

## Report for FY13 I&M Funding:

### Evaluation of management actions to assess habitat changes that affect target resources and imperiled species on Conboy Lake and Toppenish National Wildlife Refuges.

#### Summary

This project involved 1) Oregon spotted frog (*Rana pretiosa*) egg mass surveys at Conboy Lake NWR, 2) western gray squirrel (*Sciurus griseus*) surveys at Conboy Lake NWR, 3) water temperature loggers at Conboy Lake NWR, 4) inventory and assessment of moist soil plants on Conboy Lake and Toppenish NWRs, and 5) amphibian and reptile inventories at Toppenish NWR. All components within the funding proposal were completed and funding allocations were exhausted. Information gathered through the funded actions has improved our understanding of refuge habitats and resources and contributed to management decisions.

#### Funded Actions

##### *Oregon spotted frog egg mass surveys at Conboy Lake NWR*

Egg mass surveys for Oregon spotted frogs (*Rana pretiosa*) have been conducted at Conboy Lake NWR annually since 1998. We requested FY 13 funding to cover egg mass surveys in 2014 due to a concern that Refuge staffing would be insufficient to complete the surveys. A contract was awarded to an outside contractor to conduct Oregon spotted frog egg mass surveys in the spring of 2014. The contractor fulfilled his contract and completed egg mass surveys with assistance from Refuge staff. The total egg mass count for 2014 was 1,244, which is the second lowest count since 2009. Some interesting changes in egg mass numbers in specific wetland units were noted, but the survey itself is most useful in maintaining data continuity and providing trend information. Data is backed up on an external drive and has been shared with USFWS Ecological Services for storage. A report covering egg mass surveys from 2013 through 2015 is attached. The egg mass survey report and GIS layers of egg mass data from all years will be uploaded to ServCat.

##### *Western gray squirrel surveys at Conboy Lake NWR*

Western gray squirrels (*Sciurus griseus*) have been observed in and near portions of Conboy Lake NWR where Oregon white oak occurs, but only as road mortality. No live squirrels had ever been observed prior to this study. In cooperation with biologists from Hancock Forest Management, refuge staff conducted walking surveys of all oak-dominated forests on the refuge in search of squirrel nests. We also placed hair snare traps in grids consisting of 64 traps within a 40-acre area (Fig. 1). These grids were located in areas of the refuge with a high probability of squirrel occurrence based on the presence of Oregon white oak. We set the traps for a 10-day period and checked the traps daily during the sampling period. Sampling occurred between mid-August and the end of September to coincide with the most

active season for western gray squirrels. Although hair snare traps failed to pick up any western gray squirrel hair at any site, refuge staff observed a western gray squirrel at the Schoolhouse site and remains positively identified as a western gray squirrel at the Kelley site. The traps regularly captured California ground squirrel (*Otospermophilus beecheyi*) hair and a variety of invertebrates on the sticky traps. Failure of the hair snare traps to capture western gray squirrels is potentially due to high natural acorn production, which resulted in squirrels not being attracted to the trap bait. We also had to pick up some grids early due to sequestration furlough of refuge staff and closure of the refuge.

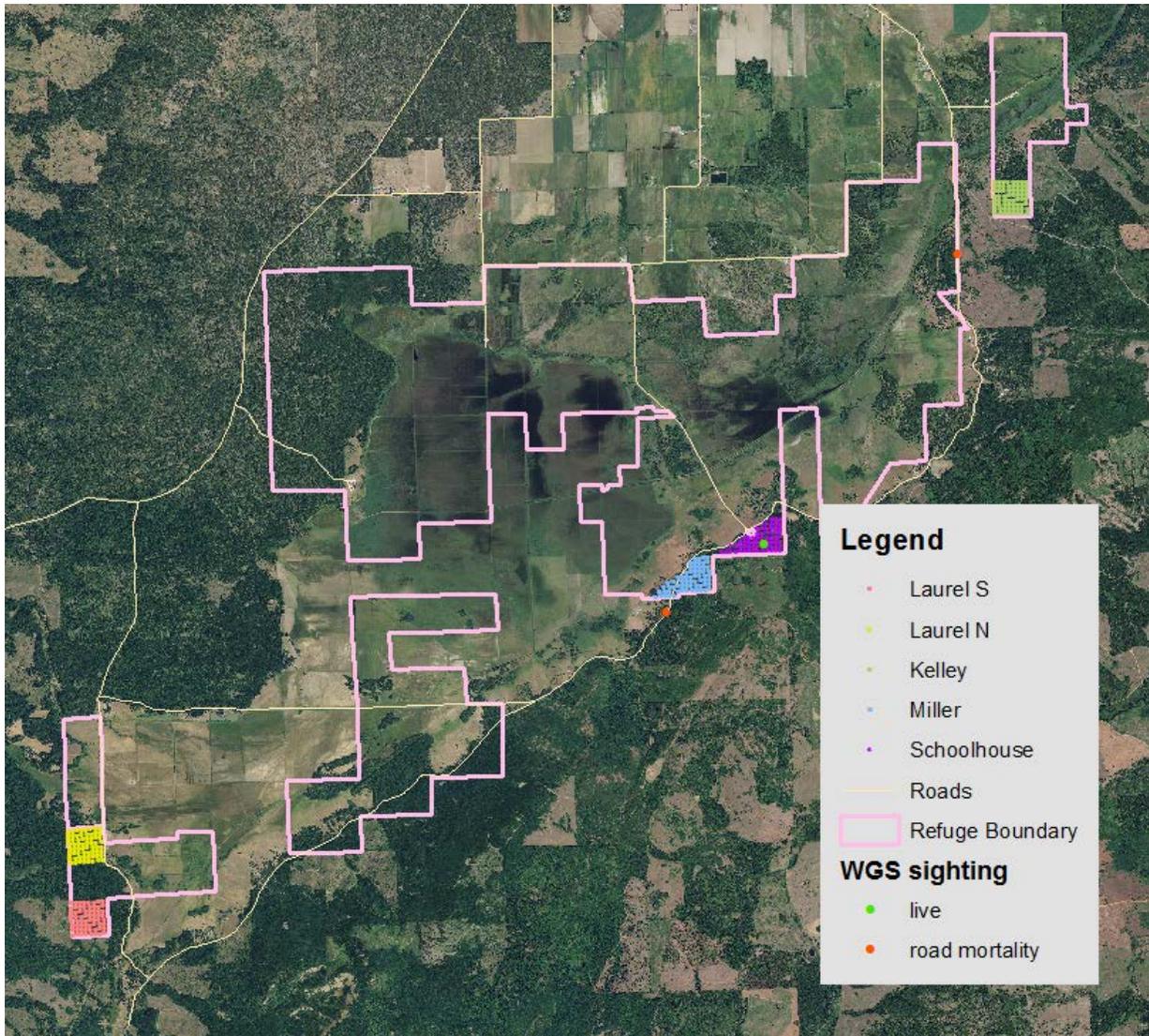


Figure 1. Map showing squirrel trap grids and observations of western gray squirrel.

### *Water temperature loggers at Conboy Lake NWR*

Water temperature, in conjunction with a study on use of ditches by Oregon spotted frogs (*Rana pretiosa*) and American bullfrogs (*Lithobates catesbeianus*), helped us determine an appropriate strategy for decommissioning Cold Springs Ditch. Temperature loggers were purchased and deployed in 2013. Initially, loggers were placed throughout the entire length of Cold Springs Ditch (Fig. 2). Some

were lost due to beaver (*Castor canadensis*) activity, but were replaced with new loggers. Initial results were analyzed through the end of calendar year 2013 (Fig. 3). Water temperature loggers are still in place and are downloaded regularly. Data is backed up locally and will be shared with the Water Resources Branch.

Temperature data from the temperature loggers, along with water management considerations, allowed us to identify the most appropriate place to decommission Cold Springs Ditch. North of CSD5, water temperatures allow bullfrogs to be more active and potentially breed in the ditch (Fig. 3). South of CSD5, the water is typically too cold to support bullfrog breeding. Decommissioning north of this point also allowed us to continue to use Cold Springs Ditch to manage water in the adjacent wetland while preventing bullfrog tadpoles from moving into the ditch from other wetlands to the north.

Continued monitoring of these dataloggers will help us understand the effects of partial ditch decommissioning on general water temperatures, as well as the effects of climate change and changes in precipitation on water temperatures in springs. With the partial ditch decommissioning, the temperature loggers removed from the ditch will be repurposed to monitor temperatures at other key sites on the refuge.

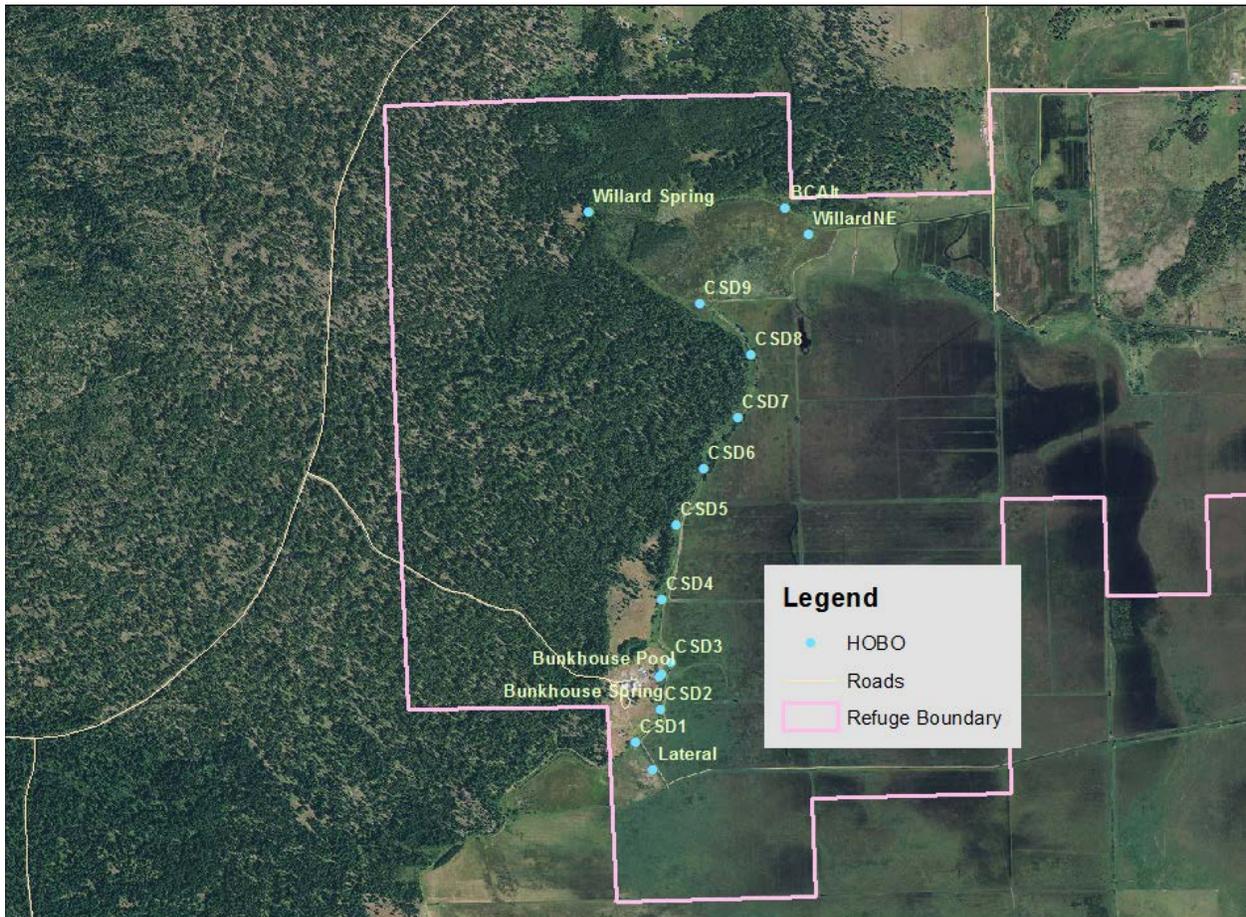


Figure 2. Map showing initial locations of HOBO temperature loggers at Conboy Lake NWR.

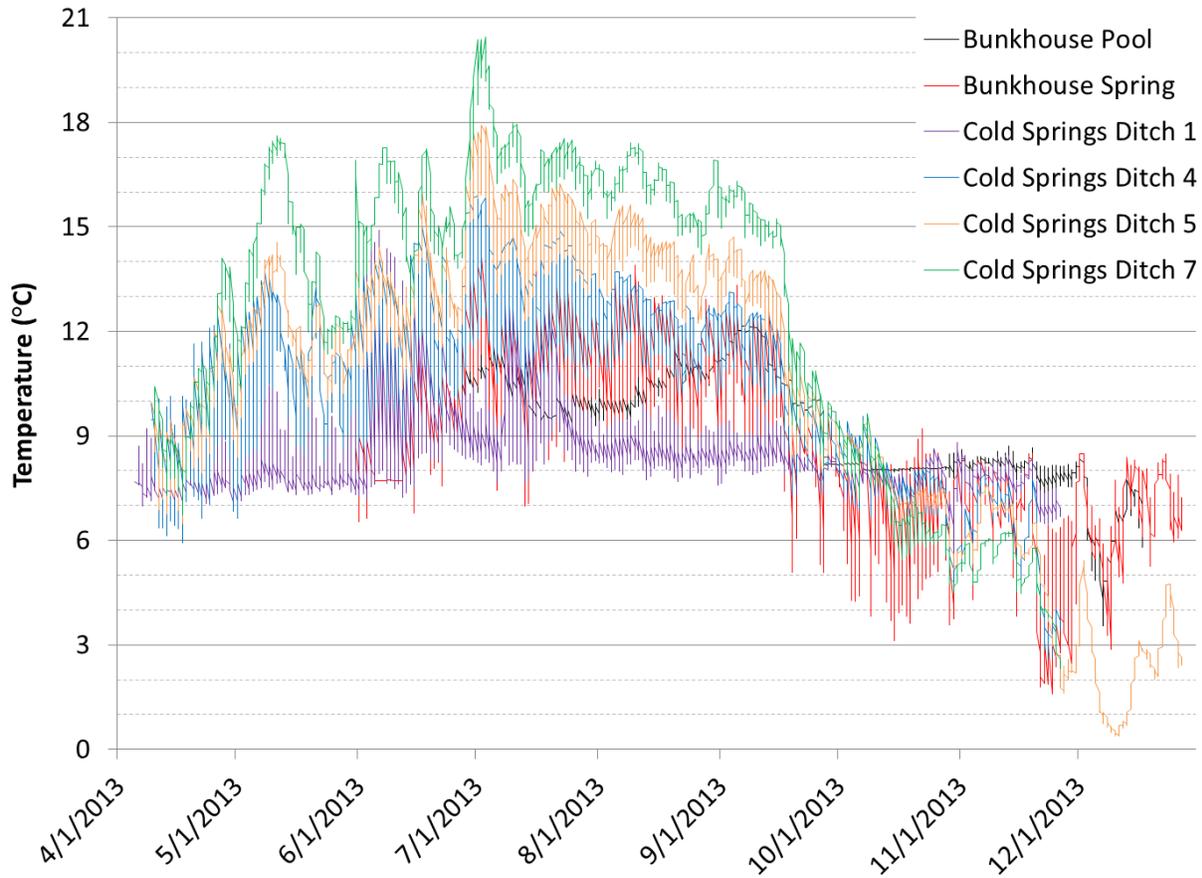


Figure 3. Water temperatures at various points in Cold Springs Ditch from April-December 2013.

### *Inventory and assessment of moist soil plants on Conboy Lake and Toppenish NWRs*

A protocol was developed with I&M staff and assessments were carried out in 2013. A final report on moist soil plants is attached.

### *Amphibian and reptile inventories at Toppenish NWR*

Refuge staff conducted extensive amphibian and reptile inventories at Toppenish NWR in the spring and summer of 2013. These inventories were conducted using upland transects, cover boards, turtle and minnow traps, dip netting in wetlands, and direct observations. A total of approximately 325 single person hours were spent on this project, including 224 hours in the field conducting inventories.

Two species of amphibians were located on the refuge, the non-native invasive American bullfrog (*Lithobates catesbeianus*) and the Pacific chorus frog (*Pseudacris regilla*). Reptiles located during inventories consisted of the common garter snake (*Thamnophis sirtalis*), western terrestrial garter snake (*Thamnophis elegans*), gopher snake (*Pituophis catenifer*), yellow-bellied racer (*Coluber constrictor*),

northern Pacific rattlesnake (*Crotalus oreganus*), and the western painted turtle (*Chrysemys picta*) (Fig. 4).

Wetland inventories consisted of minnow traps, dip netting, turtle trapping, and visual observations. Minnow traps were placed in wetland units throughout the refuge. These traps aided in the capture of bullfrog and chorus frog tadpoles, juvenile painted turtles, and various fish and insects. Dip netting in wetland units yielded one painted turtle and many bullfrog and chorus frog tadpoles. Turtle traps were set in wetland units 5c and 6b. Painted turtles, bullfrog and chorus frog tadpoles, and carp were collected in these traps. Visual observations consisted of walking the edge of the wetland units and searching grass and ponds for reptiles and amphibians. Visual observations yielded garter snakes, racers, bullfrogs, chorus frogs, and painted turtles. Visual observations were most effective for viewing a variety of different species, but less effective for capturing specimens.

Upland inventories consisted of both walking transects and cover boards. Upland walking inventories were conducted by walking the southwestern upland side of the refuge and around buildings. While mostly a single person effort, searches occasionally consisted of four people. We searched the area by turning over rocks and checking in thick vegetation and holes. During these searches we located racers and garter snakes. The snake boards consisted of a large square of plywood set out at the intersection of units 6 and 7, and a piece of tin roofing was set out at the bunkhouse area. Under the cover boards we found racers, garter snakes, and one rattlesnake. We recorded observations in ArcPad using a Trimble Nomad.

Three evening/night inventories were conducted during this season as well. These inventories consisted of listening for calls and searching upland and wetland units with flash lights in a similar method to those used during the day. Night surveys were most successful in hearing bullfrog and chorus frog vocalizations.

This is the first survey that attempted to systematically document the amphibian and reptile species that exist on Toppenish National Wildlife Refuge. Up until this survey, the assumption was made that many species did exist there based on their habitats and general range maps; however, no data to back up this assumption had been collected. We were not able to determine population size or relative abundance of these species on the refuge at this time, but the confirmed presence of these species is important for refuge biological records and management of reptiles and amphibians. We hope to have the opportunity in the future to develop a survey that will allow us to determine population size of key species on Toppenish NWR, such as western painted turtles or other potential species that were not found.

While the majority of the observed species were known or expected to exist at Toppenish NWR, northern Pacific rattlesnakes and western painted turtles had not been previously confirmed. We found painted turtles across the refuge in Toppenish Creek, the Gamble Ditch, and units 2a and 6b. The rattlesnake was likely only one individual found repeatedly near the bunkhouse. The existence of these species, particularly western painted turtles, will provide guidance for future management of wetlands to ensure their persistence. Other potential species include common side-blotched lizards (*Uta*

*stansburiana*), sage brush lizards (*Sceloporus graciosus*), northern alligator lizards (*Elgaria coerulea*), western fence lizards (*Sceloporus occidentalis*), pygmy short-horned lizards (*Phrynosoma douglassii*), rubber boas (*Charina bottae*), night snakes (*Hypsiglena torquata*), Great Basin spadefoot toads (*Spea intermontana*), western toads (*Anaxyrus boreas*), and long-toed salamanders (*Ambystoma macrodactylum*). Further surveys in the future may detect one or more of these species.

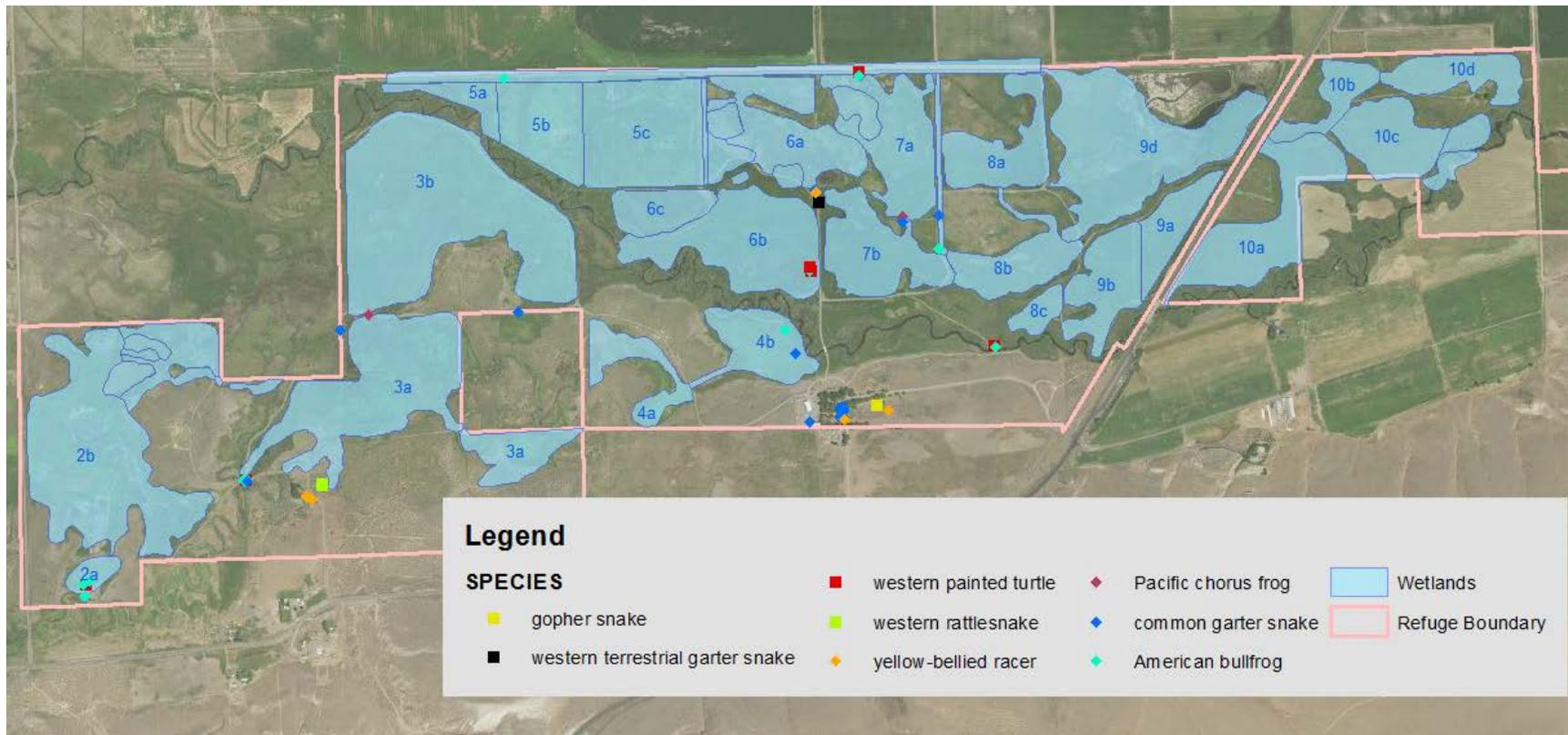


Figure 4. Map of observations made during amphibian and reptile surveys at Toppenish National Wildlife Refuge.