

habitats which directly and indirectly benefit splittail go far beyond any foreseeable habitat losses (particularly in the context of the state's Environmental Quality Act (CEQA) which explicitly requires mitigation for habitat loss. The overall effect of such habitat restoration activities is also expected to continue to be beneficial for splittail at present and into the foreseeable future.

*B. Overutilization for commercial, recreational, scientific, or educational purposes.* We believe that overutilization (*i.e.*, recreational and commercial harvest) is not a factor affecting the splittail. As noted in the January 6, 1994, proposed rule (59 FR 862) and the 1999 final rule (64 FR 5963), some scientific collecting is conducted for splittail, but these activities do not adversely affect the species. In addition, striped bass anglers report occasional use of splittail as bait, but we think this usage has little effect on the species.

In the January 6, 1994, proposed rule, and the 1999 final rule, we also noted that the small splittail fishery (Daniels and Moyle 1983; Caywood 1974) was poorly documented and that no evidence suggested it was a threat to splittail. At present, we do not consider the threat of recreational fishing to be significant. Baxter (2001b) analyzed 1999 and 2000 creel census data from the Sacramento River from Garcia Bend to Redding. Monthly catch amounted to 103 and 232 splittail, respectively. However, no abundance indices were calculated by any agency, organization, or individual from these data, as they fail to meet the criteria established by Meng and Moyle (1995) and are generally considered inadequate to the task of quantifying splittail abundance.

The largest splittail are the first to engage in the spawning migration (Caywood 1974; Moyle *et al.* 2001). The early season fishery thus targets and removes females with high reproductive potential. The effect of this fishery in the Sacramento River may be relatively greater in dry years, when splittail spawning is largely confined to river margins. However, at present, there is no evidence of any trend in the available data suggesting that larger fish are being removed from the population or that the size structure of the population have been altered by this or other fisheries.

*C. Disease or predation.* In our 1994 proposed rule we indicated that this factor was not applicable to splittail (59 FR 862). Since that time, we have questioned whether that disease may be a threat due to high incidences of adult splittail in poor health being captured in the State and Federal water project

facilities in the south Delta. The south Delta is dominated by water from the San Joaquin River, where pesticides (*e.g.*, chlorpyrifos, carbofuran, and diazinon), salts (*e.g.*, sodium sulfates), trace elements (boron and selenium), and high levels of total dissolved solids are prevalent in agricultural runoff (59 FR 862, 64 FR 5963). We are unwilling to dismiss the potential that disease is related to the presence of environmental contaminants. Of specific concern are the threats posed by metals, mercury, selenium, and pesticides. We speculate that there is some possibility that disease in splittail could be a function of increased contaminant loading and subsequent immune system depression. However, offsetting this concern is information found in the White Paper (Moyle *et al.* 2001) indicating that disease and parasite infestation may be a natural function related to the heavy cost of migration and spawning. Post-spawn adult splittail, and male fish in particular, are substantially weakened when outmigrating. We have considered whether selenium exposure can reasonably be expected to exacerbate this condition. No research is known to be conducted on disease occurrence in splittail; the only information we found on disease in splittail was in the White Paper (Moyle *et al.* 2001). Therefore, given the lack of available information, we are unable to determine that splittail are impacted by disease.

In the past, we have considered threats of predation to be minor because striped bass had coexisted with splittail for decades and because CDFG had forgone hatchery rearing and release of striped bass (59 FR 862, 64 FR 5963). We have determined that predation may be a minor factor in the decline of the splittail. Additionally, CALFED includes numerous studies on the threats posed by predators (CALFED 2000a, 2000b) (*see* Factor A for a discussion of CALFED).

*D. The inadequacy of existing regulatory mechanisms.* In the past (59 FR 862, 64 FR 5963), we did not consider the suite of available regulatory mechanisms to be adequate to protect the splittail. Our primary concerns involved the likelihood that the CVPIA, the Bay-Delta Accord and CALFED, though not regulatory programs, would be sufficient to control water movement in a way that would protect splittail. At that time, the funding and implementation of the Bay-Delta Accord and CALFED had just begun, and it was too early to know if their funding and implementation would continue. We now believe that progress to date indicates that these mechanisms are likely to allow effective management of

water for the benefit of splittail. In addition, we believe that some benefits will accrue from efforts associated with these programs (*see* Factor A above for a discussion on CALFED and the CVPIA).

We also note that splittail's habitat, the loss of which constitutes the single largest threat to the species, is protected by the State under CEQA and by state statutes specific to Delta levees which protect levee habitat. Finally, plittail are listed as a Species of Special Concern requiring special considerations for mitigation and protection under CEQA.

To the extent that projects may sometimes be constructed without proper authorization under section 10 of the Rivers and Harbors Act and section 404 of the Clean Water Act, this could result in threats to the splittail. Implementation of the unpermitted projects could have negative effects on near-shore splittail habitat similar to those described under Factor A, and would not necessarily include mitigative features.

In summary, there is a slight potential that some residual threats still face splittail due to of inadequate application or enforcement of RHA and CWA regulatory mechanisms. However, we have been unable to document these threats in other than the most nebulous and anecdotal manner. Notwithstanding this potential, as the CALFED program is designed to improve habitat for the splittail as well as offset any adverse effects of its own actions and provide for recovery of a number of species including splittail, we believe it ameliorates the bulk of the minor threats associated with this factor.

*E. Other natural or manmade factors affecting its continued existence.* In our past rules and notices concerning the splittail (59 FR 862, 64 FR 5963, 66 FR 2828), we identified the risk of drought, invasive species (including interference in CVP and SWP salvage operations by the introduced Chinese mitten crab (*Eriocheir sinensis*)), detrimental flood bypass operations, the lack of screened water diversions, poor water quality and environmental contaminants including mercury, selenium and pesticides, bioaccumulation of selenium in the introduced Asiatic clam (*Potamocorbula amurensis*) as threatening the splittail. These topics and our current viewpoint of their effect on the splittail are further discussed below.

*Drought:* The variability of California's Mediterranean climate is not a threat to the species; it represents a baseline condition. This climate, however, may exacerbate the effects of the threats discussed above. Since the proposal to list the splittail, California