

**Peer Review of Preble's Jumping Mouse Report by Dr. Rob Ramey II et al.**  
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I will start by addressing the following questions and then add two additional comments at the end of review.

- (1) Do the morphology, ecology, and mtDNA data presented in the report support the authors' conclusions on synonymizing *Z. h. campestris* and *Z. h. preblei*?
- (2) Could you support synonymizing *Z. h. campestris* and *Z. h. preblei* without additional genetics study (i.e., microsatellite data)? If not, what additional analysis is needed and why?
- (3) What is the importance of potential ecological, behavioral, or physiological differences between *Z. h. campestris* and *Z. h. preblei* in substantiating or refuting synonymy?
- (4) What is the likelihood that the *Z. h. preblei* is substantially reproductively isolated from other groups within the *Z. hudsonius* complex, especially from *Z. h. campestris*?
- (5) Would the loss of what is now *Z. h. preblei* represent a substantial diminution of the *Z. h. campestris* taxon? Its Range? Biological characteristics? Evolutionary legacy? Other?

**Question 1:**

Yes, I think that the authors provide convincing evidence for synonymizing these two subspecies since the hypothesis testing did not reject the hypothesis that the two are essentially the same for the morphological and genetic data. From the report and the draft recovery plan, it is not clear if we have enough data on the ecology and behavior of *preblei* to know if there are any significant differences.

**Question 2:**

I can support synonymizing subspecies without additional microsatellite data. I do think that microsatellite data are important if the USFWS would like to thoroughly address the question of whether these populations represent an ESU.

**Question 3:**

This question is really philosophical and depends on what species/subspecies definition one accepts. I think genetic data can provide important information for subspecies classifications but I do not think it is the only data that should be used. I feel that subspecies classifications can be justified based on substantial morphological, ecological, or behavioral differences even if mtDNA data do not demonstrate long-term separation.

#### **Question 4:**

I don't feel that I can adequately answer this question without additional data. The sharing of mtDNA haplotypes could represent historic not current gene flow. Detailed field studies or microsatellite analysis (preferred approach) will be necessary to address this question.

#### **Question 5:**

This is a difficult question. If we take only a mtDNA diversity perspective then the answer is no. I do not see any evidence of unique biological or ecological characteristics but I am not certain this has been thoroughly evaluated for *preblei*. Because of potential recent isolation (within the last 5,000 yrs) of this population, it may be on a unique evolutionary trajectory that might have future importance under Waples (1991, 1995) definition of evolutionary legacy.

#### **Other General Comments:**

- 1) When evaluating whether preble's would qualify as an ESU the authors do not apply Waples (1991, 1995) definition. Since this definition was cited by NMFS/USFWS in the 1996 joint policy that addresses ESUs, I think it would be important and useful to apply Waples' ESU definition.
- 2) On the bottom of page 9, the authors state that based on the Crandall approach the two species would be considered a single population for management purposes. I think it is a premature overstatement to conclude this without microsatellite data. The Crandall approach or others might support classification as separate populations maybe even different management units (under Moritz 1994) or ESUs (under Waples definition) depending on the results of microsatellite analysis.

#### **Citations**

Moritz, C. 1994. Defining "evolutionarily significant units" for conservation. Trends in Ecology and Evolution **9**:373-375.

Waples, R. S. 1991. Pacific salmon, *Orcorhynchus spp.* and the definition of "species" under the Endangered Species Act. Marine Fisheries Review **53**:11-22.

Waples, R. S. 1995. Evolutionarily significant units and the conservation of biological diversity under the Endangered Species Act. Pages 8-27 in J. L. Nielsen, editor. Evolution and the aquatic ecosystem: defining unique units in population conservation. American Fisheries Society, Bethesda.