

Julie MacDonald@DOI
05/19/2004 02:48 PM

To: Paul Henson/SAC/R1/FWS/DOI, Diane Elam/SAC/R1/FWS/DOI@FWS,
Michael Fris/SAC/R1/FWS/DOI@FWS

cc:

Subject: CTS listing document -- more edits and comments [Virus checked]

Ok, I have sent you this document. We need to discuss my comments and edits, what is a good time to schedule that discussion? (I haven't fully edited it, had too many changes at the end, and got more than a little frustrated at what appeared to me just plain sloppy work in order to advocate a position).



editedcts cent f list wo 5 13 04 SOL surnamed.CN

Unknown

From: Jason_Peltier@ios.doi.gov
 Sent: Monday, May 19, 2003 8:29 AM
 To: Julie_MacDonald/ASFW/OS/DOI%TAPEPROCESS%PS

Attachments: pic12382.gif; pic17421.gif; pic18716.gif



pic12382.gif (114 B) pic17421.gif (1 KB) pic18716.gif (4 KB)

B)

Whipsnake protection thrown out
 Developers claimed habitat was too broad

Erin Hallissy, Chronicle Staff Writer (Embedded image moved to file:
 pic12382.gif) Saturday, May 17, 2003 (Embedded image moved to file:
 pic17421.gif) (Embedded image moved to file: pic18716.gif) Click to View

In a ruling that could open the way for more development in the East Bay, a federal judge has struck down the U.S. Fish and Wildlife Service's designation of 400,000 acres as critical habitat for the threatened Alameda whipsnake.

Judge Anthony Ishii of the U.S. District Court in Fresno ruled that the wildlife service did not identify specific physical or biological features in areas that it had deemed essential to the conservation of the species.

The judge also wrote in a 58-page decision that the service violated the federal Endangered Species Act by including land that was not critical to the species' survival, such as property already covered with structures, roads, railroads and large bodies of water.

The ruling delighted business groups and home builders who had sued, alleging that the critical-habitat designation was too sweeping and would have prevented construction on much of the available land in areas including Dublin and Livermore.

"We're very pleased with the judge's decision," Paul Campos of the Home Builders Association of Northern California said Friday. "The very broad habitat designation was so problematic for so many people. It extended land use over areas where the species aren't present."

Campos said the ruling does not mean builders can "go bulldoze 400,000 acres."

"If a project has whipsnakes present in the area, they'll have to consult with the Fish and Wildlife Service," Campos said. "The real impact is on those areas designated as critical habitat that don't host whipsnakes. Those projects will not be hung up in delays."

But Patricia Foulk, a spokeswoman for the Fish and Wildlife Service's regional headquarters in Sacramento, expressed frustration with the "litigation circus" over the habitat designation.

"What this really means is that a lot of money was spent on a process that was lawsuit-driven to get (the habitat designation) done, and now is

lawsuit- driven to get it dismantled," Foulk said. "The bottom line is we have to totally redo our analysis. It may come out the same way. It may come out with more land; it may come out with less."

Jeff Miller, a spokesman for the Center for Biological Diversity, an environmental group based in Tucson, Ariz., was also unhappy with the ruling and said Friday that the group would appeal the decision.

The dispute started in 1999 when Miller's group sued the wildlife service for failing to designate critical habitat for seven species, including the Alameda whipsnake.

The whipsnake, a threatened species under federal law, is slender, fast-moving and nonvenomous, and it feeds on lizards and small mammals. It is sooty black with yellow-orange stripes down each side, and can grow up to 4 feet long.

In 2000, the wildlife service designated more than 400,000 acres of land -- mostly chaparral, grassland and oak savanna lands in Alameda and Contra Costa counties -- as critical whipsnake habitat.

A coalition including the Home Builders Association, the California Chamber of Commerce and the California Alliance for Jobs then sued the Fish and Wildlife Service, alleging it violated the Endangered Species Act by not adequately defining the habitat area or considering its economic impacts.

"They did a botched job, and that's why we sued," said Denise Davis of the Pacific Legal Foundation, which represented the plaintiffs. "They didn't properly balance the needs of people with the needs of the species."

The plaintiffs contended that the service had included large areas with no evidence of snake occupation. Campos said the designated habitat included the entire city of Livermore and all the areas planned for development in eastern Dublin.

The service had argued that "in light of the elusive, secretive nature of the snake," it was reasonable to allow the agency latitude to reach conclusions about the snake's critical habitat. But Ishii ruled that the service abused its discretion in its sweeping designation of critical habitat.

AL

Julie MacDonald@DOI
06/24/2004 03:35 PM

To: Paul Henson/SAC/R1/FWS/DOI@fws, Michael
Fris/SAC/R1/FWS/DOI@FWS, Diane Elam/SAC/R1/FWS/DOI@FWS,
Susan Moore/SAC/R1/FWS/DOI@FWS
cc: Gary D Frazer/ARL/R9/FWS/DOI@FWS, Elizabeth
Stevens/ARL/R9/FWS/DOI@FWS, Clint Riley/ARL/R9/FWS/DOI@FWS
Subject: Complete edited document [Virus checked]

Ok, here is the entire document with my edits, all of which are subject to your review, criticism and rejections... thanks!



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Paul Henson
06/17/2004 02:34 PM

To: Susan Moore/SAC/R1/FWS/DOI@FWS, Wayne
White/SAC/R1/FWS/DOI@FWS, Diane
Noda/VFWO/R1/FWS/DOI@FWS, Carl
cc: Steve Thompson/SAC/R1/FWS/DOI@FWS, Kenneth
McDermond/SAC/R1/FWS/DOI@FWS
Subject: California tiger salamander listing - message from Julie

Paul Henson, Ph.D.
Assistant Manager
California - Nevada Operations Office
U.S. Fish and Wildlife Service
(916) 414-6464

----- Forwarded by Paul Henson/SAC/R1/FWS/DOI on 06/17/2004 11:32 AM -----

Julie MacDonald@DOI
06/17/2004 11:24 AM

To: Paul Henson/SAC/R1/FWS/DOI@fws, Diane
Elam/SAC/R1/FWS/DOI@FWS, Michael Fris/SAC/R1/FWS/DOI@FWS
cc:
Subject: California tiger salamander listing

Not sure why I didn't CC you on the initial transmission.

----- Forwarded by Julie MacDonald/ASFW/OS/DOI on 06/17/2004 02:23 PM -----

Julie MacDonald
06/17/2004 02:04 PM

To: Gary D Frazer/ARL/R9/FWS/DOI@FWS, Elizabeth
Stevens/ARL/R9/FWS/DOI@FWS
cc: Craig Manson/ASFW/OS/DOI@DOI, Steve
Thompson/SAC/R1/FWS/DOI@FWS
Subject: California tiger salamander listing

I have asked CNO to proceed as follows:

1. Immediately commence with a comparative analysis of the data included in the most recent California Department of Conservation report on land use. I have forwarded a copy of the memo I sent with a suggested format.
2. There will be no new comment period. This decision was made by Judge Manson based on the advice of the Solicitor.
3. Per Judge Manson's instruction, the Central California Tiger Salamander will be listed as threatened and the entire range of the California Tiger Salamander will be listed as threatened.
4. Critical habitat for the entire range of the California Tiger Salamander will be proposed concurrently.
5. CNO will meet with plaintiffs and the California Tiger Salamander Coalition to clarify their comments. Solicitors will advise them on this process.

Please call if you have any questions.

Julie MacDonald@DOI
06/24/2004 03:35 PM

To: Paul Henson/SAC/R1/FWS/DOI@fws, Michael
Fris/SAC/R1/FWS/DOI@FWS, Diane Elam/SAC/R1/FWS/DOI@FWS,
Susan Moore/SAC/R1/FWS/DOI@FWS
cc: Gary D Frazer/ARL/R9/FWS/DOI@FWS, Elizabeth
Stevens/ARL/R9/FWS/DOI@FWS, Clint Riley/ARL/R9/FWS/DOI@FWS
Subject: Complete edited document [Virus checked]

Ok, here is the entire document with my edits, all of which are subject to your review, criticism and rejections... thanks!



edited cts cent f list CNO_06-08-04.c

the California tiger salamander to establish their not being warranted as threatened (see Factor D below). Regarding protected areas in Merced County, we incorporated these areas into our analysis for estimating the amount of protected Central California tiger salamander habitat. We estimated that there were 76,501 ha (189,032 ac, 20 percent) of the Central California tiger salamander habitat that was afforded some protection (see Factor A below), which we determine is not sufficient to preclude listing of the species.

Comment 9: Several commenters stated that there are no diseases adversely affecting the Central California tiger salamander and that the discussion on disease as a threat in the proposed rule was speculative. Several commenters stated that the Service was on record that disease did not pose a threat to the California tiger salamander.

Our Response: As stated in the proposed rule, the Service acknowledges that relatively little is known about the diseases of wild amphibians in general (Alford and Richards 1999) and California tiger salamander in particular (see Factor C below).

Pathogen outbreaks have not been documented in the Central California tiger salamander and while two of the peer reviewers expressed concerns that disease could pose a future threat to the tiger salamander we have no basis to consider it a threat at this time and have not identified disease as a threat in our final rule.

Comment 10: A few commenters expressed concern about the estimate of 4,451,549 ha (11.1 million ac) of habitat available for the Central California tiger

~~Deleted:~~ However, the proposed rule stated that disease must be considered a potential future threat because of the relatively small, fragmented remaining Central California tiger salamander breeding sites, the many stresses on these sites due to habitat losses and alterations, and the many other potential disease-enhancing anthropogenic changes which have occurred both inside and outside the species' range. Two of the peer reviewers expressed concerns that disease (chytrid fungus and ranavirus) could pose a future threat to the Central California tiger salamander (Lips, in litt. 2003; Longcore, in litt. 2003).

Comment [jm29]: We could extrapolate the demise of the entire human race based on disease in the foreseeable future, I can point you to several published books on the subject... The Coming Plague being one that comes to mind immediately.

~~Deleted:~~ , but recently chytrid fungus infections (chytridiomycosis) have been detected in Central California tiger salamanders (Padgett-Flohr 2004; see Factor C below).

Our Response: These comments were not accompanied by information we could use to substantiate the status of each project (e.g., photographs, environmental documents). To the extent that we could independently verify the information submitted, we included it in our analysis.

Comment [jm32]: Did we independently verify all the in-lits and conversations we had with various advocates of listing ie Shaffer? Because if we didn't, we had better use the same basis for evaluating this commenters information and theirs. If we accept at face value theirs, we should accept at face value the other information.
Comment [db33]: Explain this, please

Comment 14: Another commenter stated that planned development areas should not be considered areas of potential impact due to avoidance, minimization, and mitigation. Additionally, this commenter stated that development will not go beyond general plans.

Our Response: Some project applicants provide avoidance, minimization, and mitigation measures as part of their project to offset impacts to the California tiger salamander. We agree that it is difficult to quantify and accurately tabulate all the measures for mitigation that are included as part of California's permitting process under CEQA. We also agree that most projects do contain some minimization and mitigation as part of their approval. However, this information is not easily accessible and the amount of time required to collect and tabulate the data was not available. We used what information was readily available. This issue was also one of the bases for which the Service sought additional time because of the disagreement among scientists regarding the accuracy of the data used to calculate the habitat available to the salamander.

Comment [db34]: This is not the right answer.

Deleted: Occasionally, a large development will provide large habitat set-asides that are managed for natural values and which may complement conservation of California tiger salamander. Many projects are too small to provide substantial conservation for California tiger salamander on their own because of the large amount of land needed to

Comment [db35]: We cannot say this because CEQA requires consideration of cumulative effects.

Deleted: sustain the species, even though the project proponent may implement minimization and mitigation measures as part of their project. More importantly, the minimization and mitigation measures of most individual projects do not offset the cumulative regional effects of habitat loss and fragmentation from roads and other development when implemented one project at a time. Such piecemeal mitigation results in highly fragmented landscapes with a steadily diminishing ability to sustain California tiger salamander (see Background above and Factor A below), instead of a coordinated approach to conservation of habitat for the California tiger salamander.

Comment 18: Several commenters stated that the Service was on record stating that pesticides were not a threat to the California tiger salamander (Service citing Davidson et al. 2002). Other commenters stated that pesticides are not a threat and their use in California is declining. Another commenter stated that if pesticides were shown to impact California tiger salamanders, then other agencies would regulate those pesticides.

Our Response: ~~We have no information that pesticide use affects Tiger salamanders except to the extent that they are accidentally poisoned in their burrows by fumigants. As a result, we have excluded fumigation from those ordinary ranching activities exempt from the control of the FSA.~~

Comment 19: A few commenters stated that ground squirrel control was not a threat to the California tiger salamander because the control of ground squirrels in the state is declining. Another commenter stated that rodenticides do not pose a threat to the California tiger salamander any more than they do to burrowing owls.

Our Response: California ground squirrel control may be done by trapping, shooting, fumigation of burrows, use of toxic (including anticoagulant) baits, and habitat modification, including deep-ripping of burrow areas (UC IPM internet website 2004). These control programs are still widely conducted by numerous local and state agencies. We received no data to suggest that active rodent control is declining.

Deleted: We cited Davidson et al.'s (2002) study in which they were unable to find a significant overall relationship between upwind agriculture and the California tiger salamander's decline. Our use of the study results does not suggest that we believe pesticides are not a threat to the California tiger salamander. As stated by Davidson et al. (2002), the absence of a correlative pattern should not be interpreted as the proof of the absence of a process. Like most amphibians, California tiger salamanders are extremely sensitive to pesticides and other chemicals, which may be found in both the aquatic and terrestrial habitats they use in different stages of their life cycle (Blaustein and Wake 1990). See also Factor C below.

Deleted: We agree some information indicates that pesticide use (measured by pounds of active ingredient) in California has declined between 1992 and 2002 (California Department of Pesticide Regulation website). However, in 2002 eight of the top ten pesticide-using counties were in the range of the Central California tiger salamander. We believe that California tiger salamanders are still at risk from the use of pesticides because salamanders occur in the vicinity of agricultural lands where pesticides are often used (e.g., along the east side of the San Joaquin Valley). See also Factor E below.

¶ Regarding the regulation of pesticides by other agencies for adverse effects to California tiger salamanders, we are unaware of any agencies that are currently regulating the use of pesticides in that such use may pose a threat to the California tiger salamander

Deleted: In fact, these rodent control programs could be the cause for absence of California tiger salamander in certain areas (Shaffer et al. 1993).

Two of the most commonly used rodenticides, chlorophacinone and diphacinone, are anticoagulants that cause animals to bleed to death (see Factor E below). These chemicals can be absorbed through the skin and are considered toxic to fish and wildlife (EPA 1985; EXOTONET 1996). These two chemicals, along with strychnine, are used to control rodents (R. Thompson, in litt. 1998). We have no information on the effects of these poisons on California tiger salamander have not been assessed, any uses in close proximity to occupied Central California tiger salamander habitat could have various direct and indirect toxic effects. Gases, including aluminum phosphide, carbon monoxide, and methyl bromide, are used in rodent fumigation operations and are introduced into burrows by either using cartridges or by pumping. When such fumigants are used, animals inhabiting the fumigated burrow are killed (Salmon and Schmidt 1984).

Comment 20: A few commenters stated that mosquito control did not represent a significant threat to the Central California tiger salamander because other forms of control were being utilized to reduce the use of this fish as a control strategy.

Our Response: We believe that mosquito control activities can be readily adapted to prevent or minimize potential threats to salamanders by appropriate water level management of stock ponds or proper application of bacterial larvicides. As a result, we have exempted some forms of mosquito control undertaken as routine ranching activities from the take prohibitions of the Act (see Special Rule below).

Deleted: We believe caution must be exercised when extrapolating the results of studies assessing the effects of pesticides and chemicals on birds and mammals to amphibians.

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Comment [db39]: is that still legal

Deleted: Although the

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Comment [db40]: Do we have something to say in the 4(d) rule about rodent control.

Deleted: In addition to the possible direct adverse effects of rodent control chemicals and gases, California ground squirrel and pocket gopher control operations may have the indirect effect of reducing the number of upland burrows available to specific California tiger salamanders (Loredo-Prendeville et al. 1994).

Deleted: Shaffer et al. (1993) believe that rodent control programs could be the cause for absence of California tiger salamanders in certain areas.

Deleted: ¶

Comment [jm41]: The mosquito fish thing is baloney, the Schaeffer says... there was a correlation between absence of CTS and presence of mosquito fish but it was not significant... that has a particular meaning... and that is ... it's meaningless... to cite it as though it were a real effect is dishonest.

Deleted: Mosquitofish may adversely affect the Central California tiger salamander through predation and competition (see Comment 13 above and Factor C). Western mosquitofish now occur throughout California wherever the water does not get too cold for extended periods, and they are still widely planted throughout the State (K. Boyce, Sacramento County/Yolo County Mosquito and Vector Control District, in litt. 1994; Moyle 2002) by about 50 local mosquito abatement districts. ¶

In addition to the use of western mosquitofish, a common method of mosquito control in California involves the use of methoprene, a hormone mimic. Studies have shown that methoprene can retard the development of selected crustacea (Lawrenz 1984, 1985), and, thus, inadvertently reduce the number and density of prey available for aquatic vertebrates, including the California tiger salamander. Methoprene has also been shown to have both direct and indirect effects on the growth and survival ... [1]

evaluate long-term conservation implications for each taxon separately on a case-by-case basis where introgressive hybridization may have occurred.

Distinguishing between native California tiger salamanders and hybrid animals

appears to require some scientific and technical expertise. We understand that it is difficult for non-experts to make the distinction based on morphology alone and that a number of misidentifications have been made as a result (Shaffer and Trenham 2002). The best way to identify hybrid or introgressed individuals at this point appears to be using sophisticated molecular genetic techniques. Because of the difficulty distinguishing hybrid and introgressed individuals from native California tiger salamanders, we believe it is both inappropriate and impractical to distinguish between them under the Act.

Comment [jm42]: OK, I am looking at this threat with a pretty jaundice eye at this point... if this paragraph is accurate, how in the world can we possibly be saying they are a threat?

Comment [db43]: If this is the case how can we possibly be saying they are a threat?

Comment 30: A few commenters expressed concern about the potential regulatory protection to ground squirrels that would result from listing the Central California tiger salamander and the ground squirrel's relation to incidences of the plague. Several other commenters also stated that the potential regulatory protection to ground squirrels would result in their inability to conduct rodent control in the interest of public health.

Our Response: We believe that ground squirrel control can occur in a manner that affects CTS only minimally.

Comment [db44]: If this is not the case we had better raise rodent control as an issue for Steve Williams.

Comment [db45]: Not sure what to do with this, since we removed everything else. Dajuana

Deleted: In emergency situations where human health and safety are at risk, human health and safety concerns would be the first priority in making decisions about appropriate

Deleted: rodent control.

breeding ponds become fragmented and isolated from other ponds (Marsh and Trenham 2001; Jung in litt. 2003; Trenham and Shaffer in review). Earthmoving operations and cultivation in upland habitat can directly or indirectly kill or injure California tiger salamanders in burrows or on the surface by crushing or trapping them. Such activities render all affected areas unsuitable for salamander breeding, feeding, and sheltering. Earth disturbing practices can also expose salamanders to adverse environmental conditions (increased predation, high temperatures, low humidity, destroy food sources) and alter surface hydrology (potentially affecting breeding ponds). Discing, deep-ripping, or grading of upland habitat also destroys burrows and crevices utilized by the salamander, making suitable upland sites unavailable and likely reducing long-term adult survival of Central California tiger salamanders (Loredo et al. 1996). Ongoing agricultural and urban land uses prevent upland sites from being reestablished, and may kill or injure salamanders that enter the developed area.

Wetland habitat. Filling, discing, or excavating wetland habitat can directly kill or injure larvae, eggs, or breeding adults, and prevent future use of the wetland for reproduction. Additionally, surviving adults may be unable to locate alternative breeding sites in subsequent years if habitat is present but has become highly fragmented by roads, housing, agriculture, and other non-habitat elements. Some changes in vernal pool or pond inundation duration and depth caused by urban and agricultural land use (e.g., digging of drainage/irrigation ditches, construction of permanent ponds or reservoirs, deepening or berming of seasonal wetlands, redirection of runoff from developments) can

Comment [jm50]: This is a cite that cites other studies... per the Assistant Secretary we don't use tertiary sources, cite the original work, and include it....

Comment [jm51]: I have been working on the CTS since I arrived in Washington DC two years ago. As long as I have been working on it, Schaffer has had multiple articles "in review" and "about to be published" and so far ... NOT ONE has been published. Put a date in or say unpublished... but no more in review, it's misleading. Not only that, the statement is recycled from Trenham's 1998 dissertation. These guys have a cottage industry going. Finally, I don't have a copy of the 'in preview' cite.

Comment [jm52]: No one disputes discing can kill CTS in the ground... these anecdotes add little to the document... thus I am removing them.

Deleted: For example, in the Santa Rosa Plain (Kelly Farms), California tiger salamanders were trapped in a field where "shallow discing" occurred during the summer of 2003 (M. Fawcett pers. comm., 2003). California tiger salamanders (alive and dead) also were found at the Cosumnes Power Plant project site in Sacramento County where the site had been graded to construct ... [1]

Comment [jm53]: There is no research in that cite that supports the statement.

Comment [jm54]: Ok, look, this is just plain dishonest. The cite refers to loss of dispersal... but it appears to be ... [2]

Comment [jm55]: There is no copy of the Sweet 1998 in lit cite I asked for ... so I can only assume it does not exist.

Comment [db56]: Check this

Deleted: Existing vineyards and orchards can disrupt annual migration patterns and prevent access to breed ... [3]

Deleted: when

Deleted: may

Deleted: be

Comment [jm57]: This is completely speculative and frankly I don't think it adds to the issue you are raising.

Comment [jm58]: The cites for this deleted statement are nowhere in the requested cites. Sneed and Sweet ... [4]

Deleted: Erosion from agriculture or grading can similarly impair reproductive success by causing sedimentation ... [5]

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Page 84: [1] Deleted jamacdonald 6/23/2004 2:51:00 PM

For example, in the Santa Rosa Plain (Kelly Farms), California tiger salamanders were trapped in a field where "shallow discing" occurred during the summer of 2003 (M. Fawcett pers. comm., 2003). California tiger salamanders (alive and dead) also were found at the Cosumnes Power Plant project site in Sacramento County where the site had been graded to construct a parking lot (Service file number 1-1-04-I-0752).

Page 84: [2] Comment [jm54] jamacdonald 6/22/2004 6:18:00 PM

Ok, look, this is just plain dishonest. The cite refers to loss of dispersal... but it appears to be a cite that supports the entire sentence. Remove it, characterize the statement as what it is, a judgement of the consequence of ag and urban uses... not supported by any research.

Page 84: [3] Deleted jamacdonald 6/23/2004 2:58:00 PM

. Existing vineyards and orchards can disrupt annual migration patterns and prevent access to breeding wetlands as salamanders avoid moving through areas with heavy canopy cover (S. Sweet, in litt. 1998). Agricultural and urban land uses also interfere with dispersal among breeding sites and prevent natural colonization of ponds that can result in the loss of breeding sites (Marsh and Trenham 2001).

Page 84: [4] Comment [jm58] jamacdonald 6/23/2004 3:01:00 PM
The cites for this deleted statement are nowhere in the requested cites. Sneed and Sweet in litt. 1998

Page 84: [5] Deleted jamacdonald 6/23/2004 3:01:00 PM

Erosion from agriculture or grading can similarly impair reproductive success by causing sedimentation and degradation of nearby wetlands (S. Sweet, in litt. 1998; Sneed 2000).

composition at a vernal pool complex, with salamanders becoming proportionally less abundant as bullfrogs increased in number. Although bullfrogs are unable to establish permanent breeding populations in unaltered vernal pools and seasonal ponds because they require more than one year to complete their aquatic larval stage, dispersing immature bullfrogs take up residence in such water bodies during the winter and spring where they prey on native amphibians, including larval salamanders (Morey and Guinn 1992; Seymour and Westphal 1994). However, given the fact that bullfrogs have been present for at least 100 years it is likely that the effects of this species on populations has stabilized.

Bullfrogs are known to travel at least 2.6 km (1.6 mi) from one pond to another (Bury and Whelan 1984), and they have the potential to naturally colonize new areas where they do not currently exist, including areas where Central California tiger salamanders occur. In one study of the eastern San Joaquin Valley, 22 of 23 ponds (96 percent) with California tiger salamanders were within the bullfrogs' potential dispersal range (Seymour and Westphal 1994). In addition, because bullfrogs are still sought within California for sport and as food, and may be taken without limit under a fishing license, the threat of transport for intentional establishment in new habitat suitable for the Central California tiger salamanders is significant.

Western mosquitofish (Gambusia affinis) are native to central North America (watersheds tributary to the Gulf of Mexico) and have been introduced throughout the

Comment [jm68]: These are inaccurate statements. Westphal notes they coexist but with depressed populations. The statement in Schaeffer 1993 is that there is a strong correlation between fish and the absence of CTS and other vernal pool species. He said there was a strong association between bullfrogs and CTS absence but that it was not possible to determine how much was because of fish effects.

Deleted: A strong correlation exists between bullfrog presence and California tiger salamander absence (Shaffer et al. 1993; Seymour and Westphal 1994; Laabs et al. 2001)

Deleted:

Comment [jm69]: This entire discussion is troubling. These bullfrogs have been around for nearly 100 years and have not wiped out the Salamander. The research shows that it depresses salamander populations but... isn't that the function of a predator? Ho can the bull frog or any of these species be a threat to the continued existence? I agree it's a predator, and I agree that depresses populations, but I don't see that it threatens the continued existence ...

Detrimental effects of wild pigs on the Central California tiger salamander include both predation and habitat modifications.

D. The Inadequacy of Existing Regulatory Mechanisms. One primary cause of Central California tiger salamander decline is the loss, degradation, and fragmentation of habitat due to human activities. Federal, State, and local laws have been insufficient to prevent past and ongoing losses of the limited habitat of the Central California tiger salamander, and are unlikely to prevent further declines of the species.

Federal

Clean Water Act. This section as written is disingenuous. On our 6.24.04 telephone conversation we discussed the Corps refusal to grant a 404 permit based on impacts to vernal pools. Fix it, include the general nationwide permit conditions that apply and note that the real hole is these stock ponds... nationwide permits don't govern them, and in some areas they are 80% of the habitat. There is no need to go into the mind-numbingly dull discussion of SWA/NCC, primarily because the worst case scenario it predicts doesn't and won't exist. There are plenty of gaps and threats without having to play stuff worse or more confusing than it has to be... Pursuant to Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344), the U.S. Army Corps of Engineers (Corps) regulates the discharge of dredged or fill material into all Waters of the United States, including wetlands. In general, the term "wetland" refers to areas meeting the Corps

Comment [db78]: *cough* any tiger sal/wild pigs data research etc?

Comment [jm79]: Entire section deleted no evidence provided that supports it. The one cite that directly represents pigs effect salamander populations was not provided on the CD. Happy to replace if there is some evidence that pigs are a problem.

Deleted: Another non-native species which may be a threat to the California tiger salamander is the wild pig (*Sus scrofa*). Wild pigs in California are the result of numerous introductions. Some have escaped from captivity and others have been deliberately introduced for sport hunting. Recent estimates suggest that there are about 106,000 to 160,000 wild pigs in California (Waithman et al. 1999). Although range expansion of introduced wild pigs has ceased in many regions of the United States, it increased significantly since the 1950s in California (Waithman et al. 1999). Wild pigs are now distributed within parts of 49 of California's 58 Counties (Waithman et al. 1999), with densities as high as 3.8 (Sweitzer et al. 2000) to 4.7 pigs per square kilometer (9.8 to 12.2 pigs per square mile) (Schauss et al. 1990).

Wild pigs have been widely implicated in declines and extinctions of numerous species worldwide and have had pronounced negative ecological effects on Central California tiger salamanders when their numbers are high (Waithman et al. 1999).

Comment [jm80]: Entire section deleted, no supporting research provided.

develop Regional Water Quality Control Plans and issue waste discharge requirements (permits).

As part of surface and groundwater quality planning, the Porter-Cologne Water Quality Control Act (Porter-Cologne) regulates the discharge of fill to wetlands and other water bodies and to regions where it could impact those waters (California Water Code §13260 et seq.). If the Corps has jurisdictional authority over waters under the CWA section 404, and a project applicant requires a Corps permit for work in those waters, then that project applicant must also obtain Water Quality Certification from its local Regional Water Quality Control Board (Water Board), pursuant to section 401 of the CWA, that its project will not violate State water quality standards. If the Corps does not have jurisdictional authority, then a project applicant may require a permit under Porter-Cologne. State jurisdiction over waters under Porter-Cologne can be much greater than federal jurisdiction under the CWA. However, the Water Boards generally regulate the fill of State waters where fill occurs within waters that would normally fall under Corps regulation, but have been excluded due to various reasons (e.g., the Supreme Court's SWANCC and Tulloch Rule decisions). We have determined that the Porter-Cologne does not serve as an adequate regulatory mechanism for the Central California tiger salamander for the same reasons of limited scope of jurisdictional authority described under Section 404 of the CWA above:

Local

Comment [jm102]: That is also just plain wrong. Porter-Cologne is extremely broad and the State has the power to do virtually anything they want with water. You would be better off stating something to the effect of ... they could regulate, but they don't.

hybridization) and that, in at least some circumstances (e.g., where there are perennial ponds), non-native genes may be more likely to persist than native genes. *Both studies suggest that the spread of non-native genetic material into California tiger salamander via hybridization is probable and may be an important threat to the long-term persistence of California tiger salamander, particularly given the number of artificial and highly modified habitats used by California tiger salamander and the presence of perennial ponds within the range of the species.*

Comment [jm116]: Entire section is speculative.
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Comment [db117]: Well how do we define persistence.

The geographic extent of known hybridization and the apparent movement of hybrid genes across the landscape over the last decade also show that hybridization with A. tigrinum may be a serious threat to the integrity of California tiger salamander. Using mtDNA and nuclear DNA markers as described above, researchers have examined the geographic extent of hybridization between A. tigrinum and California tiger salamander (Shaffer and Trenham 2002, H.B. Shaffer in litt. 2003). Hybridization has been found to varying degrees in the Central Coast, Bay Area, and the Central Valley regions of California tiger salamander (Shaffer and Trenham 2002, H.B. Shaffer in litt. 2003, Service 2004). Of particular concern is the widespread hybridization within the Central Coast. Introduced genes have been found from southern Santa Clara County throughout most of Monterey County down to Fort Hunter Liggett on the San Luis Obispo County line, and east across all of San Benito County where California tiger salamanders occur (H.B. Shaffer in litt. 2003). We believe hybridization is a serious threat in the Central Coast region of California tiger salamander. Within this region, virtually all Monterey

Comment [db118]: What does this mean?

Comment [jm119]: Cite?

Comment [jm120]: No data was included in either of these cites.

Comment [jm121]: Basis for this other than Shaffer random statement?

County populations have been compromised by non-native genes, and every population at Fort Hunter Liggett is either introduced or a hybrid mixture (H.B. Shaffer in litt. 2003).

Comment [jm122]: Is there data to back up this statement? If so, produce please.

Comment [db123]: Why is it a threat?

Also of concern is the advancement of hybrid genes observed over the last decade. Salamander tissues collected ten or more years ago at the former Fort Ord and in the upper Carmel Valley were all pure California tiger salamander. However, material collected in May, 2003, at the former Fort Ord, and two years ago in the Carmel Valley contained introduced genes, suggesting that introduced genes are moving into new areas. In addition, introduced genes were recently detected from material collected in eastern Merced County (Shaffer in litt. 2003). These changes in the distribution of hybridization indicate that the threat from hybridization is likely to increase in the future.

Comment [jm124]: There is absolutely no basis for this statement. Why couldn't it have been just plain old migration?

Comment [db125]: Why does it suggest human vs some other type of movement

Deleted: , suggesting that human-mediated movement of introduced salamanders

Deleted: may still be occurring

Using GIS, we estimated the number of Central California tiger salamander records (presumably California tiger salamanders without non-native genes present) that were threatened by hybridization (Service 2004). We considered a California tiger salamander record threatened by hybridization if the record was within 2.1 km (1.3 mi) of a hybridized or nonnative tiger salamander observation. Locations of hybridized or non-native tiger salamander locations were provided by Dr. H. Bradley Shaffer of University of California at Davis. Other records also were considered threatened if they were part of a larger polygon that consisted of multiple records (see Service Analysis of Central California Tiger Salamander Habitat above), located within 2.1 km (1.3 mi) of a hybridized or nonnative tiger salamander observation. Our assumptions were that if a

Comment [jm126]: Get me the data set.

Julie MacDonald@DOI
05/19/2004 02:48 PM

To: Paul Henson/SAC/R1/FWS/DOI, Diane Elam/SAC/R1/FWS/DOI@FWS,
Michael Fris/SAC/R1/FWS/DOI@FWS
cc:
Subject: CTS listing document -- more edits and comments [Virus checked]

Ok, I have sent you this document. We need to discuss my comments and edits, what is a good time to schedule that discussion? (I haven't fully edited it, had too many changes at the end, and got more than a little frustrated at what appeared to me just plain sloppy work in order to advocate a position).



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identified, into a single species listed as threatened. Two distinct populations, the Santa Barbara and Sonoma were listed as endangered and a third the Central California was proposed to be listed as threatened. The California tiger salamander is threatened primarily by habitat destruction, degradation, and fragmentation due to urban development and conversion to intensive agriculture. Other threats include hybridization with non-native salamanders, inadequate regulatory mechanisms, and certain practices involved with livestock grazing. Concurrently, with publication of this final rule, we are publishing a special rule under section 4(d) of the Act. Under the special rule, take of the Central California tiger salamander caused by existing routine ranching activities located on private, State, or Tribal lands would be exempt from the prohibitions of section 9 of the Act. This rule implements the Federal protection and recovery provisions afforded by the Act for the Central California tiger salamander.

DATES: This rule is effective [Insert date 30 days after date of publication in the FEDERAL REGISTER].

ADDRESSES: The complete file for this rule is available at U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office (SFWO), 2800 Cottage Way, Suite W-2605, Sacramento, CA 95825.

FOR FURTHER INFORMATION CONTACT: Wayne White, Field Supervisor (Attn: CTS) telephone: 916/414-6600; facsimile: 916/414-6713.

~~Deleted: Central California~~

~~Deleted: by a variety of factors. The~~

~~Deleted: threats include~~

~~Deleted: , hybridization with non-native salamanders, and predation by non-native species. The threat of hybridization with non-native tiger salamanders is a particularly severe threat to the Central Coast Range and Bay Area regions, and to a lesser extent, the Central Valley region.~~

~~Comment [jm2]: We always put this standard phrase in, however, in the case of California, CEQA provides significant regulatory protections for the salamander, particularly when we are talking about a 'species of special concern' which the salamander has been designated.~~

~~Comment [jm3]: When we start getting effective at rodent control loss of burrows will be a problem. There was no information provided that indicated Salamander death from contaminants, pesticides, or secondary ingestion of rodent control poisons; absent that, it is purely speculation. Road crossing mortality as a threat to the continued existence of the species is also speculative. Disease is not currently a threat although it could become a threat under the right circumstances, it is not currently a threat and accordingly does not belong. There is no disease currently affecting populations above normal background levels.~~

~~Comment [jm4]: Is this inconsistent with our 4(d) language? Are we explaining what activities that are ranching activities ought not happen?~~

~~Deleted: disease,~~

~~Deleted: contaminants, agricultural and landscaping contaminants, rodent control, road-crossing mortality,~~

~~Deleted: ¶~~

~~¶~~

allow such metamorphoses. In contrast to natural vernal pools, stock ponds may contain enough water throughout the year, or for sufficiently long periods, that predatory fish and bullfrogs (*R. catesbeiana*) can colonize the pond and establish self-sustaining breeding populations (see Factor C below; Shaffer et al. 1993; Seymour and Westphal 1994) these populations have the potential to affect tiger salamander survival. Permanent wetlands may occasionally support breeding California tiger salamanders if fish are not present, but extirpation of the salamander population is likely if fish are introduced (Shaffer et al. 1993; Seymour and Westphal 1994). Habitat in artificial ponds can also be threatened due to inadequate maintenance. Natural soil erosion, sometimes increased by pond breaching, berm failure, stock animal impacts, can result in increased sedimentation of the pond (Hamilton and Jepson 1940), thereby reducing their quality as salamander habitat. Often ponds are not maintained because it may be more economical to construct a new pond when the old pond fills with silt and is no longer functional (Hamilton and Jepson 1940).

Once fall or winter rains begin, adults emerge from the upland sites on rainy nights to feed and to migrate to the breeding ponds (Stebbins 1985, 1989; Shaffer et al. 1993). Males migrate to the breeding ponds before females (Twitty 1941; Shaffer et al. 1993; Loredo and Van Vuren 1996; Trenham 1998b). Males usually remain in the ponds for an average of about six to eight weeks, while females stay for approximately one to two weeks. In dry years, both sexes may stay for shorter periods (Loredo and Van Vuren 1996; Trenham 1998b). Most marked salamanders have been recaptured at the pond

~~Deleted: however,~~
~~Deleted: i~~

Comment [jm17]: Add a cite or remove as it is speculati

Deleted: Perennial breeding sites also may place California tiger salamanders at a greater risk of hybridization with non-native tiger salamanders (see Factor E below).

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Comment [jm18]: Ok, this entire section is kind of meandering... what point is being made here? We've already said management determines how stockponds contribute... the rest of this seems to be kind of meandering on about what might go wrong... I took it out, because it didn't add anything, but if you can tighten it up and make a point, add it back in

Deleted: also require ongoing maintenance and are often temporary structures.

Comment [jm19]: We know the FWS does not like ORV use, but if you want to leave this in, please explain why ORV use is a particular problem in ponds as opposed to say... hikers and fishermen degrading the banks?

Deleted: and off-road vehicle (ORV) use,

Deleted: Stock ponds may be geographically isolated from other seasonal wetlands occupied by California tiger salamanders, and newly created ponds may be located beyond the maximum dispersal distances of juvenile or adult salamanders. However, because the species can live for more than a decade (Trenham et al. 2000), and during this time individuals can migrate between aquatic and upland habitats, colonization of newly created and geographically isolated ponds may be possible, provided the intervening habitat has not been destroyed (Sweet in litt. 2003).

habitat because smaller patches have relatively more edge than larger patches (Noss and Cooperrider 1994). At what point in the fragmentation process biological integrity declines dramatically is not typically known.

Because the negative effects of habitat loss and fragmentation on the long term persistence of species are established to the point that they are axiomatic in modern ecology and conservation biology, we believe that using documentation of habitat loss and fragmentation as an indication of population status is legitimate and reasonable when data documenting declines in numbers of individuals are unavailable. We believe the California tiger salamander has been, and continues to be, threatened by habitat loss and fragmentation.

The Service believes that the California tiger salamander likely occupied the habitats throughout the state which have been lost or fragmented. In addition, we believe that the California tiger salamander has negatively affected by the alteration of its habitat throughout the state. We also believe that the California tiger salamander will continue to be threatened by habitat loss and fragmentation as urbanization and conversion of rangelands to intensive agriculture occur in the future (see Factor A below). To some extent the past and future losses of habitat may be compensated by construction of artificial breeding ponds in locations with suitable upland habitat (e.g., stock ponds on cattle ranches). Our specific analysis of the ongoing threat from habitat loss and fragmentation is described in detail in the Summary of Factors Affecting the Species

~~Deleted: Widespread habitat alteration and fragmentation can affect even once-common species, such as the Middle Spotted Woodpecker (*Dendrocoptes medius*) of Sweden. The Middle Spotted Woodpecker has disappeared from areas which now have a low density of suitable habitat patches as a result of habitat fragmentation (Carlson and Aulen 1992 as cited in Moffe and Carroll 1997). ¶~~

~~Comment [jm27]: I took this out since it applied specifically to the Central Valley CTS, you can add something in that applies to some or all of the habitats.~~

~~Deleted: The Central Valley of California, once described by John Muir as "one sheet of plant gold, hazy and vanishing in the distance," has been drastically altered subsequent to the 1850's gold rush. Since that time, Central Valley habitats have been cleared, drained, cultivated and built upon (Barbour et al. 1993).~~

~~Comment [jm28]: I must say...this paragraph is the crux of the entire listing. In this paragraph there are three statements of 'we believe' ... I am very uncomfortable with this ... being Catholic. I know the Apostles' Creed and it begins ... We believe ... such statements are appropriate to religion, but not to scientific documents and certainly not to regulatory documents. I know that one of the reasons for the 6 month extension is the extent to which habitat was a. occupied and b. lost over the years since migration into California began ... we simply must do a better job of documenting habitat occupation at least.~~

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~~Comment [jm29]: What is the basis for this belief? This is not a theological paper.~~

~~Deleted: However, we believe these habitats are likely to have shorter overall life-spans than natural habitats and are likely to require long-term management to ensure continued suitability for California tiger salamanders.~~

Below we discuss loss and fragmentation of upland and aquatic habitat for Central California tiger salamander. We also discuss the loss of habitat within the range of Central California tiger salamander, loss of historic habitat on the Central Valley floor, urbanization and human population growth, and loss of rangeland as it relates to the future fragmentation and loss of habitat for the species.

Upland habitat. Correlative analyses have determined that California tiger salamanders have declined due to habitat conversion to intensive agriculture and urbanization (Davidson et al. 2002). Even salamanders inhabiting breeding ponds that are protected from development may not persist as viable populations if upland habitat is unavailable or reduced in area, or if breeding ponds become fragmented and isolated from other ponds (Marsh and Trenham 2001; Jung in litt. 2003; Trenham and Shaffer in review). Earthmoving operations and cultivation in upland habitat can directly or indirectly kill or injure California tiger salamanders in burrows or on the surface by crushing or trapping them. Such activities render all affected areas unsuitable for salamander breeding, feeding, and sheltering. Earth disturbing practices can also expose salamanders to adverse environmental conditions (increased predation, high temperatures, low humidity, destroy food sources) and alter surface hydrology (potentially affecting breeding ponds). Discing, deep-ripping, or grading of upland habitat also temporarily destroys burrows and crevices utilized by the salamander, making suitable upland sites unavailable and likely reducing long-term adult survival of Central California tiger

Comment [jm35]: What is this?
Please provide a copy... is this a case of
jello eating causing cancer?

Comment [jm36]: Doesn't just
destroy ground squirrel burrows, destroys
them all.

Deleted: California ground squirrel

Annual estimates of vernal pool loss in the Central Valley before the late 1980s and early 1990s were 2 to 3 percent (Holland 1988). During the 1980s and 1990s, the estimated annual loss of vernal pools in Madera County was 0.4 percent; 0.5 percent in Kings County; 0.6 percent in Fresno County; and 1.4 percent in Tulare County (Holland 1998). South of Fresno and Tulare counties, vernal pools are limited in distribution because soils that support them are less wide spread than in northern counties (Keeler-Wolf et al. 1998). In Tulare and Kings Counties, vernal pools are almost completely lost, and are primarily associated with Cottonwood Creek in the northern portions of these counties (Holland 1978). There are six California tiger salamander records in this area; these are threatened variously by urbanization, conversion to intensive agriculture, and possible irrigation runoff (Kirkpatrick et al. 1992).

Comment [jm86]: Ok, Kirkpatrick estimated that these salamander ponds are threatened 12 years ago, and nothing has happened? This is pure speculation then?

Urban development. Shaffer et al. (1993) were unable to find breeding habitat over most of the original grassland habitat of the San Joaquin Valley. Where ponds were located, California tiger salamanders generally were absent (72 percent of 324 ponds sampled were not occupied). The rarity of this species in the San Joaquin Valley, in habitat that was apparently suitable historically, indicates widespread extirpation of California tiger salamanders by habitat conversion to agricultural and urban uses (Stebbins 1989). Large areas of California tiger salamander habitat were destroyed and degraded by major urbanization in this region during the 1970s and 1980s (Shaffer et al. 1993). From 1992 to 2000, the San Joaquin Valley continually was one of the top three

Comment [jm87]: Ok, look ... apparently suitable is nothing but a GUESS... nothing else... we cannot be basing a listing on this kind of speculative wool-gathering... If there is data that supports the assertion it was habitat that's one thing. But ... one could also make an argument that since there is suitable habitat (ponds, grasslands) and we have no record of the salamander in the area it is also entirely possible that there is some other reason that the habitat is not suitable... like for instance, maybe it's too hot or there is not enough rainfall.

with densities as high as 3.8 (Sweitzer et al. 2000) to 4.7 pigs per square kilometer (9.8 to 12.2 pigs per square mile) (Schauss et al. 1990).

Wild pigs have been widely implicated in declines and extinctions of numerous species worldwide and have had pronounced negative ecological effects on Central California tiger salamanders when their numbers are high (Waithman et al. 1999). Detrimental effects of wild pigs on the Central California tiger salamander include both predation and habitat modifications. One recognized expert on wild pigs in California states that he has found bullfrogs, snakes, and newts in pig stomachs, and he believes that California tiger salamanders would be consumed by pigs, if encountered (R. Barrett, University of California, Berkeley, pers. comm. 2002), a view also shared by another wild pig expert in Florida (R. Belden, Florida Wildlife Commission, pers. comm. 2002). The nocturnal behavior of wild pigs, and their affinity for ponds and watering holes in oak woodlands of foothills and other fringe areas of the Central California tiger salamander's range, coupled with the nocturnal movements of the amphibian during the rainy season, could result in considerable predation. In addition, wild pigs may cause ecological damage to Central California tiger salamander habitat, including consumption of vegetation for food, and rooting and digging, which may change plant successional patterns, soil properties, water infiltration rates, water quality (Synatzske 1993), or cause the loss of the small-mammal burrows the salamander needs for shelter and foraging.

Comment [jm115]: This is a parade of horrors completely unsupported by any factual evidence that they prey on salamanders.

E. Other Natural or Manmade Factors Affecting Its Continued Existence. Several

other factors threaten Central California tiger salamanders, including their exposure to various contaminants, the effects from rodent population control efforts, mosquito control, direct mortality while they are crossing roads, the species' hybridization with non-native tiger salamanders and future hybridization that is likely to occur, and certain practices associated with livestock grazing.

Contaminants

Little research has been done on the effects of contaminants to the California tiger salamander, especially with respect to agricultural pesticides. Although there is concern that the presence of pesticide residue may adversely affect amphibians.

Roads in addition to being a cause of mortality from vehicular traffic also generate contaminants in stormwater runoff. The presence of these contaminants in breeding ponds may have an adverse effect on tiger salamander survival.

Hatch and Burton (1998) and Monson et al. (1999) investigated the effects of the petroleum product fluoranthene and urban runoff on spotted salamanders (A. maculatum), northern leopard frogs (R. pipiens), and African frogs (Xenopus laevis). In laboratory and outdoor experiments, using levels of the contaminant comparable to those found in stormwater runoff from service stations and other urban areas, the researchers found

Comment [jm139]: This entire section is a fishing expedition and completely speculative.

Deleted: This section uses currently available salamander data and surrogate species data as the best available science. Most toxicological studies to date have been conducted on other amphibian species, in particular Anuran species (frogs and toads). These studies provide sufficient information to assess the potential risks of contaminants to the California tiger salamander. ¶

Deleted: Like most amphibians, California tiger salamanders inhabit both aquatic and terrestrial habitats during different stages of their life cycle and may be exposed to a variety of pesticides and other chemicals throughout their range. Due to their permeable skin, amphibians may be particularly vulnerable to environmental stressors such as pesticides (Blaustein and Wake 1990). Toxicants do not have to be present at lethal levels to be harmful. Toxicants at sublethal levels may still cause adverse effects such as developmental abnormalities in larvae and behavioral anomalies in adults, which can be deleterious to the exposed individuals (Hall and Henry 1992; Blaustein and Johnson 2003). In addition to the potential for direct effects from toxicant exposure, California tiger salamanders could also suffer from starvation due to a reduction or loss of their prey base resulting from environmental contaminants. Sources of chemical pollution which may adversely affect California tiger salamanders include pesticides used in agricultural, landscaping, roadside maintenance, and rodent and vector control activities, as well as hydrocarbons and other pollutants in stormwater runoff and from industrial and oil production facilities. ¶

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Deleted: is not the only risk factor associated with roads.

Deleted: Oil and other

Comment [jm140]: I am speculating here, still waiting for copies of the studies to be delivered, but I believe these studies have various causality issues.

Deleted: from roads have been detected in adjacent ponds and linked to die-offs and deformities in California tiger salamanders and spadefoot toads, as well as die-offs of invertebrates that form most of both species' prey base (S. Sweet, in lit. 1993). Lefcort et al. (1997) found that oil had limited direct effects on 5-week-old marbled (A. opacum) and tiger salamanders (A. t. tigerinum). Also ... [1]

from roads have been detected in adjacent ponds and linked to die-offs and deformities in California tiger salamanders and spadefoot toads, as well as die-offs of invertebrates that form most of both species' prey base (S. Sweet, in litt. 1993). Lefcort et al. (1997) found that oil had limited direct effects on 5-week-old marbled (A. opacum) and tiger salamanders (A. t. tigrinum). Also, salamanders from oil-contaminated natural ponds metamorphosed earlier at smaller sizes, and larvae from oil-contaminated artificial ponds had slower growth rates than larvae raised in uncontaminated ponds. These studies did not address effects on eggs and early larval stages where the effects may be more pronounced.

reduced survival and growth abnormalities in all species. The effects were more pronounced when the larvae were exposed to the contaminant under natural levels of sunlight, rather than in the laboratory under artificial light.

Rodent Control

Mosquito Control

In addition to the use of western mosquitofish (see Factor C above), a common chemical method of mosquito control in California involves the use of methoprene. Methoprene is an insect hormone mimic which increases the level of juvenile hormone in insect larvae and disrupts the molting process. Lawrenz (1984, 1985) found that methoprene (Altosoid SR-10) retarded the development of selected crustacea that had the same molting hormones (i.e., juvenile hormone) as insects, and anticipated that the same

Comment [jm141]: Ummm... excuse me... we have a sentence early in this draft that states (although I edited it out) that these salamanders are restricted to vernal pools and stockponds. Mischaracterization of the salamander's adaptability is inexcusable in a document such as this. Either remove this, or revise our recitation on habitat the salamander lives in to reflect it's adaptability and presence in ditches.

Comment [jm142]: What is the basis for calling ditches marginal habitat? Is there any research showing that the salamanders grow more slowly in these ditches? Is there any research that the salamander chooses these ditches only where there is no other option?

Deleted: There are a number of records of California tiger salamanders using roadside ditches in areas where there are no known breeding ponds (CNDD... [1])

Comment [jm143]: This paragraph leaves the reader with the impressi... [2]

Deleted: In 2002, over 172 million pounds of pesticides were used in... [3]

Comment [jm144]: If a study suggested, that means, Christian st... [4]

Comment [jm145]: This paragraph is completely speculative.

Deleted: The results of a study conducted by Christen et al. (2003)... [5]

Comment [jm146]: Causality is an issue here, is it because of plowing... [6]

Comment [jm147]: speculative

Deleted: Agricultural sites where pesticides are often used have low... [7]

Comment [jm148]: The most toxic are designed to be applied at a leve... [8]

Deleted: Many of the pesticides are extremely toxic to aquatic organisms... [9]

Comment [jm149]: Again speculative

Deleted: Richards and Kendall (2002) conducted a study evaluating effe... [10]

Comment [jm150]: Anything that the FWS can say about pesticide effe... [11]

Deleted: A study conducted by Rohr et al. (2003) examined the effects of... [12]

Comment [jm151]: This entire section is absurd. I do not under... [13]

Comment [jm152]: It would make sense to write something about lif... [14]

Deleted: California tiger salamanders spend much of their lives in unde... [15]

Page 142: [1] Deleted

jamacdonaId

5/19/2004 5:23:00 PM

There are a number of records of California tiger salamanders using roadside ditches in areas where there are no known breeding ponds (CNDDDB 2003), thus these animals are utilizing the only marginal habitat remaining for breeding. In light of increased urbanization, along with concurrent increases in traffic, the risk factor associated with contaminants in runoff will likely increase in both roadside ditches and across the general landscape.

Page 142: [2] Comment [jm143]

jamacdonaId

5/19/2004 5:44:00 PM

This paragraph leaves the reader with the impression that these pesticides remain in the environment moving through various mediums when in fact, often the pesticides break down in a short period of time, or in contact with rain or sunlight. The mere fact that these pesticides are applied means nothing unless there are specific cites of controlled studies demonstrating ill effects. Short of that, it's folklore and opinion.

Page 142: [3] Deleted

jamacdonaId

5/19/2004 5:23:00 PM

In 2002, over 172 million pounds of pesticides were used in California. For the California counties where California tiger salamanders may occur, over 125 million pounds of pesticide active ingredients were used (California Department of Pesticide Regulation, pesticide use summary reports for 2002, http://www.cdpr.ca.gov/docs/pur/pur02rep/lbsby_co.pdf). Chemicals used in these counties include herbicides (e.g., atrazine, trifluralin), organophosphate insecticides (e.g., diazationon, chlorpyrifos, malathion), carbamate insecticides (e.g., carbaryl, carbofuran), and pyrethroid insecticides (e.g., esfenvalarate, permethrin), along with a mix of other agricultural and industrial chemicals that may have synergistic effects. Pesticides applied outdoors can move off a target site through aerial drift, stormwater runoff, or groundwater seepage. Off-target movement may introduce pesticides into surface waters adjacent to application sites, potentially exposing biota in the water. Furthermore, many outdoor pesticide applications occur during the spring and summer months, coinciding with the

timeframe for the California tiger salamander's aquatic life stages (i.e., eggs, larvae, and pre-metamorphic juveniles).

Page 142: [4] Comment [jm144] jamacdonald 5/19/2004 5:44:00 PM

If a study suggested, that means, Christian stated his opinion as to why this may be occurring. That is not science, it's an indicator that additional research in the particular area may be appropriate.

Page 142: [5] Deleted jamacdonald 5/19/2004 5:27:00 PM

The results of a study conducted by Christen et al. (2003) suggested that pesticides can increase the susceptibility of amphibians to pathogens by depressing their immune system. Furthermore, pathogens may become more virulent in immunocompromised individuals. Given that organisms exposed to pollutants have increased energy consumption associated with detoxification and elimination processes, less energy is available to combat different pathogens (Skinner 1982). Pathogens and pesticides may have a synergistic effect on the immune system. This is of particular concern since most amphibians living in the wild are infected by parasites or pathogens that under normal conditions are not lethal. If pesticides cause an increase in immunosuppression, this may cause salamanders to be more vulnerable to a variety of infections.

Page 142: [6] Comment [jm146] jamacdonald 5/19/2004 5:44:00 PM

Causality is an issue here, is it because of plowing and destruction of habitat rather than pesticides?

Page 142: [7] Deleted jamacdonald 5/19/2004 5:29:00 PM

Agricultural sites where pesticides are often used have lower amphibian species richness and abundance than adjacent nonagricultural sites (Bonin et al. 1997). Berger (1989) suggested that agricultural pesticide use has resulted in the disappearance of amphibians from the landscape in some instances. Susceptibility of amphibians to adverse effects of pesticide exposure may be dependent on the developmental stage of exposed individuals (Pauli et al. 1999; Greulich et al. 2002). Several studies have examined effects on amphibian development after pesticide exposure to the eggs, with

observations of significant post-exposure tadpole mortality (Berrill et al. 1998), morphological deformities in later development (Allran and Karasov, 2000; Harris et al., 2000), and delay in larval growth (Bridges, 2000). These results indicate the importance of life stage exposure on the development and long-term growth of amphibians. In addition, if pesticide exposure occurs during the egg or larval development stage, much of the organism's metabolic energy is spent on detoxification in order to regain physiological balance (Gruelich and Pflugmacher, 2003).

Page 142: [8] Comment [jm148] jamacdonald 5/19/2004 5:44:00 PM
The most toxic are designed to be applied at a level that results in no mortality even with no dilution.

Page 142: [9] Deleted jamacdonald 5/19/2004 5:30:00 PM
Many of the pesticides are extremely toxic to aquatic organisms, including amphibians and the organisms on which they prey. The primary mode of action for some of these pesticides, such as the organophosphate insecticides, is the inhibition of cholinesterase (ChE) activity. Reduced ChE activity has been linked to uncoordinated swimming, increased vulnerability to predation, depressed growth rates, and increased mortality in tadpoles (de Llamas et al. 1985; Rosenbaum et al. 1988; Bridges 1997; Berrill et al. 1998; Sparling et al. 2001).

Page 142: [10] Deleted jamacdonald 5/19/2004 5:31:00 PM
Richards and Kendall (2002) conducted a study evaluating effects of the organophosphate insecticide chlorpyrifos on two developmental stages (premetamorphs and metamorphs) of the anuran species Xenopus laevis. Mortality, deformity, ChE activity, and DNA and protein concentrations were measured. All parameters indicated that metamorphs were more sensitive than the premetamorphs. Richards and Kendall's (2002) data indicate that organophosphate insecticides have the potential to affect anuran larvae, based on EPA toxicity estimates of chlorpyrifos in surface water. At these

concentrations, significant deficiencies in tissues of developing organisms, particularly nervous system tissues, could occur.

Page 142: [11] Comment [jm150] jamacdonald 5/19/2004 5:44:00 PM

Anything that the FWS can say about pesticide effects is said more completely, more accurately, and more definitively by the EPA. I would suggest that the staff read the technical analysis of the FWS review of EPA's pesticide registration program. What the FWS found as a result of 9 months of intensive review, is that EPA used the best available science to make registration decisions that were consistent with the agency's charge to do no harm to the environment. That charge is not restricted to only endangered species but to ALL species, and arguably is a more stringent standard than the FWS which is limited in scope to only endangered species.

Page 142: [12] Deleted jamacdonald 5/19/2004 5:32:00 PM

A study conducted by Rohr et al. (2003) examined the effects of four agrochemicals; atrazine, carbaryl, endosulfan and octylphenol on the streamside salamander (Ambystoma barbouri). They found that none of the agrochemicals significantly affected embryo survival; however, exposure to endosulfan resulted in reduced larval survival, lowered growth rates, respiratory distress, and a significant increase in limb deformities compared to controls.

Observed behavioral abnormalities of tadpoles, such as twisting, writhing, and non-coordinated swimming, are typical signs of pyrethroid poisoning (Cole and Casida, 1983). Gruelich and Pflugmacher (2003) investigated the behavioral and morphological effects of exposure to the pyrethroid insecticide ζ -cypermethrin on various amphibian life stages. During 48 hours of exposure, hatching success of Rana arvalis decreased significantly. Differences in sensitivity between the developmental stages occurred, especially between tadpoles exposed during the egg stage and tadpoles exposed exclusively as newly hatched embryos. Berrill et al. (1993) observed that the more developed embryo of Rana clamitans was more sensitive to pyrethroid exposure than less developed stages. The researchers concluded that the greater sensitivity of the late-stage

embryo reflects the more differentiated state of the nervous system; this is because pyrethroid's primary mode of action is to block sodium and calcium channels in the nervous system.

Berrill et al. (1993) exposed embryos and larvae of five amphibians, Ambystoma maculatum, Rana sylvatica, Rana pipiens, Rana clamitans and Bufo americanus, to one or both of the pyrethroid insecticides permethrin and fenvalerate. No significant mortality occurred during or following exposure; however, tadpole growth was delayed following exposure, and tadpoles and salamander larvae responded abnormally to prodding, potentially increasing susceptibility to predation. Slower growth of tadpoles may result in delayed metamorphosis and perhaps smaller size after metamorphosis. Any delay in growth or metamorphosis may result in failure to outgrow potential predators rapidly enough (Werner 1986), and failure to metamorphose before ephemeral habitat disappears.

Page 142: [13] Comment [jm151] jamacdonald 5/19/2004 5:44:00 PM
This entire section is absurd. I do not understand the focus on ground squirrels, it's clear that the salamander uses small mammal burrows. Ground squirrels, shrews, gophers, rats and mice all fit that description. People have been implementing rodent control for centuries with no success. The experience in California is that we are nowhere near eradicating rodents from the landscape. Until that becomes a reality, assertions that rodent control presents a threat to the salamander are patently ridiculous.

Page 142: [14] Comment [jm152] jamacdonald 5/19/2004 5:44:00 PM
It would make sense to write something about limiting fumigation and specific practices that could direction harm salamanders in burrows. To imply that anti-coagulants might somehow harm salamanders when they don't even ingest them is again... really a stretch, and not very supportable.

Page 142: [15] Deleted jamacdonald 5/19/2004 5:38:00 PM
California tiger salamanders spend much of their lives in underground retreats, often in California ground squirrel burrows (Loredo et al. 1996; Trenham 1998a), so widespread control of ground squirrels may pose threats to the salamander. California ground squirrel control, which began in the early 1900s (Marsh 1987), may be done by trapping, shooting, fumigation of burrows, use of toxic (including anticoagulant) baits,

and habitat modification, including deep-ripping of burrow areas (UC IPM internet website 2004).

California ground squirrel control programs are widely conducted (frequently via bait stations placed at specific problem sites) on and around various commercial agricultural operations, including grazing/range lands and various cropland including vineyards (R. Thompson, Science Applications International Corporation in litt. 1998). Also, agencies, particularly flood control agencies and levee districts, conduct extensive California ground squirrel control programs around levees, canals, and other facilities they manage (Kneil in litt. 2003).

The pocket gopher, which also provides the required upland retreats for some California tiger salamanders (Loredo et al. 1996; Trenham 1998a; D. Cook, pers. comm. 2001), is targeted by certain control operations that may also pose threats to the amphibian. This species is classified as a non-game mammal by CDFG. Pocket gopher control measures (UCIPM internet website 2004) are similar to measures used for California ground squirrel control, except that shooting is not an effective approach because of the pocket gophers' nearly continuous seclusion underground. Pocket gopher control typically is most common around golf courses and other large, landscaped areas, and around residential homes and gardens.

Two of the most commonly used rodenticides, chlorophacinone and diphacinone, are anticoagulants that cause animals to bleed to death. These chemicals can be absorbed

through the skin and are considered toxic to fish and wildlife (EPA 1985; EXOTONET 1996). These two chemicals, along with strychnine, are used to control rodents (R. Thompson, in litt. 1998). Although the effects of these poisons on California tiger salamander have not been assessed, any uses in close proximity to occupied Central California tiger salamander habitat may have various direct and indirect toxic effects. Gases, including aluminum phosphide, carbon monoxide, and methyl bromide, are used in rodent fumigation operations and are introduced into burrows by either using cartridges or by pumping. When such fumigants are used, animals inhabiting the fumigated burrow are killed (Salmon and Schmidt 1984).

In addition to possible direct adverse effects of rodent control chemicals and gasses, California ground squirrel and pocket gopher control operations may have the indirect effect of reducing the number of upland burrows available to specific California tiger salamanders (Loredo-Prendeville et al. 1994). Because the burrow density required by California tiger salamanders is unknown, the impacts of burrow loss are also unknown.

Shaffer et al. (1993) believe that rodent control programs could be the cause for absence of California tiger salamanders in certain areas. Active California ground squirrel colonies probably are needed to sustain California tiger salamanders, because inactive burrow systems likely become progressively unsuitable over time. Loredo et al. (1996) found that burrow systems usually collapsed within 18 months following cessation of California ground squirrel use, and did not report California tiger salamanders utilizing

any collapsed burrows. Also, deep ripping of rodent burrow areas as a rodent control measure would be likely to completely destroy burrows and harm or kill any California tiger salamanders using them.

Many Central California tiger salamander sites are currently occupied by livestock. Livestock owners' concern over livestock breaking their legs in rodent burrows is a reason for many California ground squirrel control efforts, especially around livestock watering tanks and ponds. These and other California ground squirrel and pocket gopher control efforts have potential to adversely affect Central California tiger salamanders if they are implemented without knowledge of, and concern for, the habitat needs of the species.

Susan Moore
06/24/2004 07:39 PM

To: Arnold Roessler/SAC/R1/FWS/DOI@FWS, Adam
Zerrenner/SAC/R1/FWS/DOI@FWS, Jan
Knight/SAC/R1/FWS/DOI@FWS, Chris
cc:
Subject: Complete edited document [Virus checked]

----- Forwarded by Susan Moore/SAC/R1/FWS/DOI on 06/24/2004 04:29 PM -----

Julie MacDonald@DOI
06/24/2004 03:35 PM

To: Paul Henson/SAC/R1/FWS/DOI@fws, Michael
Fris/SAC/R1/FWS/DOI@FWS, Diane Elam/SAC/R1/FWS/DOI@FWS,
Susan Moore/SAC/R1/FWS/DOI@FWS
cc: Gary D Frazer/ARL/R9/FWS/DOI@FWS, Elizabeth
Stevens/ARL/R9/FWS/DOI@FWS, Clint Riley/ARL/R9/FWS/DOI@FWS
Subject: Complete edited document [Virus checked]

Ok, here is the entire document with my edits, all of which are subject to your review, criticism and rejections... thanks!



edited cts cent f list CNO 06-08-04.r

the California tiger salamander to establish their not being warranted as threatened (see Factor D below). Regarding protected areas in Merced County, we incorporated these areas into our analysis for estimating the amount of protected Central California tiger salamander habitat. We estimated that there were 76,501 ha (189,032 ac, 20 percent) of the Central California tiger salamander habitat that was afforded some protection (see Factor A below), which we determine is not sufficient to preclude listing of the species.

Comment 9: Several commenters stated that there are no diseases adversely affecting the Central California tiger salamander and that the discussion on disease as a threat in the proposed rule was speculative. Several commenters stated that the Service was on record that disease did not pose a threat to the California tiger salamander.

Our Response: As stated in the proposed rule, the Service acknowledges that relatively little is known about the diseases of wild amphibians in general (Alford and Richards 1999) and California tiger salamander in particular (see Factor C below).

~~Pathogen outbreaks have not been documented in the Central California tiger salamander and while two of the peer reviewers expressed concerns that disease could pose a future threat to the tiger salamander we have no basis to consider it a threat at this time and have not identified disease as a threat in our final rule.~~

Comment 10: A few commenters expressed concern about the estimate of 4,451,549 ha (11.1 million ac) of habitat available for the Central California tiger

~~Deleted:~~ However, the proposed rule stated that disease must be considered a potential future threat because of the relatively small, fragmented remaining Central California tiger salamander breeding sites, the many stresses on these sites due to habitat losses and alterations, and the many other potential disease-enhancing anthropogenic changes which have occurred both inside and outside the species' range. Two of the peer reviewers expressed concerns that disease (chytrid fungus and ranavirus) could pose a future threat to the Central California tiger salamander (Lips, in lit. 2003; Longcore, in lit. 2003).

Comment [m29]: We could extrapolate the demise of the entire human race based on disease in the foreseeable future, I can point you to several published books on the subject... The Coming Plague being one that comes to mind immediately.

~~Deleted:~~ , but recently chytrid fungus infections (chytridiomycosis) have been detected in Central California tiger salamanders (Padgett-Flohr 2004; see Factor C below).

Our Response: These comments were not accompanied by information we could use to substantiate the status of each project (e.g., photographs, environmental documents). To the extent that we could independently verify the information submitted, we included it in our analysis.

Comment [jm32]: Did we independently verify all the in lists and conversations we had with various advocates of listing ie Shaffer? Because if we didn't, we had better use the same basis for evaluating this commenters information and theirs. If we accept at face value theirs, we should accept at face value the other information.
Comment [db33]: Explain this, please

Comment 14: Another commenter stated that planned development areas should not be considered areas of potential impact due to avoidance, minimization, and mitigation. Additionally, this commenter stated that development will not go beyond general plans.

Our Response: Some project applicants provide avoidance, minimization, and mitigation measures as part of their project to offset impacts to the California tiger salamander. We agree that it is difficult to quantify and accurately tabulate all the measures for mitigation that are included as part of California's permitting process under CEQA. We also agree that most projects do contain some minimization and mitigation as part of their approval. However, this information is not easily accessible and the amount of time required to collect and tabulate the data was not available. We used what information was readily available. This issue was also one of the bases for which the Service sought additional time because of the disagreement among scientists regarding the accuracy of the data used to calculate the habitat available to the salamander.

Comment [db34]: This is not the right answer.

Deleted: Occasionally, a large development will provide large habitat set-asides that are managed for natural values and which may complement conservation of California tiger salamander. Many projects are too small to provide substantial conservation for California tiger salamander on their own because of the large amount of land needed to

Comment [db35]: We cannot say this because CEQA requires consideration of cumulative effects.

Deleted: sustain the species, even though the project proponent may implement minimization and mitigation measures as part of their project. More importantly, the minimization and mitigation measures of most individual projects do not offset the cumulative regional effects of habitat loss and fragmentation from roads and other development when implemented one project at a time. Such piecemeal mitigation results in highly fragmented landscapes with a steadily diminishing ability to sustain California tiger salamander (see Background above and Factor A below), instead of a coordinated approach to conservation of habitat for the California tiger salamander.

Comment 18: Several commenters stated that the Service was on record stating that pesticides were not a threat to the California tiger salamander (Service citing Davidson et al. 2002). Other commenters stated that pesticides are not a threat and their use in California is declining. Another commenter stated that if pesticides were shown to impact California tiger salamanders, then other agencies would regulate those pesticides.

Our Response: ~~We have no information that pesticide use affects Tiger salamanders except to the extent that they are accidentally poisoned in their burrows by fumigants. As a result, we have excluded fumigation from those ordinary ranching activities exempt from the control of the ESA.~~

Comment 19: A few commenters stated that ground squirrel control was not a threat to the California tiger salamander because the control of ground squirrels in the state is declining. Another commenter stated that rodenticides do not pose a threat to the California tiger salamander any more than they do to burrowing owls.

Our Response: California ground squirrel control may be done by trapping, shooting, fumigation of burrows, use of toxic (including anticoagulant) baits, and habitat modification, including deep-ripping of burrow areas (UC IPM internet website 2004). These control programs are still widely conducted by numerous local and state agencies. We received no data to suggest that active rodent control is declining.

~~Deleted: We cited Davidson et al.'s (2002) study in which they were unable to find a significant overall relationship between upwind agriculture and the California tiger salamander's decline. Our use of the study results does not suggest that we believe pesticides are not a threat to the California tiger salamander. As stated by Davidson et al. (2002), the absence of a correlative pattern should not be interpreted as the proof of the absence of a process. Like most amphibians, California tiger salamanders are extremely sensitive to pesticides and other chemicals, which may be found in both the aquatic and terrestrial habitats they use in different stages of their life cycle (Blaustein and Wake 1990). See also Factor C below.]~~

~~Deleted: We agree some information indicates that pesticide use (measured by pounds of active ingredient) in California has declined between 1992 and 2002 (California Department of Pesticide Regulation website). However, in 2002 eight of the top ten pesticide-using counties were in the range of the Central California tiger salamander. We believe that California tiger salamanders are still at risk from the use of pesticides because salamanders occur in the vicinity of agricultural lands where pesticides are often used (e.g., along the east side of the San Joaquin Valley). See also Factor E below.]~~

Regarding the regulation of pesticides by other agencies for adverse effects to California tiger salamanders, we are unaware of any agencies that are currently regulating the use of pesticides in that such use may pose a threat to the California tiger salamander

~~Deleted: In fact, these rodent control programs could be the cause for absence of California tiger salamander in certain areas (Shaffer et al. 1993).~~

Two of the most commonly used rodenticides, chlorophacinone and diphacinone, are anticoagulants that cause animals to bleed to death (see Factor E below). These chemicals can be absorbed through the skin and are considered toxic to fish and wildlife (EPA 1985; EXOTONET 1996). These two chemicals, along with strychnine, are used to control rodents (R. Thompson, in litt. 1998). We have no information on the effects of these poisons on California tiger salamander have not been assessed, any uses in close proximity to occupied Central California tiger salamander habitat could have various direct and indirect toxic effects. Gases, including aluminum phosphide, carbon monoxide, and methyl bromide, are used in rodent fumigation operations and are introduced into burrows by either using cartridges or by pumping. When such fumigants are used, animals inhabiting the fumigated burrow are killed (Salmon and Schmidt 1984).

Comment 20: A few commenters stated that mosquito control did not represent a significant threat to the Central California tiger salamander because other forms of control were being utilized to reduce the use of this fish as a control strategy.

Our Response: We believe that mosquito control activities can be readily adapted to prevent or minimize potential threats to salamanders by appropriate water level management of stock ponds or proper application of bacterial larvicides. As a result, we have exempted some forms of mosquito control undertaken as routine ranching activities from the take prohibitions of the Act (see Special Rule below).

Deleted: We believe caution must be exercised when extrapolating the results of studies assessing the effects of pesticides and chemicals on birds and mammals to amphibians.

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Comment [db39]: is that still legal

Deleted: Although its

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Comment [db40]: Do we have something to say in the 4(d) rule about rodent control.

Deleted: In addition to the possible direct adverse effects of rodent control chemicals and gases, California ground squirrel and pocket gopher control operations may have the indirect effect of reducing the number of upland burrows available to specific California tiger salamanders (Loroco-Proedeville et al. 1994).

Deleted: Shaffer et al. (1993) believe that rodent control programs could be the cause for absence of California tiger salamanders in certain areas.

Deleted: ¶

Comment [jfm41]: The mosquito fish thing is baloney, the Schaeffer says... there was a correlation between absence of CTS and presence of mosquito fish but it was not significant... that has a particular meaning... and that is ... it's meaningless... to cite it as though it were a real effect is dishonest.

Deleted: Mosquitofish may adversely affect the Central California tiger salamander through predation and competition (see Comment 13 above and Factor C). Western mosquitofish now occur throughout California whenever the water does not get too cold for extended periods, and they are still widely planted throughout the State (K. Boyce, Sacramento County/Yolo County Mosquito and Vector Control District, in litt. 1994; Moyle 2002) by about 50 local mosquito abatement districts. ¶

In addition to the use of western mosquitofish, a common method of mosquito control in California involves the use of methoprene, a hormone mimic. Studies have shown that methoprene can retard the development of selected crustacea (Lawrenz 1984, 1985), and, thus, inadvertently reduce the number and density of prey available for aquatic vertebrates, including the California tiger salamander. Methoprene has also been shown to have both direct and indirect effects on the growth and survival [redacted]

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evaluate long-term conservation implications for each taxon separately on a case-by-case basis where introgressive hybridization may have occurred.

Distinguishing between native California tiger salamanders and hybrid animals

appears to require some scientific and technical expertise. We understand that it is difficult for non-experts to make the distinction based on morphology alone and that a number of misidentifications have been made as a result (Shaffer and Trenham 2002). The best way to identify hybrid or introgressed individuals at this point appears to be using sophisticated molecular genetic techniques. Because of the difficulty distinguishing hybrid and introgressed individuals from native California tiger salamanders, we believe it is both inappropriate and impractical to distinguish between them under the Act.

Comment [jm42]: OK, I am looking at this threat with a pretty jaundice eye at this point... If this paragraph is accurate, how in the world can we possibly be saying they're a threat?

Comment [db43]: If this is the case how can we possibly be saying they are a threat?

Comment 30: A few commenters expressed concern about the potential regulatory protection to ground squirrels that would result from listing the Central California tiger salamander and the ground squirrel's relation to incidences of the plague. Several other commenters also stated that the potential regulatory protection to ground squirrels would result in their inability to conduct rodent control in the interest of public health.

Our Response: We believe that ground squirrel control can occur in a manner that affects CTS only minimally.

Comment [db44]: If this is not the case we had better raise rodent control as an issue for Steve Williams.

Comment [db45]: Not sure what to do with this, since we removed everything else. Dajunas

Deleted: in emergency situations where human health and safety are at risk, human health and safety concerns would be the first priority in making decisions about appropriate

Deleted: rodent control.

breeding ponds become fragmented and isolated from other ponds (Marsh and Trenham 2001; Jung in litt. 2003; Trenham and Shaffer in review). Earthmoving operations and cultivation in upland habitat can directly or indirectly kill or injure California tiger salamanders in burrows or on the surface by crushing or trapping them. Such activities render all affected areas unsuitable for salamander breeding, feeding, and sheltering. Earth disturbing practices can also expose salamanders to adverse environmental conditions (increased predation, high temperatures, low humidity, destroy food sources) and alter surface hydrology (potentially affecting breeding ponds). Discing, deep-ripping, or grading of upland habitat also destroys burrows and crevices utilized by the salamander, making suitable upland sites unavailable and likely reducing long-term adult survival of Central California tiger salamanders (Loredo et al. 1996). Ongoing agricultural and urban land uses prevent upland sites from being reestablished, and may kill or injure salamanders that enter the developed area.

Wetland habitat. Filling, discing, or excavating wetland habitat can directly kill or injure larvae, eggs, or breeding adults, and prevent future use of the wetland for reproduction. Additionally, surviving adults may be unable to locate alternative breeding sites in subsequent years if habitat is present but has become highly fragmented by roads, housing, agriculture, and other non-habitat elements. Some changes in vernal pool or pond inundation duration and depth caused by urban and agricultural land use (e.g., digging of drainage/irrigation ditches, construction of permanent ponds or reservoirs, deepening or berming of seasonal wetlands, redirection of runoff from developments) can

Comment [jm50]: This is a cite that cites other studies... per the Assistant Secretary we don't use tertiary sources, cite the original work, and include it...

Comment [jm51]: I have been working on the CTS since I arrived in Washington DC two years ago. As long as I have been working on it, Schaffer has had multiple articles "in review" and "about to be published" and so far... NOT ONE has been published. Put a date in or say unpublished... but no more in review, it's misleading. Not only that, the statement is recycled from Treham's 1998 dissertation. These guys have a cottage industry going. Finally, I don't have a copy of the 'in preview' cite.

Comment [jm52]: No one disputes discing can kill CTS in the ground... these anecdotes add little to the document... thus I am removing them.

Deleted: For example, in the Santa Rosa Plain (Kelly Farms), California tiger salamanders were trapped in a field where "shallow discing" occurred during the summer of 2003 (M. Pawcett pers. comm., 2003). California tiger salamanders (alive and dead) also were found at the Cosumnes Power Plant project site in Sacramento County where the site had been graded to construct... [1]

Comment [jm53]: There is no research in that cite that supports the statement.

Comment [jm54]: Ok, look, this is just plain dishonest. The cite refers to loss of dispersal... but it appears to be... [2]

Comment [jm55]: There is no copy of the Sweet 1998 in litt cite I asked for... so I can only assume it does not exist.

Comment [db56]: Check this

Deleted: Existing vineyards and orchards can disrupt annual migration patterns and prevent access to bees... [3]

Deleted: when

Deleted: may

Deleted: be

Comment [jm57]: This is completely speculative and frankly I don't think it adds to the issue you are raising.

Comment [jm58]: The cites for this deleted statement are nowhere in the requested cites. Sweet and Sweet... [4]

Deleted: Erosion from agriculture or grading can similarly impact reproductive success by causing sedimentation... [5]

Deleted: C

Page 84: [1] Deleted jamacdonald 6/23/2004 2:51:00 PM

For example, in the Santa Rosa Plain (Kelly Farms), California tiger salamanders were trapped in a field where "shallow discing" occurred during the summer of 2003 (M. Fawcett pers. comm., 2003). California tiger salamanders (alive and dead) also were found at the Cosumnes Power Plant project site in Sacramento County where the site had been graded to construct a parking lot (Service file number 1-1-04-I-0752).

Page 84: [2] Comment [jm54] jamacdonald 6/22/2004 6:18:00 PM

Ok, look, this is just plain dishonest. The cite refers to loss of dispersal... but it appears to be a cite that supports the entire sentence. Remove it, characterize the statement as what it is, a judgement of the consequence of ag and urban uses... not supported by any research.

Page 84: [3] Deleted jamacdonald 6/23/2004 2:58:00 PM

. Existing vineyards and orchards can disrupt annual migration patterns and prevent access to breeding wetlands as salamanders avoid moving through areas with heavy canopy cover (S. Sweet, in litt. 1998). Agricultural and urban land uses also interfere with dispersal among breeding sites and prevent natural colonization of ponds that can result in the loss of breeding sites (Marsh and Trenham 2001).

Page 84: [4] Comment [jm58] jamacdonald 6/23/2004 3:01:00 PM

The cites for this deleted statement are nowhere in the requested cites. Sneed and Sweet in litt. 1998

Page 84: [5] Deleted jamacdonald 6/23/2004 3:01:00 PM

Erosion from agriculture or grading can similarly impair reproductive success by causing sedimentation and degradation of nearby wetlands (S. Sweet, in litt. 1998; Sneed 2000).

composition at a vernal pool complex, with salamanders becoming proportionally less abundant as bullfrogs increased in number. Although bullfrogs are unable to establish permanent breeding populations in unaltered vernal pools and seasonal ponds because they require more than one year to complete their aquatic larval stage, dispersing immature bullfrogs take up residence in such water bodies during the winter and spring where they prey on native amphibians, including larval salamanders (Morey and Guinn 1992; Seymour and Westphal 1994). However, given the fact that bullfrogs have been present for at least 300 years, it is likely that the effects of this species on populations has stabilized.

Bullfrogs are known to travel at least 2.6 km (1.6 mi) from one pond to another (Bury and Whelan 1984), and they have the potential to naturally colonize new areas where they do not currently exist, including areas where Central California tiger salamanders occur. In one study of the eastern San Joaquin Valley, 22 of 23 ponds (96 percent) with California tiger salamanders were within the bullfrogs' potential dispersal range (Seymour and Westphal 1994). In addition, because bullfrogs are still sought within California for sport and as food, and may be taken without limit under a fishing license, the threat of transport for intentional establishment in new habitat suitable for the Central California tiger salamanders is significant.

Western mosquitofish (Gambusia affinis) are native to central North America (watersheds tributary to the Gulf of Mexico) and have been introduced throughout the

Comment [jm68]: These are inaccurate statements. Westphal notes they coexist but with depressed populations. The statement in Schaeffer 1993 is that there is a strong correlation between fish and the absence of CTS and other vernal pool species. He said there was a strong association between bullfrogs and CTS absence but that it was not possible to determine how much was because of fish effects.

Deleted: A strong correlation exists between bullfrog presence and California tiger salamander absence (Shaffer et al. 1993; Seymour and Westphal 1994; Laabs et al. 2001)

Deleted:

Comment [jm69]: This entire discussion is troubling. These bullfrogs have been around for nearly 100 years and have not wiped out the Salamander. The research shows that it depresses salamander populations but... isn't that the function of a predator? How can the bull frog or any of these species be a threat to the continued existence? I agree it's a predator, and I agree that depresses populations, but I don't see that it threatens the continued existence...

Detrimental effects of wild pigs on the Central California tiger salamander include both predation and habitat modifications.

D. The Inadequacy of Existing Regulatory Mechanisms. One primary cause of Central California tiger salamander decline is the loss, degradation, and fragmentation of habitat due to human activities. Federal, State, and local laws have been insufficient to prevent past and ongoing losses of the limited habitat of the Central California tiger salamander, and are unlikely to prevent further declines of the species.

Federal

Clean Water Act. This section as written is disingenuous. On our 6/24/04 telephone conversation we discussed the Corps refusal to grant a 404 permit based on impacts to vernal pools. Fix it, include the general nationwide permit conditions that apply and note that the real hole is these stock ponds... nationwide permits don't govern them, and in some areas they are 80% of the habitat. There is no need to go into the mind-numbingly dull discussion of SWANCC, primarily because the worst case scenario it pictures doesn't and won't exist. There are plenty of gaps and threats without having to make stuff worse or more confusing than it has to be. Pursuant to Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344), the U.S. Army Corps of Engineers (Corps) regulates the discharge of dredged or fill material into all Waters of the United States, including wetlands. In general, the term "wetland" refers to areas meeting the Corps

Comment [db76]: "cough" any tiger sal/wild pigs data research etc?

Comment [jm79]: Entire section deleted, no evidence provided that supports it. The one cite that directly represents pigs effect salamander populations was not provided on the CD. Happy to replace if there is some evidence that pigs are a problem.

Deleted: Another non-native species which may be a threat to the California tiger salamander is the wild pig (*Sus scrofa*). Wild pigs in California are the result of numerous introductions. Some have escaped from captivity and others have been deliberately introduced for sport hunting. Recent estimates suggest that there are about 106,000 to 160,000 wild pigs in California (Waithman et al. 1999). Although range expansion of introduced wild pigs has ceased in many regions of the United States, it increased significantly since the 1950s in California (Waithman et al. 1999). Wild pigs are now distributed within parts of 49 of California's 58 Counties (Waithman et al. 1999), with densities as high as 3.8 (Sweitzer et al. 2000) to 4.7 pigs per square kilometer (2.8 to 12.2 pigs per square mile) (Schauss et al. 1990).

Wild pigs have been widely implicated in declines and extinctions of numerous species worldwide and have had pronounced negative ecological effects on Central California tiger salamanders when their numbers are high (Waithman et al. 1999).

Comment [jm80]: Entire section deleted, no supporting research provided.

develop Regional Water Quality Control Plans and issue waste discharge requirements (permits).

As part of surface and groundwater quality planning, the Porter-Cologne Water Quality Control Act (Porter-Cologne) regulates the discharge of fill to wetlands and other water bodies and to regions where it could impact those waters (California Water Code §13260 et seq.). If the Corps has jurisdictional authority over waters under the CWA section 404, and a project applicant requires a Corps permit for work in those waters, then that project applicant must also obtain Water Quality Certification from its local Regional Water Quality Control Board (Water Board), pursuant to section 401 of the CWA, that its project will not violate State water quality standards. If the Corps does not have jurisdictional authority, then a project applicant may require a permit under Porter-Cologne. State jurisdiction over waters under Porter-Cologne can be much greater than federal jurisdiction under the CWA. However, the Water Boards generally regulate the fill of State waters where fill occurs within waters that would normally fall under Corps regulation, but have been excluded due to various reasons (e.g., the Supreme Court's SWANCC and Tulloch Rule decisions). We have determined that the Porter-Cologne does not serve as an adequate regulatory mechanism for the Central California tiger salamander for the same reasons of limited scope of jurisdictional authority described under Section 404 of the CWA above:

Comment [m102]: That is also just plain wrong. Porter-Cologne is extremely broad and the State has the power to do virtually anything they want with water. You would be better off stating something to the effect of ... they could regulate, but they don't.

Local

hybridization) and that, in at least some circumstances (e.g., where there are perennial ponds), non-native genes may be more likely to persist than native genes. *Both studies suggest that the spread of non-native genetic material into California tiger salamander via hybridization is probable and may be an important threat to the long-term persistence of California tiger salamander, particularly given the number of artificial and highly modified habitats used by California tiger salamander and the presence of perennial ponds within the range of the species.*

Comment [jm116]: Entire section is speculative.
 Formatted: Font: Italic
 Formatted: Font: Italic

Comment [db117]: Well how do we define persistence.

The geographic extent of known hybridization and the apparent movement of hybrid genes across the landscape over the last decade also show that hybridization with *A. tigrinum* may be a serious threat to the integrity of California tiger salamander. Using mtDNA and nuclear DNA markers as described above, researchers have examined the geographic extent of hybridization between *A. tigrinum* and California tiger salamander (Shaffer and Trenham 2002, H.B. Shaffer in litt. 2003). Hybridization has been found to varying degrees in the Central Coast, Bay Area, and the Central Valley regions of California tiger salamander (Shaffer and Trenham 2002, H.B. Shaffer in litt. 2003, Service 2004). Of particular concern is the widespread hybridization within the Central Coast. Introduced genes have been found from southern Santa Clara County throughout most of Monterey County down to Fort Hunter Liggett on the San Luis Obispo County line, and east across all of San Benito County where California tiger salamanders occur (H.B. Shaffer in litt. 2003). *We believe hybridization is a serious threat in the Central Coast region of California tiger salamander. Within this region, virtually all Monterey*

Comment [db118]: What does this mean?
 Comment [jm119]: Cite?

Comment [jm120]: No data was included in either of these sites.

Comment [jm121]: Basis for this other than Shaffer random statement?

County populations have been compromised by non-native genes, and every population at Fort Hunter Liggett is either introduced or a hybrid mixture (H.B. Shaffer in litt. 2003).

Comment [jm122]: Is there data to back up this statement? If so, produce please.

Comment [db123]: Why is it a threat?

Also of concern is the advancement of hybrid genes observed over the last decade. Salamander tissues collected ten or more years ago at the former Fort Ord and in the upper Carmel Valley were all pure California tiger salamander. However, material collected in May, 2003, at the former Fort Ord, and two years ago in the Carmel Valley contained introduced genes, suggesting that introduced genes are moving into new areas. In addition, introduced genes were recently detected from material collected in eastern Merced County (Shaffer in litt. 2003). These changes in the distribution of hybridization indicate that the threat from hybridization is likely to increase in the future.

Comment [jm124]: There is absolutely no basis for this statement. Why couldn't it have been just plain old migration?

Comment [db125]: Why does it suggest human vs some other type of movement?

Deleted: suggesting that human-mediated movement of introduced salamanders

Deleted: may still be occurring

Using GIS, we estimated the number of Central California tiger salamander records (presumably California tiger salamanders without non-native genes present) that were threatened by hybridization (Service 2004). We considered a California tiger salamander record threatened by hybridization if the record was within 2.1 km (1.3 mi) of a hybridized or nonnative tiger salamander observation. Locations of hybridized or non-native tiger salamander locations were provided by Dr. H. Bradley Shaffer of University of California at Davis. Other records also were considered threatened if they were part of a larger polygon that consisted of multiple records (see Service Analysis of Central California Tiger Salamander Habitat above), located within 2.1 km (1.3 mi) of a hybridized or nonnative tiger salamander observation. Our assumptions were that if a

Comment [jm126]: Get me the data too.

Unknown

From: Emma Suarez [esp@pacificlegal.org]
Sent: Wednesday, February 04, 2004 11:13 AM
To: Julie_MacDonald@ios.doi.gov
Subject: RE: Salutations from Sacramento

Hi again: yes, that would definitely work. You have my word that it won't go beyond me.
Thanks Emma

-----Original Message-----

From: Julie_MacDonald@ios.doi.gov [mailto:Julie_MacDonald@ios.doi.gov]
Sent: Wednesday, February 04, 2004 6:25 AM
To: Emma Suarez
Subject: Re: Salutations from Sacramento

I will send you a copy of the draft but please do not share it with anyone else. It's
still undergoing revision, although the fundamental
legal/policy approach will not change. Does that work for you?

"Emma Suarez"
<esp@pacificlegal
.org>

To: Julie MacDonald/ASFW/OS/DOI@DOI
cc:
Subject: Salutations from Sacramento

02/03/04 07:50 PM

Hi Julie: I know my sweet Mark (Pawlicki) visited with you last week in Monterey, and you
briefly talked about the draft CHD policy. I'm taking the liberty of emailing you to let
you know that I'm still working on the law review article on Alameda Whipsnake and New
Mexico Cattle Growers and how they provide for a map for meaningful CHD process. If
you're interested, I can provide you with a topical outline of the piece, so you can see
how the article is developing. Any information that you can share regarding the draft
policy, and general guidance as to the process/timetable, would be greatly appreciated.
Stay warm ...

Emma Suarez
Attorney
Pacific Legal Foundation
10360 Old Placerville Road
Suite 100
Sacramento, CA 95827
916/362-2833

CONFIDENTIALITY NOTICE: This communication and any accompanying document(s) are
confidential and privileged. They are intended for the sole use of the addressee. If you

Unknown

From: Julie_MacDonald@ios.doi.gov
Sent: Wednesday, February 04, 2004 12:01 PM
To: Emma Suarez
Subject: RE: Salutations from Sacramento [Virus checked]

Attachments: 1.21.04interim crithab guid.doc



1.21.04Interim
crithab guid.do...

Emma, please note, this will likely be revised significantly very shortly. But, as I said the fundamental legal/policy decisions are unlikely to change. It will be more a question of style and clarity editing. Please feel free to call me if you have any questions regarding what we intend if any language is unclear. 202 208 3928 or 202 208 5379 (direct line for after hours).

Julie.

(See attached file: 1.21.04interim crithab guid.doc)

"Emma Suarez"
<esp@pacificlegal.org>
02/04/04 11:12 AM
To: Julie MacDonald/ASFW/OS/DOI@DOI
cc:
Subject: RE: Salutations from Sacramento

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<esp@pacificlegal.org>
To: Julie

Unknown

From: Emma Suarez [esp@pacificlegal.org]
Sent: Wednesday, February 04, 2004 12:14 PM
To: Julie_MacDonald@ios.doi.gov
Subject: RE: Salutations from Sacramento [Virus checked]

Attachments: Topical Outline.wpd



Topical Outline.wpd
(20 KB)

Thanks Julie ... I'll be in touch. In the meantime, here's the "topical outline" for my law review article. Let me know if you have any thoughts or concerns
FYI Emma

-----Original Message-----

From: Julie_MacDonald@ios.doi.gov [mailto:Julie_MacDonald@ios.doi.gov]
Sent: Wednesday, February 04, 2004 9:01 AM
To: Emma Suarez
Subject: RE: Salutations from Sacramento [Virus checked]

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Subject: Re: Salutations from Sacramento

62

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Emma Suarez
Attorney
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Suite 100
Sacramento, CA 95827
916/362-2833

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Unknown

From: Julie_MacDonald@ios.doi.gov
Sent: Tuesday, March 30, 2004 7:51 PM
To: lumindanu@hotmail.com
Subject: deital smelt [Virus checked]
Attachments: draft delta smelt 5-year.3-1-04.DOC

Unknown

From: Julie_MacDonald@ios.doi.gov
 Sent: Thursday, April 01, 2004 11:27 AM
 To: Steve_Thompson@fws.gov; Paul_Henson@r1.fws.gov; Michael_Fris@fws.gov
 Cc: Craig_Manson@ios.doi.gov; Tom_Bauer@ios.doi.gov
 Subject: Delta Smelt letter/report/press release.

I have copies of the letter and the press release which were provided to Congressional Affairs in Washington DC. Each of these documents makes the statement that delta smelt populations have not recovered and are significantly below historic levels. We have spent the last two days agreeing that we cannot estimate delta smelt populations as we do not have the proper data to do so, and yet your letter and the press release categorically state we have this information. In addition we spent hours discussing the fact that the data are inconclusive, we don't know what they show us, and all we know is that the situation is far more complicated than we originally thought in 1993.

We also had explicit conversations about the fact that the review panel was not completely independent and that most of the comments included were biased and did not consider the most recent information we have on the smelt; which is that we have alot of contradictory information. As a result of those discussions, my understanding was that it would not be necessary to reference the review panel's work. Particularly given the fact that, unlike most peer review processes the authors of the paper were never given a chance to respond to the criticisms leveled at their work. Generally, when a document is peer reviewed, the comments are forwarded to the authors, and they are provided an opportunity to clarify, provide additional information, or defend their approach. This is done to ensure that the final review is based on an accurate understanding of the assumptions and underlying research supporting the work. The review document was completed November 6, 2003 and never transmitted to the authors so that dialogue never took place, in itself a flaw in the review.

Nowhere, in any of the documents I received are those discussions and what I understood our fundamental agreement on the facts reflected. We also had explicit discussions about the shortcomings in all the data sets used to measure population, the fact that 1970 may not be the appropriate benchmark to use in describing the "historic" population (we have NEVER had any population numbers). We agreed that our lack of understanding of smelt population dynamics was what prevented us from managing in a manner that would remove significant threats to the smelt since we don't and haven't been able to understand what and how the various factors interact to affect smelt populations. None of that is reflected in the documents that I have received. We agreed that the Service would acknowledge that both the recovery plan and the listing document were based on flawed data and assumptions but that we did not have sufficient understanding to replace them with any other data or assumptions.

I did not insist on seeing any of the documents because I understood the need for a speedy completion of the documents and I believed that we were in agreement. I believe it is critical to present a fair characterization of our understanding of the smelt to date to the public and to our partners. The documents I have before me do no such thing. They leave the impression there is no uncertainty, that we know populations have declined from historic levels due to climate change and project operations, without the qualification that we don't have any accurate population information nor do we have any understanding of the interactions between the various factors influencing delta hydrology. They leave the impression that an independent panel dismissed the San Luis and Delta Mendota Water Authority's white paper is insubstantial. The truth is that the panel was not independent and there were serious concerns with the process.

My understanding of our agreements is as follows:

That the smelt would be listed again today if the Service were to be presented with a petition.

That the original listing and recovery plan were based on flawed assumptions and data.
That we do not have and have not ever had any good population estimates.
That we do not understand how the various factors within the delta affect populations.
That all of the data we use to estimate populations is flawed.

The Service wrote:

Delta smelt populations remain at historically low levels.
That climate change and water projects operations are the cause of the decline.
That smelt populations are substantially below historic levels.
That threats identified in the original listing remain.

I believe that the facts represented by the Service in the two documents before me provide an oversimplified and misleading characterization of what is happening and are certainly inconsistent with our discussions. I have asked that the press release be stopped until we have an opportunity to more accurately characterize the finding and its basis.



United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240

68
CC: Paul
CCD: Mike

TRANSMISSION NOTICE

FISH AND WILDLIFE AND PARKS
1849 C Street N.W., MIB-3156
Washington, DC 20240
202 208-4416 (office)
202 208-4684 (fax)

Date: _____

No. of Pages Including Cover Sheet: 35

Facsimile To: Paul Henson / Mike Fuis

Fax Number: 916 414 6484

From: _____ Judge Craig Manson, Assistant Secretary

_____ Paul Hoffman, Deputy Assistant Secretary

_____ David P. Smith, Deputy Assistant Secretary

_____ ~~(Name)~~ Julie MacDonald

Remarks: re Delta Smelt

Any Problems with this transmission, please call 202 208-4416.

916 414 6486

69

DRAFT

- Paul Hanson
- Mike Fries

5-YEAR REVIEW
March 1, 2004

Species under review: Hypomesus transpacificus (delta smelt)

FR Notice: Federal Register 68(148):45270-45271 on August 1, 2003

Lead Field Office: Sacramento Fish and Wildlife Office (916) 414-6700

Name of Reviewer(s): Ryan Olah and Michael Nepstad (916) 414-6625

Cooperating Field Office(s): Not Applicable

Lead Region: California/Nevada Operations Office, Diane Elam, 916/414-6464

BACKGROUND

1. Existing Recovery Priority Number:

The current U.S. Fish and Wildlife Service (Service) Recovery Plan (1996) for delta smelt assigned a recovery potential of 2C. A listed species is assigned a recovery priority number from 1 (highest) to 18 (lowest) according to the degree of threats, recovery potential and taxonomic distinctness. In addition, a species' rank may be elevated by adding a C designation to its numerical rank to indicate that there is some degree of conflict between the species' conservation efforts and economic development associated with its recovery. Recovery priority numbers are based on criteria published the Federal Register Notice (48 FR 43098; September 21, 1983).

Out the time of listing

was altered to be

Delta smelt ~~is~~ under a high degree of threat, but managed to survive the severe 1987-1992 California drought in small numbers and rebound to pre-decline levels in 1993 suggesting that its recovery potential is fairly high. The subsequent decline in 1994, a critical water year, to a then all-time low annual abundance index of 102 (Fall Midwater Trawl Survey (FMWT)), however, illustrates the high degree of threat that neutralizes gains in abundance that result from good water years. More recent abundance indices have varied, but overall, the trend is still negative.

2. Most recent Species Status as reported to Congress in the Biennial Report:

The 2003 Species Status as reported to Congress in the Biennial Report (Service 2003a) contained the following information:

- 2003 Listing Status: T, CH
- 2003 Population Status: U
- 2003 Recovery Achieved: 2
- 2003 Recovery Priority: 2C
- 2003 Is Recovery Plan Under development: No (Final plan completed 1996)
- 2003 Active Approved Recovery Team: No

2003 Last Year of Population Survey: There presently is no survey which provides data which can be used for population estimates. All of the surveys described below provide limited data on seasonal distribution and abundance for a portion of the smelt life history.

2003 Controlled Propagation: Yes, for research program, objectives met
Species Comments: Not enough known as population information is based on abundance indices

look at original

Recovery Plan Comments: 5 year review ongoing, plan set low recovery criteria, has not met delisting criteria. (see section 11 below and appendix A)

was this in the report to Congress? When? this language is

3. Listing History:

a. Original Listing:

The Service was petitioned to list the delta smelt as endangered on June 26, 1990. The Service proposed the species as threatened with critical habitat on September 27, 1991. The species was listed as threatened in Federal Register 58:12863 on March 5, 1993. Critical habitat was designated in Federal Register 59:65256 on December 19, 1994.

b. Revised Listing: Not Applicable

4. Associated Listings: Not Applicable

5. Review History: Not Applicable

6. Recovery Plan or Outline:

The Recovery Plan for the Sacramento-San Joaquin Delta Native Fishes was signed and approved on November 26, 1996. A recovery team assisted in the preparation of the plan; Dr. Peter Moyle of the University of California, Davis was the team leader. (See #11 and #12 below for a discussion of the Recovery Plan and Appendix A for recommendations concerning the Recovery Plan).

7. Reference Point Document:

The March 5, 1993 Final Rule (Service 1993) is the most recent comprehensive analysis of the species status and will be used as the reference point document.

The following is the five factor analysis as published in the 1993 Final Rule (Note that the citations in this section are located within Appendix C):

A. The Present or Threatened Destruction, Modification, or Curtailment of its Habitat or Range.

The delta smelt was one of the most common and abundant pelagic fish caught by California Department of Fish and Game trawl surveys in the Delta during the early

1970's (Stevens and Miller 1983, Moyle et al. 1989, Stevens et al. 1990). Its distribution once ranged from western Suisun Bay upstream to Sacramento on the Sacramento River and to Mossdale on the San Joaquin River (Radtko 1966, Moyle 1976, Moyle et al. 1992). Smelt populations fluctuated a great deal in the past, but after 1981 began a precipitous decline. Over the last 20 years, the population has experienced a ten-fold decline in numbers, and since 1982, has remained at extremely low levels. Recent population abundance indices confirm that the species has not shown any significant signs of recovery (Moyle and Herbold 1989, Moyle et al. 1989, Stevens et al. 1990, Moyle et al. 1992, Sweetnam 1992). This species' pelagic life history, dependence on pelagic microzooplankton, 1-year life span, and low fecundity are characteristics of a fish species that is affected greatly by perturbations to its reproductive habitat or larval nursery areas. Under existing levels of water development, the delta smelt is especially vulnerable during protracted drought periods. Deleterious effects of the present drought period would be exacerbated if additional alterations in hydrology caused by reductions of freshwater inflows to the Delta alter the timing and/or duration of water exports. A weak stock-recruitment relationship (i.e., little evidence of the effect of parent population size on subsequent recruitment) strongly suggests that environmental or habitat factors are severely limiting delta smelt abundance, even during those years when adults may be abundant (Moyle et al. 1992).

Moyle et al. (1989) reported multiple and synergistic causes of the delta smelt decline in the following order of importance: (1) Reduced river outflows, primarily in the Sacramento and San Joaquin Rivers, and their tributaries, (2) extremely high river outflows in years with unusually high rainfall, (3) entrainment mortality caused by water diversion, (4) human and natural perturbations to the smelt's food web, (5) presence of toxic substances in the aquatic habitat (e.g., agricultural and industrial chemicals, heavy metals, etc.), and (6) loss of genetic integrity because of a sharply curtailed delta smelt population. This small delta smelt population may become displaced by the wagasaki, or Japanese smelt (*Hypomesus nipponensis*), which was inadvertently introduced into reservoirs of the Sacramento River drainage by the California Department of Fish and Game (Moyle 1976).

Delta water diversions and exports presently total up to about nine million acre-feet per year. State and Federal projects presently export about six million acre-feet per year when there is sufficient water available, and in-Delta agricultural uses result in diversion of about three million additional acre-feet per year. Plans currently being prepared propose to greatly increase exports and diversions in the future. The Service is aware of 21 major Central Valley Project, State Water Project, or private organization proposals that will result in increased water exports from the Delta, reduce water inflow to the Delta, change the timing and volume of Delta inflow, or increase heavy metal contamination into the Delta. These proposed projects or actions include but are not limited to: Los Banos Grandes Reservoir, South Delta Water Management Program, South Delta Water Barriers Project, North Delta Water Management Project, West Delta Water Management Project, Coastal Aqueduct proposal, Delta Wetlands Corporation Water Storage Project, Central Valley Project contract renewals, Los Vaqueros Reservoir, the Central Valley Project and State Water Project wheeling purchase

agreement, reactivation of the San Luis Drain, Stanislaus-Calaveras River Basin Water Use Program, Kern Water Bank, Arvin Edison water storage and exchange proposal, and State Water Project Pump additions.

A significant change in in-Delta diversions is unlikely; if anything, a slight decrease in in-Delta agricultural use is probable. The Federal pumping plant has been operated at capacity for many years except for a very few drought years, so increased exports at this plant appear unlikely. The State Water Project pumping plant and the capacity of the State Aqueduct have considerable unused capacity, however. A table of past and projected State Water Project deliveries from Delta sources during the years of 1962 to 2035 are listed in California Department of Water Resources (1992). In the 1980's, deliveries ranged from 1.5 million acre-feet to 2.8 million acre-feet. By 1993, if enough water is available, deliveries could increase to as much as 3.8 million acre-feet. By 2010, deliveries of up to 4.2 million acre-feet are possible.

Since 1983, the proportion of water exported from the Delta during October through March has been higher than in earlier years (Moyle et al. 1992). The timing of these proportionally higher exports have coincided with the delta smelt's spawning season. Federal and State water diversion projects in the southern Delta export, by absolute volume, mostly Sacramento River water with some San Joaquin River water. During periods of high export pumping and low to moderate river outflows, however, reaches of the San Joaquin River reverse direction and flow to the pumping plants located in the southern Delta. The State-operated pumping plant presently exports water at rates up to 6,400 cubic feet per second (cfs). The State is considering proposals to export an additional 3,900 cfs. The Federal pumping plant can export water at rates up to 4,600 cfs. In addition, local private diverters export up to 5,000 cfs from about 1,800 diversions scattered throughout the Delta.

When total diversion rates are high relative to Delta outflow and the lower San Joaquin River and other channels have a net upstream (i.e., reverse or negative) flow, out-migrating larval and juvenile fish of many species become disoriented. Large mortalities occur as a result of entrainment and predation by striped bass at the various pumping plants and other water diversion sites. Net positive riverine flows and estuarine outflows of sufficient magnitude are required for delta smelt larvae to be carried downstream into the upper end of the mixing zone of the estuary rather than upstream to the pumping plants.

In recent years, the number of days of reversed San Joaquin River flow have increased, particularly during the February-June spawning months for delta smelt (Moyle et al. 1992). All size classes of delta smelt suffer near total loss when they are entrained by the pumping plants and diversions in the south Delta. Very few are effectively salvaged at the State and Federal pumping plant screens. The few delta smelt that are transported into water project reservoirs or canals fail to reproduce. This species' embryonic, larval, and postlarval mortality rates also will become higher as reduced western Delta flows allow increases in the salinity level and relocation of the mixing zone.

The delta smelt is adapted for life in the mixing zone (brackish water/freshwater interface) of the Sacramento-San Joaquin estuary. The estuary is an ecosystem where the mixing zone and salinity levels are determined by the interaction of river outflow and tidal action. Moyle et al. (1992) reported that delta smelt were most abundant in shallow, low salinity water associated with the mixing zone, except when they spawned. Their analysis showed that smelt were collected from water with a mean salinity of 2 parts per thousand (ppt) with a mean temperature of 15 degrees Celsius (C), but were found in salinities ranging from 0-14 ppt at temperatures ranging from 6-23 degrees C. The larvae require the high microzooplankton densities produced by the mixing zone environment. The best survival and growth of smelt larvae occurs when the mixing zone occupies a large geographic area, including extensive shoal regions that provide suitable spawning substrates within the euphotic zone (depths less than 4 m). Sixty-two percent of delta smelt collected in Suisun Bay occurred at 3 sampling stations with depths less than 4 m; the remaining 38 percent were caught at 6 deeper stations.

During periods of drought and increased water diversions, the mixing zone and associated smelt populations are shifted farther upstream in the Delta. During years prior to 1984, the mixing zone was located in Suisun Bay during October through March (except in months with exceptionally high outflows or during years of extreme drought). From April through September, the mixing zone usually was found upstream in the channels of the rivers. Since 1984, with the exception of the record flood outflows of 1986, the mixing zone has been located primarily in the river channels during the entire year because of increased water exports and diversions. When located upstream, the mixing zone becomes confined to the deep river channels, becomes smaller in total surface area, contains very few shoal areas of suitable spawning substrates, may have swifter, more turbulent water currents, and lacks high zooplankton productivity. Delta smelt reproduction very likely is adversely affected now that the mixing zone is located in the main channels of the Delta, east of Suisun Bay (Moyle et al. 1992). In 1982, the decline of the delta smelt population in response to the shifted location of the mixing zone was significant. In all respects, the upstream river channels are much less favorable for the spawning and survival of the smelt. The decline of the delta smelt population since 1981 has been concurrent with an increasing amount and proportion of freshwater diversions that confine the mixing zone to the narrow, deep, and less productive channels in the lower rivers.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Not known to be applicable; however, the delta smelt may be harvested as a non-target by-catch in commercial bait fisheries for other baitfish species. Some scientific collecting is conducted for the delta smelt; however, these activities do not appear to be adversely affecting this species. Native Americans historically harvested delta smelt for food, but modern Native Americans are not known to be harvesting this fish. No recreational or educational uses of this animal are expected to affect the delta smelt population.

C. Disease or Predation

Not known to be applicable. However, the introduced striped bass may have caused an increase in predation on all size classes of the delta smelt. An effort by the California Department of Fish and Game is underway to compensate for striped bass population mortalities caused by water export projects. The 1991 striped bass stock was very low relative to the population in the 1960's. The striped bass compensation program annually releases 1-2 million juvenile hatchery reared striped bass in the estuary in an effort to rebuild the population. This year the Director of the California Department of Fish and Game decided not to release striped bass because of the potential harm they would cause to the federally threatened Sacramento River winter-run chinook salmon.

D. The Inadequacy of Existing Regulatory Mechanisms

NOTE: This paragraph from the original delta smelt listing is no longer correct. The delta smelt was subsequently listed as threatened under the California Endangered Species Act. Regulatory mechanisms currently in effect do not provide adequate protection for the delta smelt or its habitat. This species is not listed by the State of California. The California Fish and Game Commission ruled on August 30, 1990, that a petition to the State to list the species was unwarranted, rejecting the California Department of Fish and Game's recommendation to list the delta smelt as a threatened species under State authority (Stevens et al. 1990). State listing would have provided some measure of protection to the species because State agencies would have been required to consult with the California Department of Fish and Game if any project they funded or carried out would adversely affect the delta smelt. However, even if the State of California had listed the delta smelt, the species would not have been protected from the adverse effects of Federal actions.

Suisun Bay is the best known nursery habitat for this species' reproduction and larval survival, but the habitat has been deleteriously altered because of higher salinities in spring. These higher salinities are caused by the large number of freshwater diversions that allow brackish seawater to intrude farther upstream. At present, there are relatively few periods when freshwater outflow volumes through the Delta and Suisun Bay of any significance are mandated for wildlife or fisheries. Federal and State agencies had planned to increase 1991 and probably 1992 water supplies for out-of-stream uses at the expense of environmental protection of estuarine fish and wildlife resources in the fifth and potentially sixth years of drought (Morat 1991). Because of significantly higher than normal precipitation and subsequent higher instream flows during March, 1991, a State agency request for relaxation of Delta water quality standards was withdrawn. It is likely, should the severe California drought continue, that this water quality relaxation action will be requested again in the near future to favor out-of-stream water use over the need to protect aquatic habitats for fish and wildlife.

Present regulatory processes do not ensure that water inflows to Suisun Bay and the western Sacramento-San Joaquin estuary will be adequate to maintain the mixing zone near or in Suisun Bay to benefit delta smelt and other fish and wildlife. The California State Water Resources Control Board (Board) has the authority to condition or require changes in the amount of water inflow and the amount of water exported or diverted from

the Delta. At the Board's Water Quality/Water Rights Hearings in 1987, a Service biologist testified that the delta smelt had been recommended for addition to the Federal Animal Notice of Review as a category 1 candidate species (Lorentzen 1987). The Board has not taken regulatory or legal action to protect this animal or its habitat during the 4 years since the Service expressed its concern for several species native to Sacramento-San Joaquin estuary. On December 9, 1992, the Board released a copy of Water Rights Decision 1630 (D-1630), San Francisco Bay/Sacramento-San Joaquin Estuary (California State Water Resources Control Board 1992). A meeting to consider adoption of D-1630 is scheduled for January 25, 1993. In whatever form it is finally adopted by the Board, D-1630 will establish minimum levels of public trust uses of the delta for up to 5 years. Subsequently, long-term standards will be prepared and adopted.

Implementation of the draft decision as prepared would result in improved habitat conditions for the delta smelt. The Service is presently in the process of analyzing the draft terms and conditions to determine to what extent delta smelt will be benefited, if the decision is adopted and implemented. However, even assuming immediate adoption and implementation of these interim terms and conditions, their adequacy as a regulatory mechanism to protect the delta smelt remains in question. The Service is aware that the salinity standards currently in effect (D-1485) are inconsistently implemented and frequently violated due to operational constraints. Institutional guarantees of compliance have been lacking in the past and are needed in the future.

Similarly, the Service is currently analyzing the potential effects on the delta smelt and other fish and wildlife resources in California as a result of the recent enactment of the Central Valley Project Improvement Act (Pub. L. 102-575). Two of the stated purposes of this act are to: "protect, restore, and enhance fish, wildlife, and associated habitats in the Central Valley and Trinity River basins of California" and "to contribute to the State of California's interim and long-term efforts to protect the San Francisco Bay/Sacramento-San Joaquin Delta Estuary". Section 3406(b)(2) dedicates annually 800,000 acre-feet of Central Valley Project water for various purposes including the benefit of federally listed species. While the Service is reasonably certain that the delta smelt will realize some benefit from implementation of this Act, the magnitude and timeliness of these protections may be inadequate to prevent the endangerment of the delta smelt. For example, many analysts predict that provisions within the Act will take many years for the courts to resolve. Finally, neither adoption of the State Water Resources Control Board's Decision 1630 or the Central Valley Project Improvement Act protect the delta smelt per se, or provide mechanisms to ensure the continued existence of the species.

For the reasons stated above, the Service considers the existing regulatory mechanisms inadequate to assure the long-term existence of delta smelt in Suisun Bay and the Delta.

E. Other Natural or Manmade Factors Affecting its Continued Existence

The delta smelt is highly vulnerable to extinction because of its short life span, present small population size, and restricted distribution. The limited gene pool may result in

depressed reproductive vigor and loss of genetic variation.

Poor water quality also may be a threat. All major rivers in this species' historic range are exposed to large volumes of agricultural and industrial chemicals that are applied in the California Central Valley watersheds (Nichols et al. 1986). Agricultural chemicals and their residues, and chemicals originating in urban runoff, find their way into the rivers and estuary. Toxicology studies of rice field irrigation drain water of the Colusa Basin Drainage Canal documented significant toxicity of drain water to striped bass embryos and larvae, medaka larvae, and the major food organism of the striped bass larvae and juveniles, the opossum shrimp (Neomysis mercedis). This drainage canal flows into the Sacramento River just north of the City of Sacramento. The majority of drain water samples collected during April and May 1990 were acutely toxic to striped bass larvae (96-hour exposures), the third consecutive year that the Colusa Basin rice irrigation drain water has been acutely toxic (Bailey et al. 1991). Delta smelt may be similarly affected by agricultural and industrial chemical run-off.

Some heavy metal contaminants have been released into the Delta from industrial and mining enterprises. Although the effects of these contaminating compounds on delta smelt larvae and their microzooplankton food resources are not well known, the compounds could potentially adversely affect delta smelt survival. In addition, increases in urban development in the Sacramento Valley will continue to result in concurrent increases in urban runoff. Finally, a proposal to reactivate the San Luis Drain would result in discharge of high levels of selenium from the San Joaquin Valley into the Delta. Selenium has been shown to cause developmental defects in and mortality of wildlife species.

In recent years, untreated discharges of ship ballast water introduced nonindigenous aquatic species to the Sacramento-San Joaquin estuary ecosystem (Carlton et al. 1990). Several introduced species adversely affect the delta smelt directly. An Asian clam (Potamocorbula amurensis), introduced as veliger larvae at the beginning of the present drought, was first discovered in Suisun Bay during October 1986. By June 1987, the Asian clam was nearly everywhere in Suisun, San Pablo, and San Francisco Bays irrespective of salinity, water depth, and sediment type at densities greater than 10,000 individuals per square meter. Asian clam densities declined to 4,000 individuals per square meter as the population aged during the year (Carlton et al. 1990). Persistently low river outflow and concomitant elevated salinity levels may have contributed to this species population explosion (Carlton et al. 1990). The Asian clam could potentially play an important role in affecting the phytoplankton dynamics in the estuary. It may have an effect on higher trophic levels by decreasing phytoplankton biomass and by directly consuming Eurytemora affinis copepod nauplii, the primary food of delta smelt.

Three non-native species of euryhaline copepods (Sinocalanus doerrii, Pseudodiaptomus forbesi, and Pseudodiaptomus marinus) became established in the Delta between 1978 and 1987 (Carlton et al. 1990), while Eurytemora affinis populations, the native euryhaline copepod, have declined since 1980. It is not known if the introduced species have displaced E. affinis or whether changes in the estuarine ecosystem now favor S.

doerrii and the two *Pseudodiaptomus* species (Moyle et al. 1989). These introduced copepod species are more efficient at avoiding the predation of larval delta smelt. The introduced copepods also exhibit a different swimming behavior that makes them less attractive to feeding delta smelt larvae. Because of reduced food availability or feeding efficiency causing decreased food ingestion rates, weakened delta smelt larvae are more vulnerable to starvation or predation.

The significantly altered microzooplankton food web now present in the Suisun Bay-Delta estuary may have decreased the gross growth efficiency of delta smelt larvae. Gross growth efficiency is the proportion of weight-specific food ingestion rate that goes to larval fish body growth. When food ingestion rates are low, gross growth efficiency is low. At low gross growth efficiencies, larval fish take much longer to metamorphose to juveniles. Long larval stage durations increase the likelihood that density-dependent mechanisms (e.g., predators, overgrazing of food resources, etc.) and density-dependent mechanisms (e.g., adverse salinities, temperature, absence of zooplankton, water diversion entrainment and impingement mortality, etc.) would develop to adversely affect survival and recruitment. In temperate latitudes, where spawning is temporally and spatially confined, as it is for the delta smelt, both mortality and growth rates tend to be low. Ingestion in temperate species is relatively low compared to tropical species, and larval stage duration is long and potentially highly variable. Under these circumstances, small changes in either mortality rates or growth rates can have significant adverse effects on recruitment potential (Shepherd and Cushing 1980, Houde 1989). Therefore, the timing of spawning and the availability of favorable spawning sites for adults are added critical elements in the recruitment success of the spawned cohort.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species in this listing determination. The Service acknowledges that available data on the population dynamics of the delta smelt were collected incidental to other investigations and were not intended to provide a population estimate. The Service believes, however, that these data represent the best available information and support the listing of this species. The available data indicate a significant population decline over the last 20 years. Though the current population has remained relatively stable over the last 5 years, it has done so at very low levels. No apparent recovery is occurring. The delta smelt faces threats from a more frequent upstream shift of its aquatic estuarine habitat, and a reduction of available habitat due to drought, replenishment for groundwater overdraft, and water exports and diversions. The shift in location of the mixing zone, as well as the reduced area available to the smelt, is expected to continue in the future. These factors will continue to adversely affect all life stages of the delta smelt. Because the smelt population is at such low levels, this species' 1-year lifespan is also a factor that threatens the species. The failure of a single reproductive season could significantly affect the ability of this species to survive and recover. Based on the evaluation of all available information on population dynamics and threats to this species, the Service has determined that listing as threatened is appropriate at this time.

REVIEW

8. DPS Review - Application of the Distinct Population Segment (DPS) Policy:

The entire population of delta smelt is listed and nothing in the current science suggests that the delta smelt should be listed as a DPS.

Status Review

- 9. Information Review: Is there new information available that is relevant to this review? Available information is considered to be all information 1) submitted, 2) available to Service employees, or 3) in Service files, during the review.

Yes X (Go to 9. B.) No _____ (End of Review/Go to 14)

- 9. A. Is there any relevant new information regarding the listed population and/or the species throughout its range with respect to the appropriate application of the DPS policy?

Yes _____ No X

Not applicable, as the delta smelt was not listed as a DPS.

- 9. B. Is there relevant new information addressing the species' biology and status including, but not limited to, population trends, distribution, abundance, demographics, and genetics?

Yes X No _____

What are these various topics related to? Is there some General Heading that these come under? like:

SURVEYS

The Service is aware of 14 surveys that collect data on delta smelt. See Appendix B for Abundance Indices Tables based on some of the below survey data. The following nine surveys began sampling before the listing in 1993:

pertinent facts; changes; info; new info

(1) California Department of Fish and Game's (CDFG's) Fall Midwater Trawl (FMWT) (1967 to present) (CDFG 2003a). This trawl catches adult smelt throughout the delta in September through December. The FMWT covers the entire range of delta smelt distribution and provides one of the two best measures of delta smelt abundance (Sweetnam and Stevens 1993). The FMWT provides a better measure of abundance than the Summer Trawl Survey (described below) because it catches pre-spawning adult delta smelt (Service 1996). An index based on pre-spawning adults, rather than on juveniles which are vulnerable to high mortality, provides a better estimate of delta smelt stock and recruitment (Service 1996). The FMWT ~~may~~ ^{is} not be as efficient at catching delta smelt compared with the Kodiak trawl (described below), but it has been continuously done for almost 40 years (since 1967) and so has a solid base of historical data with known sampling error (Service 1996). Results from this trawl are used to calculate the Delta Smelt Recovery Index as described in the Recovery Plan.

need to note at this was ver designed sample for ult. fact that we not sampling in right at this.

(2) CDFG's San Francisco Bay Midwater Trawl (1980 to present). This trawl catches

delta smelt throughout the year in the San Francisco Bay and delta.

Each of these should have a similar discussion re pros & cons.

(3) CDFG's San Francisco Bay Otter Trawl (1980 to present). This trawl catches delta smelt throughout the year in the San Francisco Bay and delta.

(4) University of California (UC) Davis' Suisun Marsh Otter Trawl (1979 to present). This trawl catches delta smelt in the Suisun Marsh waterways.

(5) Service's Chipps Island Trawl survey (1976 to present). This trawl catches delta smelt throughout the year.

(6) fish salvage at the CVP Tracy Fish Collection Facility (1979 to present) (CDFG 2003b and Service 2003b). These facilities salvage smelt throughout the year. The number of smelt salvaged is used to help determine if an Environmental Water Account (EWA) action needs to be taken. (See 9D below for a discussion of EWA)

(7) fish salvage at the SWP Skinner Delta Fish Protective Facility in the south Delta (1979 to present) (CDFG 2003b and Service 2003b). These facilities salvage smelt throughout the year. The number of smelt salvaged is used to help determine if an EWA action needs to be taken.

(8) Service's Delta Beach Seine Survey (1976 to present). This survey can catch delta smelt throughout the year.

(9) CDFG's Summer Towntnet Survey (1959 to present) (CDFG 2003c). This trawl is operated in the summer, catches juvenile and adult delta smelt, and provides one of the two best measures of delta smelt abundance (Sweetnam and Stevens 1993).

(10) CDFG's Striped bass egg and larval survey (1968 to 1995) (Interagency Ecological Program 1996). This survey sampled in the spring and caught larval delta smelt.

The following five surveys began sampling delta smelt since the listing:

Again - illegal pros & cons - may want to make general comment about fact that not data time series make survey long run considerations difficult.

(11) IEP's 20mm survey (1995 to present) (CDFG 2003d). This survey runs in the spring to catch larval and juvenile delta smelt. This survey's information is used to help determine smelt distributions in the delta and to help determine if an EWA action needs to be taken.

(12) U.S. Army Corps of Engineers' (Corps) Napa River Survey (2001 to present) (Corps 2002 and 2003). This survey catches delta smelt in the Napa River.

(13) IEP's Spring Kodiak Trawl (2002 to present) (CDFG 2003e). This trawl is pulled by two boats and samples the upper water column. This survey catches adult delta smelt and can help determine where adult smelt are distributed in the delta.

↳ need to talk about the fact that samples in the upper portion of the water column so provides better info for population estimates -

over 2

80

(14) North Bay Aqueduct Larval Fish Survey (1996 to present) (CDFG 2003f). This trawl sampled north delta in the spring for larval delta smelt.

still going on?

Include a paragraph discussing

DENSITY DEPENDENCE

short paragraph discussing density dependant what it is & implication for recovery

Attempts have been made to answer the questions of density dependence and population size for delta smelt, but to date there is no expert consensus on whether delta smelt populations display density dependence or density independence. Density dependence can be broadly defined as the case where more individuals of one life stage does not necessarily result in more adults and implies that there is a finite carrying capacity. There is considerable disagreement among experts over whether the data show that delta smelt exhibit density dependence during part or all of their life cycle (CALFED 2001, 2003a). Bennett used traditional stock-recruitment analysis and calculations of mortality between life stages to conclude that density dependence has regulated delta smelt abundance over the period of record (CALFED 2001). However, Bennett (CALFED 2002a) stated that the available evidence suggests density dependence occurs infrequently and was most evident in the 1970's. Finally, Bennett (2003) stated that density dependant regulation may now be occurring at lower levels of abundance during late-summer than before the population decline.

A preliminary analysis by the California Department of Fish and Game (CDFG) (2003g) strongly suggests that the delta smelt population is largely regulated by density independent factors, particularly spring temperature conditions, the location of X2, and possibly the impact of export losses in dry years. CDFG (2003g) does not believe density dependant mortality currently plays a substantial role in determining annual delta smelt abundance for three fundamental reasons: 1) no credible mechanism for density dependent regulation has been presented; 2) smelt are currently not abundant relative to their past abundance or relative to the other species living in the delta, and; 3) the statistical evidence for density dependence is very weak. CDFG (2003g) believes that an assumption of density dependence in delta smelt management is extremely risky.

get me

ROLE OF TWO YEAR OLDS

Delta smelt typically live one year, but approximately 3-8% of individuals live two years. (Bennett 2003) Two year old fish have 3 to 5 times the fecundity of 1 year fish. These fish could be important for carrying the population over through years of poor year class strength (fewer individuals). However, there is no direct evidence that 2-year-old fish contribute more to spawning during years following poor recruitment than during other years (CALFED 2003a, CDFG 2003g, and Bennett 2003).

information that describes extent to which these fish contribute more spawning following poor recruitment

9.C. Is there relevant new information addressing habitat conditions including, but not limited to, amount, distribution, and suitability?

Yes X (See Section 9D)

No

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9.D. Is there relevant new information addressing conservation measures that have been implemented that benefit the species?

Yes X

No

FISH SCREENS

The CALFED Ecosystem Restoration Program has funded the construction of screens on several water diversions within the range of delta smelt, including an agricultural diversion on Hastings Slough, and the City of Sacramento's diversion on the Sacramento River (CALFED 2003b).

begin the question: are the CALFED screens properly designed/operated?

[These screens, when ^{are} properly designed and operated, help prevent adult delta smelt from becoming entrained by the physical barrier of the screen as well as sweeping velocities that would carry delta smelt past the point of diversion (CALFED 2003b). While there remain over 1,800 diversions within the range of delta smelt, the Service recognizes that the actions of CALFED to date represent progress towards eliminating entrainment of delta smelt in unscreened diversions (CDWR 1995).

ECOSYSTEM RESTORATION

The CALFED Ecosystem Restoration Program has funded the restoration of multiple habitats at several locations within the range of delta smelt, including Canal ranch, Liberty Island, and McCormack-Williamson Tract (CALFED 2003b). The CALFED Ecosystem Restoration Program has also funded the restoration of shallow water tidal and marsh habitat at several locations within the range of delta smelt, including Fay Island, Franks Tract, Big Break, Lower Sherman Lake, and Prospect Island (CALFED 2003b). [While the delta smelt may never be out of danger of extinction unless there are permanent and reliable changes made to the flow and temperature regimes that favor the delta smelt (Moyle 2003),] the Service recognizes that the actions of CALFED to date represent progress towards enhancing and/or restoring additional habitat for the delta smelt. However, the benefits of habitat restoration needs to be weighed against the potential that constructed habitats will foster exotic species as well as re-mobilize toxic chemicals (Grimaldo *et al.* 1998 and T. Suchanek *et al.* 1999 as cited in Bennett 2003; Grimaldo *et al.* 2000).

juvies is out on this.

give me cit

WATER MANAGEMENT

VAMP

It has been postulated that the Vernalis Adaptive Management Program (VAMP) has changed water movement in the southern Delta during the early delta smelt life history (CALFED 2001). The assumptions and information leading to this hypothesis are as follows: 1) since the initiation of VAMP in 1996, modeling and field data demonstrate that April through May net flows in southern Delta channels are more positive than occurred pre-VAMP, with less water movement towards the pumps; 2) since VAMP started, the projects have exceeded the red light take level more often than they would have pre-VAMP; 3) the VAMP flows and pumping restrictions provide better spawning and rearing conditions in the south Delta than was formerly possible; 4) with better rearing conditions, the larvae in the south Delta that are not entrained grow to the size (greater than or equal to 20 mm) that is successfully salvaged and counted at the intakes; 5)

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taking this model to its logical conclusion, the projects are not removing more fish than they did historically, they are removing more older fish (i.e. in the past the larval fish did not reach the salvageable size and went down the aqueduct without being counted), and; 6) on balance, VAMP effects on delta smelt are likely to be or slightly positive since delaying higher levels of exports may allow more of the oldest fish to avoid entrainment.

go back to the main about

EWA

CALFED has undertaken efforts to minimize the take of delta smelt at the SWP and CVP since 2001 water year using their Environmental Water Account (EWA). The EWA is designed to balance two conflicting objectives: 1) to protect federally listed fish and 2) avoid interruptions of water deliveries by the state and federal export facilities. The EWA is built on the premise that water can be obtained and banked until needed. When large numbers of delta smelt are being taken at the state and federal export facilities, pumping is reduced and water stored south of the delta pumps is delivered in place of water not pumped. The effectiveness of EWA is limited by its ability to acquire sufficient water and the surplus pumping capacity at the state and federal export facilities needed to bank the water (Service 2003c).

govern two f

EWA is managed by an interagency team which has the responsibility of determining if and when EWA assets are used. The EWA is currently being resized to account for proposed increases in water exports at the state and federal export facilities. In addition, the EWA is currently being reviewed to determine if it was successful in its first 3 years of operation. The current EWA was established as a temporary program, lasting only four years with the ability to be extended in the future. It is expected that the EWA will continue, although it has not yet become a permanent program. EWA actions for smelt are taken to reduce pumping at the CVP and SWP when high numbers of smelt are in the south delta. However, at this time it is unclear

what, if any, effect EWA actions have had on the delta smelt population. The last 3 years of survey data show declining numbers of delta smelt (see Appendix B) (CDFG 2003g). However, 3 years of operation are insufficient to determine whether or not EWA has had a positive (or negative) impact on delta smelt, for even if abundance indices were to indicate increases, they represent too limited a timeframe to overcome natural variance (Service 2003c).

This should be a discussion

At present there is insufficient information concerning the effects of VAMP and EWA to change our understanding of the species as cited in the reference point document. What is clear is that to the extent flow management affects DS viability both programs can

regarding Delta smelt and Delta exports were incorrect. However, the info currently available is incorrect. As a result, we are unable to accurately assess

on the part of DS conservation

9. E. Is there relevant new information addressing species= existing threats status and/or trends since the last review?

Yes X

No

New information relating to existing threats include water flow, water diversions, proposed modifications to the water system, and continuing inadequacy of existing regulatory mechanisms. Please refer to section #13 (5 factor analysis) for an in-depth discussion on each issue.

9. F. Is there relevant new information addressing new threats since the last review?

Yes X

No

New information relating to new threats include the South Delta Temporary Barriers, and

possible disease, introduced species, predation, discharge of ballast water, food availability, genetics, and other environmental issues. Please refer to section #13 (5 factor analysis) for an in-depth discussion on each issue.

9. G. Is there relevant new information to suggest a change in species taxonomy?

Yes _____ No X

Stanley *et al.* (1995) confirmed that delta smelt is a genetically distinct species. This does not change our understanding of the species as cited in the reference point document.

9. H. Have any improved analytic methods resulted in relevant new information?

Yes X No _____

POPULATION TREND - *This does not accurately represent the understanding we have nor does it accurately represent the uncertainty around population estimates and the ability of the stock to track on.*

A number of surveys have been conducted both prior to and since the 1993 listing, as described in section 9B. The data gathered from these surveys provide abundance indices for delta smelt (see Appendix B). The two-year running average of the Delta Smelt Recovery Index for 2003, as determined from the FMWT, is the second lowest since the species was listed (Service 2003d). The Summer Tow Net Survey data show an almost complete disappearance of juvenile delta smelt in the south delta sampling stations by the mid-1970s (CDFG 2003g). Moyle (2003), stated that the analysis of 22 years of monthly sampling data from Suisun Marsh shows that the delta smelt have still not recovered to their former abundance, although there has been a general increase in numbers since their low point during a long period of drought (Matern *et al.* 2002) (see Appendix B). From these indices, the Service has concluded that the delta smelt abundance has not recovered to its pre-decline (prior to 1982) levels.

In addition, the San Luis & Delta-Mendota Water Authority (2002) submitted an analysis of population trend on delta smelt. Based on four analyses (simple moving average, Lowess smoothing, linear splines smoothing, and polynomial trend smoothing) of Fall Midwater Trawl (FMWT) data, they asserted that delta smelt have exhibited an increasing population trend since the mid-1980's.

USGS (2003) conducted a peer review of the San Luis & Delta-Mendota Water Authority (2002) submission. The San Luis & Delta-Mendota Water Authority paper was reviewed by four peer reviewers. A summary of the peer reviews and the peer reviews themselves were submitted to the Service by USGS. Overall, the peer reviewers (USGS 2003) concluded that the authors failed to demonstrate a positive trend in smelt abundance. Specifically, the reviewers were concerned that the trend lines were "only visually fitted" (i.e., the line was not statistically derived) to a single subset of data and that no statistical tests were conducted to determine

15
We need to draw a coherent picture of what we know & don't know. We also need to acknowledge the San Luis Water Authority analysis provides a different view of the picture but the data is

uncertain around population estimates and the ability of the stock to track on. We need to talk about the block of now i moves of the anomaly more adults than the small fry suggest ought to have.

positive or negative trends. In addition, there was no discussion of either significance or power of the results. Also of concern to the peer reviewers was the use of only one life stage in this analysis. Rather than demonstrating a positive trend, the USGS review (2003) indicated that large inter-annual variability is notable and that such variability is expected from a species with this life cycle. ~~We cannot use~~

POPULATION SIZE

Many individuals and organizations have strongly suggested that abundance indices are inadequate to meet management needs and that population estimates should be made for delta smelt. A population estimate for delta smelt may permit more easily justified take limits, better assessments of population dynamics and extinction coefficients, better understanding of the trophic dynamics of the delta, and better public education efforts. However, there are many challenges associated with determining population size for delta smelt (Herbold 1996).

all Surveys of abundance in one area can sometimes be generalized over an entire population. Most often in fisheries science, this involves counts of individuals at a point or points where the entire population must pass. For some species such as salmon, fish passage rates at fish ladders or carcass counts on spawning grounds can give reasonably adequate estimates of total population size (Herbold 1996). However, these methods are not possible for use on delta smelt.

sk Populations that spend at least part of their life cycle in a discrete area permit estimates of total population size. Fish which aggregate in large, monospecific, and concentrated schools can be adequately estimated through hydroacoustic surveys. The small, mixed species aggregations in the entrapment zone, combined with the delta smelt's frequent presence in shallow water habitats where hydroacoustic gear is least effective; make such estimation procedures unsuitable for delta smelt (Herbold 1996).

sk Species that are regularly or randomly distributed within a well defined habitat permit counts in part of the habitat to be confidently expanded to the entire habitat. Species, like delta smelt, whose distributional patterns are unknown but which are likely to demonstrate different abundances and distributional patterns in different parts of their range are unlikely to be estimated with any useful degree of accuracy. For example, capture of two delta smelt in July in Suisun Marsh at a salinity of 10 parts per thousand (ppt), conditions under which they have never been abundant, would mean something quite different from a catch of 2 delta smelt at Chipps Island in October at a salinity of 2 ppt. However, our current understanding of delta smelt is insufficient to translate the difference into a population estimate (Herbold 1996).

The difficulties surrounding delta smelt population estimates are independent of the assumptions regarding gear effectiveness or choice of sampling sites. Thus, more effective sampling gear and wider distribution of surveys cannot overcome the statistical difficulties attending the estimation of population size (Herbold 1996). *Wholly*

particularly when our understanding of smelt populations is so rudimentary

California Department of Water Resources (CDWR) noted that neither the FMWT nor the Summer Townet Survey provide statistically defensible population abundance estimates. Rosenfield (2003) stated that the Fall Midwater Trawl (FMWT) index is highly variable, at least in part because the sampling gear is not well-suited to detecting delta smelt, as it only briefly samples the surface waters where delta smelt are concentrated. According to Rosenfield (2003), the Kodiak Trawl appears to be a much more effective sampling instrument than the FMWT. The Kodiak Trawl collects fish from the top six feet of the water column (where delta smelt generally reside) while the FMWT collects samples by drawing the trawl diagonally through the water column from the bottom of the river to the top (San Luis & Delta-Mendota Water Authority 2003). The FMWT was not designed for sampling delta smelt and is used because it was implemented in 1967 and so can provide a historical context for relative delta smelt abundance. Unfortunately, the Kodiak Trawl has only been employed recently, and there is no historical context with which to interpret data collected with this gear (Rosenfield 2003).

Bennett (2003) believed that there is little confidence in the effectiveness of the sampling gear of the Fall Midwater Trawl (FMWT) and the Kodiak Trawl. For example, he notes, Kodiak Trawls appear to out-fish the traditional Fall Midwater Trawl in abundance per unit volume, but this knowledge is based on only 2 sampling days and 12 concurrent samples in September 1994. Moreover, there is little certainty of which size classes are missed by the various surveys. The lack of an appropriate abundance measure is currently a crucial factor limiting progress in our understanding of the delta smelt population.

The San Luis & Delta-Mendota Water Authority (2002) estimated the population size of sub-adult delta smelt in the late 1990's to be at least 1 million and as many as 12 million. The estimate was derived by using "side-by-side comparisons" of Fall Midwater Trawl (FMWT) and the Kodiak Trawl made in 1994 by the CDFG. ~~Comments of Rosenfield (2003) and USGS (2003) are each discussed briefly below:~~

Rosenfield (2003) stated that the assumptions and procedures employed by the San Luis & Delta-Mendota Water Authority (2002) in reinterpreting FMWT data are flawed. He commented particularly on three areas: the correlation between the FMWT and the Kodiak Trawl, the procedure used to adjust zero values, and the 0.25 correction regarding volume of habitat sampled. Each is discussed briefly below:

Correlation. Rosenfield (2003) believed there is no way to calculate historic population sizes based on a correlation between FMWT and the Kodiak Trawl because the correlation employed is not statistically significant and not strong enough to allow an accurate estimate of smelt abundance. Rosenfield (2003) stated that the use of the putative (supposed) relationship between the Kodiak Trawl data and the FMWT compounded the error inherent in both surveys.

are there any other analyses of this data?

Adjustment of zero values. Rosenfield (2003) also disagreed with the procedure used to adjust zero values from the FMWT upward. The fact that the Kodiak Trawl detected delta smelt in some instances when the FMWT failed to detect the species is not surprising, given the delta smelt's surface orientation. However, as this happened on only three occasions in the study that compared the two nets, it does not support the assumption the delta smelt were present when none were detected by the FMWT.

0.25 correction factor. San Luis & Delta-Mendota Water Authority (2002) expanded the expected Kodiak Trawl catch-per-unit effort by the volume of habitat sampled by applying a correction factor of 0.25. This contradicts the observation that delta smelt are found predominantly in the very top of the water column. Rosenfield (2003) believed that because delta smelt distribution is nearly two-dimensional, effort is better measured as the area sampled, not the volume sampled. He stated that: 1) we cannot accurately back-calculate the area of delta smelt habitat sampled by the FMWT; 2) although we know that delta smelt are strongly surface oriented, we have no data regarding the maximum or average depth of their distribution, and; 3) even if #1 and #2 were not true, the amount of sampling by the FMWT in the smelt's narrow band of surface habitat is insufficient to calculate a population estimate for delta smelt.

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USGS (2003) made comments largely similar to Rosenfield (2003). They note that at least four steps in the calculations are in error or dependent upon assumptions omitted in the analysis. For example, they state that the comparison of catches with different gear and scaling of density data to obtain population estimates is unsupported as are the estimated correction factors used to offset trawl inefficiency. Also, the use of a correction factor for the Kodiak trawl is questionable. They stated that "scaling up of zero values is found unacceptable given the assumptions listed, life history of the fish, and limitations of the gear." Because of the concerns noted by USGS (2003) and Rosenfield (2003), we conclude that the population size estimates presented by San Luis & Delta-Mendota Water Authority (2002) are not supportable.

PROBABILITY OF EXTINCTION

The San Luis & Delta-Mendota Water Authority (2002) used the population estimates discussed above to estimate the probability of extinction of delta smelt. They estimated that if the sub-adult population is 12 million, then the probability of extinction of delta smelt by 2050 is less than one percent. The USGS peer reviewers (USGS 2003) were concerned about use of inaccurate population estimates as a basis for this calculation. They noted that the conclusions about population trend and population size were optimistic and based on questionable science (see discussion above). USGS (2003) indicated that the use of these conclusions as a basis for estimating extinction probability would result in a severe underestimate. Further, this analysis of extinction risk is based upon an unpublished model that has no associated risk factors and no estimation of likelihood of such risks. Finally, the peer reviewers were concerned that the conclusion is not based upon commonly accepted methods of population viability analysis

(PVA).

USGS reviewers (2003) also felt that risk could not be removed from the analysis as San Luis claims. USGS concluded that risks to the population from both the anthropogenic and climatic factors were major concerns in evaluating abundance indices, regardless of the analytical outcome.

Include a discussion of population's normal risk profile & pose whether it's lesser or greater

~~In summary, there is no new information concerning the delta smelt's population size and extinction probability to change our understanding of the species as cited in the reference point document.~~

wrong

9. I. Is there any other relevant new information, such as corrections in historic range, nomenclatural changes, or identification of erroneous information in the list?

Yes X

No _____

The range of the smelt is currently larger than was assumed in the list

Even though delta smelt are now known to spawn in the Napa River (CDFG 2003d; Corps 2002 and 2003), it is unclear if these delta smelt are self-perpetuating or if recolonization from the delta is necessary to maintain a population there. [Several more years of study will be needed in order to determine if delta smelt are able to persist in the Napa River during adverse hydrologic conditions (e.g. drought and extreme outflow) and the role that the Napa River plays in maintaining the species.] [Trenham et al. 1998 determined that delta smelt exhibits very little population subdivision across its range, and that the delta smelt in the Napa River are not a distinct population.]

she as well as XX through listing etc. presumed they had been extirpated from some areas. It is unclear whether is is a result of population expansion or failure to detect.

10. For population listings only, utilizing the updated species information, provide your assessment with respect to the appropriate application of the DPS policy. See attachment to 5-year review - Consideration of the DPS policy during the 5-year review.

Not applicable, as the delta smelt was not listed as a DPS.

11. Does the species have an up-to-date recovery plan with downlisting and/or delisting criteria (and in some cases uplisting criteria for threatened species) that address both the demographics and the threats to the species?

Yes _____

No X

Our Recovery Plan (Service 1996) stated that recovery of delta smelt should be assessed when the species satisfies abundance and distribution criteria. Distribution criteria were based on catches of smelt in various zones throughout the range of the species. Abundance criteria were that (1) smelt numbers or total catch must equal or exceed 239 (based on the Delta Smelt Recovery Index) for 2 out of 5 years and (2) not fall below 84 for more than two years in a row.

If distribution and abundance criteria are met for a five-year period that includes two successive extreme outflow years, one of which is dry or critical, the species will be considered restored.

12. Does the relevant new information indicate that the recovery criteria for downlisting/delisting/uplisting have been met?

Yes X

No X

Our Recovery Plan (Service 1996) stated that delisting would be considered when (1) the five-year period includes two successive extreme outflow years with one year dry or critical and (2) legal mechanisms and interagency agreements are in place to manage the Central Valley Project (CVP), State Water Project (SWP), and other water users to meet these criteria.

During the period from 1998 through 2002 the Delta Smelt Recovery Index, as calculated from the Fall Midwater Trawl data, exceeded 239 in 2 out of 5 years, the 2 year running average never fell below 84, and the distribution criteria were met (Service 2003d). Therefore, the delta smelt met the abundance and distribution criteria in 2002 based on the five year period from 1998 through 2002. However, threats to delta smelt still remain, and sufficient legal mechanisms and interagency agreements are not in place to assure removal of many of the threat (see section 13 below for a discussion of threats). Therefore, the delisting process has not been initiated. It should also be noted that for 2003, the Delta Smelt Recovery Index did not meet the abundance and distribution criteria outlined in the Recovery Plan.

13. 5-Factor Analysis - Threats Assessment

This section describes the current status of threats to delta smelt, using our 5-factor analysis.

(A) The present or threatened destruction, modification, or curtailment of its habitat or range.

WATER OUTFLOW

In the original listing document,

The delta smelt's decline and sustained low abundance ^{was} linked to changes in hydrology resulting from water resource development in and upstream of the Delta. Increased upstream storage and water diversions from the Sacramento and San Joaquin Rivers and tributaries, particularly in combination with dry years, has reduced fresh water available to flush through the estuary (Reclamation 2003b). Water storage is also reduced in dry years when reservoirs and ground water basins are not replenished. Water diversions increase when annual precipitation is low and result in reduction of both high spring outflows and total outflow which are important to spawning and transportation of young fish utilizing the upper San Francisco Estuary and Delta. Two major diversions in the south Delta, the Federal Central Valley Project (CVP) and State Water Project (SWP), can create reverse flows in the lower San Joaquin River, making delta smelt more vulnerable to entrainment at these facilities (Service 1996).

is not possible

Our analysis of smelt was in the area that the del was a river system... the decade listing our understanding of the delta has evolved and now know it better than we did

This change has implications for how we analyze the effects of water conveyance through the delta

- 1. Physical functioning
- 2. Hazards to the smelt from function
- 3. How our understanding has evolved

For fishes and most other Delta organisms, moderately high spring outflows are important because they move fish downstream to shallow water areas in and around Suisun Bay, distant from south Delta diversions (Service 1996). This well mixed shallow water habitat encourages production of phytoplankton and zooplankton that are food for plankton-feeding fish such as delta smelt and their larvae (Service 1996). Low outflows maintain fish larvae and juveniles in the deep, narrow channels of the Delta and Sacramento River where productivity of phytoplankton is lower because much of the water is beyond the reach of sunlight (Service 1996).

Presumably, if the food supply is inadequate, fish either starve to death or have increased mortality from secondary effects, as a result of poor nutrition (Service 1996). *had para* (Strong statistical relationships between outflow and abundances of American shad, Chinook salmon and longfin smelt (Stevens and Miller 1983), were demonstrated, but no such statistically significant relationship was found for delta smelt. Nevertheless, Kimmerer (2002) shows a change in delta smelt abundance as it relates to X2 (i.e., flow) historically, the further upstream X2 was the greater the abundance of delta smelt; and more recently, the further upstream X2 the poorer the abundance of delta smelt (see below for additional discussion of X2).

Years of major delta smelt decline have been characterized not only by unusually dry years with exceptionally low outflows (1987-1991) but also by unusually wet years with exceptionally high outflows (1982-83, 1986, 1998). High outflows are believed to flush delta smelt out of the system along with much of the zooplankton. This means that not only is potential spawning stock of delta smelt reduced, but its food supply as well. Furthermore, depletion of established populations of invertebrates and fish may have made it easier for exotic species of copepods, clams, and fish to colonize the estuary, which may be detrimental to delta smelt (Service 1996).

Years of high delta smelt abundance were strongly correlated with the springtime location and duration of the 2 parts per thousand (ppt) bottom isohaline (X2) demarcation. There is some evidence that a large part of this relationship rests on the number of days in April when salinities of 2 ppt are between Middle Ground and Roe Island. However, for 1993, larval smelt were reported in Suisun Marsh as early as February and as late as June, so nursery habitat may be needed throughout the 5-month period. The higher captures of delta smelt below 2 ppt and in shallow habitats (when waters of 2 ppt are near shallow habitats) strongly suggest habitat selection by delta smelt. The tie between the amount of this habitat and fall abundance of delta smelt argues that availability of suitable habitat limits the abundance of this species. In the absence of a significant stock/recruitment relationship or tie to any other environmental variable, availability of nursery habitat seems to be the primary limiting factor to abundance of adult delta smelt (Service 1996).

See this out as apparent contradiction not point up the fact a causal relationship is unconvincing

WATER DIVERSIONS

Water is pumped out of the Delta system mainly by the CVP and SWP to supply California's agriculture and municipal demands (Service 1996). Also, over 1,800 small diversions within the

Delta supply water for Delta farms (CDWR 1995). Water is also pumped through power plants for cooling west of the Delta (Service 1996). Delta smelt are caught (entrained) in all these pumping facilities (Service 1996). The early stages of these fish are planktonic and weak swimmers making them susceptible to flow patterns (Service 1996). Large numbers of young delta smelt are entrained at CVP and SWP plants (Service 1996). Efforts are made to rescue a portion of the fish (greater or equal to 20 millimeters (mm) fork length being entrained at CVP and SWP plants by trapping them and trucking them back to the Delta (Service 1996). There are no efforts to rescue or quantify fish below 20 mm, these fish are the most susceptible to entrainment and loss (Service 1996). The effectiveness of the salvage activities have not been well evaluated, however, delta smelt are very fragile and the majority die as a result of the process (Bennett 2003). - but note the fact this doesn't seem to affect adult pops very much

accurate

During dry years, larvae are concentrated in the river channels making them more likely to be entrained in major and minor diversions. High export pumping in dry years changes the hydraulics of the Delta and small fish are shifted upstream to Delta channels rather than in Suisun Bay where they are relatively immune to entrainment. Studies are currently being conducted to quantify losses of delta smelt and other fishes to these delta diversions. Some delta smelt have been captured in agricultural diversions during the studies, but it appears that season, location and size of the diversion are major factors affecting entrainment of delta smelt. Other major diversions within the habitat of delta smelt are the power generation facilities west of the Delta, near Pittsburg and Antioch. These facilities are believed to entrain large numbers of delta smelt juveniles and larvae. Several million larval and juvenile delta smelt are estimated as lost in State, Federal, agricultural, and cooling diversions each year. Impacts of these diversions contributed to decline of delta smelt and limit potential for full recovery of the species (Service 1996).

this has been debunked

There is consensus among experts that power plants with flow through cooling can impose significant mortality if they are close to fish habitat (CALFED 2003a and Service 1996). In the San Francisco Estuary there are two such plants, one at Pittsburg and one at Antioch, both well within the region of maximum abundance of delta smelt for many months of each year (CALFED 2003a and Service 1996).

The California Department of Fish and Game (CDFG) (2003g) is concerned that entrainment at the CVP and SWP may be a major source of population impacts under certain conditions. The Summer Tow Net Survey data show an almost complete disappearance of juvenile delta smelt in the south delta sampling stations by the mid-1970s (CDFG 2003g). This disappearance followed a trend of increasing combined water exports from the south Delta (CDFG 2003g). They further state that they estimate the losses of delta smelt juveniles to SWP and CVP operations to range between 11 to 46% annually (Kimmerer, pers. comm. as cited in CDFG 2003g).

but all south is not fact is not correlated with a population decline in delta pops.

CDFG (2003g) further stated that in the pre-decline period, delta smelt were most abundant in the delta and least abundant in Suisun Marsh, and in the post-decline period the delta smelt are now least abundant in the delta and most abundant in Suisun Marsh. CDFG concludes that the water exports from the delta had deprived delta smelt of much of their upstream habitat, the delta, leaving them with the much smaller Suisun Marsh (CDFG 2003g).

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The CDWR and the U.S. Bureau of Reclamation (Reclamation) are currently preparing a proposal to replace the temporary barriers with permanent barriers. The change from temporary fish and agricultural barriers to permanent barriers in the South Delta could result in additional effects to delta smelt. The temporary barriers are installed in April of each year and are removed in November, and serve the purpose of maintaining water levels for in-delta diverters. These barriers operate using tidal flap gates, meaning the barriers allow the flood tide flow upstream and then close when the tide ebbs to hold water behind the barriers. These barriers physical prevent smelt movement and can also change delta hydraulics. The Service provided ESA consultation on the temporary barriers in a Section 7 biological opinion dated March 30, 2001 (Service 2001). The proposed permanent barriers operations may include operating during additional periods and may include different operations that may affect delta smelt. Computer simulations by the California Department of Water Resources (2003) have shown that placement of the barriers changes south delta hydrodynamics, increasing central delta flows toward the state and federal export facilities. When delta smelt occur in areas influenced by the barriers, entrainment losses at the state and federal export facilities could increase. However, the operations and effects of the permanent barriers have not yet been fully analyzed.

what
did the
B.D.
say?

PROPOSED MODIFICATIONS TO THE WATER SYSTEM

The demands on surface water resources in the Central Valley have increased. The proposed Freeport Regional Water Project would divert up to 185,000 acre-feet(af)/year of water from a point of diversion north of the delta at Freeport (Freeport Regional Water Authority 2003). The proposed expansion of Los Vaqueros Reservoir would entail an additional 400,000 af of off-stream storage, diverted from the delta using existing facilities as well as new facilities located at Old River and/or Middle River (CALFED 2003c and Reclamation 2003a). Reclamation and CDWR have proposed to increase pumping capacity at the SWP Banks pumping plant from 6,680 cubic feet per second (cfs) to 8,500 cfs and eventually to 10,300 cfs (CALFED 2002b, 2003d). Reclamation and CDWR have also proposed construction of a 400 cfs intertie connecting their aqueducts, which would allow Reclamation to increase the pumping at their Tracy Pumping Plant from 4,200 cfs to 4,600 cfs. The CALFED Bay-Delta Program proposes to expand surface water storage capacity at existing reservoirs and strategically located off-stream sites by 3.5 million af (including the 400,000 af at Los Vaqueros) by: 1) north of the delta off stream storage; 2) Shasta enlargement; 3) Los Vaqueros Expansion; 4) in-delta storage; and 5) additional storage in the Upper San Joaquin (Friant) (CALFED 2002b and Reclamation 2003a). Finally, the City of Stockton proposes to construct a new intake at the southwestern tip of Empire Tract on the San Joaquin River with an ultimate diversion capacity of 371 cfs (Environmental Science Associates 2003). The diversions would likely result in lower delta outflows and increased entrainment.

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In summary, the threats of the destruction, modification, or curtailment of its habitat or range resulting from extreme outflow conditions, the operations of the State and Federal water projects, and other water diversions as described in the original listing remain. Although the Delta's Water Quality Standards, VAMP and EWA have helped to ameliorate these threats, it is unclear how effective these will continue to be over time based on available funding and future demands

talk about Cal Fed the
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the ongoing work

for water. In addition, there are increased water demands outside the CVP and SWP which could also impact delta smelt. The increases in water demands are likely to result in less suitable rearing conditions for delta smelt in Suisun Marsh, increased vulnerability to entrainment, and less water available for maintaining the position of X2.

no
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NONE

(B) Overutilization for commercial, recreational, scientific or educational purposes

Our final listing rule (Service 1993) did not identify any threats in this category, and there is no new information concerning threats of overutilization for commercial, recreational, scientific or educational purposes.

(C) Disease or predation

Our final listing rule (Service 1993) did not identify any threats in this category.

Antonio *et al.* (2000) examined infections associated with *Mycobacterium* spp. in wild and captive delta smelt. *Mycobacterium* spp. was not detected from any of the fish examined immediately after collection from the Sacramento-San Joaquin Estuary or during captivity of broodstock groups at water temperatures of 9-12EC. However, *Mycobacterium* spp. was isolated from, and mycobacteriosis occurred in, broodstock held at 16EC during spawning season and in experimental groups maintained at 17EC. *Mycobacterium* spp. and mycobacteriosis were more prevalent among groups frequently handled for physiological experiments. Broodstock groups that were less stressed exhibited a lower prevalence of the bacterium and the disease. Their findings suggest that *Mycobacterium* spp. may be present in a latent state in the wild population of delta smelt and infections may progress from asymptomatic to clinical under intensive culture conditions. Swanson *et al.* 2002a concluded that while *Mycobacterium* spp. may not play a significant role in the ecology of delta smelt (e.g. as the proximate cause of post-spawning mortality), some aspect of the handling of the fish may have caused this disease to develop. The relevance of *Mycobacterium* spp. to delta smelt in the wild is unknown at this time.

In the central Delta, recent studies by Grimaldo *et al.* (2000) of tidal wetland and marsh habitats show that introduced fishes dominate. The presence of the introduced water plant, *Egeria densa*, appears to be an important factor at sites in the central Delta. In areas where this plant is abundant, native fishes are extremely rare. The presence of the plant and associated predatory fish may disrupt natural patterns of habitat use by native fishes and may also result in increased mortality of native fishes through predation.

plant
species

Although many species may prey on adult and juvenile delta smelt, much of the attention to date has focused on inland silversides (CALFED 2001). After their accidental introduction to the Delta in 1975, their population expanded rapidly through the 1990s (CALFED 2001). Estimates of abundance of delta smelt and silversides are negatively correlated, suggesting that inland silversides may be an important predator on larval delta smelt and competitor for copepod prey (CALFED 2001). Silversides often occur in dense schools near shorelines and their occurrence may detract from the value of shallow water habitat created to aid delta smelt restoration

(CALFED 2001).

As noted by CDWR (2003), however, since the early 1980's there also have been increases in other potential larval fish predators such as coded-wire-tagged chinook salmon smolts released in the delta for survival experiments and non-native centrarchids. In addition, striped bass appear to have switched to piscivorous feeding habits at smaller sizes than they historically did following severe declines in the abundance of mysid shrimp (CDWR 2003). To address concerns regarding delta smelt, the California Department of Fish and Game completed a Habitat Conservation Plan for their striped bass management program, which includes measures designed to help conserve delta smelt.

Northern pike (*Esox lucius*) have been introduced into Lake Davis, and all attempts at eradication have failed (CDFG 2000). If these fish escape into the Sacramento River system and become established in the delta, the delta smelt population will almost certainly be affected (CDFG 2000).

In summary, the threats of disease and predation have still not been sufficiently studied to determine their effects on delta smelt.

(D) The inadequacy of existing regulatory mechanisms

The operation of the SWP and CVP has been conditioned by the Service's biological opinion. (Service 1995). The BO has no provision for the protection of larval delta smelt (<20mm in size) at the facilities. The take is not quantified but assumed substantial given the smelt's poor swimming ability. *no correlation between smelt take & adults so no basis for drawing this conclusion.*

The discharge of any ballast water into the San Francisco Bay is not prohibited. The U.S. Coast Guard has jurisdiction over ships that discharge ballast water (Service 1996). The Coast Guard requires ships to discharge ballast water before entering U.S. ports, but compliance is voluntary (Service 1996). A number of non-native species have already been introduced into the Bay-Estuary-Delta from ballast water and without strictly enforced prohibitions on ballast water discharge in the Bay, additional introductions of non-native species can be expected to continue (Service 1996 and Molye 2003). *This circumstance has been in effect since Europeans started sailing into SF Bay can't really call it a smelt.*

In summary, the existing regulatory mechanisms continue to be inadequate to protect the delta smelt.
CALFED CLEAN WATER CAESA } *the question of whether*
SWRCB COPIA ESA } *removing ESA protection will*
(E) Other natural or manmade factors affecting its continued existence *result in*
inadequate

REDUCED PRODUCTIVITY AND FOOD

Jassby *et al.* (2003) found that phytoplankton biomass has declined over the past few decades, partly because of the Asiatic clam invasion. The phytoplankton decline may represent a reduction in the system's capacity to support higher levels of the food web. Lower phytoplankton levels have been linked to declines in key zooplankton populations in the delta,

although the evidence for food limitation of fish populations is not as strong as for zooplankton and benthic invertebrates. However, Kimmerer (2002) pointed out that the decline in delta smelt abundance predates the steep decline in the base food web.

Our Recovery Plan (Service 1996) stated that another complicating factor is the rise in abundance of the diatom *Melosira*, at some times to the point where it is the most abundant species of phytoplankton. This diatom grows in long chains and is very difficult for zooplankton to graze on; thus the change in composition and abundance of zooplankton may also be tied to the increased importance of this diatom. The causes of increase in *Melosira* are not known (Service 1996).

GENETICS

Genetic analyses have confirmed that delta smelt and wakasagi (*Hypomesus nipponensis*) are distinct species with delta smelt more closely related to surf smelt than wakasagi (Stanley et al. 1995; Trenham et al. 1998). While hybridization is possible between delta smelt and wakasagi the threat of introgression at the population level is believed to be low due to the sterility or lack of viability of offspring (Trenham et al. 1998). Interbreeding may cause the loss of valuable gametes of delta smelt and hinder the population from recovering (Moyle 2002, 2003). Swanson et al. (2000) studied the temperature, salinity, and flow tolerances of delta smelt and the non native wakasagi, and concluded that delta smelt may be at a physiological disadvantage to wakasagi, particularly in habitats with suboptimal environmental conditions. They also concluded that the low abundance of wakasagi in the delta recorded to date may indicate that factors other than temperature, salinity, and flow determine wakasagi distribution.

ENVIRONMENTAL FACTORS

Delta smelt are relatively poor swimmers and show lower swimming ability than other sympatric fishes of the Delta (Swanson et al. 2000). Delta smelt are unable to swim against the current for any substantial distance, and therefore are more susceptible to impingement and entrainment at major water diversions than other similar sized fish species (Cech and Swanson 1998; Swanson et al. 1998, 2002b, and 2003; Young et al. 1998, and 2003; and White et al. 1998).

Knowles (2001) reconstruction of seven decades of estuarine fluctuations revealed a long-term trend toward higher May average salinities in Suisun Bay, representing an increase of about 5 practical salinity units (psu) from 1930-present. The long-term rise in May salinity is due primarily to freshwater management in the upstream watershed over the last half-century, which has resulted in the significant reduction of May inflows (Knowles 2001). A progressively earlier snowmelt, as a result of a century-long global warming trend (natural or anthropogenic, or both), is also contributing to the long-term increase in May salinity (Knowles 2001). Simulations of changes in snowpack, streamflow and estuarine salinity projected by combining models of state-of-the-art global climate change, watershed hydrology and estuarine water quality paint a picture

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in Ca?

Models
are no
better
than
their
inputs

95

of the following potential impacts on the Bay Delta system by 2060: a projected average increase of 1.6 ° Celsius (C) in surface air temperatures over the watershed, resulting in the loss of over 1/3rd of the total April snowpack, with the most severe losses occurring in the Cascade and northern Sierra ranges (Knowles 2001). This would increase winter storm runoff and reduce the snowmelt-driven runoff of spring (Knowles 2001). Other climate factors, such as the Pacific Decadal Oscillation, might have played a role in shaping the long-term historical trend (Knowles 2001). Further investigation into such possibilities is needed to better understand the role of long-term climate variability in shaping riparian and estuarine variability (Knowles 2001). Global climate modeling is still an uncertain science (Knowles 2001). While the projections presented here are considered state-of-the-art, considerable uncertainties in the nature of future climate change remain (Knowles 2001). As winter storm runoff increases and snowmelt-driven spring runoff decreases over the coming century, the watershed might lose its ability to generate spring flows (Knowles 2001). The freshwater management infrastructure will likely be unable to mitigate the impacts (Knowles 2001). As a result, the historical long-term rise in May salinity might continue, and in fact accelerate, in the coming decades (Knowles 2001). Managers might need to plan for more salinity intrusion into the Delta, and potential difficulties maintaining X2 standard in Suisun (Knowles 2001).

highly speculative

The importance of exposure to toxic chemicals on the population of delta smelt is highly uncertain. However, recent investigations demonstrate that an integrated application of toxicological and ecological techniques can be useful for evaluating chemical effects on delta smelt. Numerous pesticides were found to occur where post-larval delta smelt were collected in 1998-2000. Examinations of these specimens using the "comet" assay and histopathology indicated that about 10% had fragmented DNA in blood cells, as well as cancerous cells and abnormalities in the organelle structure of livers. These biomarkers can reliably detect exposure and organ damage that can impair reproductive success and survival. Furthermore, the liver biomarkers showed that 30% of the individuals lack glycogen in their livers, whereas those damaged by toxic chemicals also have a variety of other abnormalities. Although the extent of impairment due to toxic exposure appeared minor using these techniques in 1999-2000, the high variability in toxic exposure among years suggests this may not always be the case (Bennett 2003)

historical inaccurately as much as much wrap.

The threats of other natural or manmade factors affecting the delta smelt's continued existence as described in the original listing (Service 1993) remain and will increase. ~~The historical long-term rise in May salinity might continue, and in fact accelerate, in the coming decades, rendering it more difficult for managers to maintain suitable water quality standards for delta smelt.~~ The available information indicates that hybridization with wakasagi is not a threat to delta smelt.

14. Outcome:

14.A. Regarding the species' demographic status, does the species now occupy a significant portion of its former range, and within its current range, is the species demographically stable or improving? If not, what is the outlook for expansion of the species into a significant portion of its former range?

There is some question as to the adequacy of all current sampling programs.

The delta smelt currently occupies its historic range, although its abundance in the south delta is considerably lower (CDFG 2003g). Moyle (2002) stated that the pelagic life style, short life span, spawning habits, and relatively low fecundity indicate that a substantial population is necessary to keep delta smelt from becoming extinct. *but we sometimes have that & sometimes don't & can't determine what variations are due to - poor sample, & enviro*

The two-year running average of the Delta Smelt Recovery Index for 2003, as determined from the FMWT, is the second lowest since the species was listed (Service 2003d). The Summer Tow Net Survey data show an almost complete disappearance of juvenile delta smelt in the south delta sampling stations by the mid-1970s (CDFG 2003g). Moyle (2003), stated that the analysis of 22 years of monthly sampling data from Suisun Marsh shows that the delta smelt have still not recovered to their former abundance, although there has been a general increase in numbers since their low point during a long period of drought (Matern *et al.* 2002)(see appendix B). From these indices, the Service has concluded that the delta smelt abundance has not recovered to its pre-decline (prior to 1982) levels and that the overall trend is negative. *Alternatively San Luis and makes a finding diametrically opposite.*

CDFG (2003g) is concerned that entrainment at the CVP and SWP remains be a major source of population impacts under certain conditions, and that the species will remain threatened in the foreseeable future due in part to water exports. Future increases in water exports could increase the population effects to delta smelt. Moyle (2003) states that the delta smelt will never be out of danger of extinction unless there are permanent and reliable changes made to the flow and temperature regimes that favor the smelt.

14.B. What individual threat(s), if any, could result in the extinction of the species within its currently occupied range? What has been done/is being done to abate these threats?

The threats of the destruction, modification, or curtailment of its habitat or range resulting from extreme outflow conditions (reduced outflow or high outflow) and/or the operations of the State and Federal water projects could result in the extinction of the delta smelt (CDFG 2003g and Moyle 2002, 2003). In addition, any one of the many stochastic factors that affect delta smelt, such as predation, invasive species, change in food organisms, toxic substances, disease, competition, and entrainment losses to water diversions can cause their numbers to spin downward to extinction (Moyle 2002, 2003).

To date no studies have provided information on determining a probability of extinction for the delta smelt. The San Luis & Delta-Mendota Water Authority (2002) submitted to the Secretary of Interior their analysis of population size estimate, population trend and extinction probability for delta smelt. Their analysis was subjected to a peer review by the USGS (2003). The USGS (2003) determined that none of their analysis or assumptions was valid and that their white paper did not constitute new information. Others reviewing their white paper reached the same conclusions as the USGS. (See 9h above)

Moyle (2002) states that it is implicit that the recovery of delta smelt requires the recovery of natural processes in the Sacramento-San Francisco estuary, including outflow. Finding a way to

protect the delta smelt without disrupting water supplies (i.e. CVP and SWP operations), was a major reason for the creation of CALFED. The CALFED process set in motion a number of efforts, described in #9D above, toward recovery of delta smelt, although the effectiveness of these measures remains to be seen.

14.C. What combined threats, if any, could result in the extinction of the species within its currently occupied range? What has been done/is being done to abate these threats?

See #14B above.

14.D. If no single threat or combination of threats threatens the species' existence at this time, what single threat or combination of threats could cause a decline toward endangerment?

See #14B above.

The 5-year review does not indicate a change in classification is warranted.

The 5-year review does indicate a change in classification is warranted.

In summary, the threats of the destruction, modification, or curtailment of its habitat or range resulting from extreme outflow conditions, the operations of the State and Federal water projects, and other water diversions as described in the original listing remain. Although VAMP and EWA have helped to ameliorate these threats, it is unclear how effective these will continue to be over time based on available funding and future demands for water. In addition, there are increased water demands outside the CVP and SWP which could also impact delta smelt. The increases in water demands are likely to result in less suitable rearing conditions for delta smelt in Suisun Marsh, increased vulnerability to entrainment, and less water available for maintaining the position of X2. The importance of exposure to toxic chemicals on the population of delta smelt is highly uncertain. Therefore, a recommendation to delist the delta smelt is inappropriate.

In addition, many potential threats have not been sufficiently studied to determine their effects, such as predation, disease, competition, and hybridization. Therefore, a recommendation of a change in classification to endangered is premature.

In his August 24, 2003, letter, the foremost delta smelt expert, Dr. Peter B. Moyle, stated that the delta smelt should continue to be listed as a threatened species (Moyle 2003). In addition, in their January 23, 2004, letter, the CDFG fully supported that the delta smelt should retain its threatened status under the Act (CDFG 2004).

15. If the outcome to #14 above indicated that a change is warranted, recommend the appropriate classification.

Not Applicable.

16. List all information and data sources used in this review, and file locations if they will not be filed with the review: All listed documents are filed within the Sacramento Fish and Wildlife Office.

A. Peer Reviewed Literature

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- B. Personal Communications, Comment Letters, White Papers, Workshop Summaries, Federal Register Publications, and All Other Information**
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Unknown

From: Julie_MacDonald@ios.doi.gov
Sent: Thursday, April 01, 2004 2:25 PM
To: exblackice@aol.com
Subject: Delta Smelt letter/report/press release.

----- Forwarded by Julie MacDonald/ASFW/OS/DOI on 04/01/2004 02:25 PM -----

Julie MacDonald
 To: Steve Thompson/SAC/R1/FWS/DOI@FWS, Paul Henson/SAC/R1/FWS/DOI, Michael
 Fris/SAC/R1/FWS/DOI@FWS
 04/01/2004 11:27
 AM cc: Craig Manson/ASFW/OS/DOI@DOI, Tom Bauer/ASFW/OS/DOI@DOI
 Subject: Delta Smelt letter/report/press release.

I have copies of the letter and the press release which were provided to Congressional Affairs in Washington DC. Each of these documents makes the statement that delta smelt populations have not recovered and are significantly below historic levels. We have spent the last two days agreeing that we *cannot estimate* delta smelt populations as we do not have the proper data to do so, and yet your letter and the press release categorically state we have this information. In addition we spent hours discussing the fact that the data are inconclusive, we don't know what they show us, and all we know is that the situation is far more complicated than we originally thought in 1993.

We also had explicit conversations about the fact that the review panel was not completely independent and that most of the comments included were biased and did not consider the most recent information we have on the smelt; which is that we have a lot of contradictory information. As a result of those discussions, my understanding was that it would not be necessary to reference the review panel's work. Particularly given the fact that, unlike most peer review processes the authors of the paper were never given a chance to respond to the criticisms leveled at their work. Generally, when a document is peer reviewed, the comments are forwarded to the authors, and they are provided an opportunity to clarify, provide additional information, or defend their approach. This is done to ensure that the final review is based on an accurate understanding of the assumptions and underlying research supporting the work. The review document was completed November 6, 2003 and never transmitted to the authors so that dialogue never took place, in itself a flaw in the review.

Nowhere, in any of the documents I received are those discussions and what I understood our fundamental agreement on the facts reflected. We also had explicit discussions about the shortcomings in all the data sets used to measure population, the fact that 1970 may not be the appropriate benchmark to use in describing the "historic" population (we have NEVER had any population numbers). We agreed that our lack of understanding of smelt population dynamics was what prevented us from managing in a manner that would remove significant threats to the smelt since we don't and haven't been able to understand what and how the various factors interact to affect smelt populations. None of that is reflected in the documents that I have received. We agreed that the Service would acknowledge that both the recovery plan and the listing document were based on flawed data and assumptions but that we did not have sufficient understanding to replace them with any other data or assumptions.

I did not insist on seeing any of the documents because I understood the need for a speedy completion of the documents and I believed that we were in agreement. I believe it is critical to present a fair characterization of our understanding of the smelt to date to the public and to our partners. The documents I have before me do no such thing. They leave the impression there is no uncertainty, that we know populations have declined from historic levels due to climate change and project operations, without the qualification that we don't have any accurate population information nor do we have any understanding of the interactions between the various factors influencing delta hydrology. They leave the impression that an independent panel dismissed the San Luis and Delta Mendota Water Authority's white paper as insubstantial. The truth is that the panel was not independent and there were serious concerns with the process.

5/10/2006

My understanding of our agreements is as follows:

- That the smelt would be listed again today if the Service were to be presented with a petition.
- That the original listing and recovery plan were based on flawed assumptions and data.
- That we do not have and have not ever had any good population estimates.
- That we do not understand how the various factors within the delta affect populations.
- That all of the data we use to estimate populations is flawed.

The Service wrote:

- Delta smelt populations remain at historically low levels.
- That climate change and water projects operations are the cause of the decline.
- That smelt populations are substantially below historic levels.
- That threats identified in the original listing remain.

I believe that the facts represented by the Service in the two documents before me provide an oversimplified and misleading characterization of what is happening and are certainly inconsistent with our discussions. I have asked that the press release be stopped until we have an opportunity to more accurately characterize the finding and its basis.

5/10/2006

Unknown

From: Julie_MacDonald@ios.doi.gov
Sent: Thursday, April 01, 2004 2:14 PM
To: molrose22@yahoo.com
Subject: Delta Smelt letter/report/press release.

----- Forwarded by Julie MacDonald/ASFW/OS/DOI on 04/01/2004 02:13 PM -----

Julie MacDonald **To:** Steve Thompson/SAC/R1/FWS/DOI@FWS, Paul Henson/SAC/R1/FWS/DOI, Michael
 Frie/SAC/R1/FWS/DOI@FWS
 04/01/2004 11:27 **cc:** Craig Manson/ASFW/OS/DOI@DOI, Tom Bauer/ASFW/OS/DOI@DOI
 AM **Subject:** Delta Smelt letter/report/press release.

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5/10/2006

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5/10/2006



United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240

July 7, 2004

Mr. George Gomes
Administrator
California Farm Bureau Federation
2300 River Plaza Drive
Sacramento, CA 95833

Dear Mr. Gomes:

On April 16, 2004, in a letter addressed to Julie MacDonald, Special Assistant to the Assistant Secretary of Fish, Wildlife and Parks, you filed a Freedom of Information Act (FOIA) request seeking the following records:

1. The April 1, 2004 e-mail sent from Ms. Julie MacDonald to Mr. Steve Thompson, Mr. Paul Henson, and Mr. Mike Fris and copied to Mr. Craig Manson and Mr. Tom Bauer. The subject line of this e-mail reads "Delta Smelt letter/report/press release."
2. Any and all responses to this e-mail, including but not limited to, records of telephone conversations and file notes wherein the above referenced e-mail was discussed.

On May 3, 2004 the FOIA contact for the Office of the Assistant Secretary for Fish, Wildlife and Parks received your request, who in turn forwarded your request to our office. We received your request on May 4, 2004, and assigned it control number OS-2004-00343. Please cite this number in any future correspondence or communications with the Office of the Secretary regarding your request.

With respect to your request:

1. You mailed your letter to Julie MacDonald, the Special Assistant to the Assistant Secretary of Fish, Wildlife and Parks. As noted in the Department's FOIA regulations at 43 CFR § 2.10(b), a FOIA request should be submitted to the FOIA contact at the bureau or office where you believe the records are maintained. Sending a letter to someone other than a designated FOIA contact delays its processing because it must be transferred to the appropriate FOIA contact.

A list of bureau FOIA Officers and Coordinators is posted on our website at www.doi.gov. If you are looking for records maintained by any portion of the Office of the Secretary, including the Secretary's Immediate Office and all of the Departmental policy offices, please mail your requests to the Office of the Secretary FOIA office, at the address provided in the closing paragraph of this letter. If you are uncertain as to which bureau maintains the records you are seeking, please call me on 202-208-6045 and I will assist you in determining where to send your FOIA request.

- 2. The Office of the Secretary is acknowledging your request and responding to your request for a fee waiver on behalf of the Department.
- 3. Response to Request
 - a. Enclosed you will find documents responsive to your request totaling 7 pages.
 - b. Pursuant to 5 U.S.C. § 552 (b)(5) and (b)(6), some information was withheld. Redactions will be clearly marked and identified.
 - c. Also, pursuant to 5 U.S.C. § 552 (b)(5), 3 attachments that were referenced in the released e-mails are being withheld in their entirety. A total of 166 pages have been withheld in full.

4. Exemption 5 Withholdings

The redacted portions were withheld pursuant to Exemption 5 of the FOIA (5 U.S.C. § 552 (b)(5)), and consisted of thoughts, impressions, analysis and commentary between and among high-level officials working for the Assistant Secretary for Fish and Wildlife and Parks. The withheld attachments are draft documents that were prepared before the final document, and were used in the deliberations regarding a final policy. Therefore, they are predecisional and deliberative, and are properly withheld under exemption 5.

Exemption 5 allows an agency to withhold "inter-agency or intra-agency memorandums or letters which would not be available by law to a party . . . in litigation with the agency."(5 U.S.C. § 552 (b)(5)). (See enclosed Explanation of Withholding under Exemption 5)

5. Exemption 6 Withholdings

Deleted from the responsive documents, pursuant to Exemption 6 of the FOIA (5 U.S.C. § 552 (b)(6)), is information of a personal nature pertaining to individuals named in the record. Exemption 6 allows an agency to withhold "personnel and medical files and similar files the disclosure of which would constitute a clearly unwarranted invasion of personal privacy." We have determined that release of the information that we have withheld would constitute a clearly unwarranted invasion of the privacy of these individuals, and that it therefore may be withheld, pursuant to Exemption 6. (See enclosed Explanation of Withholding under Exemption 6)

Donald Harris, Attorney-Advisor with the Office of the Solicitor, was consulted in reaching this decision. Sue Ellen Sloca, Office of the Secretary FOIA Officer, is responsible for making this decision.

6. Appeal Rights

If you believe that the decision to withhold this information is incorrect, you may file a FOIA appeal by writing to the FOIA Appeals Officer, U.S. Department of the Interior, 1849 C Street, NW, Mail Stop 5312, MIB, Washington, D.C. 20240. Your appeal letter must be received no later than 30 calendar days (excluding Saturdays, Sundays and legal holidays) after the date of our response (this letter). Your appeal letter must be marked, both on its envelope and at the top of its first page, with the legend "FREEDOM OF INFORMATION APPEAL." Your appeal letter must be accompanied by a copy of your original FOIA request (a copy of which is enclosed with our response, for your convenience) and a copy of this letter, along with a brief explanation of why you believe that this decision is in error.

7. FOIA Fees Incurred/Charged

The FOIA fee for the processing of your requests within the Office of the Secretary is \$9.01, calculated as follows:

1/4 hour of professional search time	@	\$ 8.10 per 1/4 hour
7 pages photocopied	@	\$0.13 per page

However, insofar as we have classed your request as an "other-use" request, and have determined that you are entitled to receive 2 hours of search time and 100 pages of photocopying without charge before you can be asked to pay a portion of the fees incurred in the processing of your request, your fee has been waived because the Department of the Interior does not bill requesters for FOIA fees

incurred in processing "other-use requests" when their fees do not exceed \$30.00, after the subtraction of their entitlements, because the cost of collection would be greater than the fee collected. This does not mean that we have determined that you have met the legal criteria for a fee waiver.

This completes our response to your request.

If you have any questions regarding the issues discussed in this letter, you may contact me by phone at (202) 208-6045, by fax at (202) 219-2374, by e-mail at osfoia@nbc.gov, or by mail at U.S. Department of the Interior, MS 1413 MIB, Washington, D.C. 20240. Within the Office of the Secretary, we are committed to providing you, our customer, with the highest quality of service possible.

Sincerely,

Sue Ellen Sloca
Office of the Secretary
FOIA Officer

Enclosures

PRIVACY ACT notice: Before you choose to contact us, electronically, there are a few things you should know. The information you submit, including your electronic address, may be seen by various people. We will scan a copy of your request into our electronic OS FOIA administrative/image file. We will key the information that you provide to us into our electronic OS FOIA tracking file. We may share it with other individuals, both within and without the Department, involved in Freedom of Information Act administration. You may be contacted by any of these individuals, in other limited circumstances, including requests from Congress or private individuals, we may be required by law to disclose some of the information you submit. Also, e-mail is not necessarily secure against interception. If your communication is very sensitive, or includes personal information like your bank account, charge card, or social security number, you might want to send it by postal mail, instead.

Unknown

From: Julie_MacDonald@ios.doi.gov
Sent: Monday, March 31, 2003 12:31 PM
To: kcbl@chevrontexaco.com; pnet@chevrontexaco.net
Subject: [Virus checked]

Attachments: review copy.wpd



review copy.wpd
(524 KB)

(See attached file: review copy.wpd)

Unknown

From: Findaro, Joe [Joe@mgninc.com]
Sent: Friday, October 04, 2002 2:25 PM
To: Julie Macdonald (E-mail)
Cc: Findaro, Joe
Subject: FW: OMB Guidelines re: Daubert [Watchdog: Virus checked] [Watchdog:Virus checked]

Attachments: OMB Proposed Guidelines Fed Reg 6-28-01.pdf; OMB Fed Reg Notice Part 1 09-28-01.pdf;
OMB Fed Reg Notice Part 2 02-22-02.pdf



OMB Proposed Guidelines Fed Re...Notice Part 1 09-2...
OMB Fed Reg Notice Part 2 02-2...
OMB Fed Reg Notice Part 2 02-2...

Julie, first of all great to see you wed. Jean thinks you are great (as does anyone I introduce you to).
two things:

- (1) can you check to see what FWS (and NMFS - if you have contacts there) has done with the OMB guidelines (attached)?
- (2) We understand Judge manson is in SF Oct 22. Two calif farm bureau reps (Chris Buckley, Ronda Lucas) would like to meet with him privately regarding "arizona cattlegrowers v. U.S. FWS" (273 F 3rd 1229, decided Dec 2001, 9th Circuit - Court stated that the burden of proving whether a species exists in an area is statutorily imposed. If FWS is imposing land use restrictions without actual proof of endangered species on the land - in violation of the law.)

We are concerned about FWS land use restrictions without proof of a species on property. The specific listing of concern is the "sonoma county distinct population segment of the Calif. Tiger Salamander."

I'm in ariz/montana mon-thurs. if you have any feedback on these two, could you leave a voice mail on my office line 742-4296? could also try my cell (215-5665), but likely in the field and may not receive well.

THANKS.

-----Original Message-----
From: Lucas Ronda [mailto:rlucas@CFBF.com]
Sent: Friday, October 04, 2002 1:09 PM
To: Joe Findaro (E-mail)
Cc: Sheehan Rebecca; Nance Chris
Subject: OMB Guidelines re: Daubert

Joe,
Here are all the Federal Register notices that provide the evolution of the OMB guidelines. I am faxing you the additional information that Chris Nance located on OMB's website. According to the Fed. Reg. notice, agencies were supposed to develop their own guidelines, and these agency specific guidelines were to become effective on October 1, 2002.

<<OMB Proposed Guidelines Fed Reg 6-28-01.pdf>> <<OMB Fed Reg Notice Part 1 09-28-01.pdf>>
<<OMB Fed Reg Notice Part 2 02-22-02.pdf>>

Thanks for your help!

Ronda Azevedo Lucas
Litigation Specialist

Natural Resources and Environmental Division California Farm Bureau Federation
(916) 561-5666
Fax: (916) 561-5691
rlucas@cbbf.com

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This message may contain confidential and privileged information. If it has been sent to
you in error, please reply to advise the sender of the error and then immediately delete
this message.

(See attached file: OMB Proposed Guidelines Fed Reg 6-28-01.pdf) (See attached file: OMB
Fed Reg Notice Part 1 09-28-01.pdf) (See attached file: OMB Fed Reg Notice Part 2
02-22-02.pdf)

Unknown

From: Findaro, Joe [Joe@mgninc.com]
Sent: Thursday, October 17, 2002 10:47 AM
To: 'Julie_MacDonald@ios.doi.gov'
Subject: RE: Farm Bureau and Judge Manson

I'll call Patty. great to see you yesterday. THANKS

-----Original Message-----

From: Julie_MacDonald@ios.doi.gov [mailto:Julie_MacDonald@ios.doi.gov]
Sent: Thursday, October 17, 2002 10:40 AM
To: Findaro, Joe
Cc: Patty_Myatt@ios.doi.gov
Subject: Farm Bureau and Judge Manson

Richard is out, and Patty Myatt will be handling the scheduling for this trip. The judge has time after his speech which ends at 1:45. He would like to meet as soon as possible after that time since he has other commitments later in the afternoon. We're sort of playing catchup as Richard is not here, and has been out for the past couple of days ... please give Patty a call at 208 5378 to confirm and get dates and times ... thank you!!

Also, I'll be contacting you re: the OMB guidelines later this afternoon assuming I catch Jim.

Unknown

From: Joe Findaro [jfindaro@katzlaw.com]
Sent: Tuesday, September 30, 2003 3:41 PM
To: Julie Macdonald (E-mail)
Subject: funding delta smelt review

julie,

with respect to the FY 04 appropriations/budget - any issue regarding the funding for the Fish and Wildlife Service to do the 5 year delta smelt review? where would the money come from?

thanks

joe

Unknown

From: Joe Findaro [joef@katzlaw.com]
Sent: Thursday, December 04, 2003 3:38 PM
To: Julie Macdonald
Subject: bugging you

delta smelt 5 year funding?

121

Unknown

From: Julie_MacDonald@ios.doi.gov
Sent: Friday, December 05, 2003 3:49 PM
To: Denise_Sheehan@fws.gov
Cc: Clint_Riley@fws.gov; Patrick_Joos@fws.gov; Stephen_Guertin@fws.gov;
Steve_Thompson@fws.gov
Subject: Re: Delta Smelt 5-year Review

Many thank yous!

Denise Sheehan@FWS

12/05/03 02:57 PM **To:** Julie MacDonald/ASFW/OS/DOI@DOI, Stephen Guertin/ARL/R9/FWS/DOI@FWS, Patrick Joos@fws.gov
cc: Clint Riley/ARL/R9/FWS/DOI@FWS, Steve Thompson/SAC/R1/FWS/DOI@FWS
Subject: Re: Delta Smelt 5-year Review [Link](#)

Julie--
We'll get back to you asap.
Denise

Julie MacDonald@DOI

12/05/2003 02:03 PM **To:** Clint Riley/ARL/R9/FWS/DOI@FWS, Steve Thompson/SAC/R1/FWS/DOI@FWS
cc: Denise Sheehan/ARL/R9/FWS/DOI@FWS
Subject: Delta Smelt 5-year Review

Where is the funding for this and how much is it? thank you.

7/21/2006

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

CALIFORNIA FARM BUREAU
FEDERATION, a California non-profit
corporation; TED SHEELY, an individual
farmer,

Plaintiffs,

vs.

ANNE BADGLEY, in her official capacity as
Regional Director of the United States Fish and
Wildlife Service, Region 1; *et al.*,

Defendants,

and,

NATURAL RESOURCES DEFENSE
COUNCIL, *et al.*,

Intervenor-Defendants.

Case No. 1:02CV02328 RCL ECF

DECLARATION OF BRENDA JAHNS SOUTHWICK IN SUPPORT OF
PLAINTIFFS' MOTION FOR LEAVE TO FILE
FIRST SUPPLEMENTAL COMPLAINT

I, Brenda Jahns Southwick, declare as follows:

1. I am Managing Counsel of the California Farm Bureau Federation (hereinafter "Farm Bureau") Natural Resources and Environmental Division. The Farm Bureau's purpose is to protect and improve the ability of farmers and ranchers engaged in production agriculture to provide a reliable food and fiber supply through responsible stewardship of California's resources. Its members consist of 53 county farm bureaus and, through them, more than 89,000 farm families and individual members, including over 20,000 members within the Central Valley counties. The following facts are within my personal knowledge, and if called and sworn as a witness, I could and would testify competently thereto. I declare the following:

2. March 31, 2004 was the due date for the completion of the delta smelt five year status review ("Status Review") per the Court's March 19, 2004 order amending ¶ 1(b) of the Stipulation and Settlement Agreement into which Plaintiffs and Defendants entered on April 25, 2003.

3. On March 31, 2004, at approximately 11:00 a.m. PST, Farm Bureau Associate Counsel Ronda Azevedo Lucas forwarded to me a voicemail message that she had received from Mike Fris, Program Manager of Ecological Services, California/Nevada Operations Office, United States Fish and Wildlife Service ("Service"). Mr. Fris conveyed the message that Bill Pauli, President of the Farm Bureau, would receive a telephone call regarding the Status Review that afternoon between 3:00 p.m. and 5:00 p.m. from Steve Thompson, Manager of the Service's California/Nevada Operations Office.

4. On March 31, 2004, at approximately 1:00 p.m. PST, I received a telephone call from Julie A. MacDonald, Deputy Assistant Secretary of Fish, Wildlife and Parks, U.S. Department of

the Interior. Ms. MacDonald inquired whether Mr. Thompson had contacted Mr. Pauli or me regarding the Status Review. I informed Ms. MacDonald that Mr. Thompson had not yet contacted me or, to my knowledge, Mr. Pauli.

5. On March 31, 2004, at approximately 5:00 p.m. PST, I personally spoke by telephone with Mr. Thompson, Mr. Fris, and Mr. Daniel G. Nelson, Executive Director, San Luis and Delta-Mendota Water Authority, regarding the Status Review. During this telephone conversation, Mr. Thompson discussed the Status Review and told us the delta smelt would remain listed as threatened. After approximately 20 minutes of conversation, I informed the other participants in the call that I would reserve comment on the Status Review until I had received a written copy of it. Mr. Thompson said the Service would send a cover letter from him to Mr. Pauli and Mr. Nelson via facsimile, and then send the entire Status Review via overnight mail.

6. On April 1, 2004, at approximately 9:00 a.m. PST, I received a telephone call from Ms. MacDonald regarding problems with the Status Review and inconsistencies between representations that had been made by the Service in Department of the Interior meetings she had attended prior to March 31, 2004 and what had been published in the Status Review on that date. Ms. MacDonald read to me the contents of an e-mail that she told me she had sent to Mr. Thompson. This e-mail discussed the differences between representations made in the above meetings and the Status Review issued by Mr. Thompson's office.

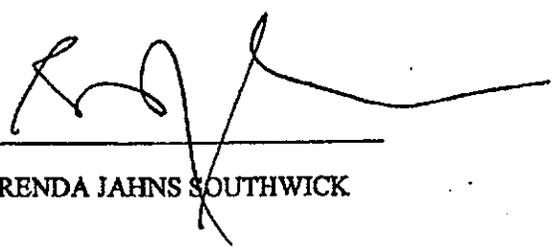
7. On April 1, 2004, at approximately 5:00 p.m. PST, I again spoke with Ms. MacDonald, and requested a copy of the e-mail she had read to me earlier in the day. I told her I would ask Mr. Joe Findaro, the Farm Bureau's Washington, D.C. representative on

administrative and legislative matters, to pick up a copy of the e-mail from her office and send it to me for review. I then called Mr. Findaro and left a message for him to return my call.

8. On April 2, 2004, at approximately 9:00 a.m. PST, Mr. Findaro returned my call to say that he would go to Ms. MacDonald's office to pick up a copy of the above e-mail from Ms. MacDonald, and that he would then send it to me via facsimile.

9. On April 2, 2004, at approximately 10:30 a.m. PST, I received a copy of the above e-mail via facsimile from Mr. Findaro. A true and correct copy of that document, dated April 1, 2004, is attached hereto as Exhibit "A". I declare under penalty of perjury that the foregoing is true and correct.

Executed on May 17, 2004



BRENDA JAHNS SOUTHWICK

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

CALIFORNIA FARM BUREAU
FEDERATION, a California non-profit
corporation; TED SHEELY, an individual
farmer,

Plaintiffs,

vs.

ANNE BADGLEY, in her official capacity as
Regional Director of the United States Fish and
Wildlife Service, Region 1; *et al.*,

Defendants,

and,

NATURAL RESOURCES DEFENSE
COUNCIL, *et al.*,

Intervenor-Defendants.

Case No. 1:02CV02328 RCL ECF

DECLARATION OF JOE FINDARO IN SUPPORT OF
PLAINTIFFS' MOTION FOR LEAVE TO FILE
FIRST SUPPLEMENTAL COMPLAINT

I, Joe Findaro, declare as follows:

1. I am an attorney with the law firm Akerman Senterfitt in Washington, D.C. I am the California Farm Bureau Federation's ("Farm Bureau") Washington, D.C. representative on administrative and legislative matters. The following facts are within my personal knowledge, and if called and sworn as a witness, I could and would testify competently thereto. I declare the following:

2. On the evening of April 1, 2004, I received a voicemail message from Ms. Brenda Jahns Southwick, Farm Bureau's in-house counsel primarily responsible for the representation of the Plaintiff, Farm Bureau, requesting that I return her phone call.

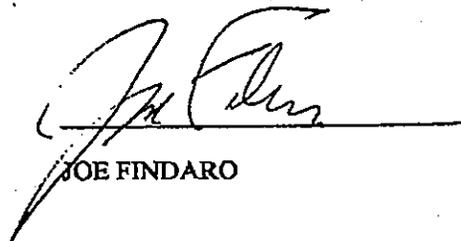
3. On April 2, 2004, at approximately 12:00 p.m. EST, I returned Ms. Southwick's phone call. She requested that I go to Julie A. MacDonald's office, Deputy Assistant Secretary of Fish, Wildlife and Parks, U.S. Department of the Interior, and pick up the e-mail that Ms. MacDonald had sent to Steve Thompson, Manager, California/Nevada Operations Office, United States Fish and Wildlife Service. This e-mail discussed the differences between representations made to her and the final delta smelt five year status review issued by Mr. Thompson. I agreed to send the e-mail to Ms. Southwick via facsimile upon receipt.

4. Shortly after ending my telephone call with Ms. Southwick, I went to Ms. MacDonald's office and retrieved a printed copy of the e-mail Ms. MacDonald had sent to Mr. Thompson. After retrieving the e-mail, I returned to my office.

5. On April 2, 2004, at approximately 1:30 a.m. EST, I sent the e-mail via facsimile to Ms. Southwick. A true and correct copy of the e-mail, dated April 1, 2004, is attached to Ms.

Southwick's declaration as Exhibit "A". I declare under penalty of perjury that the foregoing is true and correct.

Executed on May 13, 2004



Handwritten signature of Joe Findaro, written in black ink over a horizontal line.

JOE FINDARO

Unknown

From: Findaro, Joe [Joe@mgninc.com]
Sent: Thursday, October 24, 2002 2:50 PM
To: 'Julie_MacDonald@ios.doi.gov'
Subject: RE: calif farm bureau

great!!

-----Original Message-----

From: Julie_MacDonald@ios.doi.gov [mailto:Julie_MacDonald@ios.doi.gov]
Sent: Wednesday, October 23, 2002 3:59 PM
To: Findaro, Joe
Subject: Re: calif farm bureau

why thank you! he is also following up on the "potential range" issue.

"Findaro, Joe"
<Joe@mgninc.com> To: Julie
MacDonald/ASFW/OS/DOI@DOI cc:
10/23/02 02:27 PM Subject: calif farm bureau

brief report from the farm bureau - meeting went very well. they were particularly impressed with how versed Judge Manson was on the issue they wanted to cover. you are such a pleasure to work with.

Unknown

From: Julie_MacDonald/ASFW/OS/DOI%TAPEPROCESS%PS
Sent: Wednesday, November 13, 2002 5:09 PM
To: Findaro, Joe
Subject: Re: Farm Bureau

I got Brenda's invitation. I need to talk to Craig about his schedule that week, I would really love to do it, and would be happy to speak if they would like me to...it's up to them... but I really need to check with Craig because he may not want me gone then ... lots going on with critical habitat and pesticides.

Checking with Steve Thompson to get an up-to-the-minute report on the Delta Smelt Working group ...

"Findaro, Joe"
<Joe@mgninc.com> To: Julie MacDonald/ASFW/OS/DOI@DOI
11/13/02 04:45 PM CC:
Subject: Farm Bureau

Brenda Southwick from the California Farm Bureau wants to invite youi to the annual meeting in Monterey Dec 9, 10 and 11. You could do a meeting or be a speaker. Are you interested?

Also, will be making a request for Bill Pauli to meet with Judge Manson on Dec 17 or 18. I the judge in town then? I will call Richard.

finally, delta smelt status of working group?

Unknown

From: Julie_MacDonald/ASFW/OS/DOI%TAPEPROCESS%PS
Sent: Monday, November 18, 2002 6:22 PM
To: Findaro, Joe
Subject: Re: CFB

You should be hearing from Richard on the meeting soon, I'm pretty sure it got scheduled today.

I will be gone the week of Thanksgiving, so we probly can't do lunch until after Thanksgiving.

I will be calling Brenda Southwick to thank her for the Farm Bureau's invitation and accept. I'll need to get a sense from them what they want me to talk about if anything.

Hope you have a great week!

132

Unknown

From: Julie MacDonald/ASFW/OS/DOI%TAPEPROCESS%PS
Sent: Wednesday, December 04, 2002 3:59 PM
To: craig_Manson%TAPEPROCESS%PS
Subject: update

I think this would be a way that I could meet with the farm bureau folks and not be too long away from the office, would this work for you? Apparently they would really really like for me to be there, and they suggested this as a way to minimize the time out of the office. If it's ok with you, I will schedule travel on sunday and return first thing monday morning.

----- Forwarded by Julie MacDonald/ASFW/OS/DOI on 12/04/02 03:57 PM -----

"Findaro, Joe"
<Joe@mgninc.com> To: Julie MacDonald/ASFW/OS/DOI@DOI
cc:
12/04/02 03:02 PM Subject: update

also left voice mail

latest from farm bureau -- could you be at dinner with us 6 pm doubletree, monterey, sunday dec 8. could talk informally with members sunday night.

may not need you to be there monday morning. we could do our business sunday night.

call on my cell any time 215-5665.

sorry for this state of flux.

Unknown

From: Julie_MacDonald/ASFW/OS/DOI%TAPEPROCESS%PS
Sent: Wednesday, March 26, 2003 11:28 AM
To: Joe Findaro
Subject: RE: update

Yes!! It's great, going to try to take a walk at lunch...

"Joe Findaro"
<jfindaro@katzlaw.com>
03/26/03 10:50 AM
To: Julie MacDonald/ASFW/OS/DOI@DOI
cc:
Subject: RE: update

thx. at least we have calif weather for you today

-----Original Message-----

From: Julie_MacDonald@ios.doi.gov [mailto:Julie_MacDonald@ios.doi.gov]
Sent: Wednesday, March 26, 2003 9:41 AM
To: Joe Findaro
Subject: Re: update

I am not sure, just got back from California today... I'll check. I'll check with Richard on Ann as well.

MacDonald/ASFW/OS/DOI@DOI
"Joe Findaro"
<jfindaro@katzlaw.com>
03/20/03 12:03 PM
To: Julie
cc:
Subject: update

lunch April 2 with farm bureau and Judge Manson. I asked Richard W if he could include Ann Klee.

what is the Interior view on S. 369 (the Thomas ESA bill)? formal or informal?

Unknown

From: Joe Findaro [jfindaro@katzlaw.com]
Sent: Monday, June 16, 2003 9:51 AM
To: Julie_MacDonald@ios.doi.gov
Subject: RE: calif farm bureau

didn't I send you another email, 10 am they'd like to meet at their office. if you need to coordinate more directly, suggest you contact becky sheehan (or Brenda Southwick or Ronda Lucas) at 916-561-5660. concur on the lunch, as usual!

-----Original Message-----

From: Julie_MacDonald@ios.doi.gov (mailto:Julie_MacDonald@ios.doi.gov)
Sent: Monday, June 16, 2003 9:33 AM
To: Joe Findaro
Subject: Re: calif farm bureau

10am works best for me. Thanks you. Lunch was fun and delicious!!

"Joe Findaro"
<jfindaro@katzlaw
MacDonald/ASFW/OS/DOI@DOI
.com>
06/12/03 03:27 PM
To: Julie
cc:
Subject: calif farm bureau

On for lunch tomorrow , 11:30 am capitol grill

Calif Farm Bureau (Becky Sheehan, Ronda Lucas) would like to meet with you Friday June 20 either 10 am or 1 pm for an hour.

2d floor, 2300 River Plaza Dr, 916-561-5660

let me know what time works best for you. you can let me know fri. thanks.

Unknown

From: Joe Findaro [joef@katzlaw.com]
Sent: Friday, February 06, 2004 2:22 PM
To: Julie_MacDonald@ios.doi.gov
Subject: RE: energy and water monies

OK

-----Original Message-----

From: Julie_MacDonald@ios.doi.gov [mailto:Julie_MacDonald@ios.doi.gov]
Sent: Friday, February 06, 2004 11:09 AM
To: Joe Findaro
Subject: Re: energy and water monies

I think we are good on money.

"Joe Findaro"
<joef@katzlaw.com To: Julie
MacDonald/ASFW/OS/DOI@DOI cc:
> Subject: energy and water monies
02/06/04 10:34 AM

should we try to get some money through doolittle for delta smelt work, energy and water approps? or do you want to keep it on the Interior approps side? please advise.

Unknown

From: Julie_MacDonald@ios.doi.gov
Sent: Friday, February 06, 2004 11:09 AM
To: Joe Findaro
Subject: Re: energy and water monies

I think we are good on money.

"Joe Findaro"
<joeff@katzlaw.com
>
02/06/04 10:34 AM

To: Julie MacDonald/ASFW/OS/DOI@DOI
cc:
Subject: energy and water monies

should we try to get some money through doolittle for delta smelt work, energy and water approps? or do you want to keep it on the Interior approps side? please advise.

Unknown

From: Joe Findaro [joef@katzlaw.com]
Sent: Friday, February 06, 2004 10:35 AM
To: Julie Macdonald
Subject: energy and water monies

should we try to get some money through doolittle for delta smelt work, energy and water approps? or do you want to keep it on the Interior approps side? please advise.

Unknown

From: Julie_MacDonald@ios.doi.gov
Sent: Thursday, February 03, 2005 8:20 AM
To: Findaro, Joe
Subject: Re: snowshoe

yes, just waiting for a ride now))

"Findaro, Joe"
 <Joe.Findaro@akerman.com>
 02/03/2005 08:13 AM

To: Julie MacDonald/ASFW/OS/DOI@DOI
cc:
Subject: Re: snowshoe

You are welcome. Are you coming over with craig to the white house to meet with the calif farm bureau this am?

 Sent from my BlackBerry Wireless Handheld

-----Original Message-----

From: Julie_MacDonald@ios.doi.gov <Julie_MacDonald@ios.doi.gov>
To: Findaro, Joe <Joe.Findaro@akerman.com>
Sent: Thu Feb 03 08:12:32 2005
Subject: Re: snowshoe

I will be in California that week, but thankyou.

"Findaro, Joe"
 <Joe.Findaro@akerman.com>
 MacDonald/ASFW/OS/DOI@DOI
 02/02/2005 03:29 PM

To: Julie
cc:
Subject: Re: snowshoe

Will stay in contact with her. Thx. Any interest in going to snowshoe

presidents week? Some congressional staffers may come down

Sent from my BlackBerry Wireless Handheld

-----Original Message-----

From: Julie MacDonald@ios.doi.gov <Julie_MacDonald@ios.doi.gov>
To: Findaro, Joe <Joe.Findaro@akerman.com>
CC: Dajuana Blackmon@ios.doi.gov <Dajuana_Blackmon@ios.doi.gov>
Sent: Wed Feb 02 14:21:13 2005
Subject: Re: snowshoe

Think all are working on it, I'm happy to do whatever works with people's schedules... so just work with Dajuana she can make magic!

"Findaro, Joe"

MacDonald/ASFW/OS/DOI@DOI <Joe.Findaro@akerman.com> To: Julie
cc:
Subject: snowshoe

02/02/2005 01:29

PM

just spoke to dajuana

mike t here tomorrow to meet with clint.

i thought maybe we could all try to meet this week, but i understand you are not free until 4 pm fri.

an idea: if mike t. can not be here on tues feb 8 (we have an 11 am time block with you), possibility to do the meeting fri at 4 pm with both mike and clint in the room at the same time with you, presuming mike t could stay here?

anyway, dajuana trying to get in contact with clint and mike, and will get back to me.

THANKS. joe

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Unknown

From: Dajuana_Blackmon@ios.doi.gov
Sent: Wednesday, September 21, 2005 9:05 AM
To: Julie_MacDonald@ios.doi.gov
Subject: Re: Joe Findaro

Okay, I will tell him. Thanks.

Dajuana Blackmon
Office of A/S FWP
202-208-3928 (main)
202-208-1381 (direct dial)
e-mail: Dajuana_Blackmon@ios.doi.gov

Julie MacDonald
09/21/2005 08:53
AM

To: Dajuana Blackmon/ASFW/OS/DOI@DOI
cc:
Subject: Re: Joe Findaro(Document link:

Dajuana Blackmon)

I'll stop at Cosi, that will give me a chance to get some food.

Dajuana Blackmon
09/21/2005 07:23
AM

To: Julie MacDonald/ASFW/OS/DOI@DOI
cc:
Subject: Joe Findaro

Julie,
Got a call from Joe Findaro and he wanted to know could he meet with you on Thursday. I told him that you would be out of the building at Jackson Place until 1pm. He wanted to know on your way back could you meet him at Cosi, on Penn Ave. If not he could come on over to the office. But he thought it would be nice to talk out of the office. He has 2 people from the Farm Bureau that would like to meet w/you. He said he had mentioned this to you when he was here the other day. Let me know how you would like for me to handle this. Thanks

Dajuana Blackmon
Office of A/S FWP
202-208-3928 (main)
202-208-1381 (direct dial)
e-mail: Dajuana_Blackmon@ios.doi.gov

Unknown

From: Julie_MacDonald@ios.doi.gov
Sent: Tuesday, April 01, 2003 10:41 AM
To: pnetsch@chevrontexaco.com
Subject: [Virus checked]

Attachments: review copy.wpd



review copy.wpd
(524 KB)

(See attached file: review copy.wpd)

From: Julie_MacDonald@ios.doi.gov
Sent: Thursday, September 16, 2004 6:45 PM
To: Elizabeth_Stevens@fws.gov; Marshall_Jones@fws.gov; Clint_Riley@fws.gov;
Theresa_Rabot@fws.gov; Paul_Henson/SAC/R1/FWS/DOI%fws@Zantaz-NBC.com;
Jana_Grote@r1.fws.gov; David_b_Allen@fws.gov
Subject: Bull Trout Critical Habitat.

Everyone:

Following are the exclusions and a brief description of them, I will have verbiage to go into the rule tomorrow.

1. Exclude the Federal Columbia River Power System in its entirety based on Sections 3(5)(a) and 4(b)(2). The system is currently governed by multiple laws providing for the protection of fish and wildlife as well as being the subject of numerous collaborative efforts. The system is currently adequately managed to protect bull trout and their habitat (Section 3(5)(a)) of the Act. In addition, the benefit of implementing an additional regulatory control in the shape of a critical habitat designation will add no additional protection beyond that which is currently afforded by the existing statutory controls, the benefit of avoiding additional transactions costs which would be imposed by a critical habitat designation exceeds the benefit to the species of designation of the critical habitat.
2. Exclude the State of Idaho's Conservation Plan under Section 4(b)(2). The Secretary of the Interior has agreed with the State to cooperate in managing habitat in Idaho on timber lands. The state's plan provides for conservation benefits on all lands and thus provides benefits beyond those afforded by a critical habitat designation which would only have a regulatory effect if a federal nexus existed.
3. Exclude all reservoirs under Section 4(b)(2). The Service agrees that reservoirs provide marginal benefits to bull trout. The benefit of excluding reservoirs is in cost avoidance and avoidance of significant social and economic (beyond direct costs) upheaval. The proposed designation would designate full reservoirs as critical habitat, arguably, this designation could result in the inability of cities and water operators to draw down the reservoirs in order to consume the water. In addition, reservoirs with flood control storage could be prevented from spilling water in order to preserve critical habitat as designated, this in turn could result in dam failure and/or flooding later in the flood control season, significantly compromising health and safety of the public. The benefit of excluding this habitat is in avoiding the risk of catastrophic flooding and potential loss of life, and exceeds the marginal benefit of designating critical habitat.
4. Exclude the Willamette Valley and the Malheur River basin under 4(b)(2). The Willamette has the highest cost per river mile and 23% or the designated reaches are unoccupied or of unknown occupancy. The benefit of the designation (non-existent or unknown) exceeds the benefit of exclusion. Exclude the Malheur River Basin which is the second most costly unit per river mile and much of it requires restoration or is unoccupied (Bosonberg Creek, Corral Basin Creek, and Little Malheur River). The benefit of including it (non-existent or speculative) exceeds the benefit of excluding it (second most costly designation per river mile).
5. Exclude the reaches within the boundaries of the Northwest Forest Plan under Section 3(5)(a) and 4(b)(2). The plan currently provides for the management of land and water within the boundaries in a manner that protects bull trout. Designation of critical habitat will have no measureable benefit since the plan already protects bull trout habitat. Exclusion of this area will avoid the transactions costs associated with duplicative regulation. Therefore, the benefits of exclusion exceed the benefits of designation.

6. Excise all unoccupied and known occupancy designations. In the absence of evidence to the contrary, we must assume unknown occupancy is unoccupied as we have no data to show occupancy. The Secretary may only designate unoccupied habitat where she finds that the habitat is essential to the conservation of the species. The Service has not provided a rangewide species analysis outlining why the habitat designated is essential to the conservation of the species. The document provided to this office provides little analysis in general, simply stating the reaches are "essential to the conservation". This is insufficient for the Secretary to make a determination that the unoccupied habitat is essential to the conservation.

7. Excise all designations of critical habitat where the PCEs do not currently exist. For example, the Clark Fork River between Missoula and Butte is designated as critical habitat despite the fact that it is currently a superfund site due to leaching of mining waste. The same is true for the contamination Middle Fork of the Boise River near Atlanta Dam. Mere presence of some of the PCEs (water) is not sufficient to justify designation, the PCEs must be present in adequate quantity and the conditions must be such that the fish can actually carry out normal functions. Speculative future PCEs or habitat is not appropriate for designation.

8. Excise all critical habitat included on the basis of connectivity where the connections proposed are predicated on removal of barriers that would provide access to competing fish species (such as brook, rainbow, or lake trout). I have received emails from the Service indicating that where connection of stream reaches might permit access of competitor fish, the Service would evaluate those connections on a case by case basis. If the FWS is unable to definitively answer the question of whether the connection will actually be beneficial to bull trout, the designation of the area is not justified as essential.

9. Please conform the designations to the temperature range included in the PCEs. We cite a very narrow band of temperature for bull trout as a PCE. Yet, we designate multiple reaches that exceed that temperature band. However, in response to my queries and comments, the Service identifies research indicating the species can withstand a much broader range of temperatures than those identified as a PCE, and justifies inclusion of stream reaches that vary from the stated PCE. If the species indeed can only survive in that narrow band, then those reaches that do not meet that standard are not critical habitat. If the species can in fact withstand a broader temperature range, then the PCE should be revised to reflect the more accurate range. However, one or the other must occur.

Please feel free to call me if you have any questions or you disagree with my analysis or if I have any errors in this document.