



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003



IN REPLY REFER TO:
81440-2009-F-0387

May 25, 2010

Jane M. Hicks, Chief, Regulatory Branch
Department of the Army
San Francisco District, Corps of Engineers
1455 Market Street
San Francisco, California 94103

Subject: Biological Opinion for the Proposed California Department of Fish and Game Fisheries Restoration Grant Program Regional General Permit Renewal for the Counties of Monterey, San Benito, San Luis Obispo, and Santa Cruz (File Number 2003-279220N) (8-8-09-F-73).

Dear Ms. Hicks:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the San Francisco District of the U.S. Army Corps of Engineers' (Corps) proposed renewal of a Regional General Permit (RGP), authorizing projects funded by the California Department of Fish and Game's (CDFG) Fisheries Restoration Grant Program (Program), and its effects on the federally threatened California red-legged frog (*Rana draytonii*), in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Your March 17, 2009, request for formal consultation was received in our office on March 23, 2009.

This biological opinion is based on information which accompanied your March 17, 2009, request for consultation, including the RGP renewal application, project descriptions, and general protective measures (CDFG 2008); the 2008 Mitigated Negative Declaration (CDFG 2008a) requested by our office on July 13, 2009, and received on July 22, 2009; the 2009 Mitigated Negative Declaration (CDFG 2009a) requested by our office on November 10, 2009, and accessed electronically on November 12, 2009; the California Salmonid Habitat Restoration Manual (Restoration Manual) (Flosi et al. 1998) with recent revisions (Dean et al. 2004, Weaver et al. 2006, Love et al. 2009); and telephone and electronic mail communications between our staff and representatives of the Corps, the CDFG, and the National Marine Fisheries Service (NMFS).



In accordance with 50 CFR Parts 402.10 and 402.13, you have requested our concurrence by letter dated March 17, 2009, that the RGP renewal and implementation of the proposed Fisheries Restoration Grant Program may affect, but is not likely to adversely affect, the following listed species and their critical habitats:

- The federally endangered California freshwater shrimp (*Syncaris pacifica*),
- The federally threatened California red-legged frog;
- The federally threatened Central California Distinct Population Segment (DPS) of the California tiger salamander (*Ambystoma californiense*);
- The federally endangered least Bell's vireo (*Vireo bellii pusillus*);
- The federally threatened marbled murrelet (*Brachyramphus marmoratus*);
- The federally threatened northern spotted owl (*Strix occidentalis caurina*); and
- The federally endangered southwestern willow flycatcher (*Empidonax traillii extimus*).

You have reached these determinations based on proposed implementation of the mitigation measures described in the annual Mitigated Negative Declarations (CDFG 2008a, 2009a), intended to avoid project related impacts to these species and their habitats. Mitigated Negative Declarations are generated annually throughout the 5-year span of the RGP and include specific project locations and activities (P. Forbes, CDFG, in litt. 2009).

The current authorization would include Program activities in various locations from 2010 to 2015. This biological opinion addresses listed species and their habitats within the jurisdictional area of the VFWO and the San Francisco District of the Corps. This area includes portions of Monterey, San Benito, San Luis Obispo, and Santa Cruz Counties. Abovementioned species that do not pertain to these jurisdictional areas are the California freshwater shrimp, the northern spotted owl, and the southwestern willow flycatcher. Effects to these species will be addressed by the field offices that have lead responsibility for them.

California Tiger Salamander

We concur with your determination that the proposed authorization may affect, but is not likely to adversely affect the federally threatened California tiger salamander and its habitat. Our concurrence is based on the following factors described in the 2004 biological opinion, the current project description, and the 2008 and 2009 Mitigated Negative Declarations:

1. Most of the proposed projects will occur in or near streams and riparian corridors; California tiger salamanders use ponds and vernal pools for breeding, and existing burrows in grassland habitat for estivation. These habitat types are usually not located in proximity to anadromous fish-bearing streams, and project activities will avoid effects to pond, vernal pool, and grassland habitats.
2. Upslope projects will be limited to road upgrading and decommissioning in areas that are steep, eroding, and often vegetated with trees and shrubs (Service 2004, CDFG 2008, 2008a, 2009a).

Least Bell's Vireo

We concur with your determination that the proposed authorization may affect, but is not likely to adversely affect the least Bell's vireo and its habitat. Our concurrence is based on the following measures, as described in Appendix B of the 2008 Mitigated Negative Declaration:

The proposed activities will not significantly degrade existing vireo habitat; however the potential exists for noise from heavy equipment work and the harvesting of willow branches during revegetation activities to disrupt vireo nesting. To avoid this potential impact, the following mitigation measures will be implemented:

- a. Work will not begin within 0.25 mile of any site with known or potential habitat for the least Bell's vireo until after September 15;
- b. Harvest of willow branches at any site with potential habitat for the least Bell's vireo will not occur between March 1 and September 15;
- c. The work window at individual work sites may be modified if protocol surveys determine that nesting birds do not occur within 0.25 mile of the site during the breeding season;
- d. The CDFG will ensure that the responsible party is aware of this site-specific condition and will inspect the work site before, during, and after completion of the action item; and
- e. If for some reason these mitigation measures cannot be implemented or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential impacts to least Bell's vireos or their habitat, then activity at that work site will be discontinued (CDFG 2008a).

Marbled Murrelet

We concur with your determination that the proposed authorization may affect, but is not likely to adversely affect the marbled murrelet and its habitat. Our concurrence is based on the following measures, as described in Appendix B of the 2008 and 2009 Mitigated Negative Declarations:

Proposed activities will not remove, degrade, or downgrade suitable marbled murrelet habitat, and injury or mortality is not expected; however, the potential exists for noise from heavy equipment work at these sites to disrupt marbled murrelet nesting. To avoid this potential impact, the following mitigation measures will be implemented:

- a. Adverse effects will be avoided by limiting heavy equipment work within 0.25 mile of marbled murrelet habitat to the period between September 16 and March 23.
- b. Work will not begin within 0.25 mile of any site with occupied or un-surveyed suitable marbled murrelet habitat between March 24 and September 15.
- c. The work window at individual work sites near suitable habitat may be modified, if protocol surveys by a qualified biologist determine that habitat quality is low and occupancy is very unlikely.
- d. If for some reason these mitigation measures cannot be implemented or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential adverse effects to the marbled murrelet or its habitat, then activity at that work site will be discontinued (CDFG 2008a, 2009a).

California Red-Legged Frog

We concur with your determination that the proposed authorization may affect, but is not likely to adversely affect, proposed or designated critical habitat for the California red-legged frog. Our concurrence is based on the following:

1. Implementation of protective measures for the California red-legged frog, described in the 2008 and 2009 Mitigated Negative Declarations and outlined below; in conjunction with
2. Implementation of the general protective measures submitted with the RGP renewal application, outlined below in the description of the proposed action.

These measures should ensure that any primary constituent elements of California red-legged frog critical habitat (aquatic breeding habitat, non-breeding aquatic and riparian habitat, upland habitat, and dispersal habitat), as defined in the proposed critical habitat designation (Service 2008), will not be damaged or deteriorated. In addition, restoration projects implemented under the proposed authorization within proposed or designated critical habitat units would tend to improve the quality of California red-legged frog habitat in these areas, revitalizing degraded or impaired aquatic and riparian habitats. The restoration projects should provide a long-term benefit to the California red-legged frog, and result in higher quality habitat in dispersal corridors and core areas.

We do not concur with your determination that the proposed authorization may affect, but is not likely to adversely affect the California red-legged frog. This determination is based on the proposed capture, handling, and removal of frogs from project sites where they may be killed or injured by work activities, as described below. This activity is likely to adversely affect the California red-legged frog, and requires evaluation under a biological opinion.

Your March 17, 2009, letter requested initiation of formal consultation in the event that the Service did not concur with your determination that the proposed authorization may affect, but is not likely to adversely affect the aforementioned listed species or their habitats. Therefore, your letter serves to initiate formal consultation regarding the potential effects of the proposed authorization on the California red-legged frog.

CONSULTATION HISTORY

The existing RGP, which expired in December 2009, was addressed in a biological opinion completed on August 13, 2004, by the Ventura Fish and Wildlife Office (VFWO) that evaluated effects of Program activities on the California red-legged frog (Service 2004). The current biological opinion includes updated project descriptions and mitigation measures from the 2008 and 2009 Mitigated Negative Declarations, and refers to the 2004 biological opinion where necessary.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The CDFG has applied for a Department of the Army Authorization under a Regional General Permit, to implement its Fisheries Restoration Grant Program within the boundaries of the San Francisco District of the Corps. The proposed activities are designed to restore salmonid habitat with the goal of increasing populations of wild anadromous fish in coastal streams and watersheds. Habitat restoration activities and practices include fish passage projects, bank stabilization treatments, upslope road decommissioning or repair, and replacement or modification of culverts that are barriers to fish passages. Structures are proposed to provide predator escape and resting cover, increase spawning habitat, improve upstream and downstream migration corridors, improve pool to riffle ratios, and add habitat complexity and diversity. Some structures would be designed to reduce sedimentation, protect unstable banks, stabilize existing slides, provide shade, and create scour ponds.

The following is a summary of proposed habitat restoration activities, as described in the RGP renewal application and project description (CDFG 2008). These proposed activities would be implemented consistent with State laws and the California Salmonid Stream Habitat Restoration Manual with recent revisions (Flosi et al. 1998, Dean et al. 2004, Weaver et al. 2006, Love et al. 2009).

1. Instream habitat improvements would include cover structures such as divide logs, digger logs, spider logs, and log, root wad and boulder combinations; boulder structures such as boulder weirs, vortex boulder weirs, boulder clusters, and single and opposing boulder wing-deflectors; and log structures such as log weirs, upsurge weirs, single and opposing log wing-deflectors, and Hewitt ramps.
2. Unanchored large woody debris would be used to enhance pool formation and improve stream reaches (generally best suited for first through third order streams). Logs selected for placement would have a minimum diameter of 12 inches and a minimum length 1.5 times the mean bankfull width of the stream channel type reach and deployment site. A root wad would be selected with care and have a minimum root bole diameter of 5 feet and a minimum length of 15 feet and at least half the channel type bankfull width.
3. Fish screens would be used to prevent entrainment of juvenile salmonids in water diverted for agriculture, power generation, or domestic use, and on both gravity pump and pump diversion systems.
4. Fish passage at stream crossings include activities that would provide fish crossings where the crossing width is at least as wide as the active channel, with culvert passes designed to withstand a 100 year storm flow, and crossing bottoms buried below the streambed. Examples include replacement of barrier stream crossings with bridges, bottomless arch culverts, embedded culverts, and/or fords.
5. Fish passage improvements would include removal of obstructions such as log jams, beaver dams, waterfalls and chutes, and landslides. Suitable large woody debris removed from fish passage barriers that are not used by the project for habitat enhancement will be left within the riparian zone to provide a source for future recruitment of wood into the stream. Log jam barriers are typically less than 10 cubic yards.

6. Upslope restoration activities would be performed to reduce sediment delivery to anadromous streams. Activities include road decommissioning, road upgrading, and storm-proofing roads. Storm-proofing roads involves replacing high risk culverts with bridges, installing critical dips, installing armored crossings, and removing unstable side cast and fill materials from steep slopes.
7. Watershed and stream bank stability activities would be performed to reduce sediment from watershed and stream bank erosion. Examples of these activities include slide stabilization, stream bank stabilization, boulder stream bank stabilization structures, log stream bank stabilization structures, tree revetment, native material revetment, mulching, revegetation, willow wall revetment, brush mattress, checkdams, brush checkdams, waterbars, and exclusionary fencing.

Additional measures to be addressed for this authorization were discussed in several meetings between the National Marine Fisheries Service (NMFS), the CDFG, and the Service. These “sideboards” that have been finalized for inclusion to the current RGP are equivalent to mitigation and/or minimization measures and are as follows:

1. Distance between projects implemented in the same year:
Instream projects implemented in the same year will be at least 1,500 linear feet apart if carried out in a fish bearing stream. If carried out in a non-fish bearing stream, the projects must be at least 500 linear feet apart. The required distance can be modified upon the recommendation of a NMFS or CDFG hydrologist.
2. Removal of sediment associated with projects:
If instream work will liberate a sediment wedge, 80 percent of the wedge must be removed before the sediment is liberated. The required amount can be modified upon the recommendation of a NMFS or CDFG hydrologist
3. Limit on number of projects per watershed (hydrologic unit code 10 (HUC 10)):
Under this Program, an annual limit will be established on the number of projects that may occur in each HUC 10, in areas outside and within the range of the California Central Coast (CCC) coho salmon (*Oncorhynchus kisutch*) evolutionary significant units (ESU) (CDFG 2010), as shown in Table 1.

Table 1. Annual limits on projects occurring in watersheds.

| HUC 10 | Maximum number of projects per year | |
|--------|-------------------------------------|---------------------------|
| | Areas outside range of CCC | Areas within range of CCC |
| | | |

| (square miles) | coho salmon ESU | coho salmon ESU |
|----------------|-----------------|-----------------|
| less than 50 | 2 | 1 |
| 50-100 | 3 | 2 |
| 100-150 | 4 | 3 |
| 150-250 | 5 | 4 |
| 250-350 | 6 | 6 |
| 350-500 | 9 | 9 |
| 500 or more | 12 | 12 |

General Protective Measures

General protective measures for the proposed project are described in the RGP application (CDFG 2008) as follows:

1. All habitat improvements will be carried out in accordance with techniques in the Restoration Manual.
2. To avoid impacts to aquatic habitat, the activities undertaken in the restoration program will occur during the summer dry season. This is generally between July 1 and November 1, or the first rainfall.
3. Location of staging/storage areas for equipment, materials, fuels, lubricants and solvents, will be located outside for the stream's high water channel and associated riparian area. The number of access routes, number and size of staging areas, and the total area of the work site activity will be limited to the minimum necessary to complete the restoration activities. To avoid contamination of habitat during restoration activities, trash will be contained, removed, and disposed of throughout the project.
4. Any equipment work within the stream channel will be performed in isolation from the flowing stream. If there is any flow when the work is done, the contractor will construct coffer dams upstream and downstream of the excavation site and divert all flow from upstream of the upstream dam to downstream of the downstream dam.
5. If it is necessary to divert flow around the work site, either by pump or by gravity flow, the suction end of the intake pipe will be fitted with fish screens meeting CDFG and NMFS criteria to prevent entrainment or impingement of small fish. Any turbid water pumped from the work site itself to maintain it in a dewatered state will be disposed of in an upland location where it will not drain directly into any stream channel.
6. For minor actions, where the disturbance to construct coffer dams to isolate the work site would be greater than to complete the action (for example, placement of a single boulder cluster), then measures will be put in place immediately downstream of the work site to capture suspended sediment.
7. The spread or introduction of invasive exotic plants will be avoided to the maximum extent possible.
8. Wildlife encountered during the course of construction will be allowed to leave the construction area unharmed. Any red tree vole (*Arborimus longicaudus*) nests encountered at a work site will be flagged and avoided during construction.

9. Work sites containing western pond turtles (*Actinemys marmorata*), foothill yellow-legged frog (*Rana boylei*) or tailed frogs (*Ascaphus truei*) will use exclusion measures to prevent take or injury to any individual pond turtles or frogs that could occur on the site.
10. Ground disturbance that has the potential to affect cultural resources will be avoided through implementation of mitigation measures, including completing cultural resource surveys, fencing, on-site monitoring, and redesigning proposed work to avoid disturbance of cultural resources.
11. Specific measures have been developed to avoid impacts to endangered, rare, or threatened species that could occur at specific work sites, and can be found in the 2008 Mitigated Negative Declaration (CDFG 2008a). Conditions have been developed to avoid incidental take of these species:
 - Rare plants
 - California freshwater shrimp
 - Coho salmon (*Oncorhynchus kisutch*)
 - Chinook salmon (*Oncorhynchus tshawytscha*)
 - Steelhead (*Oncorhynchus mykiss*)
 - Coast cutthroat trout (*Oncorhynchus clarki clarki*)
 - California red-legged frog
 - Least Bell's vireo
 - Marbled murrelet
 - Northern spotted owl
 - Southwestern willow flycatcher

Table 2, as described in the 2004 biological opinion gives the maximum number of California red-legged frog adults, juveniles, tadpoles, and eggs that the Corps and the CDFG anticipate may be injured or killed as a result of project related activities conducted under the proposed authorization. Because ground-disturbing project related activities in potential California red-legged frog habitat will be restricted to the period between July 1 and October 15, California red-legged frog egg masses should not be encountered. If any of the projected injury or mortality limits is observed, the Corps and the CDFG will cease project activities and the Corps will reinitiate formal consultation with the Service.

Table 2. Maximum number of California red-legged frogs that may be injured or killed during program activities, as proposed by the Corps and the CDFG (Service 2004).

| Unit of Measure | Adults or Juveniles | Tadpoles | Egg Masses |
|-------------------------------------|---------------------|---------------------------------|------------|
| Per Project Site | 1 | 10 percent of those encountered | 0 |
| Per Dewatered Area per Project Site | N/A | 10 percent of those encountered | 0 |
| Per Watershed | 5 | 10 percent of those encountered | 0 |
| Cumulative Total Per Year | 25 | 10 percent of those encountered | 0 |

The 2008 and 2009 Mitigated Negative Declarations state that potential for impacts to the California red-legged frog will be mitigated by complying with the mandatory terms and conditions described in the 2004 biological opinions issued by the VFWO and the Arcata Fish and Wildlife office. Additionally, the CDFG proposes to implement the following protective measures for the California red-legged frog and its habitat.

Protective Measures for the California Red-Legged Frog

1. At least 15 days prior to the onset of activities, the CDFG will submit the name(s) and credentials of biologists who would conduct activities specified in the following measures. No project activities will begin until the CDFG has received written approval from the Service that the biologist(s) is qualified to conduct the work.
2. A Service-approved biologist will survey the work site at least 2 weeks before the onset of activities. If California red-legged frogs are found in the project area and these individuals are likely to be killed or injured by work activities, the Service approved biologist will allow sufficient time to move them from the site before work activities resume. Only Service-approved biologists will participate in activities with the capture, handling and monitoring of California red-legged frogs.
3. Before any construction activities begin on a project, a Service-approved biologist will conduct a training session for all construction personnel. At minimum, the training will include a description of the California red-legged frog and its habitat, the importance of the California red-legged frog and its habitat, the general measures that are being implemented to conserve the California red-legged frog as they relate to the project, and the boundaries within which the project may be accomplished. Brochures, books and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions.
4. A Service-approved biologist will be present at the work site until removal of California red-legged frogs, instruction of workers, and all habitat disturbing activities have been completed. The Service-approved biologist will have the authority to halt any action that might result in impacts that exceed the levels anticipated by the Corps and Service during review of the proposed action. If work is stopped, the Corps and the Service will be notified immediately by the Service-approved biologist or on-site biological monitor.
5. During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.
6. All fueling and maintenance of vehicles and other equipment and staging areas will occur at least 65 feet from any riparian habitat or water body. The Corps and the CDFG will ensure contamination of habitat does not occur during such operations. Prior to the onset of work, the CDFG will ensure that the grantee has prepared a plan to allow a prompt and effective response to any accidental spills. All workers will be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.
7. A Service-approved biologist will ensure that the spread or introduction of invasive exotic plant species is avoided to the maximum extent possible. Areas disturbed by project activities will be restored and planted with native plants.

8. The number of access routes, number and size of staging areas, and the total area of the activity will be limited to the minimum necessary to achieve the project goal. Routes and boundaries will be clearly demarcated.
9. Ground disturbing activities in potential California red-legged frog habitat will be restricted to the period between July 1 and October 15.
10. To control erosion during and after project implementation, the CDFG will implement best management practices, as identified by the appropriate regional water quality control board.
11. If a work site is to be temporarily dewatered by pumping, intakes will be completely screened with wire mesh not larger than 0.2 inch to prevent California red-legged frogs from entering the pump system. Water will be released or pumped downstream at an appropriate rate to maintain down stream flows during construction activities and reduce the creation of ponded water. Upon completion of construction activities, any barriers to flow will be removed in a manner that would allow flow to resume with the least disturbance to the substrate.
12. A Service-approved biologist will permanently remove any individuals of exotic species from the project area such as bullfrogs (*Rana catesbiana*), centrarchid fishes, and non-native crayfish (*Procambarus clarkii*) to the maximum extent possible. The biologist will have the responsibility to ensure that their activities are in compliance with the CDFG code.
13. Prior to the onset of any project related activities, the Service-approved biologist will identify appropriate areas to receive California red-legged frog adults and tadpoles from the project areas. These areas will be in proximity to the capture site, contain suitable habitat, not be affected by project activities, and be free of exotic predatory species (i.e., bullfrogs, crayfish) to the best of the approved biologist's knowledge.
14. If California red-legged frogs are found and are likely to be killed or injured by work activities, the Service-approved biologist will be allowed sufficient time to move them from the site before work activities resume. The Service-approved biologist will relocate the California red-legged frogs the shortest distance possible to one of the predetermined areas. The Service-approved biologist will maintain detailed records of any individuals that are moved (e.g. size, coloration, any distinguishing features, photographs) to assist in determining whether translocated animals are returning to the point of capture. Only California red-legged frogs that are at risk of injury or death by project activities may be moved.
15. Biologists who handle California red-legged frogs will ensure that their activities do not transmit diseases. To ensure that diseases are not conveyed between work sites, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force will be followed at all times (CDFG 2008a, 2009a, DAPTF 1998). A copy of this code of practice can be found in Appendix A.

ANALYTICAL FRAMEWORK FOR THE JEOPARDY DETERMINATION

The jeopardy analysis in this biological opinion relies on four components: (1) the *Status of the Species*, which evaluates the range-wide condition of the California red-legged frog, the factors

responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which evaluates the condition of the California red-legged frog in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the California red-legged frog; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the California red-legged frog; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the California red-legged frog.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed federal action in the context of the current status of the California red-legged frog, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the California red-legged frog in the wild.

The jeopardy analysis in this biological opinion places an emphasis on consideration of the range-wide survival and recovery needs of the California red-legged frog and the role of the action area in the survival and recovery of the California red-legged frog as the context for evaluation of the significance of the effects of the proposed federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

STATUS OF THE SPECIES

The California red-legged frog was federally listed as threatened on May 23, 1996 (Service 1996). A recovery plan was published by the Service in 2002, and critical habitat was designated on April 13, 2006. On September 16, 2008, a revised designation of critical habitat was proposed to modify critical habitat boundaries to better reflect lands containing essential features for the California red-legged frog (Service 2008). On April 28, 2009, an amended version of the proposed rule was reopened for comments to interested parties (Service 2009), and a final designation for critical habitat was made on March 17, 2010 (Service 2010).

Until recently, the California red-legged frog was recognized as two conspecific subspecies, *Rana aurora aurora* and *Rana aurora draytonii*. Recent genetic analysis of the *Rana aurora/draytonii* complex has concluded that the two *Rana aurora* subspecies are in fact separate species (Shaffer et al. 2004, Frost et al. 2006, as cited in Service 2009); this change in nomenclature was acknowledged and finalized in the final rule for revised designation of critical habitat for the California red-legged frog (Service 2010).

The California red-legged frog is the largest native frog in the western United States, ranging from 1.5 to 5.1 inches in length. The abdomen and hind legs of adults are largely red; the back is characterized by small black flecks and larger, irregular dark blotches with indistinct outlines on a brown, gray, olive, or reddish background color. Dorsal spots usually have light centers, and dorsolateral folds are prominent on the back. Tadpoles range from 0.6 to 3.1 inches in length and are dark brown and yellow with dark spots.

California red-legged frogs spend most of their lives in and near sheltered backwaters of ponds, marshes, springs, streams, and reservoirs. Deep pools with dense stands of overhanging willows and an intermixed fringe of cattails are considered optimal habitat. Eggs, larvae, transformed juveniles, and adults also have been found in ephemeral creeks and drainages and in ponds that do not have riparian vegetation. Accessibility to sheltering habitat is essential for the survival of California red-legged frogs within a watershed, and can be a factor limiting population numbers and distribution. Some California red-legged frogs have moved long distances overland between water sources during winter rains. Adult California red-legged frogs have been documented to move more than 2 miles in northern Santa Cruz County “without apparent regard to topography, vegetation type, or riparian corridors” (Bulger et al. 2003). Most of these overland movements occur at night. In another study conducted at the Point Reyes National Seashore and Golden Gate National Recreation Area in Marin County, radio tagged frogs often moved in a straight line between breeding and upland habitats up to 1.7 miles, again with no apparent regard to topography. Some of these frogs remained at breeding ponds all year, while others moved to non-breeding areas, even when the breeding sites retained water (Fellers and Kleman 2007).

California red-legged frogs breed from November through March with earlier breeding records occurring in southern localities. California red-legged frogs are often prolific breeders, typically laying their eggs during or shortly after large rainfall events in late winter and early spring. Female California red-legged frogs deposit egg masses on emergent vegetation so that the masses float on the surface of the water. Egg masses contain about 2,000 to 5,000 moderate-sized (0.08 to 0.11 inch in diameter), dark reddish-brown eggs. Embryos hatch 6 to 14 days after fertilization. Larvae generally undergo metamorphosis 3.5 to 7 months after hatching, but some larvae overwinter and metamorphose after up to 13 months (Fellers et al. 2001). Tadpoles probably experience the highest mortality rates of all life stages, with less than 1 percent of eggs laid reaching metamorphosis. Sexual maturity normally is reached at 3 to 4 years of age. California red-legged frogs may live 8 to 12 years. Juveniles can be active diurnally and nocturnally, whereas adults are mainly nocturnal.

The diet of California red-legged frogs is highly variable. Invertebrates are the most common food items for adults, although vertebrates such as Pacific treefrogs (*Hyla regilla*) and California mice (*Peromyscus californicus*) can constitute over half of the prey mass eaten by larger frogs (Hayes and Tennant 1985). Larvae eat algae and detritus.

The historical range of the California red-legged frog extended coastally from southern Mendocino County and inland from the vicinity of Redding, California, southward to northwestern Baja California, Mexico (Jennings and Hayes 1985, Storer 1925). The California red-legged frog has been extirpated or nearly extirpated from 70 percent of its former range. Historically, this subspecies was found throughout the Central Valley and Sierra Nevada foothills. California red-legged frogs have been documented in 46 counties in California, but now remain in only 238 streams or drainages in 31 counties in California and one region in Baja California, Mexico (Grismer 2002, Fidenci 2004, Smith and Krofta 2005, Service 2009b).

Over-harvesting, habitat loss, non-native species introduction, and urban encroachment are the primary factors that have negatively affected the California red-legged frog throughout its range (Jennings and Hayes 1985, Hayes and Jennings 1988). Ongoing causes of decline include direct habitat loss due to stream alteration and disturbance to wetland areas, indirect effects of expanding urbanization, and competition or predation from non-native species. Other causes of declines in amphibian species have been studied by Davidson et al. (2001). Results indicate that ozone depletion resulting in an increase in ultraviolet radiation is a potential factor of amphibian decline. In addition, upwind pesticides and/or other chemicals used for agricultural purposes have been identified as factors in a number of declining California amphibians.

An additional threat affecting amphibians worldwide is the chytrid fungus *Batrachochytrium dendrobatidis*. *B. dendrobatidis* causes chytridiomycosis, a skin disease that has been found to disrupt osmoregulatory function in the skin of amphibians, resulting in an imbalance of electrolytes and death (Voyles et al. 2009). Chytridiomycosis in amphibians may be marked by deformed mouthparts in tadpoles, wherein most infected tadpoles will die at metamorphosis (Service 2002). Infected boreal toads (*Bufo boreas boreas*) showed few clinical signs of the disease but many appeared weak or lethargic, exhibited excessive shedding of skin and were reluctant to flee at the approach of humans (U.S. Geological Service 2000, as cited in Service 2002). Chytrid fungi are widespread in the environment where they act as decomposers of keratin, chitin, cellulose, and other plant material, and are known parasites of fungi, algae, higher plants, protozoa, invertebrates, and most recently in vertebrates. Chytrid fungi reproduce asexually by means of minute, fragile, motile spores, and are probably spread directly from amphibian to amphibian in water. These fungi most likely move from one water source to another on migrating amphibians, waterbirds, or flying insects (Daszak et al. 1999 as cited in Service 2002).

Since its discovery in 1998, chytrid fungus has likely been responsible for die-offs of a number of amphibian species, including remaining populations of the endangered boreal toad (*Bufo boreas boreas*) in the southern Rocky Mountains, and Chiricahua leopard frogs (*Rana chiricahuensis*) in Arizona (Colorado Herpetological Society 2000, as cited in Service 2002). Occurrences of infection have been observed in two amphibian species in the Sierra Nevada, the mountain yellow-legged frog (*Rana muscosa*) and the Yosemite toad (*Bufo canorus*). An infected California red-legged frog tadpole was collected in Calabasas Pond on the Ellicott Slough National Wildlife Refuge in Santa Cruz County (Service 2002).

The chytrid fungus *Batrachochytrium dendrobatidis* is now recognized for its ability to spread quickly through amphibian populations and infect numerous species, causing high rates of mortality, and persisting at low host densities (Voyles et al. 2009). These recent findings validate the importance of taking precautions to prevent the spread of chytrid fungus or any disease agent into and/or between amphibian populations.

ENVIRONMENTAL BASELINE

The implementing regulations for section 7(a)(2) of the Act define the action area as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 Code of Federal Regulations (CFR) 402.02).

Salmonid habitat restoration activities typically occur in watersheds that have been subjected to significant levels of logging, road building, urbanization, mining, grazing, and other activities that have reduced the quality and quantity of stream habitat available for native anadromous fish. The location of these restoration activities is not specifically known at this time. All of the activities will take place in counties within the jurisdiction of the San Francisco District of the Corps and the VFWO (CDFG 2008). This includes various watersheds in the counties of Monterey, San Benito, San Luis Obispo, and Santa Cruz. The CDFG will provide the Service with notification of specific project information including the names and types of projects to be conducted, and the locations of projects including creeks, watersheds, cities or towns at least 90 days prior to project implementation (CDFG 2008a, 2009a). Notification will be made via mail or electronic mail to the appropriate contact at the VFWO.

The action area for this consultation includes areas in 3 of the 8 recovery units identified in the recovery plan for the California red-legged frog (Service 2002): the Central Coast unit; the Diablo Range and Salinas Valley unit; and the Northern Transverse Ranges and Tehachapi Mountains unit. California red-legged frogs were once widespread and abundant in the inner Coast Ranges between the Salinas River drainage and the San Joaquin Valley. Currently, no more than 10 percent of the historic localities within the Salinas River hydrographic basin and inner Coast Ranges still support this species. California red-legged frogs are known to occur in the Pajaro, Salinas, and San Benito River drainages and at Pinnacles National Monument.

The central California coast supports the greatest number of drainages occupied by California red-legged frogs. Almost all coastal drainages from the Santa Cruz/San Mateo County line south to the city of Santa Cruz are occupied by California red-legged frogs. The Elkhorn Slough watershed in northern Monterey County supports this species. California red-legged frogs occur in the Carmel River watershed and most of its tributaries; Rancho San Carlos, a private ranch in this watershed is one of the few places throughout the species range that has been known to support more than 350 adult California red-legged frogs. Nearly all coastal drainages in Monterey County north of Salmon Creek support California red-legged frogs. In San Luis Obispo County, California red-legged frogs are found in many streams, stock ponds, dune ponds, and springs on the coastal plain and western slopes of the Santa Lucia Range from San Carpoforo Creek in the north to the Santa Maria River drainage in the south.

EFFECTS OF THE ACTION

Direct effects to adults, sub-adults, tadpoles, and eggs of the California red-legged frog in the footprint of projects utilizing the proposed RGP would include injury or mortality from being crushed by earth-moving equipment, construction debris, and worker foot traffic. These effects would be reduced by the avoidance and minimization measures proposed by the CDFG, including minimizing and clearly demarcating the boundaries of the project areas.

Relocating California red-legged frogs out of harm's way, as proposed, may further reduce injury or mortality. However, injury or mortality of California red-legged frogs may occur as a result of improper handling, containment, or transport of individuals, or from releasing them into unsuitable habitat (e.g., where exotic predators are present). Observations of diseased and parasite-infected amphibians are now frequently reported. This has given rise to concerns that releasing amphibians following a period of captivity, during which time they can pick up infections of disease agents, may cause an increased risk of mortality in wild populations. Amphibian pathogens and parasites can also be carried between habitats on the hands, footwear, or equipment of fieldworkers, which can spread them to localities containing species which have had little or no prior contact with such pathogens or parasites.

Relocation of California red-legged frogs captured from the project area could contribute to the spread of chytrid fungus. In addition, infected equipment or footwear could introduce chytrid fungus into areas where it did not previously occur. If this occurs in the action area, many California red-legged frogs could be affected. The possible spread of chytrid fungus would be minimized by following the Declining Amphibian Populations Task Force's Fieldwork Code of Practice (Appendix A), in conjunction with the use of a Service-approved biologist to reduce or prevent improper handling, containment, or transport of California red-legged frogs. These measures have been included in the protective measures for the California red-legged frog, as described above.

Work activities, including noise and vibration, may cause California red-legged frogs to leave the work area. This disturbance may increase the potential for individual frogs to become victims of predation and/or desiccation. Minimizing the area disturbed by project activities will reduce the potential for fleeing as a result of the action. California red-legged frogs are more likely to disperse overland in mesic conditions. Because the CDFG would primarily be executing the proposed projects during the dry season, these impacts are less likely. As long as no substantial rainfall (substantial rainfall equal or greater than 0.5 inch of rain in a 24-hour period) occurs, California red-legged frogs are unlikely to be at risk.

Tadpoles may be injured or killed if entrained by pump or water diversion intakes. Screening pump intakes with wire with not greater than 0.2-inch diameter mesh, as proposed by CDFG, will reduce the potential that tadpoles would be caught in the inflow.

If water that is impounded during or after work activities creates favorable habitat for non-native predators, such as bullfrogs, crayfish, and centrarchid fishes, California red-legged frogs may suffer abnormally high rates of predation. Additionally, any time California red-legged frogs are concentrated in a small area at unusually high densities, native predators such as great blue herons (*Ardea herodias*), great egrets (*A. alba*), Virginia opossums (*Didelphis virginiana*), and raccoons (*Procyon lotor*) may feed on them opportunistically. This impact would be minimized by proposed measures to avoid creation of ponded water as a result of project actions, such as dewatering the work area.

Trash left during or after project activities could attract predators to work sites, which could, in turn, prey on California red-legged frogs. For example, raccoons are attracted to trash and also prey opportunistically on the California red-legged frog. This potential impact would be reduced or avoided by careful control of waste products at all work sites as proposed by CDFG.

Accidental spills of hazardous materials or careless fueling or oiling of vehicles or equipment could degrade water quality or upland habitat to a degree where California red-legged frogs are adversely affected or killed. The potential for this effect to occur can be reduced by implementation of measures proposed by CDFG to thoroughly inform workers of the importance of preventing hazardous materials from entering the environment, locating staging and fueling areas a minimum of 65 feet from riparian areas or other water bodies, and by having an effective spill response plan in place.

Work in live streams or in floodplains could cause unusually high levels of siltation downstream. This siltation could alter the quality of the habitat to the extent that use by individuals of the species is precluded. Implementing best management practices for erosion control and reducing the area to be disturbed to the minimum necessary should decrease the amount of sediment that is washed downstream as a result of project activities.

Uninformed workers could disturb, injure, or kill California red-legged frogs. The potential for this to occur may be greatly reduced by proposed education of workers as to the presence and protected status of this species and the measures that are being implemented to protect it during project activities.

The restoration projects that would utilize the proposed authorization are intended to provide additional habitat for and increased populations of steelhead and coho salmon in the respective project areas. The effects of potentially increasing predators on California red-legged frogs cannot be accurately predicted. California red-legged frogs and steelhead presumably occurred sympatrically in many coastal watersheds prior to the onset of human disturbance. Although we anticipate that some predation of California red-legged frogs by salmonid fishes may occur, this level of predation is not expected to appreciably alter the population structure within the project areas.

The Corps' proposed authorization of the CDFG Program is not expected to result in the loss of California red-legged frog habitat. The restoration projects will provide more stable stream banks, better water quality through decreased erosion and sediment loading, and shelter along stream banks for California red-legged frogs. Additionally, many of the projects are expected to improve California red-legged frog habitat by creating additional pools and providing a more natural water flow regime by eliminating or altering fish passage barriers. The restoration projects will contribute to the local recovery of the California red-legged frog by removing non-native predators such as bullfrogs which out-compete and ultimately displace California red-legged frogs from suitable habitat, and by improving the riparian buffer along streams which should reduce the movement of pesticides into the aquatic environment.

The Corps' proposed authorization would affect a small number of California red-legged frogs, if any occur in the areas that would be temporarily disturbed by project activities. Based on the small size of the work areas, the temporal nature of the projects, the implementation of the projects in the dry season, and the proposed protective measures, we anticipate that few, if any, California red-legged frogs are likely to be killed or injured during project activities. The areas disturbed by Program projects constitute a small portion of the available California red-legged frog habitat throughout the Corps' San Francisco District's jurisdiction. Additionally, disturbed areas will be restored and planted with native plants. Restoration and enhancement of riparian vegetation in project sites is likely to increase the number and quality of cover sites and the diversity and abundance of prey species for California red-legged frogs. The proposed authorization is likely to improve the quality of habitat for the California red-legged frog in areas affected by projects implemented under the Program.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. As described in the Environmental Baseline section of this biological opinion, Program activities vary by location, and notification by the CDFG will occur 90 days prior to project implementation; therefore, we are unable to analyze cumulative effects that are reasonably certain to occur in the action area at this time.

CONCLUSION

After reviewing the current status of the California red-legged frog, the environmental baseline for the action area, the effects of the proposed authorization, and the cumulative effects, it is the Service's biological opinion that the Corps' issuance of the CDFG Fisheries Restoration Grant Program Regional General Permit, as proposed, is not likely to jeopardize the continued existence of the California red-legged frog.

We have reached this conclusion based on the following reasons:

1. The Corps and the CDFG have proposed measures to minimize the potential adverse effects of project activities on the California red-legged frog;
2. Few, if any, California red-legged frogs are likely to be killed or injured during project activities; and
3. The overall quality of California red-legged frog breeding, foraging, and dispersal habitat is expected to be improved as a result of improved water quality, reduced sedimentation, and habitat enhancement associated with Program projects.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined

as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary, and must be undertaken by the Corps so that they become binding conditions of any grant or permit issued to the CDFG, as appropriate, for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to assume and implement the terms and conditions or (2) fails to require the CDFG to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the Corps or the CDFG must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement. [50 CFR 402.14(i)(3)] Based on the take limits proposed by the Corps and the CDFG in Table 2 of the Description of the Proposed Action portion of this biological opinion, the maximum amount of incidental take in the form of injury or mortality that may occur as a result of Program project activities is as follows:

| Unit of Measure | Adults or Juveniles | Tadpoles | Egg Masses |
|-------------------------------------|----------------------------|---------------------------------|-------------------|
| Per Project Site | 1 | 10 percent of those encountered | 0 |
| Per Dewatered Area per Project Site | N/A | 10 percent of those encountered | 0 |
| Per Watershed | 5 | 10 percent of those encountered | 0 |
| Cumulative Total Per Year | 25 | 10 percent of those encountered | 0 |

All California red-legged frog adults, juveniles, and tadpoles within the boundaries of work areas may be taken as a result of capture during translocation activities. A small number of these captured individuals may be injured or die as a result of capture and relocation. Any California red-legged frogs injured or killed as a result of relocation activities will be counted toward the totals in the table above. California red-legged frogs may be taken only within the Action Area as defined in the Environmental Baseline section.

Incidental take of California red-legged frogs will be difficult to detect because of their small body size, and finding a dead or injured specimen is unlikely. California red-legged frogs injured or killed during translocation efforts are more likely to be observed; however, mortality from other sources, including the indirect effects of translocation, would be difficult to observe. The actual numbers of California red-legged frogs taken may be greater than what is observed.

If any California red-legged frogs are found dead or injured, the Corps or the CDFG must contact our office immediately so we can review the project activities to determine if additional protective measures are needed. Project activities may continue during this review period, provided that all protective measures proposed by the Corps and the CDFG and the terms and conditions of this biological opinion have been and continue to be implemented. This biological opinion does not authorize any form of take that is not incidental to implementation of the Program projects within the Action Area.

Only forms of take that are incidental to implementation of Program projects are exempt from the prohibitions described in section 9 of the Act. If the amount of incidental take within any geographic or temporal unit of measure described above (e.g., per project site, per dewatered area, per watershed, per year) is reached, the Corps and the CDFG must cease project activities and the Corps must reinitiate formal consultation with the Service.

REASONABLE AND PRUDENT MEASURES

The 2004 biological opinion for the existing RGP lists reasonable and prudent measures as necessary and appropriate to minimize take of California red-legged frogs. These measures have been incorporated into the current RGP application and description, as outlined in the above protective measures for the California red-legged frog and habitat (CDFG 2008, 2008a, 2009a). However, because the action areas for the RGP projects vary throughout the 5-year span of the RGP permit, the following reasonable and prudent measure is necessary and appropriate as a precursor to minimize take of California red-legged frogs:

1. The Service will be notified by CDFG of specific locations of Program projects prior to onset of project activities.

Any subsequent changes in these measures proposed by the Corps or the CDFG may constitute a modification of the proposed action and may warrant reinitiation of formal consultation, as specified at 50 CFR 402.16.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the Corps must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline reporting and monitoring requirements. These terms and conditions are non-discretionary.

The terms and conditions originally outlined in the 2004 biological opinion have since been incorporated as part of the current RGP application and description (CDFG 2008), and are outlined in the protective measures for the California red-legged frog and habitat above. In addition:

1. The following term and condition implements reasonable and prudent measure 1:
 - a. For activities in Monterey, San Benito, San Luis Obispo, and Santa Cruz counties, the Corps or the CDFG must provide the Service's Ventura Fish and Wildlife Office (2493 Portola Road, Suite B; Ventura, California 93003) with notification of projects that are authorized through the RGP at least 90 days prior to project implementation. This notification will contain specific project information including the names and types of projects to be conducted and the locations of projects including creeks, watersheds, city or towns, and counties (CDFG 2008a, 2009a).

REPORTING REQUIREMENTS

The CDFG must submit an annual report of implemented projects due by January 31 of each year. The report must include (1) A table documenting the number of red-legged frogs killed, injured, and handled during each Program project that utilizes the Corps authorization; (2) a summary of how the terms and conditions of this biological opinion and the protective measures by the Corps and DFG worked; and (3) any suggestions of how these measures could be revised to improve conservation of this species while facilitating compliance with the Act (CDFG 2008a, 2009a).

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

In the 2004 biological opinion for the existing RGP, we recommended conservation measures to promote the recovery of listed and unlisted species. These recommendations have been incorporated into the 2008 and 2009 Mitigated Negative Declarations and will be implemented as part of the general protective measures outlined in the RGP renewal application. The Service requests notification of the implementation of any conservation recommendations so that we may be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats.

REINITIATION NOTICE

This concludes formal consultation on the action(s) outlined in the Corps' proposed renewal of the California Department of Fish and Game Fisheries Restoration Grant Program Regional

General Permit. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have any questions, please call Lena Chang of my staff at (805) 644-1766, extension 302.

Sincerely,

/s/: Diane K. Noda

Diane K. Noda
Field Supervisor

Attachment

LITERATURE CITED

- Bulger, J.B., N.J. Scott, and R.B. Seymour. 2003. Terrestrial activity and conservation of adult California red-legged frogs (*Rana aurora draytonii*) in coastal forests and grasslands. *Biological conservation* 110: 85-95.
- California Department of Fish and Game. 2008. Application for renewal of the Department of the Army Regional General Permit for the Fisheries Restoration Grant Program including project descriptions and general protective measures. Fisheries Branch, Sacramento California. Received March 17, 2009.
- California Department of Fish and Game. 2008a. 2008 Fisheries Restoration Grant Program Mitigated Negative Declaration. Fisheries Branch, Sacramento, California. Received July 22, 2009.
- California Department of Fish and Game. 2009a. 2009 Fisheries Restoration Grant Program Mitigated Negative Declaration. Fisheries Branch, Sacramento, California. Accessed electronically November 12, 2009.
- California Department of Fish and Game. 2010. Final RGP 12 sideboards. Fisheries Branch, Sacramento, California. Received electronically February 1, 2010.
- [CNDDDB] California Department of Fish and Game, Natural Diversity Data Base. 2009. Element Occurrence Reports for *Rana aurora draytonii*. Unpublished cumulative data current to December 2009.
- Colorado Herpetological Society. 2000. Chytrid fungus implicated as a factor in the decline of Arizona frogs. *The Cold Blooded News*: 27(6). 3pp.
- Davidson, C., H.B. Shaffer, and M.R. Jennings. 2001. Declines of the California red-legged frog: climate, UV-B, habitat, and pesticides hypothesis. *Ecological Applications* 11(2): 464-479.
- [DAPTF] Declining Amphibian Populations Task Force. 1998. The Declining Amphibian Populations Task Force fieldwork code of practice. *Froglog* 27.
- Daszak, P., L. Berger, A.A. Cunningham, A.D. Hyatt, D.E. Green, and R. Speare. 1999. Emerging infectious diseases and amphibian population declines. *Emerging Infectious Diseases*. 5(6):735-748.
- Dean, C., R. Evans, G. Fisher, K. Gaffney, and K. Gledhill. 2004. California salmonid stream habitat restoration manual 3rd edition, revision of Part XI, riparian habitat restoration. California Department of Fish and Game, Inland Fisheries Division, Sacramento, California.

- Fellers, G.M., A.E. Launer, G. Rathbun, and S. Bobzien. 2001. Overwintering tadpoles in the California red-legged frog. *Herpetological Review*. 32: 156-157.
- Fellers, G.M. and P.M. Kleeman. 2007. California red-legged frog (*Rana draytonii*) movement and habitat use: implications for conservation. *Journal of Herpetology* 41: 276-286.
- Fidenci, P. 2004. The California red-legged frog, *Rana aurora draytonii*, along the Arroyo Santo Domingo, Northern Baja California, Mexico. *The Herpetological Journal*, Volume 88. London, England.
- Flosi, G., S. Downie, J. Hopelain, M. Bird, R. Coey, and B. Collins. 1998. California salmonid stream habitat restoration manual 3rd edition. California Department of Fish and Game, Inland Fisheries Division, Sacramento, California.
- Frost, D.R., T. Grant, J. Faivovich, R.H. Bain, A. Haas, C.F.B. Haddad, R.O. de Sá, A. Channing, M. Wilkinson, S.C. Donnellan, C.J. Raxworthy, J.A. Campbell, B.L. Blotto, P. Moler, R.C. Drewes, R.A. Nussbaum, J.D. Lynch, D.M. Green, and W.C. Wheeler. 2006. The amphibian tree of life. *Bulletin of the American Museum of Natural History* 297: 1-370.
- Grismer, L. 2002. Reptiles and amphibians of Baja California, including its Pacific island and the islands in the Sea of Cortez. University of California Press, Berkeley and Los Angeles, California.
- Hayes, M.P., and M.R. Jennings. 1988. Habitat correlates of distribution of the California red-legged frog (*Rana aurora draytonii*) and the foothill yellow-legged frog (*Rana boylei*): Implications for management. Pages 144-158 in R. Sarzo, K.E. Severson, and D.R. Patton (technical coordinators). *Proceedings of the Symposium on the Management of Amphibians, Reptiles, and Small Mammals in North America*. USDA Forest Service General Technical Report RM-166.
- Hayes, M.P., and M.R. Tennant. 1985. Diet and feeding behavior of the California red-legged frog *Rana aurora draytonii* (Ranidae). *The Southwestern Naturalist* 30: 601-605.
- Jennings, M.R., and M.P. Hayes. 1985. Pre-1900 overharvest of California red-legged frogs (*Rana aurora draytonii*): The inducement for bullfrog (*Rana catesbeiana*) introduction. *Herpetological Review* 31(1):94-103.
- Love, M., K. Bates, M. Lang, R. Shea, and A. Llanos. 2009. California salmonid stream habitat restoration manual 3rd edition, revision of Part XII, fish passage design and implementation. California Department of Fish and Game, Inland Fisheries Division, Sacramento, California.

- Shaffer, B.H., G.M. Fellers, S. Randall Voss, C. Oliver, and G.B. Pauly. 2004. Species boundaries, Phylogeography and conservation genetics of the red-legged frog (*Rana aurora/draytonii*) complex. *Molecular Ecology* 13: 2667-2677.
- Smith, R. and D. Krofta. 2005. Field notes documenting the occurrence of California red-legged frogs in Baja California, Mexico. In litt.
- Storer, T.I. 1925. A synopsis of the amphibia of California. University of California Publications in Zoology 27:1-342.
- U.S. Fish and Wildlife Service. 1996. Determination of threatened status for the California red-legged frog. *Federal Register* 61: 25813-25833.
- U.S. Fish and Wildlife Service 2002. Recovery plan for the California red-legged frog (*Rana aurora draytonii*). U.S. Fish and Wildlife Service, Portland, Oregon. viii + 173 pp.
- U.S. Fish and Wildlife Service. 2004. Biological opinion for the proposed California Department of Fish and Game Fisheries Restoration Grant Program Regional General Permit, Monterey, San Benito, San Luis Obispo, and Santa Cruz Counties, California (PAS 375.395.2367). Ventura Fish and Wildlife Office, Ventura, California.
- U.S. Fish and Wildlife Service. 2008. Revised critical habitat for the California red-legged frog (*Rana aurora draytonii*). *Federal Register* 73: 53491-53680.
- U.S. Fish and Wildlife Service. 2009. Revised designation of critical habitat for the California red-legged frog (*Rana aurora draytonii*): proposed rule; reopening of comment period, notice of availability of draft economic analysis, and amended required determinations. *Federal Register* 74: 19184-19192.
- U.S. Fish and Wildlife Service (Service). 2009b. Sacramento Fish and Wildlife Office species account, California red-legged frog, *Rana aurora draytonii*. Available at: http://www.fws.gov/sacramento/es/animal_spp_acct/ca_red-legged_frog.pdf. Accessed: January 19, 2010.
- U.S. Fish and Wildlife Service. 2010. Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the California Red-Legged Frog; final rule. *Federal Register* 75: 12816-12959.
- U. S. Geological Service. 2000. Chytrid fungus associated with boreal toad deaths in Rocky Mountain National Park, Colorado. U.S.G.S. Northern Prairie Wildlife Research Center, U.S. Geological Survey News Release, March 29, 1999.
- Voyles, J., S. Young, L. Berger, C. Campbell, W.F. Voyles, A. Dinudom, D. Cook, R. Webb, R.A. Alford, L.F. Skerratt, R. Speare. 2009. Pathogenesis of chytridiomycosis, a cause of catastrophic amphibian declines. *Science* 326: 582-585.

Weaver, B., D. Hagans, and E. Weppner. 2006. California salmonid stream habitat restoration manual 3rd edition, revision of Part X, upslope erosion inventory and sediment control guidance. California Department of Fish and Game, Inland Fisheries Division, Sacramento, California.

In Litteris

Forbes, P. Fisheries Restoration Grant Program Coordinator, California Department of Fish and Game, Sacramento, California. Electronic mail regarding annual negative declarations for the Fisheries Restoration Grant Program. Received by Lena Chang, U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office, Ventura, California. Dated November 24, 2009.

APPENDICES

APPENDIX A. The Declining Amphibian Task Force Fieldwork Code of Practice

A code of practice, prepared by the Declining Amphibian Task Force (DAPTF) provides guidelines for use by anyone conducting field work at amphibian breeding sites or in other aquatic habitats. Observations of diseased and parasite-infected amphibians are now being frequently reported from sites all over the world. This has given rise to concerns that releasing amphibians following a period of captivity, during which time they can pick up unapparent infections of novel disease agents, may cause an increased risk of mortality in wild populations. Amphibian pathogens and parasites can also be carried in a variety of ways between habitats on the hands, footwear, or equipment of fieldworkers, which can spread them to novel localities containing species which have had little or no prior contact with such pathogens or parasites. Such occurrences may be implicated in some instances where amphibian populations have declined. Therefore, it is vitally important for those involved in amphibian research (and other wetland/pond studies including those on fish, invertebrates and plants) to take steps to minimize the spread of disease and parasites between study sites.

1. Remove mud, snails, algae, and other debris from nets, traps, boots, vehicle tires and all other surfaces. Rinse cleaned items with sterilized (e.g. boiled or treated) water before leaving each study site.
2. Boots, nets, traps, etc., should then be scrubbed with 70 percent ethanol solution (or sodium hypochlorite 3 to 6 percent) and rinsed clean with sterilized water between study sites. Avoid cleaning equipment in the immediate vicinity of a pond or wetland.
3. In remote locations, clean all equipment as described above upon return to the lab or "base camp". Elsewhere, when washing machine facilities are available, remove nets from poles and wash with bleach on a "delicates" cycle, contained in a protective mesh laundry bag.
4. When working at sites with known or suspected disease problems, or when sampling populations of rare or isolated species, wear disposable gloves and change them between handling each animal. Dedicate sets of nets, boots, traps, and other equipment to each site being visited. Clean and store them separately and the end of each field day.
5. When amphibians are collected, ensure the separation of animals from different sites and take great care to avoid indirect contact between them (e.g. via handling, reuse of containers) or with other captive animals. Isolation from un-sterilized plants or soils which have been taken from other sites is also essential. Always use disinfected/disposable husbandry equipment.
6. Examine collected amphibians for the presence of diseases and parasites soon after capture. Prior to their release or the release of any progeny, amphibians should be quarantined for a period and thoroughly screened for the presence of any potential disease agents.
7. Used cleaning materials (liquids, etc.) should be disposed of safely and if necessary taken back to the lab for proper disposal. Used disposable gloves should be retained for safe disposal in sealed bags (DAPTF 1998).