

RMP Project Statement PINN-N-205
Initial Proposal: 1998
Updated: May 14, 1999

Pinnacles National Monument, Western Region
Park Priority:
Funding Request: \$22,000

1. Title: Inventory and Monitoring of Reptiles and Amphibians

Abstract:

Reptiles and amphibians are among the most poorly studied vertebrate groups in the Monument, yet we are charged with protecting at least five state or federally listed sensitive species. A species inventory will be conducted to establish baseline data on the status of our herp populations. A low-impact, multifaceted long-term monitoring program will be designed and implemented. Methods will include artificial cover boards, visual encounter surveys, stream surveys, and road driving. An employee/visitor education component will improve information gained from herp observation reports. Important habitat for each species will be identified and mapped. Data collected from this project will help us track population changes and identify potential causes of declines, which will allow us to respond in a timely manner to threats to our herp populations.

2. Service-wide Issue:

N02 Impacts on Threatened, Endangered, and Other Sensitive Animals
N04 Degradation of Park Resources Due to Exotic Animals
N20 Lack of Basic Data

3. Problem Statement:

Reptiles and amphibians are the most poorly studied vertebrate groups in the Monument. Current knowledge is based on cursory collecting trips by visiting herpetologists, and surveys conducted by independent researchers in the 1960's (Banta and Morafka, 1968.) While these sources provide a fairly thorough inventory of our herps, the presence of several species suspected of occurring in the monument has not been confirmed. Furthermore, the population status of several species appears to have changed considerably. California red-legged frogs, once abundant and widespread, now exist only in low numbers in a few locations. Western spadefoot toads and foothill yellow-legged frogs recorded here historically now appear to be extirpated from the Monument. Consequently, a thorough inventory is needed to update the population status of our herps.

Four reptiles and at least one amphibian found in the Monument are listed as sensitive species. Amphibians, due to their moist skin and complex life cycle, are especially sensitive to environmental change. Amphibians are declining worldwide, and in Central and Southern California a combination of habitat degradation, exotic predators, and other factors are responsible for severe amphibian declines. Our current knowledge of Monument herp population trends, environmental preferences, locations of critical habitat, and effects of exotic predators is incomplete. In order to protect our herp populations, long-term monitoring is required.

4. Description of the Recommended Project:

A survey of reptiles and amphibians will be conducted, focusing special attention on species suspected but not confirmed to live in the Monument, and species possibly extirpated within the Monument. Data on habitat/microhabitat preferences will be collected, and a map will be produced of general species distributions and locations of critical habitat.

Protocols for long-term monitoring of herp populations will be developed and implemented. A variety of sampling techniques will be used to match the varied life habits of the animals. Methods used will have minimal impact on the animals and their habitats. Data on relevant environmental factors will be gathered so that seasonal and long-term changes in habitat conditions and usage can be documented.

Employees will be encouraged and assisted in learning herp identification. Employee and visitor herp observations will be investigated and compiled to supplement inventory and monitoring data. Species with characteristics of relevance to resource management or interpretation issues will be identified. Guidelines will be developed to help management protect these animals.

Survey:

Two-striped garter snake: Riparian corridors will be surveyed in the summer during dawn/dusk hours.

Sagebrush lizard: Elevations over 3,000 feet will be surveyed in early summer for this species.

Western spadefoot toad: When local populations of this species outside the Monument are calling, appropriate habitat within the Monument will be surveyed for eggs/tadpoles, and call surveys will be conducted.

Foothill yellow-legged frog: General stream surveys will include appropriate habitat for this species.

Other species: Extra effort will be put toward surveying appropriate habitat and investigating reports of other species suspected but not confirmed to live in the Monument, including California newt, California tiger salamander, Western skink, desert spiny lizard, rubber boa, glossy snake, and yellow-bellied racer.

Long-term Monitoring:

Artificial Cover Boards: Several herp species commonly seek cover under objects. In order to monitor these species, boards will be laid out on the ground along transects in various habitats. To attain sufficient sample sizes, the number of boards laid out will depend on the number of individuals using the boards. Boards will be checked during seasons and weather conditions which maximize use by these species. Data collected will include species present, weather conditions, plant community, and nearby natural cover objects. A pilot study will be conducted using approximately 600 1foot X 1foot boards (redwood and plywood) laid out in 30 100m transects in 6 different habitats.

Visual Encounter Surveys: Herp species which are surface-active are readily seen by a walking observer. Several habitats will be surveyed by walking 1km transects and recording all herp species observed by sight from the transect line. Data on activity and surrounding habitat/microhabitat (including plant community, natural cover objects, shade, and slope) will be recorded. The number of transects will depend on the number necessary to obtain sufficient sample size.

Road Driving: Road driving detects herp species difficult to observe by other methods. It is most effective at night during rainy periods (amphibians) and just after sunset during hot periods (nocturnal snakes). Park roads will be driven and all herps observed will be recorded, along with their location, activity, weather, and type of adjacent habitat. Sampling will be carried out frequently at first in order to determine the optimum sampling regime for long-term monitoring.

General Stream Surveys: Streams serve as reproductive centers and/or primary habitat for several herp species. Stream surveying is an effective method of monitoring these species. Streams will be surveyed during daylight by walking, scanning ahead with binoculars, and looking nearby for adult reptiles and amphibians, as well as amphibian larvae and eggs. Data collected will include herps, fish, other notable species present, life stage, number encountered, stream condition and flow, water temperature, shade, and location. The first survey of the year will include the reservoir and all creek sections with appreciable running or standing water. Several subsequent surveys will be conducted, limited to areas of suitable habitat as determined by the first survey. Additional surveys will be conducted in summer during dawn/dusk hours for the two-striped garter snake in appropriate habitat.

Employee/Visitor Involvement:

Employee education: Seasonally appropriate voluntary training sessions will be held to improve employee herp identification skills.

Interpretation: A herp identification handout/photo album will be developed for use in visitor contact stations.

Wildlife observation reports: Employees and visitors will be encouraged to report their observations, and to make accurate identifications. These reports will supplement inventory and monitoring data. Possible reports of introduced species which may threaten herp populations (bullfrog, painted turtle, red-eared slider, exotic fish) will be promptly investigated and referred to the IPM coordinator.

5. Compliance:

This project is categorically excluded under section 516 Dm6 App7 (E)(2).

6. Related Projects:

This project will be carried out in conjunction with the following proposed projects:

- Removal of Exotic Fish Impacting T&E Species (PINN-N-005)
- Stream Surveys for Threatened Red-legged Frogs (PINN-N-206)
- Monitor Amphibian Malformations (PINN-N-211)

7. Funding Requirements:

First year:

Personnel:	GS-05 20pp/year @ \$1,000/pp	\$20,000
Equipment/Materials:		\$ 1,500
Travel/Training:		\$ 500
Total (first year):		\$22,000

Subsequent years:

Personnel:	GS-05 10pp/year @ \$1,000/pp	\$10,000
Equipment/Materials:		200
Total (subsequent years):		\$10,200

8. Deliverables:

This project will result in a more complete and current inventory of the reptile and amphibian species living in the monument. Environmental preferences will be identified, and a map of important habitat for each species will be produced to guide land use management decisions.

A multifaceted, low-impact monitoring program will be designed and implemented. Data collected from continuous long-term monitoring will help to track population changes and identify potential causes of declines, such as habitat degradation. This will allow us to respond in a timely manner to issues threatening our herp populations.

Materials for educating employees and visitors about herp identification will be developed. This will lead to more numerous and reliable herp observation reports, which will supplement monitoring data. These reports, along with regular monitoring efforts, will help us detect the introduction of exotic species which may threaten herps.

9. Scientific Names:

COMMON NAME	SCIENTIFIC NAME
Western spadefoot toad	<i>Scaphiopus hammondi</i>
foothill yellow-legged frog	<i>Rana boylei</i>
California red-legged frog	<i>Rana aurora draytonii</i>
California tiger salamander	<i>Ambystoma californiense</i>
California newt	<i>Taricha torosa</i>
sagebrush lizard	<i>Sceloporus graciosus</i>
desert spiny lizard	<i>Sceloporus magister</i>
Western skink	<i>Eumeces skiltonianus</i>
rubber boa	<i>Charina bottae</i>
two-striped garter snake	<i>Thamnophis hammondi</i>
glossy snake	<i>Arizona elegans</i>
yellow-bellied racer	<i>Coluber constrictor</i>

10. References:

Morafka, D.J., and B.H. Banta. 1976. Ecological relationships of the recent herpetofauna of Pinnacles National Monument, Monterey and San Benito Counties, California. The Wasmann Journal of Biology 34:304-324.