

South Cascade Spotted Frog Survey Progress Report
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Background:

The western form of the spotted frog was recently determined to be a distinct species, the Oregon spotted frog (*Rana pretiosa*, Green 1996). The historic range of the frog was thought to be from southwestern British Columbia south to northern California. The western limits of its historic range in the U.S. are thought to be the Puget Trough in Western Washington (McAllister et al. 1993), the eastern Willamette Valley and western Cascades between 3,200 ft (975 m) and approximately 6,000 ft (1,597 m) in Oregon (Hayes 1994, Hayes 1998). Oregon Spotted frog populations have become isolated through habitat fragmentation and are believed to be extirpated from 79% to 90% of their historic range (Hayes et. al 1997; McAllister and Leonard 1997). Of 31 total known populations, 24 are from Oregon and the species is listed as a state “critical” species. A total of four to six populations have been located in the Klamath Basin (Hayes 1994, Hayes 1998) and there is one known from just east of the Rogue River Basin (D. Clayton pers obs.).

Oregon spotted frogs are almost entirely aquatic, leaving water only occasionally and for short duration. Wetlands associated with lakes, ponds, and slow-moving streams can provide suitable habitat. However, these aquatic environments must include a shallow emergent wetland component to be capable of supporting an Oregon spotted frog population. Historically, this critical element was found in the floodplains of many larger water bodies. Various emergent-wetland and floating aquatic plants are common in Oregon spotted frog habitat. Adult female and juvenile frogs, in particular, spend summers in relatively warm water of shallow emergent wetlands. Historically, the shallow floodplain pools that Oregon spotted frogs inhabited were drained, diked and filled to accommodate human needs. In the Puget Sound lowlands, existing wetlands represent a small proportion of what was present in pre-settlement times. In addition, exotic plants like reed canarygrass (*Phalaris arundinacea*) have changed the character of many wetlands and reduced their value as habitat for Oregon spotted frogs.

Project Area:

The project area is the Cascade Range portion of the Rogue River-Siskiyou National Forest and Medford District of the BLM. Little is known of the distribution of the Oregon spotted frog (*Rana pretiosa*,) in the southern Cascade Mountains. There are few sites known for the area, and they are primarily on the eastside of the Cascades in Klamath County or in Crater Lake National Park (Hayes 1994). There is one site known for the species just south of the Rogue River-Siskiyou National Forest on BLM lands and there is one historical site on the Rogue River-Siskiyou National Forest, however this may represent a mistaken identification of a Cascades frog (*Rana cascadae*) as a spotted

frog (Hayes pers. comm. 2004). There have been no systematic surveys for this species on the southern Cascade portion of the Rogue River-Siskiyou National Forest and this area may represent the southern extent of the species. Our initial surveys attempted to determine the extent of the range of the species in the south Cascades, measure habitat variables in order to determine habitat associations, initiate monitoring of any newly discovered sites on the Forest for population trends, and begin to develop mitigation measures for any potential impacts to the species.

Methods

Approximately forty sites were stratified by administrative unit and ten sites from each unit were randomly selected using an Excel random number generator. Six of the Forest Service randomly selected sites were sampled and five of the BLM randomly selected sites were sampled. Seven other sites were opportunistically sampled. Eighteen sites (7 BLM, 11 FS) were sampled for a total of 40 person-hours of Visual Encounter Surveys (VES) (Olson et al. 2003, Heyer et al.). All sites were sampled for a minimum of two person hours or until the entire site had been sampled. A minimum of two people sampled each site and up to six sampled one site. Stream sites were generally sampled by up to three persons, one on each side of the stream and one in the stream itself. For pond or lake sites, one person would survey onshore, one at the lake or pond edge and one in the water, usually within one meter of the shore. Dip and kick nets and hand captures were used to capture all animals observed. All animals were identified to species using either Corkran and Thoms (1996) or Leonard et al. (1993). Biotic and abiotic variables were recorded and included habitat length and width of habitat surveyed, dominant vegetation, substrate, air and water temperature, water depth at capture, as well as individual estimated age and snout-vent and total length. All sites forms are included in the Appendix.

Results

No spotted frogs were found at the selected sites; however two species of salamander, two species of frog, and one species of toad were found. Spotted frogs were confirmed at the BLM Parsnip Lake site.

Forest Service Site Summaries

Willow Prairie: T36S, R03E, section 30

This site is a relatively complex site with emergent vegetation, varied water depths with muddy substrates, and a system of many small stream inlets, and a beaver dam with high potential for ranid frogs. However, no ranid frogs were found here. A 1.51 person-hour search found several larval salamanders (*Ambystoma gracile*).

Black Bear Swamp: T34E, R04S, section 2

This site was comprised of a swampy meadow complex with peat bog areas fed by cold water streams. A 50 minute search found six cascade frogs (*Rana cascadae*) (RACA), four of which were subadults.

West Lake: T29S, R05E, section 4

This site's dimension is 300 ft X 150 ft but by the survey date it had completely dried up. The site is a snow melt pool that holds water through the summer in good snow years. Substrate is solid clay bottom - you don't sink into it when you walk across it under water. There was no emergent vegetation. The pond is surrounded by Lodgepole Pine and the habitat was extremely dry. The site is heavily used for breeding by amphibians (20-30 tadpoles per square yd in 2003). Hundreds of individuals per square meter of both Pacific treefrog (*Pseudacris regilla*) and western toad (*Bufo boreas*) were observed. No ranid frogs were observed

Beaver Dam Creek: T37S, R04E, section 4

This site has little potential for spotted frog. It has beaver activity but little open water and was dominated by willow and small streams throughout the site. No amphibians were found at the site

No Name Pond: T34S, R05E, section 3

This site was a small (30m x 20m) pond with a mud bottom and some sedge and rush emergent vegetation primarily on the north side of the pond. Numerous RACA tadpoles were observed as were several metamorphs, one tadpole was captured with a total length a 65mm. 3 adult RACA were also captured.

Grass Lake: T33S, R05E, section 34

This site was the best potential spotted frog site surveyed in 2005. Grass Lake had one spotted frog sighting in the 1970s but the sighting could never be confirmed due to a specimen that could not be found. This is an approximately 20 acre lake with profuse emergent grass and sedge vegetation and a high potential for ranid frogs. However, there is a large population of introduced brook trout in the lake. RACA were found on the south, west, and north sides of the lake in large areas of emergent vegetation. Eight RACA tadpoles, 3 metamorphs, 5 sub adults and five adults were found during a 6 person-hour search. Many thousands of western toads (*Bufo boreas*) (BUBO) were also observed at the lake, in some areas it was estimated that up to as many as 50 BUBO metamorphs per square meter were observed.

Middle Lake: T33S, R05E, section 34

This site was also good potential spotted frog habitat. This is an approximately 25 acre lake with profuse emergent grass and sedge vegetation along the south side of the lake and a high potential for ranid frogs. However, there is also introduced brook trout in the lake. RACA were found on the south of the lake in areas of emergent vegetation. One RACA tadpole, 2 metamorphs, and three adults were found during a 1 person-hour search. Many thousands of western toads (*Bufo boreas*) (BUBO) were also observed at

the lake, in some areas it was estimated that up to as many as 50 BUBO metamorphs per square meter were observed.

Frog Lake: T33S R05E, section 32

This site was an approximately 100 by 50 meter pond with some emergent grasses and sedges on the east and north side of the pond. Depth to one meter with mud and some gravel substrate. RACA and PSRE tadpoles observed and captured at the site during a 20 minute survey.

Whiskey Springs: T35S, R03E, section 25

This site is a beaver pond fed by cold (8-11 C) water streams approximately 5-20 meters wide by 200 meter long. PSRE tadpoles were captured as well as one larval salamander ID'D to be a long-toed salamander (*Ambystoma macrodactylum*). This is an unlikely site for spotted frog due to the water temperatures.

S. Fork Little Butte: T337S, R04E, section 23

This site is a slow moving, cold (10 C) stream reach approximately 1-10 meter wide by 150 meter long with mud bottom and sedge/grass edge water habitats. No amphibians were found. This is an unlikely site for spotted frog due to the water temperatures.

Hershberger Mdws: T29S, R03E, section 22

This is a high elevation, relatively high gradient stream reach with a water temperature of 10-12 C. One subadult RACA was captured in the stream and three adult RACA were captured at a small pond near the road during a 1 person-hour survey.

BLM Site Summaries

Parsnip Lake T40S, R03E, section 10

The only known site on Medford BLM lands in the Cascade National Monument was sampled for a total of 90 minutes and spotted frogs were confirmed at the site; two tadpoles were captured. The site sampled was a small (20-30 meter) pond adjacent to the road with profuse emergent willow and grass vegetation throughout the pond. Water depth was to one meter and temperature 20 degrees C. The tadpoles were captured with nets while observed basking in small opening in the emergent vegetation.

Lindsay Ponds T38S, R04E, section 19

This pond complex was dry except for one pond approximately 305 by 110 meters wide. The pond was less than twenty CM in depth, 27 C in temperature, and was dominated by emergent rushes, sedges and grass. A 2 person-hour survey detected several hundred PSRE tadpoles and metamorphs. There was evidence of both off road vehicle use and cattle use in and adjacent to the pond. This is an unlikely site for spotted frogs due to a lack of depth and the ponds ephemeral nature

Dead Indian Mdws: T38S, R03E, section 15

This site was a 1-3 meter wide by 110 meter long stream reach with highly dissected banks and evidence of heavy cattle use. No amphibians were found at this site during a 52 minute survey. Subsequent to our survey we determined that we had been given the wrong UTM's for the site and will visit the correct site.

Pinehurst Ponds: T40S, R04E, section 8

This pond complex was dry when visited with only a small amount of surface water. It is unlikely that this is suitable for spotted frogs due the ephemeral nature of the site.

Little Hyatt Lake: T39S, R03E, section 20

This site is a highly complex system of small braided streams that feed into the north end of the lake with profuse sedge and grass edge water habitat as well as bull rush thickets approximately 200 meter long. This site has a water depth range from a few centimeters to at least one meter deep and water temperatures varied from 15-18 C. There is an unconfirmed historical record from this site and it should be surveyed for spotted frogs again in 2006.

Hoxie Creek: T38S, R04E, section 20

This site consisted of a 110 meter stream reach overgrown with willow and little flowing water. No amphibians were found. This site is not likely suitable spotted frog habitat.

Discussion

No spotted frogs were found at the selected sites, which could be partially due to the lack of good pre-existing habitat data on sites selected for survey and a lack of knowledge of what might constitute suitable habitat for spotted frogs in the Rogue Basin.

Consequently, many sites that lacked what is considered to be good habitat for spotted frogs (warm perennial water, abundant emergent vegetation, soft muddy substrates, etc.), were sampled without success for spotted frogs and other ranid frogs. However, surveyors also did not detect spotted frogs at other sites that did have what may be considered high potential habitat. This could be due to the cryptic nature of the species and or surveyor inexperience. However, surveyors were able to be quite successful capturing tadpoles and metamorphosed ranids as well as other frog and toad species and the field characteristics of ranid frog tadpoles should have enabled the surveyors to distinguish spotted frogs if they were found at a site. Due to its cryptic nature, detectability with this species may be a confounding factor and sites should not be considered unoccupied by spotted frogs with only one year of survey. It could take more than one year to be able to reliably consider a site sampled sufficiently to consider it not likely occupied by spotted frogs. However, the survey methods used seemed to be sufficient to detect at least the primary species that occur at a given site. A careful review of all methods available for this type of aquatic amphibian survey may reveal that a combination of survey methods could increase the chances of detecting spotted frogs.

Conclusions and Recommendations

Only a small portion of what might be considered potential habitat for spotted frogs on the Rogue Basin was sampled in 2005, surveys should continue in the Basin to determine if the species does in fact occur here. However, better screening of potential sites for survey need to be conducted prior to field work in order to maximize surveys effort. In addition to local knowledge, GIS-based products such as the National Wetlands Inventory might be of assistance in determining what sites might contain at least minimal habitat characteristics for spotted frog.

Egg mass surveys are important for monitoring known sites but given the time egg masses are visible and their ephemeral nature it may not be the best survey method to locate new sites. While many surveyors east of the Cascades typically conduct egg mass surveys for spotted frogs at known sites, for inventory work it may be better to survey later in the season and concentrate on tadpoles, metamorphs, and adult ranid frogs in order to maximize the amount of time and the chances for finding more detectable life stages in order to locate new sites.

All sites were planned for surveys in 2005 were not visited due to time and personnel constraints. The remainder of sites will be visited in 2006 as will those sites deemed to warrant another year's survey effort. Subsequent to the 2005 surveys, two historic spotted frog records were found in a book compiled for the Forest by Dr. Stephen P. Cross, professor emeritus of Southern Oregon University. Of the two records, the Whiskey Creek site had been visited previously but the location Dr. Cross gave in the book as having spotted frogs was significantly different from the site that had been surveyed by the Forest. The other was a sighting from a small pond in the Seven Lakes Basin, approximately 1 mile from Grass Lake. This historic location was not known at the time the surveyors were surveying the nearby lakes. Both of these sites should be visited in 2006 to determine what species of ranid frog are there.

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Figure 1: Willow Prairie



Figure 2: Grass Lake



Figure 3: *Rana cascadae*



Figure 4: Parsnip Lake



Figure 5: *Rana cascadae*



Figure 6: *Bufo boreas* toadlets

