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# *Letters to the Editor*

## MONGOLIAN GERBILS: SURVIVAL IN THE SOUTHWESTERN UNITED STATES?

Sir—Food storage, burrowing, nest building, and reproduction by Mongolian gerbils (*Meriones unguiculatus*) were observed in an eastern New Mexico enclosure. The great diversity of occupied habitats in their native range and their close association with human habitation and environmental disturbances indicate potential for survival and range expansion in North America.

Reported here is the first survival and successful reproduction by Mongolian gerbils under partially natural conditions in a semi-arid grassland in east-

ern New Mexico. The Mongolian gerbil was introduced into the United States in 1954 and has become a well established research animal,[1–3] as well as a common pet. Its affinity for arid and semi-arid regions,[4] remarkable reproductive and growth capabilities,[4–6] behavioral dominance to native North American rodent species,[3] and potentially high population densities,[4] make it an important species for study. The striking similarity of the gerbil's native habitat[4] to much of western North America make it a prime candidate for a successful invasion of the continent.

Six gerbils were released into an environmental enclosure (3 m × 2 m × 1 m) 15 km northeast of Portales, Roosevelt Co., New Mexico. The Portales Fine Sandy Loam soil[7] of the area is covered with mixed grassland vegetation, i.e., blue gramma (*Bouteloua gracilis*), alkali sacaton (*Sporobolus airoides*), needle-and-thread grass (*Stipa comata*), buffalograss (*Buchloa dactyloides*), green eyes (*Berlandiera lyrata*), broom snakeweed (*Xanthocephalum sarothrae*), and ragweed (*Ambrosia psilostachya*). Foods provided for the animals during the 12 month study were collected within 25 km of the enclosure. These included milo, corn, peanuts, peas, alfalfa, wheat, beans, blue gramma, and alkali sacaton. Mean annual temperature at the study site (1.5 m above the surface) was 21°C; extremes −16°C and 38°C. At 10 mm above the surface the extremes were −12°C and 40°C, and at 10 cm below the surface the extremes were −2°C and 30°C. Our site's temperatures were in the range of those that can be tolerated (−23°C to 35°C) by gerbils,[8,9] especially if gerbils stay in their burrows during the temperature extremes. Total annual precipitation was 47 cm; the greatest single rainfall was 4.8 cm.

Gerbils were active throughout the year, even when snow covered the floor of the enclosure, and the animals did not hibernate. The burrow system they constructed was very complex. Underground storage areas containing seeds varied from 8 to 20 cm in diameter. Two nests (21 and 15 cm in diameter) were constructed of blue gramma and alkali sacaton with a few yucca leaves. The burrows may be typical for the species; Naumov and Lobachev[4] found whole families living in a single system. They also reported that burrows were situated at depths of 40 to 150 cm. Since our enclosure restricted the depth to 30 cm we may have placed a more severe hardship on the survival of the gerbils than they would have been exposed to if they were free to dig deeper. The resulting exposure to warmer summer temperatures and colder winter temperatures were apparently not enough to destroy our test population.

At the termination of the study two of the original gerbils (male and female) survived and two progeny had been produced. In addition to the food items provided, gerbils ate blue gramma, yucca pods, and snakeweed in the enclosure. Their vigorous burrowing activity damaged or destroyed all of the plants in the enclosure including a large yucca. By the end of the project the gerbils were completely subsisting on the food brought to them from the surrounding area.

We are not aware of any feral populations of the gerbil in the United States. Predation, releases at unfavorable times, failure of members of the opposite sex to encounter each other, or the possibility that gerbils cannot successfully compete with native species for food and nest sites may have prevented their establishment. Fisler[3] has shown gerbils to be behaviorally dominant to many native North American desert rodent species. Our study shows their ability to endure natural climatic conditions, reproduce, and to survive on foods readily available in the environment. Predation may play a major role in inhibiting establishment of this species; being a diurnal species it might constitute easy prey for hawks, eagles, or other predatory species. Further studies are needed to elucidate the potential for establishing feral gerbil populations in North America.

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