



U.S. Fish and Wildlife Service
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Desert Tortoise Science Advisory Committee Meeting
Meeting Summary
April 19-20, 2012
Tucson, Arizona

Meeting Goals and Objectives

- Provide scientific review of range-wide monitoring program and current analyses
- Review and improve underlying models within the desert tortoise spatial decision support system
- Discuss SAC writing projects

Attendees

Peter Hudson, SAC-Penn State Univ.
Earl McCoy, SAC-Univ. South Florida
Katherine Ralls, SAC-Smithsonian
Michael Reed, SAC-Tufts University
Bob Steidl, SAC-Univ. Arizona
Steve Campbell, SAC post-doc-Univ.
Arizona
Erin Zylstra, Univ. Arizona

Roy Averill-Murray, DTRO
Linda Allison, DTRO
Cat Darst, DTRO
Kim Field, DTRO
Chris Mullen, DTRO
Philip Murphy – Redlands University
Nathan Strout – Redlands University

Meeting Summary

1. Range-wide monitoring program

Until this year, SAC consideration of the monitoring program has focused on optimizing annual density estimates. The program has now accumulated 8 years of full-coverage transect data, so opportunities for using the data have arrived as the early legacy of multi-agency involvement has been thinned through management personnel changeover. Linda Allison provided an overview of the history of the monitoring program, including the original evaluation of various monitoring alternatives and multi-agency leadership during that planning period. With several years of data now in hand, the group discussed how to best analyze, interpret, and present preliminary information on population trends. The group also discussed how valuable these data are for recovery, how to maximize the utility of the monitoring program, and how the monitoring program might be restructured to accommodate declining budgets without sacrificing the entire program. Overall, the SAC was exceptionally pleased with the status of the program and the opportunities that the resultant data provide to inform recovery. Developing centralized funding was once again an important recommendation to allow monitoring effort to be applied at spatially and temporally relevant scales and to facilitate logistical operation of the program.

Action Item: The SAC will draft a statement that reaffirms distance sampling as the best approach to extensive population monitoring for the Mojave desert tortoise, given issues such as the scale, detectability, and densities involved.



Action Item: Linda and the SAC will outline alternative sampling strategies and recommendations for monitoring at less than a full range-wide effort every year, while nonetheless detecting population trends within a management-relevant time period.

Action Item: Linda and the SAC will explore new opportunities to utilize data from the monitoring effort. Bob Steidl and Erin Zylstra will assist with exploring correlations of tortoise observations with landscape attributes to develop a density “surface”. Such a surface will inform land managers about currently realized areas of higher and lower tortoise density and can be compared to the USGS habitat potential map and risk maps produced by the spatial decision support system.

2. Spatial Decision Support System

The SAC was very pleased and impressed with how the SDSS has continued to develop. Specific feedback and recommendations are described below.

SDSS: the original purpose--RITs & 5-year action plans

Threats & recovery action ranking; monitoring metric prioritization

- Keep implementation reporting and large-scale threat tracking, but consider using range-wide monitoring data for most "effectiveness monitoring" (i.e., it is not feasible to conduct effectiveness monitoring for every type of recovery action). Think about how to incorporate cost for range-wide monitoring into 5-Year Action Plans.
- To determine more specific effectiveness monitoring needs, think about what we wish we had started measuring 20 years ago. Pool money to perform effectiveness monitoring as research. Scientists can use implementation data to site experiments/monitoring projects.

Sensitivity analysis

Aspatial/spatial sensitivity of threats & recovery action rankings

- Continue working on sensitivity analyses, focusing on both sensitivity of threats and recovery action rankings, as well as determining which weights the model outputs are most sensitive to.
- Look at sensitivity to removing nodes and compare. Continue with effort to characterize uncertainty in weights so as to be able generate error bars. Should use normal rather than uniform distributions for Monte Carlo analysis. Need to include cumulative threat effects (T-T weights).
- Report back to SAC via webinar after we have determined to which weights the model is most sensitive.

Habitat connectivity & population fragmentation

Modeling outputs and how to estimate effects of population fragmentation in SDSS

- Continue using least cost corridor and contiguous high-value habitat outputs for large-scale solar planning with BLM; consider language other than "corridor," given biological associations with this term .
- Think of population fragmentation in the SDSS as a landscape level process with a broad metric. Explore ideas for how to incorporate such a surface into SDSS calculations.

- Investigate how to fully capture cumulative impacts of multiple projects. Think about using a measure of fragmentation as a rule, not a weighted trade-off. Look at effects of both buffering TCAs to achieve critical size AND connecting them.
- SAC would be interested in learning more about our proposal for this as it develops as part of new CEC grant.

Model structure & demographics research

Current, what we hope for; what we're exploring to get there

- Explore alternatives to equal weighting of changes in lambda and changes in habitat potential in our delta (lambda – habitat potential) calculations.

Modeling the effects of threats on demographics

- There are virtually no data to quantitatively model demographic effects of individual threats. Nonetheless, Erin has developed models from data she could piece together from the literature on effects of paved roads on adult mortality, cattle grazing on nutritional compromise, cattle grazing on adult mortality, and raven predation on juvenile mortality. Comparing demographic effects among these models may allow model weights in the existing SDSS to be re-scaled in a future revision of the SDSS that is based on direct expected demographic effects rather than relative risks to populations.
- Consider juveniles in grazing competition; are they more vulnerable because of their reliance on forbes?

Spatially-explicit population modeling

- Potentially investigate response of model to pulses of recruitment in the population.

3. Writing Projects

- The SAC discussed writing a manuscript on considerations in developing recovery criteria.
- The DTRO is developing a manuscript on population connectivity, which will be circulated for review with the SAC.
- The group discussed the possibility of developing a manuscript on defining spatial scales for translocation that are consistent with genetic population structure.