



United States Department of the Interior



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In Reply Refer To:
1-1-06-F-0167

JUL - 6 2006

Mr. Alessandro Amaglio
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U.S. Department of Homeland Security
1111 Broadway, Suite 1200
Oakland, California 94607-4052

Subject: Programmatic Formal Section 7 Consultation on Federally Declared Disaster FEMA-1628-DR-CA and FEMA-1646-DR-CA for FEMA-Funded Disaster Assistance Projects Resulting from the December 2005 thru April 2006 Flooding in 35 Counties in California

Dear Mr. Amaglio:

This document transmits the U.S. Fish and Wildlife Service's (Service) programmatic biological and conference opinion on the Federal Emergency Management Agency's (FEMA) proposed federally funded disaster assistance projects, as described in FEMA's May 2006 *Programmatic Biological Assessment for FEMA-Funded Disaster Assistance Projects in California*, as amended (programmatic biological assessment). A conference opinion is provided for animal and plant critical habitats currently being proposed for designation by the Service. We received your May 23, 2006, letter requesting initiation of consultation in our Sacramento Fish and Wildlife Office on May 24, 2006. At issue are the effects of FEMA's federal disaster assistance program actions on more than 150 federally listed species and their designated or proposed critical habitats occurring in up to 35 counties located primarily in northern California. This response is in accordance with the Endangered Species Act of 1973, as amended (16 U.S.C. §1531 *et seq.*)(Act), and the implementing regulations governing interagency consultations found at 50 CFR Part 402.

This programmatic biological and conference opinion is based on information provided in the following:

1. *Programmatic Biological Assessment for FEMA-Funded Disaster Assistance Projects in California*. Federal Emergency Management Agency. May 2006, as amended;

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2. Conversations between the Service (H. McQuillen) and FEMA staff, or their contracted agents, assigned to federally declared disaster FEMA-1628-DR-CA and FEMA-1646-DR-CA (S. Amaglio, R. Anchors, J. Hindley, T. Lang, S. Phillips);
3. Conversations and emails between the Lead Threatened and Endangered Species Specialist for FEMA-1628-DR-CA and FEMA-1646-DR-CA (H. McQuillen) and other Service biologists from the Sacramento, Ventura, and Arcata Fish and Wildlife Offices; and
4. Information contained in Service files.

A complete administrative record of this consultation is on file at the Sacramento Fish and Wildlife Office (ref. # 1-1-06-F-0167).

Consultation History

April 3 - June 30, 2006: Service employees (H. McQuillen and S. Rickabaugh) were deployed under Emergency Support Function 11 (ESF-11)/Natural and Cultural Resources and Historic Properties Protection Mission Assignment to FEMA's Sacramento, California Joint Field Office to assist FEMA in reviewing applications for public assistance for compliance under the Act and to prepare the appropriate documents necessary to initiate section 7 consultation with the Service.

May 24, 2006: Service received a written request from FEMA (A. Amaglio) to initiate formal programmatic consultation pursuant to section 7(a)(2) of the Act on disaster assistance projects that may affect federally listed species or their designated or proposed critical habitats.

June 01, 2006: FEMA submitted its final programmatic biological assessment to the Service (California-Nevada Operations Office, Sacramento Field Office, Ventura Field Office, and Arcata Field Office) for review and concurrence with FEMA's "not likely to adversely affect" determinations and for take authorization for "may affect" projects that are covered under this programmatic biological and conference opinion.

June 22, 2006: FEMA submitted an amendment to include the FEMA-1646-DR-CA federal disaster declaration to its May 2006 final programmatic biological assessment to the Service (California-Nevada Operations Office, Sacramento Field Office, Ventura Field Office, and Arcata Field Office) for review and concurrence with FEMA's "not likely to adversely affect" determinations and for take authorization for "may affect" projects that are covered under this programmatic biological and conference opinion.

PROGRAMMATIC BIOLOGICAL AND CONFERENCE OPINION

Scope of the Consultation

This document is a programmatic biological and conference opinion for FEMA's disaster assistance program actions that are expected to occur as a result of the flooding that occurred in California from December 17, 2005, through and including January 3, 2006, (FEMA-1628-DR-CA) and from March 29 to April 16, 2006 (FEMA-1646-DR-CA). It does not cover FEMA-funded activities outside of the scope of the FEMA-1628-DR-CA or FEMA-1646-DR-CA federal disaster declarations. This programmatic consultation is designed to facilitate compliance with the Act by FEMA for projects of a similar nature, that are occurring as a result of the flooding, and that are likely to adversely affect more than 150 federally listed species and their respective designated or proposed critical habitats occurring in up to 35 northern California counties. **This programmatic biological and conference opinion will expire exactly five years from the signature date of this document.** This period corresponds to the maximum five-year renewal period proposed in FEMA's May 2006 programmatic biological assessment, as amended.

This document will also serve as the emergency consultation for all actions that were implemented in response to the December 2005 thru April 2006 flooding that are eligible for FEMA funding. Actions that were completed by FEMA's applicants and sub-grantees as "emergency" actions, as defined by the Service in 50 CFR §402.05 and by FEMA in 44 CFR §206.201, prior to environmental review may be appended to this programmatic biological and conference opinion provided that the actions were consistent with the guidelines, criteria, assumptions, and intent of FEMA's May 2006 programmatic biological assessment, as amended, and did not: (1) result in jeopardy to a species; (2) adversely affect "critically" endangered species listed in Appendix A; (3) result in the destruction or adverse modification of designated or proposed critical habitats; (4) exceed the maximum allowable take authorized in the Incidental Take Statement of this document, or (5) was otherwise not eligible for inclusion in this programmatic biological and conference opinion. "Critically" endangered species is defined as meaning those species that the Service deems to be in a state of crisis, or verging on extinction, due to their extremely low population numbers and their extremely restricted ranges, this includes species designated by the State of California to be "State Fully Protected" species. Emergency actions that were conducted prior to environmental review that are subsequently appended to this programmatic consultation will be counted towards the cumulative amount of take that is authorized in the Incidental Take Statement of this programmatic biological and conference opinion.

Consultation Process

Section 7(a)(2) of the ESA requires federal agencies to review actions authorized, funded, or carried out by them to ensure such actions do not jeopardize the continued existence of federally listed species, or result in the destruction or adverse modification of designated critical habitat. To that end, FEMA is proposing a three-tiered approach in order to comply with section 7(a)(2) of the Act. Category 1 will encompass all projects determined by FEMA to have "no effect" on

federally listed species or their designated or proposed critical habitats. FEMA will not initiate further consultation with the Service on Category 1 projects. Category 2 will encompass all projects determined by FEMA as “not likely to adversely affect” federally listed species or their designated or proposed critical habitats. The Service has already prepared a programmatic “not likely to adversely affect” concurrence letter for all Category 2 projects. Category 3 will encompass all projects determined by FEMA as “likely to adversely affect” federally listed species or their designated or proposed critical habitats. Category 3 projects will be addressed in this programmatic biological and conference opinion or, for projects that are not eligible for inclusion in this programmatic consultation, through individual section 7 consultation initiated by FEMA with the appropriate jurisdictional field office on a project-specific basis prior to project implementation.

Actions that are implemented as a result of this programmatic consultation will be consistent with the guidelines, criteria, assumptions, and intent of FEMA’s May 2006 programmatic biological assessment, as amended, and the terms and conditions outlined within this programmatic biological and conference opinion. Prior to project implementation, a FEMA or Service biologist assigned to the disaster will evaluate all of the proposed FEMA-funded projects for consistency with the programmatic biological assessment, the programmatic “not likely to adversely affect” concurrence letter, and the programmatic biological and conference opinion. Service employees have been deployed to the Sacramento Joint Field Office for three months during FEMA-1628-DR-CA to work side-by-side with FEMA’s biologists to develop FEMA’s May 2006 programmatic biological assessment (with amendments), the programmatic consultation documents, and a standard operating procedure (SOP) to guide the review process of the proposed FEMA-funded projects. In addition to streamlining the consultation process, this approach also has ensured that FEMA biologists understand the process that has been developed and that they have received training from the Service biologists on how to appropriately analyze the effect of the projects so that FEMA is in compliance with the Act. FEMA will monitor the projects funded by their agency, track the effects to the species and habitats, and submit annual reports as described later in this document.

Process for Updating and Revising this Document

Upon implementation of the FEMA-funded actions following the completion of this programmatic consultation, it may be necessary to update or revise this document, especially if during project monitoring, new information is obtained by FEMA or its applicants or sub-grantees regarding a federally listed species, their habitats, or the direct or indirect effects of the FEMA-funded actions on those species or habitats. When updates or revisions are warranted, the Service will work with FEMA to prepare the updates and revisions as appropriate. If additional species become listed under the Act, additional critical habitat is designated, the scope of FEMA’s disaster assistance program changes, new federal disaster declarations are issued, or other circumstances arise, FEMA will re-initiate consultation as described at 50 CFR §402.16 and work cooperatively with the Service to incorporate such changes into this programmatic consultation document.

Description of the Proposed Programmatic Actions

FEMA administers federal programs for response to, recovery from, and preparation for disasters. FEMA is authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act and the National Flood Insurance Act to provide state and local governments with assistance to repair, restore, or replace disaster-damaged facilities, and to provide assistance with actions that will reduce or eliminate threats to public health and safety and reduce the risk of damage to public and private property during future disasters. FEMA has determined through experience with other disasters that the majority of the typically recurring actions proposed for funding can be grouped by type of action or location. For federally-declared disaster FEMA-1628-DR-CA, FEMA may fund up to approximately 4,000 disaster-assistance projects within a 30-county area (Appendix B) in California as a result of the flooding that occurred in December 2005 thru January 2006 throughout those counties. Some of these projects may directly or indirectly affect federally listed species and their designated or proposed critical habitats. Typically recurring actions that are eligible for FEMA funding include:

- Non-emergency debris removal;
- Constructing, modifying, or relocating facilities, which includes:
 - a. Upgrading or otherwise modifying buildings;
 - b. Providing temporary facilities;
 - c. Acquiring and demolishing existing facilities;
 - d. Repairing, realigning, or otherwise modifying roads, trails, utilities, and rail lines;
 - e. Constructing new facilities or relocating existing facilities;
 - f. Relocating the function of an existing facility;
 - g. Extending the pressurized water service area; and
 - h. Developing demonstration projects
- Projects involving water courses and coastal features, which includes:
 - a. Repairing, stabilizing, or armoring embankments;
 - b. Creating, widening, or dredging a waterway;
 - c. Constructing or modifying a water crossing;
 - d. Constructing or modifying a water detention, retention, or storage facility;
 - e. Constructing or modifying other flood control structures; and
 - f. Constructing or modifying a coastal feature
- Vegetation management
 - a. Mechanical or hand-clearing of vegetation;
 - b. Herbicide treatments;
 - c. Prescribed fire; and
 - d. Biological control

These programmatic actions are described in detail in FEMA's May 2006 programmatic biological assessment, as amended, and provided at Appendix C and made a part of this programmatic biological and conference opinion.

Some projects will not be eligible to be appended to this programmatic biological and conference opinion. Projects that are "likely to adversely affect" species that the Service has determined to be "critically" endangered (Appendix A) are not eligible for inclusion under this programmatic consultation. Projects that may have a cumulative effect also are not eligible for inclusion under this programmatic consultation. Most often, the projects with the potential for cumulative effects are projects where multiple sites occur within the same watercourse, in the same habitat type in close proximity to each other, or are somehow otherwise determined during the review process to be "connected" in some manner and, therefore, cumulative in nature.

Other projects that may not be eligible to be appended to this programmatic consultation are not as clear-cut as those mentioned in the preceding paragraph. The eligibility determinations for these projects are made on a case-by-case basis by the Service or FEMA biologist conducting the environmental review of the project. These determinations are made following the June 2006 *Endangered Species Act Decision-Making Process for FEMA-Funded Disaster Assistance Projects* SOP provided at Appendix D in this document. Based on an analysis of a sub-sample of 10% of the total project applications received to date (45 out of 450) that are pending environmental review, one-third of the projects resulted in a "no effect" determination using the SOP, one-third resulted in a "not likely to adversely affect" determination, and one-third resulted in a "likely to adversely affect" determination; six of these being projects were not eligible for inclusion in this programmatic consultation and must be consulted on individually. Based on the results of this analysis, the following types of projects most frequently will not be eligible to be appended to this programmatic consultation: (1) repairing, realigning, or otherwise modifying roads, trails, utilities, or rail lines; (2) constructing new facilities or relocating existing facilities; (3) actions involving watercourses and coastal features; and (4) vegetation management.

Additionally, all projects valued at less than \$57,500 that require a Clean Water Act 404 permit from the U.S. Army Corps of Engineers (Corps) are sent directly to the Corps by FEMA and are, therefore, not covered under this programmatic consultation. The Corps will initiate section 7 consultations with the appropriate jurisdictional Service field office, as necessary, prior to the implementation of those projects.

Proposed Conservation Measures

Unlike other programmatic approaches where specific criteria are developed for each individual species or critical habitat in order to determine whether an action is eligible for inclusion, this programmatic relies on the implementation of a comprehensive suite of general and species-specific conservation measures to ensure that FEMA-funded actions reduce adverse effects to federally listed species and their designated or proposed critical habitats to the maximum extent practicable. This approach was adopted due to the magnitude of the two federally declared disasters, the geographic scope of the two federally declared disaster areas (*i.e.*, 35 counties), and the total number of species or habitats that may be affected as a result of the FEMA-funded

actions. The determination for whether a project is appended to this programmatic consultation is based on whether or not implementation of the proposed general and species-specific conservation measures will minimize the effects to species and their critical habitat such that the take authorization provided in the Incidental Take Statement of this programmatic biological and conference opinion is not exceeded. While the conservation measures proposed by FEMA are not precise or specific for every possible species or scenario encountered during these two disaster-response actions, they do cover the vast majority of conservation measures that are routinely proposed and implemented by federal agencies and project proponents seeking section 7 consultations with the Service. Thus, while some temporary disturbances to habitats are inevitable due to the magnitude of the two federally declared disasters and the nature of the FEMA-funded actions, the proposed measures do ensure that very few, if any individual species would be killed or injured as a result of the proposed actions. Since the majority of the proposed conservation measures are directed towards protection of the habitat, the measures also ensure that no primary constituent elements of the designated or proposed critical habitats will be eliminated or degraded to a point that they no longer support the survival and recovery of federally listed species. As written, the proposed conservation measures minimize the likelihood that the FEMA-funded actions will appreciably diminish the conservation value of the critical habitat. The proposed general and species-specific conservation measures are included in Appendices B & C in FEMA's May 2006 programmatic biological assessment, as amended (provide at Appendix C in this document).

Status of the Species and Critical Habitat/Environmental Baseline

Refer to Appendix A in FEMA's May 2006 programmatic biological assessment, as amended, for a brief introduction to the federally listed species that may be affected by FEMA's programmatic actions. Candidate species are also listed in Appendix A. While this consultation does not include or consider candidate species specifically, the proposed conservation measures can provide beneficial effects to candidate species and ultimately prevent the need to list the species under the Act. Detailed species accounts and environmental baselines for the federally listed species found in Appendix A of the programmatic biological assessment can be found in the following publicly available resources: 1) proposed and final rules listing the species as threatened or endangered under the Act, 2) proposed and final rules designating critical habitat, 3) draft and final recovery plans, and 4) five-year review documents.

Appendix E in FEMA's May 2006 programmatic biological assessment, as amended, describes the total number of acres of designated or proposed critical habitat for approximately 50 species with designated or proposed critical habitat; the number of individual critical habitat units for each species; the counties where the designated or proposed critical habitat occurs; and the primary constituent elements for all species with designated or proposed critical habitats. The proposed and final rules designating critical habitat provide specific details on the role that each critical habitat designation serves towards the conservation of each species.

In general, the criteria used to propose or designate critical habitat is based on the best available scientific information that identifies areas which possess the physical and biological features essential to the conservation of the species, and that may require special management

considerations or protection for the species benefit. This approach generally leads to the protection of the best quality habitat where a species occurs through the maintenance of the most important geographical and ecological distribution of the species habitat. The protection of such habitat, in turn, helps to maintain multiple populations and sub-populations of a species, thereby preserving the maximum amount of genetic variation within the range of a species. Substantial genetic variation minimizes the possibility of local extinctions due to increased threats caused by human-induced factors coupled with naturally occurring random environmental events such as floods and fires. This basic conservation principle of population redundancy is well documented in the scientific literature and it applies to all federally listed species (Tear *et al.* 1993; Mangel and Tier 1994; Meffe and Carroll 1994; National Research Council 1995; Hanski *et al.* 2002; Matthies *et al.* 2004).

Effects of the Proposed Action

The federally listed and candidate species addressed in this programmatic consultation may be directly or indirectly harassed or harmed (*e.g.*, killed or injured) as a result of the implementation of FEMA-funded projects. Many of the effects of the proposed projects funded by FEMA will be temporary and very localized; conditions are expected to return to baseline levels or better over time periods ranging from minutes (noise) to a few years (recovery of vegetation). Other actions, while seemingly innocuous when implemented by themselves, will have cumulative, long-term effects over time. For example, the repair of multiple erosion sites along an earthen canal or creek with riprap will have long-term, cumulative effects both upstream and downstream of each individual project site by hardening the embankment, thereby having an effect on the system's water velocity, transport volume, and other parameters. Habitat that is vital to the species survival and recovery also may be adversely affected or otherwise lost, fragmented, destroyed or degraded; this includes legally designated or proposed critical habitat as well as other essential habitat included in recovery units and other priority areas.

As described in FEMA's May 2006 programmatic biological assessment, all FEMA-funded activities have the potential to harass individuals of certain animal species when they are present in the immediate project area even though all of the proposed general and species-specific conservation measures are being implemented by the project proponent. Some projects have the potential to harm individuals of certain animal species if those species are present naturally in the project area, or if they temporarily enter the project area during construction activities. For example, activities that are likely to cause direct or indirect harm to certain animal species and their habitats include: grading and earthmoving; road construction; excavation and borrow; hauling; maneuvering vehicles and heavy equipment on and off roads; discharge of contaminants into soil and water; production of noise, vibrations, and dust; prescribed and/or accidental fire; placement and removal of coffer dams and other temporary water diversions in creeks and rivers; changes in hydrology; discharge of fill and sediments in water; and placement of riprap and water control structures. Some animal species occur near enough to disaster-affected areas to be affected indirectly by project activities that extend beyond the damaged features themselves, including access routes, staging areas, borrow sites, and downstream effects in watercourses. Other indirect effects that may result from proposed actions include: disturbing or killing prey species; encouraging predator species; and future urban development.

There are over 90 plant species considered in this programmatic biological and conference opinion, some of which are considered “critically” endangered, as defined previously and listed in Appendix A of this document. Loss or fragmentation of habitat for federally listed and candidate plant species may occur directly or indirectly from nearly all of the activities listed previously as well as simpler, minor activities such as the repair of roads, trails, and underground utilities. Erosion and runoff from construction activities within a watershed may bury plants and seeds directly through project activities or indirectly with silt or dust; for example, if standard Best Management Practices are not implemented fully and correctly. Erosion and runoff can change the fill capacity and hydroperiod of wetlands, especially vernal pools, and that fill, whether intentional or unintentional may support invasive plants species that tend to successfully out-compete federally listed, proposed and candidate plant species. Earthmoving activities within a watershed may alter downslope hydrology such that it incidentally affects the reproductive capability of plants such as the western lily (*Lilium occidentale*). Additionally, many sensitive plant species are, at least to some degree, dependent on animal pollinator species that are not well known; for example, vernal pool plants that rely on solitary bees whose life cycle is spent in adjacent uplands. Loss of pollinators may result in reduced seed set, which then affects subsequent generations of plants and the species overall survival and recovery. Ultimately, plant species addressed in this programmatic biological and conference opinion may be affected adversely by future urban development facilitated by improved flood protection that was funded through FEMA’s disaster assistance programs.

Many of the projects that FEMA proposes to fund will not have an effect on federally listed species and will not diminish the conservation value of the designated or proposed critical habitat because many of the proposed projects are wholly confined to previously disturbed areas where existing structures such as roads, bridges, and other facilities were located prior to the disaster. These areas do not contain or support the primary constituent elements for federally listed species as described in Appendix E of FEMA’s May 2006 programmatic biological assessment, as amended. Additionally, many of the projects as described in the programmatic biological assessment are relatively innocuous actions that result in temporary affects, if any, such as the removal of debris floating on the surface of a lake, the removal of silt that was deposited by floodwater in an established campground, the removal of a landslide that is blocking a road, and the re-grading and graveling of a road that washed out during a flooding event. These types of projects will not affect or diminish the conservation value of the designated or proposed critical habitat simple due to the nature of the actions.

FEMA’s disaster assistance program does have the potential to fund projects that may directly or indirectly affect designated or proposed critical habitat. For example, if an existing culvert is replaced with a culvert of a different diameter, an indirect affect could occur to designated or proposed critical habitat if the change in culvert diameter affects the upstream or downstream hydrology, thereby influencing the function and conservation value of the affected critical habitat. In contrast, the replacement of a flood-damaged culvert that once served as a dispersal corridor for species such as salamanders and frogs that would have otherwise been restricted by a dispersal-barrier may be considered to have beneficial affects for federally listed species and, thereby, the replacement of the culvert actually restores the function of a primary constituent element identified in the critical habitat proposal or designation. On the other hand, a FEMA-

funded project that reconstructs a levee embankment by placing riprap where only soil existed previously would directly affect the function of the primary constituent elements and would ultimately degrade the conservation value of designated or proposed critical habitat. To address this type of project that may affect, or that may diminish the conservation value of the designated or proposed critical habitat, FEMA has proposed in its May 2006 programmatic biological assessment, as amended, to initiate individual section 7 consultation on all actions of this nature.

To demonstrate the anticipated effect of the proposed FEMA-funded actions on critical habitat, the following analysis was conducted on a subset of projects and designated and proposed critical habitats for which GIS data was available. Of the nearly 5,400+/- applications for public assistance that are anticipated to be received in response to the FEMA-1628-DR-CA and FEMA-1646-DR-CA disaster declarations, FEMA estimates that 900 projects will undergo environmental review by FEMA or Service biologists for compliance pursuant to the Act; this does not include the projects that are sent to the Corps as discussed above. The remaining 4,500+/- projects have been determined by FEMA to have "no effect" on federally listed species.

To date, approximately 600 projects from FEMA-1628-DR-CA are pending environmental review for compliance under the Act; 450 of those projects have currently been GPS'd and mapped in GIS in relation to the nearly 5.9 million acres of designated and proposed critical habitat for approximately 50 species occurring within the FEMA-1628-DR-CA disaster declaration area. Full data sets were not available for all species since many of the species' critical habitats are not mapped in GIS or the final rules did not provide specific details about the total number of units, locations, *etc.* However, a subset of 10 species' critical habitats was analyzed based on the location of the projects in relation to designated or proposed critical habitat. These species included wide-ranging species with very large critical habitat designations such as the vernal pool branchipods and northern spotted owl, as well as very small critical habitat designations for very range-restricted species such as Suisun thistle and Scott's Valley spineflower. By extrapolating the results of the analysis of the critical habitat data for those ten species, the Service is estimating that FEMA will fund projects in only approximately one-half of the total number of designated or proposed critical habitat units. These units comprise only approximately half of the total overall designated or proposed critical habitat acres, in approximately one-half of the counties declared in the FEMA-1628-DR-CA disaster. For example, the northern spotted owl has approximately 6.9 million acres of designated critical habitat distributed in 190 areas in multiple western U.S. states. Approximately 1.4 million acres of critical habitat is designated in California in 61 individual critical habitat units. To date, FEMA has received only 17 applications for public assistance within those 1.4 million acres in California that need to undergo environmental review for compliance with the Act. If all 17 projects resulted in the maximum allowable amount of take of one (1) acre of habitat that is authorized in the Incidental Take Statement under this programmatic biological and conference opinion, a maximum total of 17 acres of the total 1.4 million that is designated in California would be adversely affected. Conversely, FEMA has received only one application for public assistance in the 2,119 designated acres of Suisun thistle critical habitat. Therefore, to date, a maximum of only one (1) acre of critical habitat could be adversely affected as a result of the proposed FEMA-funded actions. The Service does not believe, based on the type of projects proposed for funding by FEMA, the proposed general and species-specific conservation

measures, and the extrapolated results of the analysis presented above that the anticipated level of adverse effect of one (1) acre out of 2,119 acres for Suisun thistle and 17 acres out of 1.4 million acres for the northern spotted owl is likely to diminish the conservation value of the designated or proposed critical habitats.

In the case of the species that are determined by the Service to be “critically” endangered (Appendix A), one (1) acre of adverse effects to the designated critical habitat could result in a determination of adverse modification to critical habitat or jeopardy to the species. It is for this reason that FEMA will initiate individual section 7 consultations on all projects that are likely to adversely affect “critically” endangered species.

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 programmatic biological and conference 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. The following actions may affect the species covered in this programmatic biological and conference opinion by directly or indirectly harassing or harming individuals or by adversely affecting designated or proposed critical habitats.

The majority of the cumulative effects are associated with human activities within habitat that supports federally listed and candidate species in California, including designated and proposed critical habitat. Human activities typically operate synergistically and cumulatively with each other and with natural disturbances such as droughts and floods. Current human-induced factors associated with declining populations of federally listed and candidate species and their habitats in California include:

- continued loss, fragmentation, and/or degradation of habitat due to urban and agricultural conversion;
- continued development of infrastructure (*e.g.*, roads and utilities) to support urbanization
- increased recreational activities (*e.g.*, off-road vehicle use, golf courses, species collecting, bike and equestrian use, wave action in water channels caused by boats, *etc.*);
- increased mining, oil and gas exploration and production, inappropriate grazing, and timber harvesting;
- increased water impoundments (resulting in altered hydrology in essential habitat), water diversions (*e.g.*, hydropower, irrigation), and impaired water quality;
- increased invasive species (*e.g.*, plants, non-native molluscs, amphibians, crustaceans) and predation (particularly by domesticated pets or feral animals) that generally accompany urban expansion;
- increased domestic and industrial waste (resulting in an increased demand for refuse disposal areas);
- increased ground-dwelling rodent (*e.g.*, squirrels) reduction efforts (that result in less availability of retreat and aestivation areas for federally listed amphibians and reptiles; and

- increased mosquito abatement programs (that introduce exotic fish into breeding and non-breeding ponds impact the reproductive success of amphibians).

An undetermined number of future land use conversions and routine agricultural practices frequently are not reviewed for environmental compliance under the federal permitting process. These projects may alter the habitat or increase incidental take of federally listed species and are also cumulative to the proposed programmatic actions. These additional cumulative effects include, for example: (1) unpredictable fluctuations in aquatic habitat due to water management; (2) dredging and clearing of vegetation from irrigation canals; (3) deep-ripping, discing or mowing upland habitat; (4) increased vehicular traffic on access roads adjacent to aquatic habitat (frequently levee roads); (5) use of burrow fumigants on levees or in other potential upland refugia; (6) human intrusion into habitat; (7) diversion of water; (8) rip-rapping or lining of canals and stream banks; (9) use of plastic erosion control netting; and (10) point and non-point source chemical contaminant discharges (e.g., selenium, pesticides, herbicides, fuels, and other toxic substances).

The cumulative effects addressed above have the potential to significantly affect designated or proposed critical habitat if (1) they occur within the designated or proposed critical habitat in a manner that directly affects the function and conservation value of the habitat; (2) they occur in close proximity to designated or proposed critical habitat such that there are indirect effects that diminish the function and conservation value of the habitat; or (3) the number or size of the projects occurring within or near critical habitat that do not implement conservation measures designed to protect the function and conservation value of the habitat exceeds disproportionately the ecosystem's response to the perturbation.

Extinction of some remaining populations of federally listed species may be likely in the reasonably foreseeable future just due to random environmental events such as flooding or wildfires and the subsequent loss of genetic fitness commonly associated with very small population sizes. When combined with the cumulative effects of the potential actions identified above, a significant threat to the eventual recovery of the federally listed species addressed in this programmatic biological and conference opinion exists. Any positive effects that result from the implementation of FEMA-funded projects, such as the replacement of a culvert that serves as a dispersal tunnel for salamanders, would be expected to help with the overall survival of a species but it would not be expected to lead to the removal or down-listing of a federally listed species on the endangered species list. However, if some or all of the cumulative effects listed above are ameliorated or eliminated through other means, for example, such as public outreach and education programs about federally listed species, landowner incentive programs such as the Partners for Fish and Wildlife Program, other agency regulatory mechanisms, *etc.*, the likelihood that the species addressed in this programmatic biological and conference opinion will continue to exist over the long-term is a real possibility.

Conclusion

After reviewing FEMA's May 2006 programmatic biological assessment, FEMA's proposed general and species-specific conservation measures, the effects of the proposed programmatic