Vulnerability Assessment Case Study: Yosemite Toad

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Location/Scale: Sierra Nevada, CA/Yosemite National Park

Background: In December 2002 the US Fish and Wildlife Service (FWS) published its decision on the petition to list the Yosemite toad as "Warranted but Precluded." Approximately 99% of the Yosemite toad's range occurs on public land, much of their range is in wilderness, and approximately 33% of its range occurs in Yosemite National Park. Despite this fact, estimates suggest that the Yosemite toad has disappeared from at least 50% of previously occupied sites and remaining populations are smaller and more fragmented on the landscape. What is causing the decline is not well understood, but climate change, disease, and livestock/packstock grazing are among the factors identified as possible threats. It is anticipated that FWS will make a new listing decision in FY 2014.

The NPS in Yosemite has developed a research framework in collaboration with USGS to improve our understanding of the habitat needs and threats to the Yosemite toad.

Scale/focus:

The initial steps are to: 1) identify the current distribution of Yosemite toads in Yosemite National Park, 2) determine what habitat characteristics influence Yosemite toad occupancy, 3) assess the level of threat from various stressors including climate change and packstock grazing, 4) identify populations that may be vulnerable to threats, and 5) identify which habitat patches and management strategies will be most effective for restoring and protecting the Yosemite toad in Yosemite National Park. This will be done through data synthesis (remote sensing data, past survey data) new surveys of suitable habitat, course and fine-scale habitat characterizations, and genetic research.

Objectives:

Determine the following. What is the species current distribution in Yosemite National Park? How do landscape features and stressors (recreational use and climate change) affect connectivity? What are the most important sites for conservation? At what scale (individual meadows, small basins, watersheds)? What are the most vulnerable populations to climate change and other threats? What are the most effective management strategies? What sites are appropriate for packstock grazing and at what levels?

Status:

The research framework has been developed; a predictive habitat occupancy model has been developed which included variables related to climate change and packstock use levels (peer-reviewed article in preparation); 47% of the suitable habitat in the park has been surveyed with greater level of survey efforts focused on high probability meadows and watersheds; data collection for a comparative study has been completed to assess threats from packstock grazing; and tissue samples have been collected for genetic analysis. A report compiling the results of these efforts will be completed in spring 2014.