

Vernal Pool Animals

The two major papers in this section consider two very different vertebrate animal groups that use vernal pools; California tiger salamanders that are resident in this landscape during their complete life cycle, and geese and swans that visit these landscapes as winter migrants. Both these studies indicate the importance of preserving large, intact vernal pool landscapes. Additionally, a brief summary of a conference talk considering aquatic macroinvertebrates is included.

Christopher Searcy and Bradley Shaffer illustrate the amount of vernal pool landscape that must be preserved to support up to 95% of a breeding population of *Ambystoma californiense*. Adults move into vernal pools to breed, and after early development, salamanders emerging from the water move into adjacent terrestrial environments where the pre-adults and adults live in animal burrows. This work quantitatively documents the need to preserve a large area, similar in size to an area previously recommended by the Fish and Wildlife Service on the basis of an observation of a single individual. The authors point out that the California tiger salamander is an umbrella species, and if the required preservation area is used, it will preserve other important and rare species in vernal pool landscape.

Raymond Bogiatto, Sabrina Wright-Myers, Stacy Kraus, Jennifer Moor and John Hunt present a quantitative study of geese and swans visiting The Nature Conservancy's Vina Plains Preserve and adjacent conservation easements to the north. This study was conducted for four rain-seasons, ending in 2003. They observed all geese and swans that regularly winter in the Sacramento Valley; two Canada goose subspecies (the lesser and western), as well as Ridgeway's race of the cackling goose were the most abundant taxa observed. The maintenance of vernal pools is critical to these birds because the pools provide protection (from predators and harsh weather) and the pools are centers for supporting goose family units and subflocks. The authors state that large, intact vernal pool landscapes, including adjacent terrestrial environments used for grazing by the geese, should be protected.

The editors of this volume provide a summary of Christopher Rogers' conference presentation which points out that the macroinvertebrate taxa found in California vernal pools are similar to species found in a variety of temporary pools in many geographic areas. The summary also illustrates the changing nature of macroinvertebrate taxa collected from vernal pools during early, mid and late times of ponding, within one season.

Research and Recovery in Vernal Pool Landscapes