

RANID FROG AND WESTERN TOAD MONITORING ON THE MT. HOOD NATIONAL FOREST – 1986 TO 2007

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Background

This brief report was prepared in order to answer questions received from the U. S. Geological Survey Forest and Rangeland Ecosystem Science Center (FRESC). Amphibian data gathered between 1986 and the present have occasionally been requested previously by FRESC. A more thorough gleaning of data on four anuran species was required, including negative data and reports from other credible volunteers.

The questions addressed here are: How many sites have been surveyed each year for pond breeding anurans, specifically western toad (*Bufo boreas*) and Cascades frog (*Rana cascadae*), but also including Oregon spotted frog (*Rana pretiosa*) and northern red-legged frog (*Rana aurora*)? For each year, how many sites had breeding detected, presence detected but no breeding, and no presence detected? These four species are of interest because of possible declines in their breeding populations. The western toad's legal status is Sensitive – Vulnerable with Oregon Department of Fish and Wildlife (ODFW). The Cascades frog has the same ODFW designation and is a Species of Concern for U. S. Fish and Wildlife Service (USFWS). The Oregon spotted frog is a Sensitive – Critical species with ODFW, a Sensitive species with the U. S. Forest Service, and is a Candidate for federal listing with USFWS. The northern red-legged frog is designated Sensitive – Undetermined status with ODFW and is a Species of Concern with USFWS.

Study Area and Methods

The Mt. Hood National Forest (MHNF) is in northwestern Oregon, spanning the Cascade Mountains from the Columbia River Gorge National Scenic Area (CRGNSA) at the north to the Willamette National Forest to the south. All of the sites included in this report are on the MHNF, except for a few sites whose jurisdiction was transferred to the CRGNSA when it was established. The sites are scattered across much of the MHNF, but not including the south end (due to its distance from the Portland area where most of the volunteers live).

Wetland Wildlife Watch (WWW) is an ongoing partnership between the MHNF and the non-profit Northwest Ecological Research Institute (NERI). In this project, volunteers gather data on wildlife occurrence and breeding at a variety of wetland and other sites on the MHNF. As an independent contractor and volunteer for NERI, I coordinate the WWW project. This work includes: training other volunteers and providing them with observation forms and site maps; leading field trips; organizing and summarizing data gathered by the volunteers; and monitoring several sites, particularly those with interesting amphibian populations.

Between 1987 and the present, reliable observations of amphibians have been recorded by between one and four volunteers, including myself and other individuals who have received at least some training by me in amphibian identification. WWW began in 1987 but my amphibian observations from WWW sites in 1986 are also included in this report. The site list and priority focus for WWW changes every few years, dependent upon requests from MHNf district wildlife biologists and interest from the volunteers (or lack of interest in some sites that do not seem to have plentiful wildlife). An informal list of sites to be included in WWW is distributed to volunteers at the beginning of each year.

No consistent survey methods are used in WWW. For amphibians, volunteers are requested to record opportunistic observations at the sites, and if they are interested to also walk around the perimeter of ponds to look for larvae and adults. I conduct a basic pond survey (Thoms et al. 1997) at sites, frequently assisted by other volunteers.

Results

Data for four species are included in this report: western toad (BUBO), Cascades frog (RACAS), Oregon spotted frog (RAPR), and northern red-legged frog (RAAU). Only WWW sites with suitable breeding habitat for these species are included in the tables and calculations. The only other ranid frog detected at any of the sites is the non-native American bullfrog (*Rana catesbeiana*). It has been found at two sites. It breeds in larger ponds at Sandy River Delta (now in the CRGNSA). Adult males have been heard calling from a privately owned part of Rock Creek Reservoir on the eastern edge of the MHNf.

Table 1 lists 82 WWW sites that appear to have habitat suitable for breeding by one or more of the four amphibians and that have been visited at least once by WWW volunteers. While several sites include a couple of ponds lumped together, a few are split into two separate sites for this report. I decided that two different circumstances merited this. First, two species may use overlapping parts of the same site but breed at different seasons, so that a survey in one season may not be adequate to detect breeding by the other. So I split the Bull Run Upper Reservoir into A (RAAU breed there in February or March) and B (BUBO breed there in June or even July). Second, two species may use different parts of the same site but we only monitor one part in some years. At Fryingpan Lake the east string of tiny meadows where RACAS breed eluded my notice for many years, while at Dry Meadow we ignored two ponds for many years because we only surveyed the north end in order to avoid harassment to other nesting wildlife. So I split out Fryingpan Lake East, and split Dry Meadow into North and South.

For each year, each site is marked as surveyed (S) in Table 1 if it was surveyed by me or another credible volunteer during the appropriate season for detecting breeding at that site by one or more of the four amphibian species. If the site was only visited before breeding was most likely, or after metamorphs might have been able to immigrate from another site, or if the breeding habitat at the site was only partially surveyed, it is shown as having been visited (V) rather than surveyed. Ignoring the difficulties inherent in defining "a site," between 9 and 34 sites have been visited or surveyed for amphibians as part of the WWW project each year so far.

Tables 2, 3, 4, and 5 show detection and breeding likelihood each year for the four species. For each year at each site, breeding is shown as confirmed (Y) if pairs in amplexus, eggs, larvae, and/or metamorphs were observed. If only metamorphs were observed, and not until late in the season when it is possible they could have immigrated from a nearby site, breeding is shown as probable (Y?). A confirmation that no breeding occurred (N) is shown only if the site was surveyed during the appropriate seasons with no detections of the species. If there were no observations of the species but the site may have been surveyed too early, too late, or incompletely, breeding is considered unlikely (N?). If only adults or juveniles at least one year old were seen, the site is marked as detecting adults but not breeding (A). A few site / years were left blank if breeding by that species usually occurs at the site but it was not visited except too early or much too late to collect meaningful data on breeding. Sites where the species has been observed at least once are highlighted.

Table 6 summarizes the data from Tables 2 through 5, using only the years 1987 through 2007. For each species, the number and percentage of sites where that species has been observed at least once that were surveyed or at least visited are shown for each year, and average numbers and percentages of sites per year are given. The number and percentage of known or likely breeding sites visited per year are then shown, along with averages. The number and percentage of sites where only adults were observed each year, and the average number and percentage of these sites, are included also.

WWW volunteers have documented BUBO occurrence at 19 (23%) of the 82 sites on the MHNH that have potential anuran breeding habitat (see Tables 2 and 6). Breeding has been confirmed at 7 of the sites (37% of BUBO sites, 9% of all these WWW sites) and is likely at 2 others. In several years at Jackpot Meadow, the designation “N, L” (breeding unlikely, but larvae observed) indicates that although a few larvae were seen at the site, I felt it more likely that they swam and/or were washed downstream from the actual breeding site at Dry Meadow. However in 2006, several hundred BUBO larvae were seen at Jackpot Meadow and were considerably younger than those at Dry Meadow on the same date, so I noted probable breeding at the site that year. The Cache Meadow site is a large complex of ponds that I have not yet fully explored. Breeding probably occurs at one or more of the ponds, but so far only a few metamorphs and adults have been found. Between 1987 and 2007, BUBO breeding has been confirmed at an average of 3.6 sites, 48% of the BUBO sites that were surveyed each year, and 69% of their known breeding sites that were surveyed each year. Breeding by BUBO was confirmed or likely at an average of 3.9 sites, 76% of the known and likely breeding sites that were surveyed or visited each year. Only adults were observed at an average of 1.2 sites, 16% of the BUBO sites that were surveyed each year.

RACAS has been observed at 53 (65%) of the WWW sites (see Tables 3 and 6). Breeding has been detected at 29 sites (55% of the RACAS sites, and 35% of all the sites). The designation N, L at Fryingpan Lake in 1995 indicates a single larva that was seen after extremely high water levels had inundated the area, allowing it to swim or be washed into the lake from a nearby site (which remained undiscovered for several more years). Between 1987 and 2007, RACAS breeding has been confirmed at an average of

4.2 sites, 36% of the RACAS sites surveyed each year, and 57% of their known breeding sites surveyed each year. Breeding by RACAS was confirmed or likely at an average of 4.4 sites, 62% of the known and likely breeding sites surveyed or visited each year. Only adults were observed at an average of 3.7 sites, 31% of the RACAS sites surveyed each year.

RAAU has been detected at 14 (17%) of the WWW sites (see Tables 4 and 6). Breeding has been confirmed at 11 sites (79% of the RAAU sites, and 13% of all the WWW sites). One of these sites, Warm Springs Meadow, is at unexpectedly high elevation for the normal range of the species (about 3760 feet or 1145 meters). Between 1987 and 2007, RAAU breeding has been confirmed at an average of 1.9 sites, 52% of the RAAU sites surveyed each year, and 67% of their known breeding sites surveyed each year. Breeding by RAAU was confirmed or likely at an average of 2 sites, 69% of the known and likely breeding sites surveyed or visited each year. Only adults were observed at an average of 0.9 sites, 21% of the RAAU sites surveyed each year.

In 1989 a WWW volunteer reported seeing large tadpoles at Camas Prairie. It was not until 1993 that a small RAPR population was discovered, to date the only site on the MHNH where the species is known to persist. Table 5 shows several sites that have apparently suitable habitat for this species, and/or where it occurred historically (Marc Hayes 1994).

Discussion

Monitoring of amphibians, particularly of breeding aggregations, has been inconsistent during the years WWW has existed, due to a number of factors. When WWW began, I had little experience in amphibian identification or surveys, so I learned on the job and later trained other individuals. As a largely volunteer project, as well as one that attempts to monitor birds, mammals, reptiles, and even dragonflies and butterflies as well as amphibians, time constraint is a major issue. Generally the volunteers must drive between one and two hours to reach the sites, and access to many sites then requires a hike. Some sites are at 3,500 or 4,000 feet elevation and cannot be reached when amphibians are breeding because roads are closed or there is too much snow for cars and trucks, but not enough snow for snowmobiles or cross-country skis. It has been difficult to remotely judge weather, snow conditions, and water levels at the sites to capture breeding data while assuring safe or even successful access. Adding to the difficulty has been the frequent occurrence of breeding over an extended period (pulses of breeding probably associated with local weather) and/or at widely scattered microsites within a particular site. Two of the species breeding at the same site may require surveys at different times in order to adequately monitor breeding numbers. In fact, in several cases it has taken me many years to find the actual breeding site for one species at a site well monitored for another species. Concern about harassing other wildlife, in particular greater sandhill crane (*Grus canadensis tabida*) nesting at five of the meadows, has limited the amphibian survey coverage at those sites in early spring. Visibility is frequently an issue, too, due to high water levels at sites with no boat access or due to dense brush surrounding some wetlands. In the past two years at two of the breeding sites, western toad adults have become much harder to monitor because they hide and even lay eggs tucked into the

bases of branchy shrubs in deep water. Ostensibly this behavior has been in response to recent heavy predation by common raven (*Corvus corax*) and raccoon (*Procyon lotor*). With so many sites potentially having breeding amphibians, we were unable to get to all sites each year, but tended to bounce around between them rather than randomly or methodically selecting a subset to monitor every year. After assisting Michael Blouin from Oregon State University in surveying RAPR egg masses at Camas Prairie in 1999, I thought he was continuing his study and purposely did not monitor there for the next three years. All of these factors are reasons (although perhaps not good excuses) for the inconsistency of the monitoring data.

Any analysis of the percentage of sites where breeding by each species was detected may be skewed by the fact that different sites were monitored in different years, with no pattern to how regularly a given site was surveyed.

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C. Thoms, C. C. Corkran, and D. H. Olson. 1997. Basic amphibian survey for inventory and monitoring in lentic habitats. In D. H. Olson, W. P. Leonard, and R. B. Bury, editors. *Sampling Amphibians in Lentic Habitats: Methods and Approaches for the Pacific Northwest*. Northwest Fauna # 4. Society for NW Vertebrate Biology. Olympia, WA.

M. P. Hayes. 1994. The spotted frog in western Oregon. Technical Report #94-1-01. Oregon Department of Fish and Wildlife, Portland, OR.