Code

Dan C. Holland

Mr. Bruce Halstead
U.S. Fish and Wildlife Service
1125 16th Street
Room 209
Arcata, CA
95521-5582

15 November 1998

Dear Mr. Halstead,

Attached you will find a series of specific comments on the Headwaters HCP EIR/EIS and the PALCO SYP/HCP regarding my area of expertise, the ecology of amphibian and reptile species. Due to a severe lack of time for this review, I have largely concentrated my comments on a single taxon, the northwestern pond turtle (*Clemmys marmorata marmorata*). Over the past seven years, I have reviewed many different documents regarding the western pond turtle, including manuscripts submitted for publication, masters theses and a Ph.D. dissertation, EIRs/EISs, official species accounts for government publications and other material. In this time, I cannot recall ever having seen a document that is as poorly written as this material. I do not refer here to style or grammar; but rather that these accounts contain numerous misrepresentations or misstatements, errors of fact, critical omissions and misinterpretations. Given the material cited in the literature review section - incomplete and cursory though it is - I find it difficult to attribute the number and nature of the errors to mere sloppiness on the part of the author(s). There is an apparent attempt to exclude information from these accounts that would cast the review (and the potential impacts to the taxon) in a very different light. A quick review of the species accounts for the sensitive amphibian species indicates similar problems exist and that parallel concerns about their accuracy and applicability are warranted.

The other portions of the HCP that I have reviewed indicate that, in my professional opinion, on a general level this document is grossly inadequate to serve as an EIR/EIS or other basis for an adequate and appropriate HCP. The presentation of this type of flawed and inaccurate information cannot and should not be accepted as a basis upon which to plan for the maintenance and possible recovery of a series of species already facing considerable threats. Therefore, I strongly suggest that the USFWS and other agencies reject this material and require resubmission of a document that addresses the multitudinous problems present and inherent in this plan.

Sincerely,

Dan C. Holland, Ph.D.

Mr. John Munn
California Dept. of Forestry

1416 Ninth Street
Sacramento, CA
95814

15 November 1998

Dear Mr. Munn,

Attached you will find a series of specific comments on the Headwaters HCP EIR/EIS and the PALCO SYP/HCP regarding my area of expertise, the ecology of amphibian and reptile species. Due to a severe lack of time for this review, I have largely concentrated my comments on a single taxon, the northwestern pond turtle (*Clemmys marmorata marmorata*). Over the past seven years, I have reviewed many different documents regarding the western pond turtle, including manuscripts submitted for publication, masters theses and a Ph.D. dissertation. EIRs/EISs, official species accounts for government publications and other material. In this time, I cannot recall ever having seen a document that is as poorly written as this material. I do not refer here to style or grammar; but rather that these accounts contain numerous misrepresentations or misstatements, errors of fact, critical omissions and misinterpretations. Given the material cited in the literature review section - incomplete and cursory though it is - I find it difficult to attribute the number and nature of the errors to mere sloppiness on the part of the author(s). There is an apparent attempt to exclude information from these accounts that would cast the review (and the potential impacts to the taxon) in a very different light. A quick review of the species accounts for the sensitive amphibian species indicates similar problems exist and that parallel concerns about their accuracy and applicability are warranted.

The other portions of the HCP that I have reviewed indicate that, in my professional opinion, on a general level this document is grossly inadequate to serve as an EIR/EIS or other basis for an adequate and appropriate HCP. The presentation of this type of flawed and inaccurate information cannot and should not be accepted as a basis upon which to plan for the maintenance and possible recovery of a series of species already facing considerable threats Therefore, I strongly suggest that the California Dept. of Forestry and other agencies reject this material and require resubmission of a document that addresses the multitudinous problems present and inherent in this plan.

Sincerely,

Dan C. Holland, Ph.D.

Response to Headwaters HCP: Species-specific comments

(EIR/EIS pp. 3.10-40 to 3.10-41): northwestern pond turtle (*Clemmys marmorata marmorata*)

1. Page 3.10-40, column 2, 1st paragraph, lines 1 & 2: It should also be noted that Jennings and Hayes (1994) recommend listing of the NWPT as State Threatened. DH-1

2. Page 3.10-40, column 2, 1st paragraph, lines 6-12: "This subspecies is distributed throughout California west of the Sierra Nevada crest and outside of desert regions at elevations approximately under 4,700 feet, north to the Columbia River and Puget Sound (Jennings and Hayes, 1994)". This statement both misrepresents the description of the range in Jennings and Hayes and is incorrect. The range of the northwestern pond turtle (*Clemmys marmorata marmorata*) as described by Seeliger (1945) indicates that animals from the vicinity of the Mokelumne/American River northward to Oregon and the Columbia River (and Puget Sound) belong to this subspecies. For a more complete description, see Holland (1991) and Holland and Bury (in press). The remainder of the range (southern and central California is occupied by the southwestern pond turtle (*Clemmys marmorata pallida*) and intergrades between the two subspecies. Thus, the range of the subspecies *C. m. marmorata* is far more restricted than indicated by this document. Given the number of publications in which this information is readily available (e.g. Stebbins 1985), this error seems inexcusably sloppy. DH-2

3. Page 3.10-40, column 2, 1st paragraph, lines 12-20: regarding factors affecting this species "...habitat destruction from agriculture, timber management, livestock grazing practices and human-related disturbance..." is a very short and incomplete list. Please see Holland (1991, 1994), Jennings and Hayes (1994) and Holland and Bury (in press) for a more detailed discussion. DH-3

4. Page 3.10-40, column 2, 1st paragraph, 21-23: "Relatively little is known about California populations of the northwestern pond turtle (Jennings and Hayes 1994)". In reviewing Jennings and Hayes, I do not find any direct or indirect inference or reference that supports this statement. It is interesting that the authors of this statement cite only Jennings and Hayes as putative support for their contention, while ignoring the work of Bury (1972), Bury (1986), Bury and Wolfheim (1973), Holland (1991), Holland (1992), Holland (1994), Reese (1996), Reese and Welsh (1998) and Holland and Bury (in press). Ignorance of at least some of these references cannot be claimed as an excuse for this situation as they cite three of them (Holland 1994, Reese 1996, Reese and Welsh 1998) elsewhere in the text. DH-4

5. Page 3.10-40, column 2, 2nd paragraph, lines 1-4: Describing the general nature of use of terrestrial habitat, the authors state "The NWPT is an aquatic species that generally leaves the aquatic environment to reproduce, aestivate and overwinter on land." It would be more accurate to state that it is obligately tied (like the vast majority of turtles) to nesting on land. This statement also fails to note the use of terrestrial habitats for overland movement within and between drainages, another factor discussed extensively in the literature on the species (Holland 1991, Rathbun et al. 1992, Holland 1994, Reese 1996, Holland and Bury in press). DH-5

6. Page 3.10-40, column 2, lines 4-10: "Priority habitat for the NWPT is considered to be primarily DH-6

riparian and wetland waterbodies and margins that provide deep, slow-flowing pools with underwater cover and emergent basking sites and/or warm water (Reese and Welsh 1998)." Once again we see a situation similar to that described in comments #4 & 5 above. This statement is only partially correct in specific context, and grossly misleading in total. First, NWPT can be and are found in some numbers in shallow-water habitats with very limited deep-water refugia (usually pools). Second, given that the NWPT is obligately tied to upland areas (up to 402 m from the watercourse) for nesting, and also requires upland areas in many cases for overwintering (up to 500 m), estivation and overland movements, this statement is patently misleading. The NWPT is a highly aquatic species that also requires extensive upland habitats for several critical stages of its life cycle. This situation has been discussed in several of the references cited elsewhere in this document (Holland 1991, Rathbun et al. 1992 (for the SWPT), Holland 1994). Given the occasional reference to these matters elsewhere in this document, it is difficult to attribute this misinformation/omission to mere ignorance on the part of the authors. DH-6 CONT

7. Page 3.10-40, column 2, 2nd paragraph, lines 13-14: This document cites Nussbaum et al. (1983) as the sole reference for foraging habitat, specifically "forages in still or slow-moving bodies of water ....sluggish creeks and rivers". As noted repeatedly above, this statement is in part incorrect. NWPT can and do occur and forage in fast-moving streams and rivers, but are more common (or at least more observable) in slower sections. Again, the omission of repeated descriptions of suitable habitat in Bury (1972), Holland (1985,1989,1991,1994), Reese (1996), Reese and Welsh (1998) and Holland and Bury (in press) is cause for concern. DH-7

8. Page 3.10-40, column 2, 2nd paragraph, line 18: the reference to avoiding predators is curious and contextually incorrect. DH-8

9. Page 3.10-40, column 2, 2nd paragraph, line 19: Nesting occurs in the NWPT from May-August, but most occurs in May-June. The description of nesting distances again reflects a lack of attention to the existing literature; Holland (1994) notes a range of 3-402 m with a mean of 52 m. This means that the arithmetic average nest-site distance is approximately 181.5' from the watercourse. The reference to a distance of "650'" from the water where most nesting occurs needs a citation. The situation with the dynamics of nest site location is far more complex than indicated by the authors of this document; see Holland (1994) for a discussion. Furthermore, the mean nest-site distance for the northwestern pond turtle is significantly greater than that indicated in Holland (1994) (Holland unpubl. data), as nest sites in this taxon tend to be further from the edge of the watercourse than for the southwestern subspecies (*C. m. pallida*), which was included in this total. Thus, proposed Riparian Management Zones for Class I streams of 170' - even if all potential direct impacts were excluded - do not even meet the *minimum* distance necessary to protect the *mean* nest site distance for the WPT (181.5'), and in fact significantly under-represents the distance recommended for protection of the species (500 m) (see Holland 1991, Rathbun et al. 1992, Holland 1994). This situation is referenced later in the document so its omission from this section is curious. DH-9

10. Page 3.10-40, column 2, 2nd paragraph, line 22-23: The description of nesting habitat is incomplete and inaccurate. The term "meadows" as conventionally understood means an area with a distinct flora, often with hydric or saturated soils. "Wet" meadows are not suitable as oviposition sites for the species. The species will nest in dry meadows, various seral stages of forest as well as scrub- and grassland habitats. The authors of this section again selectively use and misinterpret the DH-10

literature. See Holland (1991, 1994), Reese (1996) and Holland and Bury (in press) for an accurate description of nesting habitats and ecology. DH-10 CONT.

11. Page 3.10-41, column 1, 1st paragraph, line 7: Hatchlings-1st year animals usually require shallow-water microhabitats not only for foraging, but refugia and basking as well. DH-11

12. Page 3.10-41, column 1, 2nd paragraph, line 6: It would be interesting to know the timing and methodology of the survey(s) conducted for this species, whether they were taxon-specific, the qualifications of the surveyors and other factors. It has been my experience that all of these factors can have a significant influence on the probability of detection of the species. Also, there is no mention of the review of any literature, museum or other reference sources (such as CNDDB) as support for this assertion. Given the wide geographic and habitat range of the species in this area, such an "oversight"(?) is inexcusable. DH-12

12. Page 3.10-41, column 1, 2nd paragraph, line 10: As discussed in # 6 above, this statement is patently misleading for several reasons. First, NWPTs can and do occur (at least seasonally) in Class II streams. Second, as the species is obligately tied to uplands for nesting, and in many cases for overwintering and estivation (as well as overland movement), the description of "priority" habitats necessarily must include these areas. DH-13

13. Page 3.10-41, column 1, 2nd paragraph, line 24-31: This section describes the putative priority habitat for the NWPT and concludes that approximately "281 miles of Class I streams and 486 acres of mapped wetland habitats provide potential habitat for the NWPT in the project area." The EIR/EIS states that only 261 miles of Class I stream are considered as priority habitat. The differences in these figures needs to be explained. Furthermore, as discussed in comments below, the incorrect statements concerning the habitat requirements of the species cast doubt on the validity of this statement. The potential use of Class II streams and ephemeral watersources is not discussed, even though they may constitute important habitat for the species. The unsubstantiated assertions regarding the efficacy of proposed mitigation measures within Class I RMZs (a 170' buffer in which restricted timber harvest and other activities would occur) would protect (at best) only 10.4% of the potential terrestrial habitat. If protection of this species is a priority or a matter of concern, then this is a clearly unacceptable situation. DH-14

(EIR/EIS pp.3.10-39 to 3.10-40): foothill yellow-legged frog (*Rana boylii*).

1. Page 3.10-39, 2nd column, 1st full paragraph, line 18: It should be noted that Jennings and Hayes (1994) note that the species has been extirpated from approximately the southern 1/3rd of its range, as well as most of the Sierra Nevada. The species is recommended for State Species of Special Concern north of the Salinas River. Additionally, this species may be threatened by gravel extraction operations, mining in areas adjacent to the watercourse, and instream suction dredging. DH-15

2. Page 3.10-39, 2nd column, 2nd full paragraph, line 3-4: The description of habitat should include sections of rivers where similar flow conditions are present. As this is acknowledged in the next paragraph ("This species has been commonly observed along major watercourses with relatively open, sunny banks such as the Eel and Van Duzen Rivers and has also been observed in the Yager and Bear-Mattole WAAs...") the omission of this information in the habitat description is curious at best. Additionally, observations of this species in Class II streams occur elsewhere in California DH-16

(pers. obs.).

Comments on PALCO SYP/HCP

Pp. 8-9: Specific comments on northwestern pond turtle, *Clemmys marmorata marmorata*

1. Page 8, 1st paragraph ("Natural History"), line 2: The description of the range is both inaccurate and superficial. See Stebbins (1985) or Holland (1991, 1994) for more accurate maps. DH-17

2. Page 8, 1st paragraph, line 3: The statement "In California, the species ranges from the Oregon border south to Kern County (Bury 1962)" is both inaccurate and misrepresentative of Bury's (1962) paper. Bury makes no such statement. For general references and maps of the range, see Stebbins (1985), Holland (1991, 1994), Jennings and Hayes (1994) and Holland and Bury (in press). DH-18

3. Page 8, 1st paragraph, line 3-6: The statement describes the aquatic habitat of the western pond turtle but clearly excludes streams - a curious omission since streams are the primary habitat for the NWPT throughout most of its range (Holland 1994) and are mentioned and in some cases extensively discussed in all the references cited by the authors (Zeiner et al. 1990, Bury 1962, Holland 1994, Nussbaum et al 1983). DH-19

4. Page 8, 1st paragraph, line 6-8: Again, we find another example of selective use of references and misinterpretation of same in regard to the description of the aquatic habitat. The authors need to carefully read Reese (1996) and Bury (1972) as well as Holland (1991, 1994) and Holland and Bury (in press). DH-20

5. Page 8, 2nd paragraph: There are numerous problems with this entire paragraph. The statement is made that "The specific habitat of this species is relatively limited on the PALCO ownership." Given the incomplete and misleading statements concerning habitat affinities of this taxon noted above, this statement is not supported by a) the existing documentation or discussion or b) any other reference. The statement is also made that "We have no estimates of numbers of individuals, however pond turtles appear to be present in low numbers in suitable habitat". Given that there is an obvious misunderstanding of the habitat requirements of the NWPT, and that no reference is made to the nature, timing and extent of any survey(s), the statement that "low numbers" are present cannot be supported by any objectively derived data. The statement is made that "There are approximately 265 miles of Class 1 watercourse in the Plan area, corresponding to about 11,085 acres of Class I RMZs." Given the presumed 170' width of an RMZ, this area represents approximately only 10.4 % of the known habitat-use range and recommended buffer size for WPTs (see Rathbun et al. 1992, Holland 1994, Reese 1996), and largely disregards any consideration of impacts to nesting, overwintering or estivation sites inside (and especially outside) of the RMZ(s). DH-21

6. Page 8, 3rd paragraph, line 2: As above, there are numerous problems with this paragraph. There are contentions made that several activities "have limited potential for impacts to this species" or that gravel extraction "...may have very limited potential for impacts due to habitat modification." Also, "use of ponds or slow portions of streams and rivers by livestock could have some very limited potential for habitat modification by decreasing water quality, or alteration of stream beds such that important refugia are damaged or lost." The description of these impacts as "limited" or very DH-22

limited" is disingenuous and not supported by any empirical information or observations, and is in fact contradicted by the observations and opinions of several scientists familiar with the ecology of and impacts to this species. All the activities described are likely to have impacts ranging from significant to severe, depending upon a number of factors. Furthermore, there is no discussion of indirect or off-site impacts to the species from other activities described in the HCP. As an example of both a direct and indirect effect, gravel mining operations may significantly alter the nature and extent of suitable habitat (both aquatic and terrestrial). Abandoned gravel pits frequently become source population sites for exotic predatory species (such as bullfrogs) which may then spread into stream, riverine and other habitats where they would otherwise be unlikely to occur. As an example of an off-site indirect impact, the extent and nature of timber harvest operations upstream of WPT habitats - even if the species does not occur directly within the harvest area - may have significant short- and long-term effects through the alteration of flow characteristics, increased sediment deposition and alteration of habitat and micro-habitat structure and other factors. DH-22 CONT.

7. Page 8. 4th paragraph: As with most of the rest of the portion of this document, statements are made which both misrepresent the ecology of the WPT and the potential effectiveness of proposed mitigation measures. The statement is made that "Most suitable pond turtle habitat occurs in the Channel Migration Zones of larger Class I watercourses" is not substantiated by any reference or other documentation, and given previous statements about 1) the lack of specific information on numbers of turtles and 2) mis-statements and misinterpretations of likely or suitable habitat for the species. cannot be considered to be valid. Similarly, the statement is made that "Riparian protection measures are designed to avoid impacts such as siltation which could cause indirect impacts to pond turtles, and will largely protect the species from direct impacts at nest sites and overwintering sites." The prescribed timber harvest measures within Class I RMZs are not, in my opinion, likely to minimize impacts in relation to the factors noted above. In fact, it is likely that they will increase overall mortality (to overwintering and estivating animals as well as nest sites) and increase habitat degradation, and contribute to further declines in the species. DH-23

The paragraph continues that "Other proposed mitigation includes large woody debris retention and recruitment which will continue to provide basking sites, instream habitat improvement projects which may include logs for basking sites and creation of increased pool habitat, and restriction of gravel extraction to outside the wetted channel such that potential habitat along rivers is unlikely to be altered to a unsuitable state." As is the general case with this document, there are several problems with this section. First, there is no demonstration by reference, citation or discussion that any of these measures actually constitutes effective and appropriate mitigation for loss of or impacts to WPT habitat. Second, the reference to creation of basking sites and pools reflects a basic contempt for proper scientific management of the species, namely the rigorous demonstration that such factors are limiting to a population(s) and that their "creation" or "enhancement" constitutes a functionally equivalent compensation for other impacts. Third, as discussed in # 6 above, the contention that placement of gravel extraction operations "outside the wetted channel" minimizes impacts is unlikely to be true for a variety of reasons.

8. Page 3.10-41, 1st full paragraph: The statement is made that "The plan area represents a relatively small portion of the species' range and numbers" may be partially true but is contextually misleading. First, since there are no numbers presented (other than the unsubstantiated reference to "low numbers"), there is no support for the statement that the plan area holds a "small portion" of the species' numbers. Second, as discussed in Holland (1991), Holland (1994) and Holland and Bury (in press), the north coast area in fact represents the last remaining "stronghold" of the NWPT. DH-24

Populations throughout the remainder of its range (Sacramento Valley, Oregon and small portions of Washington) are generally small, often heavily adult-biased, exist in habitats degraded to varying degrees, and face a moderate to large number of threats. Thus, the north coast metapopulations from both a scientific and functional standpoint is very significant, and the loss or further diminution of populations in this area should be avoided. DH-24 CONT.

9. Page 8. 2nd full paragraph: The statement is made that "PALCO proposes to implement an adaptive management process for this species...". Given the patent misunderstanding and misrepresentation of the species ecology demonstrated in this document, this statement cannot be viewed as credible. Furthermore, existing vague and amorphous references to "adaptive management" techniques which are untested, unreferenced and likely based upon a basic misunderstanding of the ecology of the species indicate that this concept/process is essentially being "made up as you go". This action cannot and should not be considered as an adequate substitute for a scientifically based and rigorous evaluation of appropriate management strategies and techniques, which this plan does not offer in any way, shape or form. DH-25

Pp. 6-7: Specific comments on foothill yellow-legged frog, *Rana boylii*

1. Page 6, 1st paragraph ("Natural History"), line 1: The recommended status (Species of Special Concern) from Jennings and Hayes (1994) should be included in this section. . DH-26

2. Page 6, 1st paragraph, line 5: It should be noted here that this species is found in small to moderate sized streams (as noted by Jennings and Hayes 1994), small rivers and even slower-flowing sections of larger ones (as in the EIR/EIS). DH-27

3. Page 6, 1st paragraph, line 19: It is important to note that Hayes and Jennings note that a factor in the decline of this species is "...at risk due to the exotic predatory aquatic fauna that is still increasing its range in this area...". This indicates that more than just bullfrogs are a matter of concern, and that both quasi-native and exotic fishes may have significant negative impacts. DH-28

4. Page 7, 2nd paragraph (Activities for potential for impacts): I note that the authors carefully avoid any mention of potential impacts to this species from logging activities, and go so far as to say that "No habitat alteration is planned which would render habitat unsuitable for this species." Jennings and Hayes (1994) note that "Tolerance to silt deposition need study because increased silt loads due to vegetation removal, such as logging and livestock grazing, are a frequent occurrence within the range of *R. boylii*." Observations on Hayfork Creek (Trinity County) indicate that silt deposition may smother egg masses to the point where few or no larvae emerge. The increased silt loads have been observed to be produced by instream suction-dredge mining, runoff from burned areas, and timber harvest in upstream locations. DH-29

5. Page 7, 3rd paragraph (Mitigation measures): Given the potential for impacts to this species from siltation, the contention that moving gravel extraction operations out of the "wetted channel" constitutes an effective mitigation measure remains to be demonstrated. DH-30

6. Page 7, 4th paragraph (Potential Impacts of the Incidental Taking): The statement is made that "The species has a widespread distribution and large population numbers. The plan area represents a relatively small portion of the species' range and numbers." This statement has no empirical basis DH-31

and in fact is misrepresentative of the situation. The species ranges from the southern portion of the Willamette Valley in Oregon to the area of northern Los Angeles County. However, it has been extirpated in a large portion of its range including most of southern California and the Sierra Nevada. While certain sites within the north coast area continue to hold large numbers of frogs, these sites are not numerous nor extensive. As discussed by Jennings and Hayes 1994), even this populations remain at risk and are subject to considerable impacts. As no actual numbers have been presented for populations within the project area, the contention that they are "relatively small" cannot be substantiated. OH-31 CONT