# United States Department of the Interior

**FISH AND WILDLIFE SERVICE**
**Sacramento Fish and Wildlife Office**
**2800 Cottage Way W-2605**
**Sacramento, California 95825**

In reply refer to:
08ESMF00-2012-TA-0320

JUN 0 4 2012

To Whom It May Concern:

Subject: Guidelines for Submission of Negative Findings for Vernal Pool Crustaceans and California Tiger Salamander in the Sacramento and San Joaquin Valleys and San Francisco Bay Area for the 2011-2012 Winter-Spring Sampling Season

The U.S. Fish and Wildlife Service (Service) has determined that due to below normal precipitation during the winter and spring in 2011 and 2012, survey results used to determine the presence or absence of the threatened California tiger salamander (*Ambystoma californiense*) (salamander), the threatened vernal pool fairy shrimp (*Branchinecta lynchi*), the endangered Conservancy fairy shrimp (*Branchinecta conservatio*), the endangered longhorn fairy shrimp (*Branchinecta longiantenna*), and/or the endangered vernal pool tadpole shrimp (*Lepidurus packardi*) in certain areas have an increased likelihood of showing false negative results. In that regard, Service staff will consider the low seasonal precipitation when analyzing the results of these surveys and, dependent on the area, may use those criteria to conclude whether or not the survey results can comprise a partial finding of absence for any one or all of the species named above. This determination applies to surveys for these species conducted in the Sacramento and San Joaquin valleys and in the San Francisco Bay area, except as noted below. Prior to making this determination, we reviewed the 2011-2012 winter and spring rainfall records for the Sacramento and San Joaquin valleys and San Francisco Bay area and its effect on sites known to be inhabited by these species, and contacted vernal pool shrimp and tiger salamander experts regarding their field observations during the 2011-2012 season.

The California tiger salamander and vernal pool crustaceans are highly adapted to the environmental conditions of their ephemeral aquatic habitats which fill and empty intermittently beginning with early winter rains and dry completely by late spring. Vernal pool crustacean eggs, or cysts, remain dormant in the soil when the vernal pool habitat is dry during summer and fall. The filling of the pools in winter is a necessary environmental cue for vernal pool crustacean cyst hatching. Hatching, maturation and reproduction rates of vernal pool crustaceans are controlled by water temperature in combination with sufficient water depth. A relatively short life span allows the species to hatch, mature to adulthood, and reproduce during the short time period when vernal pools contain water. Salamanders are also dependent on vernal pools to complete part of their life cycle. Adult salamanders emerge from their upland burrows during the first significant winter rains to migrate to rain-filled vernal pools to breed and lay eggs. Should the pools remain empty for the winter season, fill when air temperatures have risen above the optimum for each species, fill for too short a time to allow breeding and egg-laying, or fill

and then dry before the maturation of larvae, then salamander and vernal pool crustacean reproduction would be delayed until the next normal wet season. Adult vernal pool crustaceans and larval salamanders would not be produced or would be present in very low numbers reflecting the limited amount of favorable habitat conditions.

Precipitation records from July 2011 through March 29, 2012, from the National Weather Service (NWS) show that NWS weather observation stations and Doppler radar data within the ranges of the above species in the Sacramento and San Joaquin valleys and San Francisco Bay area reported below normal precipitation, averaging from 67 percent of normal in Redding, in the Sacramento Valley, to 36 percent of normal in San Jose, located in the San Francisco Bay area. Another weather station in the Sacramento Valley, which is located at the Sacramento executive airport, received 57 percent of normal precipitation. In the San Joaquin Valley, Stockton, Modesto, Merced, Madera, Fresno, and Hanford received between 59 percent and 46 percent of normal precipitation. Two stations in the San Francisco Bay area at Mountain View and Santa Rosa received 40 and 63 percent of normal precipitation, respectively. Rainfall totals throughout the Central Valley and Bay area averaged about 40 percent of normal prior to March 12, 2012, with additional rainfall occurring before the end of March.

*California Tiger Salamander*: As stated in the *Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander October 2003*, field surveys conducted in years with at least 70 percent of average rainfall between September 1 and April 1 produce the most reliable results. In years with low rainfall, upland emergence may be reduced and the salamander may not breed. This level of rainfall was not reached in the 2011-2012 wet season at the NWS stations located within the range of this species in the Sacramento and San Joaquin Valleys, and San Francisco Bay area. The inconsistent rainfall in the 2011-2012 wet season likely resulted in a decrease in the survival of larvae. The University of California, Davis herpetology laboratory (still operated under Dr. Brad Shaffer who is now a professor at the University of California, Los Angeles) noted that the east side of Olcott Lake at Jepson Prairie in Solano County, which is one of the higher rainfall areas within the range of the salamander and is known to support a large salamander population in most years, did not fill until January 21, 2012 and then dried completely by March 12, 2012 (C. Searcy, pers. comm., 2012). Salamander eggs were observed in Olcott Lake during surveys conducted on both February 6 and 13, 2012; however, these eggs were destroyed by desiccation during the drying out of the lake, which was completely dry by March 12. Thus, a survey conducted after March 14, 2012, when the lake began to fill again would probably not find any salamander eggs or larvae and may incorrectly assume salamanders are not present. However, adults were known to move from the uplands in numbers comparable to other seasons with normal rainfall patterns and the success of drift-fence surveys may be dependent on the location of the fences in relation to potential breeding ponds. Drift-fence and pitfall trap surveys will be evaluated on a case-by-case basis.

*Vernal Pool Crustaceans*: Because of the limited rainfall during the shrimp hatching and breeding time period, wet-season surveys conducted in the 2011-2012 season will likely have a high false negative rate (falsely reporting absence of shrimp when shrimp cysts may be present but not hatched or shrimp may have hatched late and died as temperatures increased). Some wetlands providing potential habitat in normal rainfall years likely did not fill or did not fill for a sufficiently long period to allow the species to hatch and breed. Additionally, these species require low water temperatures, approximately 50 degrees Fahrenheit, to hatch. Therefore, even

if the pools filled late in the season, the temperature may have been unsatisfactory for successful hatching.

The majority of rain in all NWS weather observation stations in the range of these species fell in October, January, and after mid-March. December was virtually dry at the NWS stations. Biologists sampling for vernal pool branchiopods throughout the Central Valley during the 2011 to 2012 wet season have reported that, with a few exceptions, pooling of vernal pools was inadequate (less than the 3 cm minimum depth required by the protocol to initiate surveys) to conduct surveys prior to the rainfall commencing during mid-March 2012. As a result of increased rainfall in late March and air temperatures averaging 1 degree Celsius cooler than normal for the month, surveys at some locations in the Sacramento Valley in late March and early April revealed the presence of vernal pool fairy shrimp adults. However, not all listed fairy shrimp species are able to produce more than a single clutch per season.

## 1. Acceptance of California Tiger Salamander Surveys for 2011-2012

### Sacramento Valley and San Joaquin Valley

*All counties in the Sacramento and San Joaquin Valleys*: No negative surveys for larval tiger salamander will be accepted.

### San Francisco Bay Area

*All counties in the San Francisco Bay Area*: No negative surveys for larval tiger salamander will be accepted.

## 2. Acceptance of Vernal Pool Crustacean Wet Season Surveys for 2011-2012

### Sacramento Valley

*Shasta County*: Rainfall in this county has been closer to normal seasonal rainfall and at least one survey has found vernal pool fairy shrimp. Therefore, survey results in these counties will be reviewed on a case-by-case basis. Survey reports submitted to the Service for this county must include all sampling dates, dates of rain events (beginning in November 2011), and air temperatures during rain events and sampling events. These data will also be compared to known occupied sites as the information becomes available.

*Butte, Sacramento, Solano, Yolo, and Yuba counties*: Survey data from several locations in these counties has revealed that vernal pool fairy shrimp hatched only in late March. Therefore, survey results in these counties will be reviewed on a case-by-case basis. Survey reports submitted to the Service for these five counties must include all sampling dates, dates of rain events (beginning in November 2011), and air temperatures during rain events and sampling events. These data will also be compared to known occupied sites as the information becomes available.

*Lake, Colusa, Glen, Placer, Sutter, or Tehama counties*: To date, no survey data have been provided to us regarding presence of vernal pool crustaceans in these five counties. Therefore, survey results in these counties will be reviewed on a case-by-case basis.

Survey reports submitted to the Service for these six counties must include all sampling dates, dates of rain events (beginning in November 2011), and air temperatures during rain events and sampling events. These data will also be compared to known occupied sites as the information becomes available.

**San Joaquin Valley**

*All counties in San Joaquin Valley (San Joaquin, Alameda, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and Kern Counties and, and portions of San Luis Obispo Counties)*: No negative vernal pool crustacean surveys will be accepted.

**San Francisco Bay Area**

*Alameda, Contra Costa, Napa, and Santa Clara Counties*: No negative vernal pool crustacean surveys will be accepted. Note that Alameda County is mentioned twice because it falls within both the San Joaquin Valley and the San Francisco Bay area; no negative wet season vernal pool crustacean surveys will be accepted from this county.

For further information regarding the restrictions on negative vernal pool shrimp and California tiger salamander survey findings for 2011-2012, please contact Josh Hull, Recovery Division Chief or David Kelly, Recovery Biologist at 916/414-6600 or at the letterhead address.

Sincerely,

for Susan K. Moore
Field Supervisor

cc:

Carlsbad Fish and Wildlife Office, Carlsbad, California (Attn: Daniel Marquez)
Carlsbad Fish and Wildlife Office, Carlsbad, California (Attn: Susie Tharratt)
Ventura Fish and Wildlife Office, Ventura, California (Attn: Chris Kofron, Julie Vanderwier)
California Department of Fish and Game, Yountville, California
California Department of Fish and Game, Rancho Cordova, California
California Department of Fish and Game, Fresno, California
California Department of Fish and Game, Redding, California
California Natural Diversity Database, Department of Fish and Game, Sacramento, California (Attn: Darlene McGriff)
U.S. Army Corps of Engineers, Regulatory Branch, Sacramento, California
U.S. Army Corps of Engineers, Regulatory Branch, San Francisco, California