



**Humboldt
Redwood™**

**Amphibian and Reptile Annual Report
2015**



June 1, 2015

Cover photo: Adult male southern torrent salamander near Bear River. Photo by HRC Forest Science staff.

Humboldt Redwood Company (HRC) Project Description

Title: Amphibian and Reptile Monitoring

Purpose: Habitat conservation plan monitoring

Date Initiated: March 1999

Projected End Date: ongoing

Manager: Sal Chinnici, Manager, Forest Science

Executive Summary:

The HRC HCP includes four covered amphibians (southern torrent salamander, tailed frog, yellow-legged frog, and red-legged frog) and one covered reptile (western pond turtle). The HCP's strategy for conserving and monitoring the covered amphibian and reptile species is a landscape approach to protecting habitat, assessment of habitat conditions through watershed analysis, and species surveys and population monitoring.

With this report covering the 2014-2015 monitoring period we have transitioned from an annual property-wide monitoring effort to a focus on upcoming watershed analysis revisitation, as discussed in the 2013-2014 summary report. Therefore, this report discusses the status and results of occupancy surveys conducted during the reporting period in the Freshwater and Van Duzen Watershed Analysis Units. No further changes in the monitoring strategy are recommended at this time.

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INTRODUCTION

The purpose of this annual report is to provide the results of surveys and monitoring of the covered amphibian and reptile species of the Humboldt Redwood Company (HRC) Habitat Conservation Plan (HCP). This report covers the period 1 June 2014 to 1 June 2015.

Surveys and habitat assessments for the covered species have been ongoing through implementation of HCP monitoring strategies. Sections of the HCP addressing amphibians and reptiles include: 6.3.2.1, 6.3.5.2.4, and 6.10. These HCP sections discuss the process by which both watershed analysis and effectiveness monitoring address the covered species' habitat needs.

Records of species occurrence have been gathered from incidental observations recorded during Timber Harvesting Plan (THP) surveys, historical records, and wildlife and monitoring surveys, including protocol surveys of Class I and Class II waters (streams, watercourses, seeps, springs, lakes, ponds, and wetlands). The methods and protocols used to survey for the five covered species were developed cooperatively between the Wildlife Agencies and HRC, and are described briefly in the following sections.

With this report covering the 2014-2015 monitoring period we are in the second year of effort on upcoming watershed analysis revisitation units. Therefore, this report discusses the status and results of occupancy surveys conducted during the reporting period in the Freshwater and Van Duzen Watershed Analysis Units (WAU). The Elk River/Salmon Creek WAU has been completed and submitted to the Wildlife Agencies. The Freshwater and Van Duzen River WAUs are scheduled for 2015, which will be followed by the Lower Eel – Eel Delta WAU in 2016.

COVERED SPECIES

SOUTHERN TORRENT SALAMANDER AND TAILED FROG

Introduction

The southern torrent salamander (*Rhyacotriton variegatus*) and tailed frog (*Ascaphus truei*) are treated jointly in this report and in survey protocols due to their preference for headwater habitats and high gradient streams. Briefly, the tailed frog and southern torrent salamander protocol was intended to fulfill the needs of distributional surveys for these two species. The goal of this protocol is to determine the approximate distribution in WAUs using an area-constrained search of Class II watercourses, seeps, and springs.

Following the initial baseline distributional surveys, it was recognized that, in some cases, the vigorous sampling techniques could potentially negatively impact sub-populations. As a result we have moved to an occupancy level survey, using similar techniques but terminating the survey once the focus species has been found, or continuing to survey the entire reach if no specimens are located. This technique will allow us to monitor the persistence of sub-populations within WAUs without risking potentially significant damage.



Figure 1. Southern Torrent Salamander.



Figure 2. Tailed Frog.

Methods

The survey protocol for tailed frogs and southern torrent salamanders uses an area-constrained search method of Class II waters. The protocol has been appended to previous reports, and is available upon request. The suggested sampling period for torrent salamanders is after the first winter rains (e.g., November) through May, depending on weather and watercourse conditions. For tailed frogs the

suggested sampling period is March through June, again depending on weather and watercourse conditions. Based on the results of previous surveys, it appears that the survey season for both species may be extended when favorable water conditions exist, although recent drought conditions have required that surveys be conducted earlier in the season.

The protocol surveys have been used to build a distributional map for the two species. In order to monitor the persistence of subpopulations of these species and continue to inform the watershed analysis revisitation process, occupancy surveys of previously located sites will be conducted using an abbreviated protocol in which the survey is considered complete once an individual of the target species is located. During the reporting period 2014-2015, the Freshwater Creek and Van Duzen River occupancy monitoring sites were again visited.

Results and Discussion: Southern Torrent Salamander

During the period covered by this report a total of 25 occupancy surveys were conducted at 11 known or historic southern torrent salamander sites in the Freshwater and Van Duzen WAUs between 4 December 2014 and 13 January 2015 (

Table 1). Occupancy by southern torrent salamanders was confirmed at 9 of the 11 sites for an occupancy rate of 0.82, compared to occupancy at 7 of the 11 Freshwater and Van Duzen sites in 2013 - 2014 (occupancy rate of 0.64), and the property-wide occupancy rate of 0.81 for the 2012 – 2013 report.

During the 2012 - 2013 season, sites 1 and 177 were occupied by RHVA, were not occupied during the 2013 - 2014 reporting period, but were found to be occupied this period. Conversely, site 6 was not occupied in 2012 – 2013, was occupied as of the 2013 – 2014 surveys, but was not found to be occupied by southern torrent salamanders this period.

No significant changes in belt habitat conditions (e.g. habitat type, gradient, substrate, or canopy) were noted between years. No degraded habitats were noted. However, belt habitat and belt gradient calls are in some cases slightly different between years and may be due to changes in observers rather than actual changes in habitat. This bears further examination by HRC. There were no changes in RMZ prescriptions between survey periods. Surveys in both seasons were conducted during preferred sampling periods, although all 2014 – 2015 surveys were during the winter (i.e. December and January). A relatively mild winter may have resulted in relatively good survey conditions during the period.

No other covered species were found at the RHVA locations during the current survey period. Once again, coastal giant salamanders (*Dicamptodon tenebrosus*) were observed at four of the sites.

Surveys were distributed by WAU as follows: Freshwater Creek (n = 8) and Van Duzen River (n = 3).

Habitat characteristics for the 9 occupied belts of 2014 – 2015 can be summarized as follows (last period results in parentheses). See Table 2 for habitat codes.

- Habitat type: cascade/falls habitat was at 66.7% (57.1%), followed by high gradient riffle, low gradient riffle, and step pool, all at 11% (42.9%).
- Belt gradient: range 15 – 45%; mean 24.2% (17 - 90%, mean 35.5%).
- Belt substrate: 100% of the sites were of competent rock.
- Belt embeddedness was low to moderate overall, averaging 1.56 (only class 2 (26-50%) embeddedness).
- Belt canopy was high overall, with a range of 41 – 92.5%, mean 74.9% (50.0 – 95.5%, mean 81.8%).

Table 1. Southern Torrent Salamander (RHVA) Survey Summary.

WAU	Date	Site ID	Occupied?	Belt Habitat	Belt Gradient	Belt Substrate	Belt Embed	Belt Canopy	Species ID
Van Duzen	04-Dec-14	20	No	C/F	15	C	2	41.00%	DITE
Van Duzen	04-Dec-14	20	Yes	C/F	15	C	2	41.00%	RHVA
Van Duzen	09-Dec-14	19	Yes	LGR	25	C	3	92.50%	RHVA
Freshwater	18-Dec-14	180	No	HGR	15	C	2	79.00%	DITE
Freshwater	18-Dec-14	180	Yes	HGR	15	C	2	79.00%	RHVA
Van Duzen	29-Dec-14	1148	No	HGR	45	C	2	82.00%	
Van Duzen	29-Dec-14	1148	Yes	C/F	45	C	1	73.00%	RHVA
Freshwater	05-Jan-15	182	No	C/F	40	C	3	95.50%	
Freshwater	05-Jan-15	182	No	HGR	40	C	2	88.00%	
Freshwater	05-Jan-15	182	Yes	C/F	20	C	2	89.50%	RHVA
Freshwater	06-Jan-15	201	No	C/F	20	C	1	62.50%	
Freshwater	06-Jan-15	201	No	HGR	20	C	2	74.50%	
Freshwater	06-Jan-15	201	No	SP	25	C	1	91.00%	
Freshwater	06-Jan-15	201	No	C/F	25	C	1	95.50%	
Freshwater	07-Jan-15	177	Yes	SP	20	C	1	79.00%	RHVA
Freshwater	07-Jan-15	192	Yes	C/F	23	C	1	56.00%	RHVA
Freshwater	08-Jan-15	3	No	C/F	25	C	1	97.00%	
Freshwater	08-Jan-15	3	Yes	C/F	25	C	1	89.50%	RHVA
Freshwater	09-Jan-15	1	No	C/F	30	C	2	70.00%	DITE
Freshwater	09-Jan-15	1	No	C/F	30	C	1	74.50%	DITE
Freshwater	09-Jan-15	1	Yes	C/F	30	C	1	74.50%	RHVA
Freshwater	13-Jan-15	6	No	SP	5	C	1	88.00%	DITE
Freshwater	13-Jan-15	6	No	HGR	5	C	1	80.50%	DITE
Freshwater	13-Jan-15	6	No	C/F	18	C	1	74.50%	DITE
Freshwater	13-Jan-15	6	No	C/F	18	C	1	83.50%	

Table 2. Habitat codes for southern torrent salamander and tailed frog survey summaries.

Parameter	Explanation	
Habitat Code	P =Pool	HGR =High Gradient Riffle
	R =Run	C/F =Cascade/Falls
	LGR =Low Gradient Riffle	SP =Step Pool
Substrate C/I	Competent (C) hard and does not break in the hand it is competent. Incompetent (I) Readily crumbles or has plasticity it is incompetent.	
Embeddedness (1-4)	1 =0-25%,	3 =51-75%
	2 =26-50%	4 =76-100%
Species ID	RHVA = southern torrent salamander	DITE = coastal giant salamander
	ASTR = tailed frog	RABO = foothill yellow-legged frog
	ANFL = black salamander	BAAT = California slender salamander

Results and Discussion: Tailed Frog

During the period covered by this report a total of 10 occupancy surveys were conducted at 6 known or historic tailed frog sites in the Freshwater and Van Duzen WAUs between 9 January 2015 and 1 June 2015 (Table 3). Surveys were distributed by WAU as follows: Freshwater Creek (n = 5), and Van Duzen River (n = 2).

Occupancy by tailed frogs was confirmed at all 6 of the surveyed sites in these two WAUs, for an occupancy rate of 1.0, compared to an occupancy rate of 0.71 for Freshwater and Van Duzen in 2013 – 2014, and 0.30 for all WAUs included in the 2012 - 2013 survey period (Bear/Mattole, ERSC, Freshwater, Lower Eel, Upper Eel, Van Duzen, and Yager/Lawrence).

Similar to the RHVA survey results, there was little change in belt habitat conditions (e.g. habitat type, gradient, substrate, or canopy) noted between years, and there were no changes in RMZ prescriptions between survey periods. No degraded habitats were noted. However, surveys done during this season were done during the preferred sampling period and with good water conditions, unlike the surveys done last period which were completed much later and outside the preferred sampling period, during July and August. The conditions during this period were good for observing ASTR tadpoles attached to rocks. These findings confirm previous observations that flexibility in survey timing is needed during years with variation in rainfall and stream flow.

Other species found at the tailed frog locations included coastal giant salamanders (n = 3). We did not complete surveys at site 46 in the Van Duzen WAU this survey period due to access problems. This is a relatively low gradient site that in past seasons has had detections of yellow-legged frogs.

Given the very small sample size, habitat characteristics for the 6 occupied belts can be summarized as follows (last period results in parentheses):

- Habitat type: 3 in low gradient riffle and one each in cascade/falls, high gradient riffle, and step pool (similar to last period).
- Belt gradient: range 2 – 25%, mean 16% (0.5% - 45%, mean 17.6%).
- Belt substrate: all of the 6 sites were of competent rock (same).
- Belt embeddedness: low overall, averaging 1.33 (the majority of belts were of class 1 (26 - 50%) embeddedness).
- Belt canopy was high overall, with a range of 41 – 89.5%, mean 80.2% (53.0 – 97.0%, mean 82.3%).

The tailed frog surveys during this season were done during the preferred survey period and were obviously successful. In contrast, last season's surveys were not conducted during the suggested sampling period, but were opportunistically done in conjunction with torrent salamander surveys at or near the tailed frog sites, and when staff was available. All positive detections were of ASTR larvae or tadpoles, with their distinctive tail marking and habit of using the suction-like mouthparts to forage on stream cobble. This would be expected, given the timing of the surveys and the location of the detections primarily in the low gradient riffles in areas with competent rock.

Table 3. Tailed Frog (ASTR) Survey Summary.

WAU	Date	Site ID	Occupied?	Belt Habitat	Belt Gradient	Belt Substrate	Belt Embed	Belt Canopy	Species ID
Freshwater	09-Jan-15	170	Yes	SP	20	C	1	41.00%	ASTR
Van Duzen	29-May-15	144	Yes	HGR	15	C	1	85.00%	ASTR
Van Duzen	29-May-15	1114	Yes	C/F	25	C	1	89.50%	ASTR
Freshwater	01-Jun-15	165	Yes	LGR	2	C	2	89.50%	ASTR
Freshwater	01-Jun-15	165	No	LGR	2	C	2	89.50%	DITE
Freshwater	01-Jun-15	175	No	LGR	14	C	2	79.00%	
Freshwater	01-Jun-15	175	Yes	LGR	14	C	2	86.50%	ASTR
Freshwater	01-Jun-15	175	No	LGR	14	C	2	86.50%	DITE
Freshwater	01-Jun-15	179	Yes	LGR	20	C	1	89.50%	ASTR
Freshwater	01-Jun-15	179	No	LGR	20	C	1	89.50%	DITE

FOOTHILL YELLOW-LEGGED FROG

Introduction

There are currently no foothill yellow-legged frog (RABO) monitoring sites in the Freshwater Creek or Van Duzen River WAUs, hence there are no surveys to report during this time period. However, during the 2013-2014 survey period, RABO were detected at ASTR survey site 146 on Blue Slide Creek, in a low gradient reach that flows directly into the Van Duzen River. There were 10 or more individuals

observed low in the reach, near the confluence with the river. There are known sites, especially on the Van Duzen River, that could be incorporated in future survey years.

The foothill yellow-legged frog is a species that inhabits open, sunny, low gradient reaches of streams and rivers. It is not a species that is diagnostic of closed canopy and cold water temperatures. Therefore it would be expected to occur in large numbers along the Van Duzen River, and possibly the lower reaches of Freshwater Creek, primarily off of HRC lands.



Figure 3. Foothill Yellow-legged Frog.

Methods

Survey and monitoring techniques for this species are also area-constrained searches, concentrating on surveying river and stream reaches for eggs, tadpoles, and adults. As with the surveys for the headwaters species, an occupancy level survey was implemented for foothill yellow-legged frogs, using similar techniques but terminating the survey once the target species has been found, or continuing to survey the entire reach if no specimens are located.

Survey sites were visually searched for the presence or absence of foothill yellow-legged frogs, using a 400-meter reach as the survey site. Surveys are concentrated during a period when the larger tadpoles, recent metamorphs, and adults are relatively easy to locate by searching the slow water edges of the wetted channel. Occupancy is established when an adult, juvenile, tadpole, or eggs are found at the survey site.

Results and Discussion

There are no results to discuss for the foothill yellow-legged frog for this reporting period. HRC may consider adding foothill yellow-legged frog monitoring sites for the next watershed analysis revisits for Van Duzen, and Freshwater if applicable.

NORTHERN RED-LEGGED FROG

Introduction

Current survey efforts for the northern red-legged frog (*Rana aurora aurora*) have been focused on attempting to determine if known breeding sites within the WAUs continue to be occupied. There are currently 39 breeding sites distributed throughout HRC lands. Monitored breeding sites for this report are in the Freshwater (n = 5) and Van Duzen (n = 3) WAUs.



Figure 4. Northern Red-legged Frog.

Methods

For this survey period we continued to use the abbreviated survey method developed for the occupancy-level surveys. Known breeding sites are inspected for evidence of adults, juveniles, and egg masses. For the 2013 – 2014 period we visited the 8 sites in the Freshwater and Van Duzen WAUs between October 2013 and May 2014 using the occupancy level survey, and revisited those sites for the 2014 – 2015 period between 6 November 2014 and 17 February 2015 (Table 4).

Results and Discussion

HRC pond sites generally fall into one of three categories: 1) relatively small in size, resulting from heavy equipment use during past logging operations and the building of associated logging roads, 2) roadside settling basins used to prevent sediment from getting into rivers and streams, and 3) naturally occurring ponds and wetlands in low-lying areas.

There were a total of 19 surveys conducted to the 8 monitoring sites in the Freshwater and Van Duzen WAUs during this reporting period. Similar to the last reporting period, 3 of the 8 surveyed sites were occupied by red-legged frogs for an occupancy rate of 0.38, compared to the rate of 0.49 for all property-wide sites visited during the 2012 – 2013 season. Similar to the last reporting period, although surveys were conducted during the preferred period for observing adults, juveniles, or egg masses of this species,

low rainfall levels throughout the region resulted in pond conditions that were not optimal for RAAU breeding. Four sites again had low level water levels, or were dry, when visited this season. No degraded habitats were noted due to HRC operations, although growth of riparian vegetation around site 54 in the Freshwater WAU has resulted in increased shade that appears to have rendered the site unsuitable for RAAU.

HRC surveys have indicated that, in normal rainfall years, red-legged frogs within the study area deposit eggs from October through February, considerably earlier than suggested in the literature for other regions of the West Coast (Storm 1960, Brown 1975, Licht 1969). Sites with ponded water were often heavily utilized for egg deposition, while pools that we observed within watercourses were not utilized. Egg masses were generally deposited in shallow water, or the shallow regions of larger ponds. In addition, egg masses can persist for extensive periods of time, (e.g., four to six weeks), allowing for flexibility in a sampling schedule. More recently, during years of below normal rainfall, known breeding sites do not have enough water for egg deposition, and require surveys immediately after rainfall to check for occupancy.

Table 4. Northern Red-legged Frog (RAAU) Survey Summary 2014 - 2015.

Site	WAU	Survey Date	Water Source	Formation	Occ by RAAU?	Species ID
1	Freshwater	11/6/2014	Stream	Basin	No	
1	Freshwater	2/17/2015	Stream	Basin	No	
2	Freshwater	11/6/2014	Rain Pooling	Equipment	No	
2	Freshwater	2/17/2015	Rain Pooling	Equipment	No	
40	Van Duzen	12/12/2014	Rain Pooling	Natural pond	Yes	RAAU
40	Van Duzen	12/12/2014	Rain Pooling	Natural pond	Yes	TAGR
40	Van Duzen	2/3/2015	Rain Pooling	Natural pond	Yes	RAAU, AMGR
40	Van Duzen	2/3/2015	Rain Pooling	Natural pond	Yes	RAAU, AMGR
40	Van Duzen	2/3/2015	Rain Pooling	Natural pond	Yes	RAAU, AMGR
52	Van Duzen	12/17/2014	Rain Pooling	Natural pond	No	
52	Van Duzen	2/3/2015	Rain Pooling	Natural pond	Yes	RAAU
52	Van Duzen	2/3/2015	Rain Pooling	Natural pond	Yes	RAAU, AMGR
52	Van Duzen	2/3/2015	Rain Pooling	Natural pond	Yes	RAAU
54	Freshwater	2/17/2015	Spring	Equipment	No	
67	Freshwater	11/6/2014	Rain Pooling	Equipment	No	
67	Freshwater	2/17/2015	Rain Pooling	Equipment	No	HYRE
67	Freshwater	2/17/2015	Rain Pooling	Equipment	No	HYRE
90	Van Duzen	12/18/2014	Rain Pooling	Natural pond	No	
133	Freshwater	11/6/2014	Spring	Ditch	Yes	RAAU

RAAU=red-legged frog, TAGR=rough-skinned newt, AMGR=northwestern salamander, HYRE=Pacific tree frog

WESTERN POND TURTLE

Introduction

The only covered reptile under the HRC HCP is the western pond turtle (*Emys marmorata*). The distribution of this species on HRC lands was poorly understood in comparison to the other covered species, but locations of pond turtles have been accumulating since the implementation of HCP monitoring programs, and the species distribution on the covered lands can now be called widespread in suitable habitats.



Figure 5. Western Pond Turtle.

Methods

The goal of the baseline surveys for pond turtles was to determine the distribution of this species on HRC lands, using techniques of observing potential habitat (e.g., Holland 1994). The sampling season for pond turtles is the summer period, or specifically June through September. We have noted that turtles can be observed both earlier and later in the season here on the north coast of California when flow conditions permit.

Methods include using visual searches (i.e., walking surveys), snorkel-surveys, and floating surveys of suitable watercourses looking for basking adults (Figure 6). Turtles can often be seen using the same basking structures over multiple years. When conducting floating surveys, surveyors stop floating above areas of potential habitat to walk the area and scan for animals.

Since the survey techniques for pond turtles are not invasive or destructive, no changes to methods were necessary to transition to occupancy level surveys. A total of 18 sites currently make up the property-wide pond turtle sample. Two sites are in the Van Duzen WAU. There are currently no monitoring sites in the

Freshwater WAU. The Van Duzen WAU sites were visited during May 2015 to check for occupancy (Table 5).



Figure 6. Basking pond turtle on Lower Yager Creek.

Table 5. Western Pond Turtle (EMMA) Survey Summary 2011– 2015.

Site ID	Focus Species	WAU	Baseline Survey	2011-2012 Occ?	2012-2013 Occ?	2013-2014 Occ?	2014-2015 Occ?
963	EMMA	Van Duzen	2002	Yes	Yes	Yes	Yes
1081	EMMA	Van Duzen	2003	Yes	No	Yes	Yes

Results and Discussion

During the 2014 - 2015 survey period both pond turtle sites in the Van Duzen WAU were visited at least once (Table 5 above). Both of the sites were occupied this season, for an occupancy rate of 1.00, compared to 0.44 for the 18 property-wide sites surveyed during 2012 – 2013 period. Site 1081 was unoccupied during that period’s surveys, but was occupied in both the 2013 – 2014 and 2014 - 2015 season.

The 2012 – 2013 survey season included a relatively dry late summer and fall, when surveys were conducted. Some pond sites had largely become dewatered, and other sites were visited during overcast conditions, reducing the likelihood of observing basking turtles. Additional visits (greater survey effort) may have eliminated at least a portion of what were likely false negatives during that season’s surveys.

For the 2013 – 2014 and 2014 – 2015 surveys, both of the Van Duzen WAU sites were visited during the spring when flow conditions were very good for observing pond turtles (clear water, relatively low flows).

Habitat does not appear to be a limiting factor (i.e. pools and basking logs or boulders). No degraded habitats were noted on the surveys this period. Given the relatively small sample, new pond turtle sites will continue to be added when found, and used as baseline sites. However, pond turtle habitat in the Freshwater WAU tends to be off of HRC lands, although adjacent (e.g. Freshwater Park).

WATERSHED ANALYSIS

The goal of watershed analysis for each WAU relative to the covered amphibians and reptile is to answer the list of critical questions concerning distribution, habitat, and possible impacts of land management on the species; by using known location data, identifying locations of potential habitat for the species, and utilizing available habitat information. Answering the critical questions for each WAU requires information on: species distribution, habitat needs for species life history requirements, location of degraded habitats and potential habitats, sediment levels, loss or creation of wetlands and ponds, and water temperatures.

There are eight WAUs covering HRC lands:

- Freshwater
- Van Duzen
- Lower Eel/Eel Delta
- Elk River/Salmon Creek
- Upper Eel/Larabee Creek
- Bear River
- Yager Creek
- North Fork Mattole

The initial round of watershed analyses has been completed for all eight WAUs, and watershed analysis revisitation is currently in progress. The Elk River/Salmon Creek WAU has been completed and submitted to the Wildlife Agencies. The Freshwater and Van Duzen WAUs are in process.

Each watershed analysis report contains an amphibian/reptile module. Results from each module are considered during the watershed analysis synthesis, and through prescription development, to minimize, and if necessary, mitigate management effects on the covered amphibians and reptile.

In general, the results of the amphibian and reptile modules have shown that the covered species are present in the WAUs, and that there are occurrences of degraded habitat, potential habitat, and suitable, occupied habitat. Site-specific prescriptions for Class I, II, and III waters have been developed in keeping with the habitat needs of the covered species. The individual watershed analysis reports are on file at HRC and available upon request.

The Elk River WAU revisit (HRC 2014) provides the following information:

“HRC completes annual monitoring of covered species habitat and presence as described under the Aquatic Conservation Plan (ACP) in the HCP. These covered species include southern torrent

salamander (Rhyacotriton variegatus), tailed frog (Ascaphus truei), northern red-legged frog (Rana aurora aurora), foothill yellow-legged frog (Rana boylei), and northwestern pond turtle (Emys marmorata). Distribution of covered species continues to be fairly widespread in suitable habitat. The ERSC WAU continues to host quality habitat for southern torrent salamanders, northern red-legged frogs, and tailed frog. Monitoring efforts have not focused on habitats preferred by yellow legged frogs or western pond turtles, which are more limited in the ERSC WAU.

All information gathered since the initial Watershed Analysis supports those earlier findings. HRC surveys have indicated that red-legged frogs within the property-wide study area deposit their eggs from October through February which is considerably earlier than suggested in literature for other regions of the West Coast (Storm 1960, Brown 1975, Licht 1969). Property-wide monitoring has also found that ponded waters were often heavily utilized for egg deposition (one site with over 320 egg masses), while pools observed within watercourses were not utilized.

At this time, all monitoring suggests that prescriptions intended to protect watercourses by minimizing water temperature increases, minimize sediment input and encourage LWD recruitment continue to provide good habitat for amphibians and reptiles within the ERSC WAU.”

SUMMARY AND RECOMMENDATIONS

For the 2014 - 2015 survey period survey efforts were focused on occupancy level surveys in the Freshwater and Van Duzen WAUs to support future watershed analysis revisits, site-specific watershed analysis questions, and on classification of waters for THPs. Survey effort by species is reflected by the number of occupied sites, as discussed above. A total of 56 individual surveys were conducted. Survey effort was distributed as follows: southern torrent salamander (n = 25), tailed frog (n = 10), northern red-legged frog (n = 19), and western pond turtle (n = 2). There are no foothill yellow-legged frog monitoring sites in the Freshwater and Van Duzen WAUs.

Distribution of covered species continues to be fairly widespread in suitable habitat. No degraded habitats of any of the species were noted, although it has been noted that increased growth of riparian vegetation around ponds and wetlands can render them unsuitable for red-legged frog breeding. Watershed analysis has aided in finding areas of good habitat to be maintained, as well as areas of habitat that can be improved or restored. During ensuing survey seasons, occupied amphibian/reptile habitat will continue to be monitored over time to develop an index of occupancy. No changes in the monitoring strategy are recommended at this time.

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