



**The Wildlife Society
Western Section
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Re: Federal Register 65(93): 30604-30605, May 12, 2000, Draft recovery plan for the California Red-legged Frog (*Rana aurora draytonii*).

Dear Supervisor White,

The Wildlife Society-Western Section (TWS-WS) was pleased to have the opportunity to review the Draft Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*). The Wildlife Society is an international, nonprofit scientific and educational organization serving professionals in all areas of wildlife conservation and resource management. The Western Section of TWS is composed of professional wildlife biologists working for government agencies, consulting firms, universities, non-profit NGOs and as individuals in the states of California, Nevada, and Hawaii. For over 60 years our membership of nearly 800 dedicated women and men has sought to enhance the capability of wildlife professionals in conserving diversity, sustaining productivity, and ensuring responsible use of wildlife resources for the benefit of society. The principal objectives of TWS include the following:

- (1) To develop and promote sound stewardship of wildlife resources and of the environments upon which wildlife and humans depend;
- (2) To undertake an active role in preventing human-induced environmental degradation;
- (3) To increase awareness and appreciation of wildlife values; and
- (4) To seek the highest standards in all activities of the wildlife profession.

The Draft Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*) bears on our objectives. On behalf of the TWS-WS, I hereby provide comments on the Plan.

Threats to Recovery

On page 12, the Recovery Plan concludes that the introduced bullfrog may have caused local extirpations of the California Red-legged Frog. However, the TWS-WS notes that bullfrogs in the Central Valley have declined in numerical distribution (Fisher and Shaffer 1996), during which time the California Red-legged Frog has not returned to the Central Valley. The recovery plan should acknowledge and cite Fisher and Shaffer (1996). Also, bullfrogs do

not occur in multiple streams where California Red-legged Frogs formerly occurred, including Cholame Creek in San Luis Obispo County and in tributaries of Clear Lake in Lake County. If bullfrogs are a threat to the California Red-legged Frog, then discussion should be devoted to decreasing infiltration of invasive, exotic species into areas with higher biological integrity (Smallwood 1994).

The Recovery Plan's conclusion that bullfrogs are a threat to California Red-legged Frog appears to be based on an unpublished report of an environmental assessment at a military base (page 26). This report apparently implicates the bullfrog and mosquitofish in the local extirpation of the California Red-legged Frog at this military base. Relying on one unpublished report does not warrant bullfrog eradication as one of the major recovery actions in the Plan. There are other studies not cited by this plan which analyze the effects of bullfrogs on red-legged frogs and other ranid frogs, including Kiesecker and Blaustein (1997, 1998), Schwalbe and Rosen (1998), Adams (1999), and Lawler et al. (1999). We recommend that more substantiation be provided of the effects of bullfrogs and other exotic species on California Red-legged Frogs.

The more conservative approach of identifying the relationships between California Red-legged Frogs and exotic plant species (page 79) should also be applied to bullfrogs and other exotic animal species. This Recovery Plan acknowledges that the effects of environmental stresses and introduced species are confounded (page 36), but it should more seriously consider the possibility that the presence of exotic vertebrates is a symptom of larger environmental problems, which, until alleviated, will continue to favor the exotic species over the California Red-legged Frog. Eradication is likely not the most productive means to recovering the California Red-legged Frog, but we do endorse the removal of exotic species that may harm the California Red-legged Frog. We recommend that exotic species removal occur, but that it occur carefully and with lesser priority than restoring ecosystem processes and expanding the availability of habitat. However, we emphasize that if exotic species are removed, then the Service needs to implement rigorous scientific monitoring designed to determine the effectiveness of exotic species removal.

In discussing the threats to the California Red-legged Frog, it would be helpful to present maps of where the California Red-legged Frog is known or suspected to occur along with maps of the proposed threats. Maps could depict the following threats to the California Red-legged Frog, as identified in the recovery plan:

- Where urban and rural sprawl is occurring within the species' range;
- Where and what types of pesticides are being loaded into the environment due to agricultural practices on an inter-annual average basis;
- Where and what types of fertilizers are being used on an inter-annual average basis;
- Locations of water impoundments, channelization of streams and flood control projects;
- Locations of past and present mining and the discharge of contaminants;
- Contours of inter-annual average levels of ozone, NO_x, ammonia, particulate matter, and other atmospheric pollutants thought to be dangerous to the species;
- Locations where levels of salts, mercury, and other water-borne contaminants threaten the species;
- Livestock stocking rates and evidence of related erosion and sediment/nutrient loading into streams;
- Locations of intense off-road vehicle use;
- Timber harvest impacts and proposed projects;
- Locations of disease incidents; and,

- Indicators of the abundance of exotic predators and competitors.

Maps of these proposed threats would help the reader make a reasonable assessment of the threats. For example, maps might cause the reader to question the claim that atmospheric pollutants are a reason for the decline of the California Red-legged Frog in the foothills of the west slope of the Sierra Nevada. A map would show that the foothills west of the Coyote Valley, south of San Jose, still support California Red-legged Frogs even though the region is subject to the same atmospheric pollutants as the foothills of the Sierra Nevada. The maps would show that California Red-legged Frogs may have been extirpated in the Counties of Lake, Sonoma, and Glenn, even though the winds blow in from the northwest, and are largely devoid of the atmospheric pollutants that the Recovery Plan suggests may have harmed the Sierra Nevada populations. In another example, maps including Cholame Valley and Lake County would illustrate that the California Red-legged Frog has been extirpated (perhaps) from locations where the bullfrog does not occur. These maps might lead to new ideas on what might be the threats to the California Red-legged Frog at regional scales, as patterns of extirpation can be related to patterns of pesticide and fertilizer inputs, to patterns of mine effluents, and to patterns of stream alterations. Given the availability of spatial data representing nearly all the threats discussed in the Recovery Plan, and given the proliferation of geographic information systems (GIS) and skills to use GIS, there is every reason to create indicator-level maps and to put them into the Recovery Plan. The TWS-WS recommends that these maps be produced so that existing populations can be protected by reducing threats, as per Recovery Strategy 1 (page 63) and so that the proposed establishment of a centralized data base on the California Red-legged Frog can be more useful (page 112) by related updated distributions of the species to the spatial patterns of the hypothesized threats.

At the very least, in Figure 2, rather than presenting the current known distribution of California red-legged frogs by county, the current range should be presented as a map of watersheds and/or drainages occupied by the frog so that greater mapping resolution and biological meaning of the species' distribution can be included in the map. County distribution data could be presented as well, but more information would be imparted by mapping occupied hydrologic units. Comparison could then be facilitated by including a map of non-occupied drainages.

Recovery Criteria

We disagree that the recovery goal on pages iii and 62 should be to "delist the California Red-legged Frog." According to Gordon et al. (1998), delisting has been a very subjective process, and there have been a number of delisting errors such as removal of species from the threatened and endangered species list because they were erroneously listed in the first place or listed based on information later determined to be unreliable. Because delisting is a bureaucratic goal, and can happen for reasons that are independent of the condition of the species, we suggest that the stated goal of the recovery plan should be to recover the California Red-legged Frog. This is not merely a semantic argument. Delisting is not necessarily the same as recovering the species; it could be a more achievable goal should the Service decide to delist the species based on reasons that are non-scientific. If the Service maintains the delist language, then we recommend that it follow the language of section 4 (b) (1) (A) of the Endangered Species Act, which states that listing and delisting determinations be made "solely on the basis of the best scientific and commercial data available" and taking into account efforts being made to protect the species.

We agree with the Recovery Criterion of continued reproduction in core areas. Numbers of

frogs would be meaningless, although the spatial extent of their occurrence would be helpful. We suggest that the availability of habitat and habitat space be considered as Recovery Criteria, as well as the spatial distribution of the California Red-legged Frog.

Recovery Units

We agree with the recovery units described in the Recovery Plan, and we agree with the approach of recovering the California Red-legged Frog within core areas. This part of the Recovery Plan was well thought out and makes practical and ecological sense.

Recovery Actions

Suitable Habitat in Core Areas

This Recovery Plan is contradictory with respect to the ecosystem approach touted on pages 50 and 51. By focusing recovery efforts on protecting and managing suitable habitat in core areas (pages 64-65), this Plan does not consider other parts of the environment that may be critical to ecosystem processes. Ecological processes are just as important as the habitat patterns in conserving species (Ricklefs et al. 1984). Preserving the habitats of existing populations (page 63) will not preserve the hydrological system that may very well originate far from the existing populations. Implementing recovery actions will be needed in unsuitable habitat in order to restore appropriate stream flows to the areas of suitable habitat, and in order to reduce pollution levels in suitable habitat, as examples. Also, the proposed removal of a native species, such as raccoon (page 99), is probably not consistent with an ecosystem approach, and should be practiced only as a last resort.

Watershed Management

We agree that this Recovery action is most important. The California Red-legged Frog should benefit from restoring and protecting habitat within watersheds, while also restoring the hydrological conditions of the watersheds.

However, the guidelines for watershed management (page 93) did not consider upland aestivation and refuge habitat in mammal burrows. By focusing only on the aquatic elements of the California Red-legged Frog habitat, this Recovery Plan again falls short of applying an ecosystem approach. The upland areas require just as much consideration as the aquatic areas.

Also, developing and implementing watershed management plans is difficult and time-consuming. We note that strong lead agencies will be required to accomplish these tasks. Who will be these lead agencies, and how much time would these tasks require? The targeted delisting date of 2025 leaves little time for watershed management plans to be successfully implemented.

Mitigation Banks

We disagree that a Recovery Plan should encourage unproven mitigation, such as mitigation banks (pages 93 and 111). Mitigation banks are the result of take of endangered species elsewhere, and as an end product amounts to a net loss of habitat area. We do not agree that a recovery plan should endorse the take of endangered species, possibly including California Red-legged Frog, so that a convenient mitigation method can be implemented. Also, we are

unaware of any evidence that demonstrates mitigation banks help recover endangered species.

If mitigation banks are included in the final recovery plan, then we recommend that the recovery plan explain how, and to what extent, they will contribute to the recovery of the species. We recommend that scientific monitoring be described in detail prior to implementing any conservation or mitigation banks. We also recommend that alternative recovery actions be defined prior to implementing mitigation or conservation banks so that failures to recover the species using mitigation banking can be quickly reversed using another approach.

Consolidating inholdings in National Forests

We do not agree that acquiring National Forest inholdings will necessarily lead to the recovery of the California Red-legged Frog. The National Forests have been managed for timber extractions and cattle grazing, which are recognized in this Recovery Plan as threats to the recovery of the California Red-legged Frog (page 34). We could agree with this Recovery Action only if the acquisitions of inholdings included the condition that they will not be subjected to timber extractions or other land uses that would threaten the California Red-legged Frog.

Eradication of Exotic Species

If public funds are earmarked for exotic species eradication efforts as a priority Recovery Action, we see this as a waste of money and time. Eradication of exotic vertebrates has a dismal success record (e.g., European starling, feral pig, feral house cat, mongoose on Hawaii, axis deer on Maui, and many others), and focusing eradication efforts on suitable habitat within core areas will leave survivors in unsuitable habitat and outside core areas, which will re-invade the areas from which they were locally eradicated. Eradication of exotic vertebrates does not repair the environmental damage that made the site invisable in the first place (see Smallwood 1994). Finally, the causal link between the exotic species and California Red-legged Frog declines is unsubstantiated. We recommend that research be conducted on the relationships between exotic species and the California Red-legged Frog prior to spending taxpayer money on eradicating exotic species. Lasting recovery efforts will likely involve restoration of habitat and ecosystem processes that favor the California Red-legged Frog over such species as the bullfrog.

Intensive Agriculture

Reducing intensive agriculture within 500 meters of wetlands, and replacing mineral fertilizers with less dangerous substances (pages 105-106) will require incentives or subsidies well in excess of the estimated cost of recovering the California Red-legged Frog. The suggested 500 meter buffer from agriculture appears to be arbitrary. It is very likely that different types of agriculture have different impacts on the California Red-legged Frog, and that different soils result in unique pathways of the chemicals input into farming operations. If this Recovery Plan were to implement an ecosystem approach, as described on pages 50-51, then a dialogue with agricultural professionals should precede the issuance of this Recovery Plan. As is, this Recovery Plan may be opposed by the agricultural community, and this conflict may be harmful to endangered species recovery efforts. We recommend that the Recovery Team meet with agricultural experts to develop a more substantiated recovery action that is also harmonious with agricultural goals.

Habitat Conservation Plans

According to this draft recovery plan (pages 47 and 109), Habitat Conservation Plans should play a significant role in California Red-legged Frog recovery efforts. However, according to the HCP Handbook (USDI and USDC 1996), HCPs are not required to contribute to species recovery. HCPs are mitigation plans for take, including the take of California Red-legged Frog and their habitat. Under these HCPs, there is a net loss in habitat area within the range of the California Red-legged Frog. Mitigation in HCPs has been inadequate, the scientific foundations of conclusions poorly developed (Kareiva et al. 1999), and the plans in general are inconsistent with the HCP Handbook and the Endangered Species Act (Smallwood 2000).

If HCPs are included as recovery actions in the final recovery plan, then we recommend that the recovery plan explain how and to what extent HCPs will contribute to the recovery of the species. We recommend that scientific monitoring be described in detail prior to implementing any HCP intended to help recover the California Red-legged Frog. We also recommend that alternative recovery actions be defined prior to implementing HCPs so that failures to recover the species using HCPs can be quickly reversed using another approach.

Safe Harbor

According to the Recovery Plan (pages 101 and 108), Safe Harbor Agreements will contribute to the recovery of the California Red-legged Frog. Safe Harbor Agreements allow for take of listed species, which the TWS-WS feels is inappropriate in a recovery plan and contrary to recovery goals. Safe Harbor Agreements can allow land holders to destroy habitat previously created and to translocate California Red-legged Frogs, which, perhaps, would be convenient for the recovery strategy of repatriation to areas of vacant suitable habitat. Translocations of vertebrate species have a poor record of success (Griffith et al. 1989). Safe Harbor Agreements have no place in a recovery plan because they offer no security to the species.

If Safe Harbor or related Agreements are included as recovery actions in the final recovery plan, then we recommend that the recovery plan explain how and to what extent Safe Harbor Agreements will contribute to the recovery of the species. We recommend that scientific monitoring be described in detail prior to implementing any Safe Harbor Agreements intended to help recover the California Red-legged Frog. We also recommend that alternative recovery actions be defined prior to implementing Safe Harbor Agreements so that failures to recover the species using Safe Harbor Agreements can be quickly reversed using another approach.

Contingency Measures

When the California Red-legged Frog is found to be not successfully reproducing, implementation of contingency measures (page 112) may be precluded by No Surprises assurances provided by the Service for mitigation sites resulting from HCPs. That is, the Incidental Taker Permit holders would not be obliged to implement contingency measures. The Service would be obliged to do so, which would cost money that has not yet been allocated by Congress.

Centralized Database

We agree that a centralized data base is needed to maintain organized information on the status of California Red-legged Frog in the various core areas (and elsewhere). This data base would be very useful to project planners and reviewers. Such a data base should be a standard feature of Recovery Plans. However, we note that this is not the responsibility of a central agency, but likely falls under the jurisdiction of the U.S. Fish and Wildlife Service.

Summarize Extent of Take

We agree that the Service should summarize the extent to which the Service has authorized the take of California Red-legged Frogs up to the present time. This information would provide perspective to current and future applications for incidental take permits and permits under section 7 consultation. It would assist with cumulative impacts assessments. It would provide a baseline against which to measure impacts. This Recovery Action is forward thinking on the part of those who prepared this Recovery Plan, and it should be a standard feature of Recovery Plans in general. We recommend that this summary of take be extended to future recovery actions for the California Red-legged Frog involving any HCP, the take associated with any mitigation or conservation bank, and any Safe Harbor or related Agreements.

Document Quality

The stepdown narrative, pages 79-129, is convoluted and difficult to follow. Task 1.0 is followed by a 12-page Table 2, and a 14-page Text Box A. Further confusing is the fact that Text Box A is presented in an outline style similar to that of the stepdown narrative. Might Table 4 and Text Box A be more appropriately presented as appendices?

Terms

Important terms have been used incorrectly and inappropriately. On page 18, and elsewhere, the Recovery Plan improperly uses the terms habitat and habitat type, and on page 46 the Plan improperly uses the term habitat quality. "Habitat" is used as a synonym for "areas" (page 6, paragraph 2; page 19, paragraph 2), "distribution" (page 27, paragraph 2), "vegetation" (page 32, paragraph 1), "features" (page 32, paragraph 1), and "aquatic features" (page 36, paragraph 2). Moreover, useage such as "wetland habitats," "pool habitats," "riparian habitats," although commonly used in gray literature, is redundant. Because "habitat" is species specific and varies with function (Hall et al. 1997), frogs may use wetlands as "breeding habitat," "dispersal habitat," or "refugia habitat," but they do not use "wetland habitats." They use "wetland features." On page 120, the Recovery Plan calls for determining whether the habitat is present or absent wherever populations occur (habitat is never absent where populations occur). These misuses of the habitat terminology are not trivial, because Recovery Criterion 1 clarifies that the recovery actions will be focused on suitable habitat within the core areas. If recovery actions are to be focused on suitable habitat, as the Plan outlines, then the Plan should use the scientifically established habitat terminology (see Hall et al. 1997, Morrison et al. 1998).

The Recovery Plan also focuses on ecological integrity, as it is to be protected under Recovery Criterion 1 (page 64). We are pleased to see this term in the Recovery Plan, but we noticed from the parenthetical description of ecological integrity that this term is used incorrectly. Ecological integrity refers to the degree to which the ecosystem components that are functionally important to the local species are also intact. Water quality pertains to

ecosystem health (see Karr 1994), not to ecological integrity.

A Recovery Action on pages 109-110 calls for utilizing an ecosystem approach and adaptive management. However, other parts of the Recovery Plan indicate that an ecosystem approach is not consistently understood by those who wrote this plan (the description on pages 50-51 was satisfactory, but not applied elsewhere in the Recovery Plan). We recommend that this Recovery Plan define these important terms, ecosystem approach and adaptive management, more thoroughly. As is, we have no idea whether adaptive management would be implemented properly, which does not bode well given past use of the term adaptive management (Smallwood et al. 1999).

On page 34 and in other parts of the document, the Plan uses the term current range. The more appropriate term should be current or known distribution. Insufficient surveys have been conducted to justify the use of the term current range in place of current or known distribution.

In discussing the foothill yellow-legged frog and mountain yellow-legged frog, the term Coast Range foothills is used (page 76). We are unclear what area this is supposed to be. Previously, the terms used were North Coast or Central Coast.

Foundation for conclusions

Citations are needed to support many unfounded conclusions in the Recovery Plan. On pages 75-79, the Recovery Plan claims that the Recovery Actions will also benefit the San Francisco garter snake, the arroyo southwestern toad, mountain and foothill yellow-legged frogs, and other species. No authoritative sources were cited to support the claim that arroyo southwestern toads will benefit from the creation of shallow pools (Red-legged frogs use deeper pools, so we fail to see why shallow pools are an issue here), that the removal of exotic animals will benefit the Santa Cruz long-toed salamander, arroyo southwestern toad, unarmored three-spine stickleback, and California tiger salamander, or that improved management of artificial ponds will benefit the California tiger salamander. We are not saying that these benefits will not be realized should these recovery actions take place, but rather that authoritative sources are needed as evidence that these benefits are likely. Also, the Recovery Plan states that the California Red-legged Frog's use of upland areas is being studied (page 19), but does not identify who is conducting the study.

Thoroughness

The discussion needs more detail of how weather cycles, or average precipitation, would be used to assess the Recovery success of the California Red-legged Frog (page 67). As it is, the description of how weather would factor into the assessment of recovery success is confusing.

Simple errors

Cholame Creek is spelled correctly on page 89, but is spelled Chalome Creek on page 14, Chalome Creek on page 88.

Local, state, and federal laws, regulations, and policies have not worked to protect the California Red-legged Frog, so we recommend that this Recovery Plan refrain from suggesting that they do so (page 110). The California Red-legged Frog has declined in

number and its distribution has shrunk and has become more fragmented, despite the existence of the federal Endangered Species Act, the California Endangered Species Act, the California Environmental Act, and other state and federal laws and local ordinances and policies. The laws and regulations need to be enforced to be effective, and this is where policies have been ineffective. We encourage the US Fish and Wildlife Service to enforce its laws and regulations pertaining to the conservation and recovery of the California Red-legged Frog.

Page 17, paragraph 1: Sweet and Leviton 1983 (as cited in Jennings 1988) report "the natural occurrence of California red-legged frogs on Santa Cruz Island." However, Jennings (1988) states that "it is likely that the frogs were introduced...". Either the red-legged frog occurs there naturally (as per Sweet and Leviton 1983), or it was introduced (per Jennings 1988). Please clarify this paragraph.

Cost of Recovery

The recovery of the California Red-legged Frog will cost much more than \$6,678,000 and it will very likely take more time than between now and the year 2025. Subsidizing farmers for loss of production acreage within 500 meters of wetlands will cost more than this figure alone, as will the subsidy required to cease mineral fertilizer inputs. The cost of watershed restoration will be staggering compared to this estimated cost. Restoring the appropriate flows into Cholame Creek, San Luis Obispo County, alone will likely cost more than \$6 million. Acquiring "inholdings" will be very costly, and will require a great amount of negotiation. The research efforts needed to identify the threats to the California Red-legged Frog will likely cost much more than \$6 million.

Summary

There were aspects of the Recovery Plan that we liked, such as the use of core areas and watersheds as recovery units, the proposed ecosystem approach, and certain recovery actions such as establishing a centralized data base on the status of the species and accounting for all the take that the Service has already permitted under Section 7 consultation. Given the mission and objectives of TWS, the Western Section of TWS would like to see better substantiation leading to the Recovery Plan's conclusions regarding the threats to recovery, the needed recovery actions, and the cost of recovery.

. We appreciate the opportunity to provide comments on this Draft Recovery Plan, and sincerely hope our comments are understood in the constructive context in which they were offered. We are eager to help in any way we can. Please contact me (MM) or Shawn Smallwood (TWS-WS Chair, Conservation Affairs Committee) if you have any questions or require clarification of any points we raised.

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Sincerely,

Michael Morrison, President
