

imprecise, and meaningless absent any data or analysis concerning population level effects and that the threats analysis does not show why the species is threatened because of the factors, as required under section 4 of the Act

*Our Response:* We refer the respondent to the sections entitled Summary of Factors Affecting the Species and Conclusion Regarding Abundance, Distribution, and Factors Affecting the Species. We believe that the splittail does not qualify for threatened status at this time based on our analysis of the threats.

*Comment 16:* Several respondents asserted that the peer review process for scientific publications doesn't necessarily ensure that published papers are unbiased, scientifically sound, and without errors. The *Transactions of the American Fisheries Society* does not use the double-blind method for peer review. This issue was raised in regards to our past use of the Meng and Moyle (1995) methodology to determine splittail abundance.

*Our Response:* We agree with this assertion. Each piece of scientific work, whether a peer reviewed published paper or an unpublished, unreviewed, draft report, must be objectively evaluated for the scientific merit of its content alone. Peer reviewed publication provides no guarantee of scientific merit. The test of time, following publication, provides the ultimate measure of scientific merit. Indeed, subsequent iterative examination of the splittail's status has resulted in our abandonment of Meng and Moyle (1995), Sommer *et al.*, (1997) and our permutation-based exact calculations of p-values for stratified (as opposed to unstratified) Mann-Whitney U-tests (66 FR 43145).

*Comment 17:* Several respondents claimed we ignored the "White Paper" published by Moyle *et al.* (2001)

*Our Response:* We agree with and use the various findings and hypotheses found in the draft and revised White Paper (Moyle *et al.* 2001) extensively throughout this document. We believe that the draft White Paper is a useful resource and contributes to the knowledge on splittail biology, though it has not yet been finalized. The paper has been referenced throughout this document.

*Comment 18:* A respondent requested that we acknowledge that the Interagency Ecological Program (IEP) provides oversight for fisheries data collection.

*Our Response:* We concur that the IEP has oversight of the various fishery programs. However, various agencies collect the data for the surveys

mentioned previously in this document. CDFG conducts the Fall Midwater Trawl, summer ternet, and the Bay study; we conduct the beach seine and Chipps Island Survey; UC Davis conducts the Suisun Marsh OT, and USBR and CDFG collect the salvage and creel census data.

*Comment 19:* A respondent felt the 2000 Service beach seine survey data supported the respondent's earlier comments that splittail were not declining. The respondent stated that new insights include: (1) YOY abundance was at a near record level in 2000; (2) distribution data show that in years of low spring outflow (e.g., 1992, 1994, and 1997), the largest catches of young splittail occurred upstream in the Sacramento River, upstream of many sampling programs; and (3) splittail spawn and recruit even in dry years.

*Our Response:* YOY abundance for a species with naturally high juvenile mortality does not necessarily equate with high recruitment. The respondent's statement that distributional data show that in years of low spring outflow (e.g. 1992, 1994, and 1997), the largest catches of young splittail occurred upstream in the Sacramento River, is inaccurate for two of the three years referenced, and faulty conclusions are drawn from the data.

Water year 1992 exhibited similar abundances of splittail in upper Sacramento River and Far North Delta locations, and moderate abundance overall. Water year 1994 did exhibit relatively higher abundance in upstream locations, but abundance was low throughout all locations. Water year 1997 was wet, not dry as stated by the respondent. Also, regardless of being a wet year, water year 1997 exhibited low splittail abundance in all locations.

Further, we expect that YOY spawned higher in the Sacramento River to suffer higher mortality, relative to fish spawned in the Delta, as they migrate downstream through progressively-worsening habitat conditions to rejoin the core population. Increased mortality among splittail spawned upstream may explain why YOY tend to be captured less frequently in downstream trawl-based surveys in certain dry years. The final statement, that splittail spawned upstream exhibit successful spawning and recruitment in dry years, is not supported by survey data. While spawning success can be inferred from YOY abundance, YOY fish do not necessarily recruit to the adult population. There is some evidence that high or low YOY abundance is correlated, with a two to three year time lag, with adult abundance. For this reason, YOY abundance cannot be

excluded entirely. Our we believe our analysis using the CDFG/USBR MLR Model data series (see section entitled Abundance) incorporates all applicable YOY and adult abundance data, though excludes the beach seine due to its lack of a reliable catch per unit time indicator (seine hauls do not accurately account for time, or unit area per time sampled). Beach seine data are best employed with regard to the splittail for determining range and timing of occurrence.

*Comment 20:* A respondent stated that while splittail are able to persist in a few key areas, such as Suisun Marsh and the lower Sacramento River, during periods of low flow, the relatively smaller populations would be vulnerable to a large scale disaster (e.g., toxic spill), habitat loss, entrainment mortality, reduced outflows, non-native species predation, and contaminants.

*Our Response:* We refer the respondent to the section entitled Summary of Factors Affecting the Species.

*Comment 21:* The respondent stated that the court requested that we provide: (1) An estimate of the current population size of the splittail; (2) determine whether or why the current populations size is inadequate to prevent extinction in the near future; (3) determine the rate of population decline of splittail; and (4) identify the minimum viable population size. In addition, a respondent stated that the hypothetical analytical model presented at the January 29, 2001, CALFED Bay-Delta Program (CALFED Program) Splittail Science Conference and described in the White Paper (Moyle *et al.*, 2001) indicates that the splittail, even during severe and lengthy drought, is unlikely to be driven to extinction.

*Our Response:* There remains no proven scientific method for determining the current splittail population size primarily because no extant survey was designed specifically to monitor splittail populations or to determine their absolute numbers. Further, the splittail exhibits relatively wide variation in annual abundance in response to prevailing hydrologic conditions; it is likely that the population size exhibits appreciable year to year variability which would confound size estimates.

Calculating the current population's risk of and/or time to extinction would require estimates of absolute population size, rate of decline, and minimum viable or sustainable population size, none of which currently exist in a scientifically defensible form. Moreover, it must also be noted that the statutory and regulatory standard for ascertaining