



U.S. Fish and Wildlife Service
DESERT TORTOISE RECOVERY OFFICE
1340 Financial Blvd., Suite 234
Reno, Nevada 89502
Ph: 775-861-6300 ~ Fax: 775-861-6301



Desert Tortoise Science Advisory Committee Meeting
September 16-17, 2006
Reno, NV

Meeting Goals and Objectives

- Resolve recovery criteria
- Chart direction for additional desert tortoise recovery/science topics

Attendees

Linda Allison, DTRO
Roy Averill-Murray, DTRO
Kristin Berry, SAC
Kim Field, DTRO
Peter Hudson, SAC
Sandy Marquez, DTRO

Earl McCoy, SAC
Katherine Ralls, SAC
Michael Reed, SAC
Bob Steidl, SAC
Richard Tracy, SAC

Meeting Summary

• **Recovery Criteria**

The SAC reviewed and addressed comments on the draft recovery criteria from the Desert Tortoise Management Oversight Group and other stakeholders. The SAC agreed that it should work with the DTRO to develop a conceptual framework to clearly describe the basis and assumptions on which the recovery criteria are based, as well as define important terms that appear to be creating confusion. Revised draft recovery criteria are included below.

Recovery Objective 1 (Demography): Maintain self-sustaining populations of desert tortoises within each recovery unit into the future.

Recovery Criterion 1: Rates of desert tortoise population growth across each recovery unit are increasing for 25 years (a single tortoise generation).

Recovery Criterion 1a: The lower 90% confidence limit around the slope of the population rate of change (λ), estimated from range-wide monitoring, exceeds 0. Diverse size classes of tortoises must be represented in survey results to ensure that recruitment is occurring.

Note: The geographic baseline over which range-wide population trends in the desert tortoise will be measured will be determined by the SAC through review of the habitat model currently under development by the USGS, as well as current land-management status.

Recovery Criterion 1b: The lower 90% confidence limit around the slope of λ , estimated directly from vital rates (recruitment, survival) measured from demographic study areas within each recovery unit, exceeds 0.

Note: The number, size, and placement of demographic study areas will be determined by the SAC through review of a spatial analysis of the 2001-2005 range-wide monitoring data.

Recovery Objective 2 (Distribution): Maintain a broad and increasing distribution of desert tortoises throughout each recovery unit.

Recovery Criterion 2: Desert tortoise distribution throughout each recovery unit is increasing over 25 years - The lower 90% confidence limit around the slope of desert tortoise occupancy exceeds 0.

Note: The geographic baseline over which desert tortoise occupancy will be measured will be determined by the SAC through review of the habitat model currently under development by the USGS, as well as current land-management status.

Recovery Objective 3 (Habitat): Ensure that habitat within each recovery unit is protected and managed to allow long-term viability of desert tortoise populations.

Recovery Criterion 3a: The quantity of desert tortoise habitat across all public lands and private conservation lands is maintained with no net loss.

Recovery Criterion 3b: The condition of desert tortoise habitat within each recovery unit is demonstrably improving.

Recovery Criterion 3c: A habitat-tracking system, based on a GIS-based tortoise habitat model, is in place and implemented to monitor the quantity and condition of desert tortoise habitat across the tortoise's range.

Note: The geographic baseline over which desert tortoise habitat will be measured will be determined by the SAC through review of the habitat model currently under development by the USGS, as well as current land-management status.

Recovery Objective 4 (Threats): Threats to desert tortoise population persistence are sufficiently mitigated to ensure the continued existence of the species.

Recovery Criterion 4: Knowledge/mitigation of the impacts of specific threats to desert tortoise populations (rather than individuals) is sufficient to determine that these factors are not compromising recovery. Management plans or cooperative agreements have been implemented within each recovery unit to ensure the maintenance of Recovery Criteria 1-3. Each plan or agreement must contain:

- a) explicit management actions that address the threats facing desert tortoise population persistence within that recovery unit;
- b) management strategies that ensure that the plan is evaluated and revised regularly, based on new information, data, and research;
- c) a system to track the implementation of management actions; and

d) assurances that the plan will continue to be implemented.

Note: Specific recovery actions to be included in the plan will include mitigation of specific threats, as well as research into demographic effects of threats on tortoise populations. One such action would be the development of conceptual models that break down the spider diagram into more specific parts and help identify priority threats for each recovery unit.

- Next steps/future topics
 - Range-wide monitoring program – A brief discussion occurred on the specifics of the range-wide monitoring program, primarily to reiterate the SAC’s availability to comment on changes in the program to incorporate the full suite of recovery objectives.
 - Recovery units – The concept of recovery units is important in the conservation biology of widely distributed species, such as the desert tortoise, and will likely be retained (after further review and evaluation) in recommendations by the SAC. “A recovery unit is a special unit of the listed entity that is geographically or otherwise identifiable and is essential to the recovery of the entire listed entity, i.e., recovery units are *individually necessary* to conserve genetic robustness, demographic robustness, important life history stages, or some other feature necessary for long-term sustainability of the *entire listed entity*. [E]stablishment of recovery units can be a useful recovery tool, especially for species occurring across wide ranges with multiple populations or varying ecological pressures in different parts of their range” (NMFS. 2006. Interim Endangered and Threatened Species Recovery Planning Guidance). For the desert tortoise, recovery units do not change the entity listed under the Endangered Species Act (i.e., the Mojave population), but they may be important for genetic robustness and may contain different suites of threats or management actions.
 - Disease – The SAC reviewed the current status of knowledge of disease in desert tortoises. Differing views hold that *Mycoplasma* is either endemic to desert tortoises or has been introduced, but conclusive evidence for either view is lacking. Information needed to make recommendations to prevent or minimize transmission of disease between tortoises includes:
 - When does transmission take place; what is the transmission rate?
 - Is there evidence for density-dependent transmission?
 - What is the average age of infection? Use to determine the force of infection. Longitudinal age/seroprevalence data need to be summarized.
 - Is gender related to transmission?
 - Are there seasonal differences in transmission?
 - How long is the infectious period?
 - How does stress affect disease expression, transmission, and the infectious period?
 - **Peter will draft a more refined list of these questions, and Kristin, Dick, and Earl will provide existing data to bear on them.**
 - Other projects – The SAC discussed the desire to hire a post-doctoral student to assist in compiling and analyzing existing data in an effort to increase the scientific foundation for

recovery recommendations. The post-doc would probably be based in Reno but would be guided by the entire SAC. Potential projects include:

- Developing a review paper on translocation and factors for consideration in translocation projects
 - Compiling information on threats to refine the heuristic threat model in the DTRPAC report
 - Documenting the process of and factors considered in developing recovery criteria
 - Synthesizing existing data on variation in desert tortoise reproduction
 - Synthesizing existing data on effects of grazing on desert tortoises
- The next meeting will be scheduled in February to allow time for USGS to pull together the habitat model and USGS/UNR scientists to conduct the spatial analysis of the 2001-2005 monitoring data. In the meantime, questions, discussion, and data relevant to tortoise disease, as well as development of the SAC post-doc, will be shared electronically.