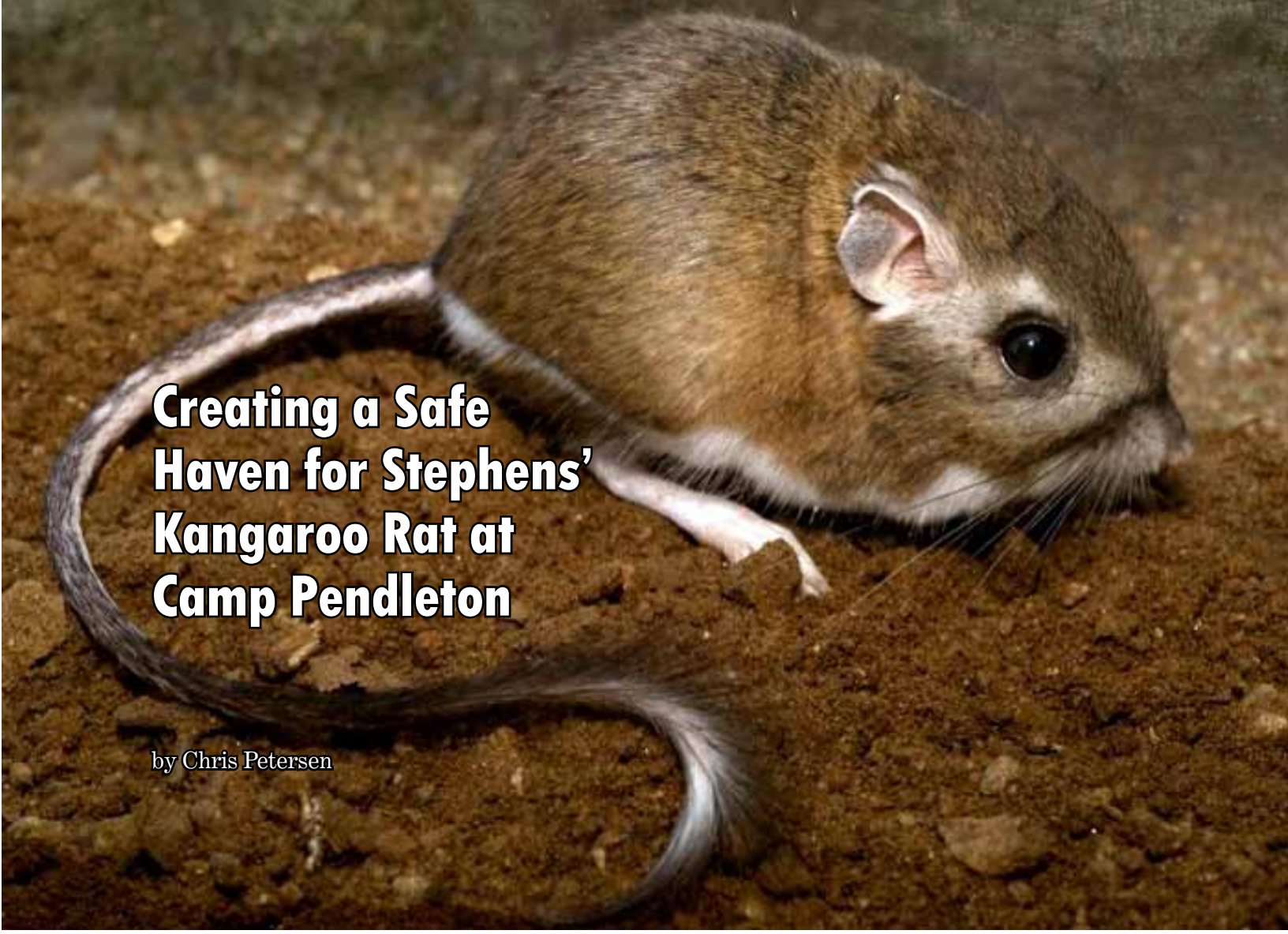

Creating a Safe Haven for Stephens' Kangaroo Rat at Camp Pendleton

by Chris Petersen

Stephens' kangaroo rat. *Photo Credit: B. "Moose" Peterson*

The Stephens' kangaroo rat (*Dipodomys stephensi*) is a nocturnal rodent that is unique to southwestern California. The species was listed as federally endangered in 1988 after half of the habitat it historically occupied was lost to residential, commercial, and agricultural development. While kangaroo rat populations have dwindled over the years, the species remains in portions of western Riverside County and parts of northern and central San Diego County.

The elusive animals are known to inhabit some of the 125,000 acres (50,586 hectares) belonging to Marine Corps Base Camp Pendleton (Camp Pendleton), a training base located on the southwestern coastal plains of the Santa Ana Mountains in San Diego County that promotes combat readiness. Since the kangaroo rat gained federal protection under the Endangered Species Act, natural resources managers at Camp Pendleton have worked closely with the U.S. Fish and Wildlife Service (USFWS) to avoid negative impacts to the species as the result of mission related activities.

In 2007, Camp Pendleton, with support from the USFWS, initiated a long-term habitat enhancement project at its Juliett training area – where a mitigation bank had previously been established – to ensure high-quality habitat for the species. While the site had been set aside for conservation of the kangaroo rat, it was overrun with non-native grasses that created unsuitable conditions for the animals.

The kangaroo rat generally occupies sparsely vegetated grasslands and shrublands where bare ground is common during much of the year. To create suitable habitat for the species, Camp Pendleton undertook a variety of actions, including prescribed burning, mechanical and chemical vegetation management, and artificial burrow installation. These measures dramatically modified the extant habitat conditions, resulting in a sizable area of high-quality habitat dominated by forbs (flowering plants). Camp Pendleton personnel also initiated a monitoring program to document the

presence of the kangaroo rats and track yearly vegetation conditions.

Despite efforts to reclaim habitat for the species, the monitoring program revealed low kangaroo rat numbers – and often the absence of the animals – early in 2011. Monitoring efforts also confirmed the presence of the Dulzura kangaroo rat (*Dipodomys simulans*) in the management area. Because this more common species competes with its endangered relative for resources, resource managers feared the Stephens' kangaroo rat had been extirpated from the site.

A positive turning point in the project occurred in September 2011, with the translocation of 21 kangaroo rats to the management area. These animals originally occupied another site within Camp Pendleton slated for development. In an effort to maximize chances for a successful translocation, personnel constructed a three-acre (one-hectare) holding fence in the management area to provide a predator-free space where the animals could safely acclimate to their new home.

Stephens' kangaroo rats use burrows for nesting, resting during daylight hours, storing food, and eluding predators. The construction of artificial burrows – measuring approximately three feet (one meter) deep and two inches (five centimeters) wide – inside the enclosure provided the animals with immediate shelter, while remote cameras installed in and around the enclosure allowed personnel to monitor the kangaroo rats and track predator activities.

Artificial burrow installation.

Photo Credit: MCB Camp Pendleton

Camp Pendleton personnel closely monitored the kangaroo rat population through periodic live-trapping surveys. To track the survival and movement of the translocated animals, biologists fitted each individual with a Passive Integrated Transponder (PIT) tag to allow its specific identification during surveys. In addition, biologists fitted the translocated animals, as well as any additional kangaroo rats captured during ongoing monitoring surveys, with unique ear tags to allow for easy identification over time. In the months that followed, biologists found that survival in the enclosure was high. Periodic monitoring events confirmed a steady increase in the size of the enclosure population, and by July 2014, the original 21 translocated kangaroo rats had fostered a population of over 90 individuals.

Encouraged by the steadily growing popultaion, biologists installed release holes along the bottom of the enclosure fence in July 2014 to encourage the animals to colonize the surrounding open habitat within the management area. A series of artificial burrows were also installed in the open grasslands surrounding the enclosure to provide immediate shelter for dispersing kangaroo rats. The release holes allowed the animals to leave and reenter the enclosure, while still preventing access of large predators such as coyotes and bobcats. Remote cameras along the enclosure fence documented the frequent use of the holes by the kangaroo rats.

Pre (top) and post (bottom) habitat condition on the Stephens' kangaroo rat management area.

Photo Credit: MCB Camp Pendleton

Recent trapping surveys indicate that the population is colonizing and successfully reproducing in the adjacent habitat outside of the enclosure. Camp Pendleton will continue monitoring the population and managing the mitigation site, performing habitat enhancement actions inside and outside of the enclosure. Camp Pendleton is currently developing a Stephens' Kangaroo Rat Management Plan that will support the installation's training mission while building on the success of the habitat enhancement project.

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