal interactions of kangaroo mice with other species.

Trapping was carried on at three places where Hall (Mammals of Nevada, pp. 379-403., 1946) had found the two species of kangaroo mice to be sympatric. The dominant vegetation at all three may be referred to the Little Greasewood-Shadscale (*Sarcobatus baileyi*-*Atriplex confertifolia*) association of Billings (Butler Univ. Bot. Stud., 7: 89-123, 1945). At each area, small Sherman traps baited with rolled oats were set within 0.5 yard (0.5 m) of positions 10.00 yards (9.14 m) apart in grid patterns. The grids, their accuracy controlled by stakes at the 20.00-yard (18.28-m) intersects, were extended as accumulating data on kangaroo mice dictated. The areas, and the greatest distances between trap positions on the grids there, were (i) Big Smoky Valley, 5,650 ft, 4.75 miles NE San Antonio, Nye Co., 439 yards (401 m); (ii) Granite Springs Valley, 4,000 ft, 21 miles W and 2 miles N Lovelock, Pershing Co., 241 yards (220 m); and (iii) Penoyer Valley, 4,800 ft, 15 miles N Groom Baldy, Lincoln Co., 632 yards (579 m). For each individual, the points of capture were expressed in rectilinear coordinates (Ghiselin, Amer. Midland Natur., 79: 242-246, 1968). For each, the distances between all sites of capture were calculated, and the greatest distance for each individual was selected by a computer routine utilizing the Pythagorean theorem. The results are set forth in Table 1. To indicate comparative sample sizes, numbers of captures and of individuals involved are included.

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Table 1.
Greatest known movements of marked mammals.

Species	♂		♀		Sex?		Σ	♂		♀		Sex?	Σ	Max. Dist. (Yards) Between Captures	
	♂	♀	♂	♀	♂	♀		♂	♀	♂	♀				
<i>Amnospermophilus leucurus</i>	15	9	11	35	10	8	28	226	139	89					
<i>Perognathus longimembris</i>	251	183	88	522	109	95	283	291	202	148					
<i>Perognathus parvus</i>	1	12	0	13	1	1	2								
<i>Microdipodops megacephalus</i>	37	9	0	46	13	5	18	459	54						
<i>Microdipodops pallidus</i>	59	71	2	132	18	25	45	262	149						
<i>Dipodomys ordii</i>	0	8	0	8	0	1	1								
<i>Dipodomys microps</i>	205	158	11	374	61	42	114	464	316						
<i>Dipodomys merriami</i>	52	10	2	64	19	4	24	155	180	14					
<i>Onychomys leucogaster</i>	0	4	0	4	0	2	2								
<i>Onychomys torridus</i>	3	1	0	4	2	1	3	180							
<i>Peromyscus maniculatus</i>	30	15	2	47	14	8	24	305	202						