

species despite the known co-occurrence of listed shrimp species in the area. However, the petition was submitted prior to completion of a biological opinion for phase one of construction (BO or opinion) (Service 2002b). Although phase 1 construction as currently planned does not directly impact any vernal pools, the opinion recognizes the likely impacts further construction will have, and establishes a set of environmental parameters and conservation measures for the University to follow. These include preservation of extensive tracts of high quality vernal pool grasslands, judicious siting and design and use of best management practices. They also require the development of numerous conservation plans, including: A wetlands mitigation plan to prevent any net loss of wetlands functions or values; a compensation strategy for protected vernal pool crustaceans; a construction mitigation plan; and a project compensation plan to identify funding mechanisms for long-term management and monitoring of preserves. In addition to the required parameters and conservation measures, the opinion includes recommendations encouraging the university to evaluate and conserve species of concern, including the midvalley fairy shrimp. Although the university has already identified and secured 5,780 acres of land containing high quality vernal pool habitat for preservation, most of the conservation plans have not yet been completed.

Under our policy for the evaluation of conservation efforts when making listing decisions (PECE policy), we must weigh both the certainty that conservation efforts will be implemented and the certainty that they will be effective in reducing the level of threat to the species. In this case the primary threat is loss of habitat, which the BO can potentially reduce in the vicinity of the proposed campus. Because many of the plans required by the BO are not yet completed and approved, however, the opinion as it now stands does not adequately identify the conservation effort, nor are the specifics approved by all parties. These points detract from the opinion's certainty of implementation under points A1 and A9 of the PECE policy. Additionally, the certainty of the opinion's effectiveness is reduced by the current lack of explicit incremental objectives and dates (point B2); as well as by the lack of specificity in some areas regarding the steps for achieving conservation goals (point B3), the parameters for determining progress (point B4), and the provisions for

monitoring (point B5). Finally, since most of the enforceable conservation measures are established for the protection of listed species, it is not clear to what extent the midvalley fairy shrimp will benefit (point B1). The petition argues, for instance, that by moving the planned supporting community site to the southern end of the property in order to benefit listed shrimp the opinion will actually increase impacts to the midvalley fairy shrimp by concentrating construction in an area of shallow, low terrace vernal pools preferred by that species. Accordingly, the BO as it currently stands does not provide sufficient certainty that conservation efforts will be implemented nor that they will be effective in reducing the level of threat to the midvalley fairy shrimp.

The petition also addresses the extent to which the CWA and the California Environmental Quality Act (CEQA) protect the midvalley fairy shrimp, concluding that in the absence of protected species or critical habitat neither statute is likely to prevent significant habitat loss. The CWA allows fill of up to 0.2 ha (0.5 ac) of wetlands without individualized permits, and does not require notification for many projects involving less than 0.04 ha (0.1 ac). Similarly, CEQA has not been implemented in such a way as to consistently require mitigation for vernal pool losses. We agree that these statutes fail to provide an adequate level of protection for the species.

Finally, of the 52 known occurrences of the midvalley fairy shrimp, 3 are in National Wildlife Refuges, 2 are in mitigation banks and 2 are in Nature Conservancy conservation easements (CNDDDB 2002; Service in litt. 2003c) that may receive some protection. These seven occurrences are likely to receive increased local protection. Roughly 10 other occurrences are based on the survey we commissioned in 2001 that produced inaccurate and incomplete data. This leaves at least 35 occurrences that are well documented but lack local protections. Eighteen of these 35 occurrences are on the proposed UC Merced campus, and 15 of those are known to co-occur with listed species. As discussed above, the protections provided for these occurrences are tenuous due to the uncertainty of continued ACOE assertion of jurisdiction over isolated vernal pools and the pending nature of the protections identified under the biological opinion for phase 1 of UC Merced construction. We therefore believe that existing regulatory mechanisms are not sufficient at this time to protect the species as a whole

from the acknowledged habitat pressures discussed above.

The petition also argues that because midvalley fairy shrimp populations tend to be small and isolated, they may suffer from inbreeding depression (decline of population fitness due to inbreeding) and from local extirpations, after which they are unable to recolonize. However, fairy shrimp cysts are "passively dispersed with high probability by shore birds and other animals" (Fugate 1998). Fugate (1998) goes on to note that under the most likely model, North American fairy shrimp species tend to become effectively isolated from each other at distances of 1,000 to 2,000 kilometers (km) (621 to 1,243 miles (mi)). The farthest distance between midvalley fairy shrimp occurrences documented in the CNDDDB (2002) is approximately 257 km (160 mi). Naturally, local features will affect these generalized figures, and a population of shrimp in a vernal pool complex that has become too degraded may be in greater danger of genetic abnormalities or extirpation. However, the petition does not present such site-specific evidence, nor are we aware of any.

#### Emergency Listing

The petition also requests us to list the midvalley fairy shrimp as endangered on an emergency basis. Under section 4(b)(7) of the Act, and regulations at 50 CFR 424.20, we may list a species on an emergency basis if the threats to the species constitute an emergency posing a significant risk to the well-being of the species. We believe the existing regulatory mechanisms discussed above are sufficient at this time to prevent the threat of habitat loss from constituting an emergency.

#### Finding

We have reviewed the petition, literature cited in the petition, other pertinent literature, and information available in Service files. We conclude the species may be threatened by habitat loss, and that existing regulatory mechanisms may not be sufficient to protect the species. Accordingly, we find the petition presents substantial information to indicate that listing the midvalley fairy shrimp may be warranted.

We have also reviewed the available information to determine if the existing and foreseeable threats pose an emergency. We have determined that an emergency listing is not warranted at this time.

The petition also requests us to designate critical habitat for this species. We always consider the need for critical habitat designation when