

point is likely to result in detection of an appreciable number of individuals of a migratory species; splittail are as likely to arrive at a static survey point in a key location as they are to be captured by a mobile survey of varied habitats.

We understand the respondent's logic in formulating a hypothesis that the nine surveys in question might be most representative of the overall splittail population due to geography, but note that at this point such an opinion is only a working hypothesis with no actual data available to either support or refute it. Until such data become available, we believe it is most conservative to follow the practice of evaluating all the data series rather than combining or rejecting discrete sets. We continue to believe that, of the individual indices, the Suisun Marsh Otter Trawl should be the most appropriate sampling method because it samples core splittail habitat, utilizes an effective, bottom-trawling gear, and samples a greater relative proportion of the habitat at the sampling site.

*Comment 12:* A respondent claimed we employed "Shifting approaches to the splittail listing" in regard to statistical testing of available data.

*Our Response:* Since we have published one listing notice for the splittail, on February 8, 1999 (64 FR 5963), we assume that this respondent is actually referring to our evolving evaluations of data relevant to the issue of whether the splittail should be listed or not, as have appeared in the January 12, 2001 (66 FR 2828); May 8, 2001 (66 FR 23181); August 17, 2001 (66 FR 43145); and March 21, 2002 (67 FR 13095); and October 31, 2002 (67 FR 66344), notices reopening public comment periods.

It is common practice in science to continually formulate and revise hypotheses in response to new information. We have applied this scientific process during the review of the splittail's status, as have certain respondents (*i.e.* CDFG, CDWR, USBR). The evolving results of our various statistical analyses and the background information describing the bases for those analyses have each appeared in successive notices. Notices are solicitations for public comment and information, not final agency actions. As a result of new scientific information and comments received during the many comment periods, we have updated our analytical methodology based on the best scientifically and commercially available information. Note also that neither we, nor respondents, have advocated nor implemented a return to the superceded

techniques used by Meng and Moyle (1995), Sommer *et al.* (1997), or the permutation-based exact calculations of p-values for stratified Mann-Whitney U-tests, published on August 17, 2001 (66 FR 43145).

*Comment 13:* A respondent claimed that we were incorrect in departing significantly from the analysis of CDFG and USBR.

*Our Response:* We did not depart at all from the statistical analysis provided by CDFG and USBR in the form of the CDFG/USBR MLR Model. We have fully accepted the model results submitted by CDFG and USBR. We have noted earlier in our analysis where we have departed from the CDFG and BOR analysis and our reasons for doing so.

*Comment 14:* Several respondents stated that the extended drought of 1984 to 1992 created only a perception of decline and that it was the "\* \* \* accidental juxtaposition of a series of wet, strong splittail years with a series of dry, weak years that prompted [our] interest in the first place."

*Our Response:* We disagree with the respondent's claims that the period of extended drought has been ignored, as well as with the contention that the splittail's drought-driven declines are the sole factor under consideration in our determination. We first note that the period of continuous drought is considered by most authoritative sources to have begun in 1987 (Moyle *et al.* 2001; Baxter 1999a; Sommer *et al.* 1997), not 1984 as reported by the respondent. We note, however, that 1985 and 1986 were dry years (Cannon 2001 in prep.).

The declines noted during the 1987 to 1992 drought were the likely result of a paucity of spawning habitat being available. The drought decreased the amount of floodplain (*i.e.* Yolo Bypass and mainstem river margins) available for spawning and thus, spawning output was lower. Low splittail population densities were aggravated by the CVP and SWP's diversion of a greater proportion of water from the Delta than in prior years; fish were entrained at the facilities and the entrapment zone (location where fish become vulnerable to the export facilities' effect on currents in the Delta), was located well upstream of Suisun Marsh in increasingly suboptimal habitat. These events are described in detail in our February 8, 1999, final listing rule (64 FR 5963).

The basis for the respondent's claim that we are disproportionately concerned with splittail declines noted during the 1984 (or 1987) to 1992 drought is unclear. True, the "accidental juxtaposition" of wet and dry years resulted in abundance data that

appeared to illustrate a precipitous drop in the splittail population. There are, however, up to 10 years of pre-drought as well as up to 8 to 10 years of post-drought data. The data collected during six years of continuous drought are but a subset of the nearly 20 years of extant splittail data. The splittail's relatively long life span and resilience following unfavorable conditions renders the declines exhibited during a discrete drought unlikely to influence the analytical findings from an ever-lengthening period of record. Most importantly, we now employ the CDFG/USBR MLR Model, which explicitly controls for potential confounding effects of hydrological year type. The respondent's concern would be more applicable to abandoned analytical techniques. The arbitrary pre- and post-decline cut point approach of Meng and Moyle (1985) was driven by trends noticed during the 1987 to 1992 drought, as was a formerly touted alternative analysis that involved the use of 1987 (the beginning of the drought) as a cut point (Sommer *et al.* 1997) for determining percent declines.

We also disagree with the contention that the 1984 to 1992 drought serves as the only factor which triggered our investigations of the splittail's status. Our interest in the splittail was prompted initially by the statement in Daniels and Moyle (1983) that the splittail's and delta smelt's "\* \* \* abundance could decline rapidly if environmental conditions become unfavorable for them, possibly making them candidates for listing as threatened species." We subsequently included the Sacramento splittail as a category 2 candidate species for possible future listing as endangered or threatened in the January 6, 1989, Animal Notice of Review (54 FR 554). The candidate category system was abandoned on February 28, 1996 (61 FR 7457), and species meeting the definition of the former category 2 (such as splittail) were no longer considered candidates. Our administrative proceedings on splittail resumed on November 5, 1992, when we received a petition from the Natural Heritage Institute to add the Sacramento splittail to the List of Endangered and Threatened Wildlife and to designate critical habitat for this species in the Sacramento and San Joaquin Rivers and associated estuary.

*Comment 15:* A respondent questioned how the data collected relate to a conclusion that the species is threatened. We had not provided analyses of population level outcomes that could be linked to threats analyses. Another respondent believed that our threats analysis is speculative,