



2015
DESERT TORTOISE
MONITORING HANDBOOK



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This is the most recent incarnation of handbooks that have been used each year of the range-wide monitoring program. The University of Nevada, Reno and their collaborators at the U.S. Geological Survey were involved in earlier versions of the Handbook. Dr. Jay Johnson has worked in recent years to update the training program for handling tortoises and has made extensive contributions to the associated chapter in this handbook. Rohit Patil (UNR) updated data collection verification procedures for the 2012 field season and helped prepare related updates in this handbook.

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INTRODUCTION

The overall goal of the U.S. Fish and Wildlife Service (USFWS) recovery plan for the desert tortoise is the recovery and delisting of the tortoise. This monitoring project contributes annual population density estimates of the Mojave desert tortoise - information that the USFWS will use to assess the status of the tortoise at various stages during recovery.

The revised recovery plan (USFWS, 2011. Revised recovery plan for the Mojave population of the desert tortoise (*Gopherus agassizii*). USFWS, Pacific Southwest Region, Sacramento, California. 222 pp.) requires for delisting that “Rates of population change (λ) for desert tortoises are increasing (i.e., $\lambda > 1$) over at least 25 years (a single tortoise generation), as measured...by extensive, range-wide monitoring across tortoise conservation areas within each recovery unit....”.

The USFWS coordinates this monitoring program to

- 1) Collect data range-wide that are scientifically credible,
- 2) Use these data to develop accurate and precise estimates of population densities in each recovery unit, and then
- 3) Update the design and annual implementation of this project to allow detection of meaningful population recovery after 25 years.

Training outlined in this manual addresses the specialized skills required to collect these data. Desert tortoise population monitoring relies on distance sampling to annually estimate the number of tortoises in managed areas of the Mojave Desert. Distance sampling has been implemented in a variety of settings; this project trains crews in the general approach to distance sampling as well as the specifics of how this is implemented for desert tortoises. Each chapter in this Handbook addresses a focal issue, stating the training objectives and standards, and providing written reference material. The following definitions apply:

Objective: statement of aim or purpose to be pursued; a priority, or an end, towards which significant effort is directed.

Standard: Statement of the necessary activities required to meet specific training objectives. By the end of training, each crew member should feel confident in their performance of these standards.

Metric: Quantitative or qualitative means used to gauge success or failure in performance. By the end of training, instructors will have evaluated all trainees using these metrics.

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