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## Study Assesses Impact of Fish Stocking on Aquatic Insects

*ARCATA, Calif., March 26, 2009*—The impact fish stocking has on aquatic insects in mountain lakes can be rapidly reversed by removing non-native trout, according to a study completed by U.S. Forest Service and University of California, Davis, scientists.

Their findings appear in a current on-line issue of the journal *Freshwater Biology* where they describe experiments that examined some effects of fisheries management practices now in use in California mountain lakes where fish do not naturally occur.

The research has value because the vast majority of mountain lakes in the western United States have been stocked with trout for several decades. Studies following lake restoration to fishless conditions will help scientists and wildlife managers understand the impact of past actions and future decisions.

Since 2000, the California Department of Fish and Game has reduced the number of wilderness lakes it stocks by about half because non-native fish feed on declining species like the Sierra Nevada yellow-legged frog. Federal and state agencies have also begun removing introduced trout in some lakes because fish can survive for years and continue feeding on sensitive species, after stocking has ceased.

Until now, scientists seldom studied the response of aquatic insect populations to the removal of non-native trout.

“These highly-mobile predators don’t naturally occur in small alpine lakes so they have significant top-down effects on ecosystems,” said Karen Pope, a Forest Service scientist at the Pacific Southwest Research Station and one of the study’s authors. “They prey upon aquatic insects that are also food for other insects, amphibians, birds and bats.”

In 2003, Pope and her colleagues began testing the effects introduced fish had on lake ecosystems in 16 lakes in Northern California’s Trinity Alps Wilderness.

The National Science Foundation, U.S. Forest Service, California Department of Fish and Game, and University of California funded the study, which matched current California fisheries management practices by including lakes with continued stocking of trout, suspension of stocking and removal of all fish. It also included fish-free lakes as reference sites for the study.

The researchers used floating nets on each lake's surface to quantify aquatic insect populations. They also used gill nets to sample trout density at lakes where there was continued stocking or suspension of stocking.

Their results showed the presence of introduced trout was the most important factor affecting the emergence of insects from the lakes.

Aquatic insect populations quickly increased when trout were removed from lakes. However, the scientists found suspension of stocking was not effective for restoring insect abundance in most lakes. This was not surprising because suspension of stocking alone had little effect on trout density, according to the researchers.

The study "Changes in Aquatic Insect Emergence in Response to Whole-Lake Experimental Manipulations of Introduced Trout" can be viewed on-line at: <http://www3.interscience.wiley.com/journal/119880174/issue>

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