

pool tadpole shrimp (*Lepidurus packardii*) (59 FR 48136; September 19, 1994). However, the midvalley fairy shrimp has a smaller overall range, and tends to use shallower pools, than these other species.

Analysis of Threats

As the petition points out, we acknowledged in our 1994 listing of four other vernal pool shrimp species (59 FR 48136) that California's remaining vernal pools have been under severe pressure from urban development, agricultural conversion and associated hydrological changes. The petition also points to evidence of high annual losses of vernal pool habitat prior to 1997 (Holland 1998), high population growth estimates, and threats from specific proposed development projects such as the new University of California (UC) Merced campus. We believe the petition substantially supports the case that loss of habitat may constitute a threat to vernal pool species. It is less clear, however, to what extent existing regulatory mechanisms may ameliorate that threat in the case of the midvalley fairy shrimp.

Section 7 of the Act requires Federal agencies to "insure that any action authorized, funded or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [critical habitat]." To that end, Federal agencies are required to consult with us on projects likely to affect listed species in the project area, and to obtain from us a biological opinion detailing the reasonable and prudent alternatives (if any) that the project applicant must take to avoid jeopardy or adverse modification (16 U.S.C. 1536). For projects affecting vernal pool habitat, we interpret this to mean that if a listed vernal pool species may occur in the same 7.5' quadrangle (the area covered by a 1:24,000 scale USGS topological map) as the project, the applicant must typically conduct 2 years of surveys to demonstrate that the listed species is not present (Service 1996). The discovery of a listed species likely to be affected by the project triggers the need for section 7 consultation and appropriate documentation.

All of the known midvalley fairy shrimp occurrences are in quadrangles that are either known to contain, or may contain, occurrences of at least one of the four listed vernal pool shrimp species mentioned under Factor A, above (CNDDDB 2002; Service in litt., 2003a; Service, in litt., 2003b). Consequently, prospective developers

requiring a Federal permit (such as a permit to fill vernal pools under section 404 of the Clean Water Act (CWA)) would already have to survey for listed species prior to developing midvalley fairy shrimp pools in those quadrangles. Although the petition argues that vernal pools with midvalley fairy shrimp and no listed species would not be protected under section 7, this is only true as applied to vernal pool complexes with no listed species rather than to single pools. We define populations of listed vernal pool shrimp according to occupied complexes rather than by single pools (Service 2002a) because cysts in individual pools may wait several years to hatch, causing adult populations to appear to move from pool to pool in a complex over time. The midvalley fairy shrimp does not typically occupy the same pools as other fairy shrimp species (Eriksen and Belk 1999). However, it is not clear to what extent listed shrimp may be expected to occupy the vernal pool complexes containing midvalley fairy shrimp. The CNDDDB mentions the presence of listed vernal pool shrimp species (typically vernal pool fairy shrimp) at 16 of the 52 midvalley fairy shrimp occurrences. Fifteen of these are in the area of the proposed UC Merced campus, while the sixteenth is in a mitigation site in Sacramento County. We have no information at this time to indicate the Act would protect midvalley fairy shrimp in most of the other 36 occurrences.

Additionally, Section 7 consultations require some form of Federal agency involvement, which for vernal pool species generally means a section 404 permit under the Clean Water Act. The recent ruling by the Supreme Court in *Solid Waste Agency of Northern Cook County v. United States Corps of Engineers et al*, 531 U.S. 159 (2001) (SWANCC) makes the application of the CWA to vernal pools (and, by extension, the protective power of section 7 of the Act) more tenuous. The Court in SWANCC determined that use of a water body by migratory waterfowl was insufficient in itself to establish that body as part of the "waters of the United States" subject to Federal jurisdiction. The Army Corps of Engineers (ACOE) of the Department of Defense and the Environmental Protection Agency (EPA) have issued an Advance Notice of Proposed Rulemaking (68 FR 1991) to address the question of which wetlands are still subject to the CWA. The notice indicates that field staff should address wetland jurisdiction on a case-by-case basis, and should avoid certain bases of jurisdiction altogether—*i.e.* where the

sole basis for asserting CWA jurisdiction is the "Migratory Bird Rule" (51 FR 41206; November 13, 1986). It is not clear what this will mean for application of the CWA to vernal pools within the range of the midvalley fairy shrimp, although to date the ACOE has continued to assert jurisdiction over vernal pools in the area.

The petition also argues that the Act would not adequately protect midvalley fairy shrimp even if they always co-occurred with listed species, because the smaller range of the midvalley shrimp leaves it comparatively more vulnerable to habitat loss. We do not expect this to be a factor, since we typically require specific vernal pool preservation and creation ratios as mitigation for any amount of listed vernal pool species habitat directly or indirectly affected by a project (Service 1999). Projects in the San Joaquin Valley, and those likely to affect more than a single acre of vernal pool habitat used by a listed species, are subject to individual review and further requirements.

The midvalley fairy shrimp's preference for shallower vernal pools than listed species could occasionally lead to disproportionate impacts, although we expect this to be rare. The range of average pond depths occupied by midvalley fairy shrimp (5 to 15 cm) is completely included within the range of average depths of pools occupied by both vernal pool fairy shrimp and vernal pool tadpole shrimp (2 to 122 cm and 2 to 151 cm, respectively) (Helm 1998). These two listed shrimps are also the most commonly occurring of the four listed species (CNDDDB 2002), and so are the most likely to determine modifications or mitigation measures for projects that also affect midvalley fairy shrimp. The other two listed species, longhorn fairy shrimp and Conservancy fairy shrimp, occupy pools with average depths in the upper half of the range of ponding depths used by the midvalley fairy shrimp (10 to 27 cm and 10 to 40 cm, respectively). Hence it is likely that reasonable and prudent alternatives determined for the protection of one of the listed shrimp species, such as the establishment of mitigation banks for vernal pool fairy shrimp, would also provide protected habitat for the midvalley fairy shrimp. It would be possible, however, for a project to avoid habitat preferred by a listed species in favor of habitat preferred by the midvalley fairy shrimp. The petition suggests such a situation applies to the proposed UC Merced campus in eastern Merced County (see below).

The petition characterizes the UC Merced campus as a threat to the