

## Western Ecological Research Center

# Publication Brief for Resource Managers

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## Population Attributes of Desert Tortoises at the National Training Center, Fort Irwin, California

Located in the central Mojave Desert, the National Training Center at Fort Irwin contains habitat for the threatened desert tortoise, an indicator species of desert ecosystem health. While similar causes of death and cumulative disturbances of habitat occur elsewhere in the geographic range of the desert tortoise, military bases such as Ft. Irwin have a unique set of disturbances typical of training areas. A recent USGS study published in the *Journal of Arid Environments* provides a snapshot of Ft. Irwin tortoise population attributes, status, and relationships between tortoise densities and human activities.

USGS scientist Kristin Berry and colleagues sampled 21 study plots at the National Training Center once between 1997 and 2003. They sampled each plot during a single season when the tortoises were most likely to be above ground. Their objectives were part of the Army's efforts to determine population attributes and health status within specific management areas of the National Training Center, compare population attributes in areas with different management histories, and identify anthropogenic factors which may affect health and well-being of the tortoises.

Their survey revealed low densities and high death rates of desert tortoises on most plots. Factors contributing to or causing deaths of tortoises included vehicles, vandalism, predation, mycoplasmosis (an infectious upper respiratory tract disease), and shell diseases. Tortoises had died from multiple anthropogenic causes, and many showed moderate to severe signs of disease. Overall, deaths of tortoises from anthropogenic sources were significantly correlated with surface disturbances, trash, military ordnance, and proximity to

### Management Implications:

- Desert tortoise populations at Ft. Irwin generally had high death rates.
- Tortoise deaths were correlated with anthropogenic uses, specifically surface disturbances, trash, military ordnance, and proximity to offices and paved roads.
- Tortoises with upper respiratory tract (infectious) diseases were more likely to occur near towns, offices, and roads.
- Tortoises with shell diseases were more likely to occur in areas with a history of military use than in areas with no history of military use.
- Populations of desert tortoise are unlikely to persist where death rates remain high.

offices and paved roads. Health status of tortoises was correlated with some anthropogenic uses. Tortoises with infectious diseases were more likely to occur near offices, the town of Ft. Irwin, and paved roads. Also, the authors found significantly more tortoises with shell disease on plots with current and recent military use than on plots with no history of military use.

*Berry, K. H., T. Y. Bailey, and K. M. Anderson. 2006. Attributes of desert tortoise populations at the National Training Center, Central Mojave Desert, California, USA. Journal of Arid Environments 67:165–191.*