SALMON PROTECTION AND WATERSHED NETWORK

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Summary of Relocation of Stranded Native Fishes from Isolated Pools in the San Geronimo Creek System in 2005

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Summary
In 2005, the seventh year of SPAWN's salmonid rescue and relocation program, a total of 1285 salmonids (752 coho, 531 steelhead) in imminent danger of mortality were relocated in the San Geronimo Creek system within the Lagunitas Creek Watershed. Fish were relocated from drying pools in Arroyo Creek, El Cerrito Creek, Larsen Creek, Montezuma Creek, North Fork of San Geronimo, and Woodacre Creek. 2 mortalities were reported. Non-native largemouth bass was exterminated. Additional native species relocated included sculpin.

Since the start of this program began in 1999 under permits from the National Marine Fisheries Service (NMFS) and California Department of Fish and Game (DFG), a total of 15,446 salmonids have been relocated.

Introduction
Coho salmon and steelhead trout (*Oncorhynchus mykiss*) are found in the Lagunitas Creek Watershed, Marin County (LCW). While steelhead trout in this region (Central California Evolutionary Significant Unit) are listed as 'threatened', Central California Coast coho salmon were recently uplisted to “endangered” on June 16th 2005, under the Endangered Species Act. The approximate 500 coho that return to this watershed annually are considered to be one of the more robust and stable populations in the state (Stillwater Sciences 2004). However, their abundance in this watershed are estimated to be a small fraction of historical numbers.

This report is a documentation of relocation efforts for the 2005 season within the San Geronimo Valley. Background and information on the populations and motivation for conducting this effort are described in previous reports (See Walder, R.K. and Steiner T.

2001. Relocation of stranded native fishes from isolated pools in the San Geronimo Creek system - 2001).

Methods

Streams were surveyed to determine presence and absence of salmonids and monitored to determine water flow, depth and temperature in pools. As it became apparent that pools would dry completely and based on current and previous years observations at known sites, relocation efforts were launched. Crews would delay efforts as long as possible in an effort to maximize resident time in their natal stream habitat. All rescue activities occured under strict supervision of trained and experienced team leaders.

Fish were dip-netted out of pools and placed in insulated coolers equipped with a battery operated aerator. Approximately every 15-45 minutes, captured fish were transported to a perennial flow section downstream on their natal tributary or to San Geronimo Creek at or downstream of the confluence where they would have passed had they not become stranded. The exact release location was dictated by the availability of nearby pool habitat and issues of access on private property. To assure that pools where fish were relocated to were not overstocked, researchers relocated fish to several pools along stretches and made sure to release into pools where connectivity would allow fish to migrate both upstream and downstream.

Upon capture of fish, individuals were identified and lengths measured and stream conditions recorded. In some cases, measurements were done on a random sample of fish, especially if hundreds were caught at a single site. On occasion, particularly when air temperature was 32º C or higher, fish were identified but not measured in order to rapidly relocate them with minimal stress.

To further minimize disturbance and stress to fish, pools were netted for no more than 30 minutes. Netting was done by gently but swiftly sweeping a net through the water. If fish mortalities occurred, individuals were collected and frozen for delivery to NMFS. Notes were made of how each incident occurred and efforts were modified to prevent further mortalities.

Results

Eight tributaries to San Geronimo Creek were surveyed for salmonids and habitat conditions between April and August 2004 (Arroyo, Barranca, El Cerrito, Evans (Bate's) Larsen, Montezuma, North Fork of San Geronimo, and Woodacre Creek. (Figure 1).

A total of 1285 salmonids (752 coho, 531 steelhead) were successfully relocated in the San Geronimo Creek system within the Lagunitas Creek Watershed. Fish in need of relocation were rescued from drying pools in Arroyo Creek (0 coho, 106 steelhead), El Cerrito (39 coho, 8 steelhead), Larsen Creek (94 coho, 14 steelhead), North Fork of San Geronimo 113 coho, 11 steelhead), Montezuma (53 coho, 4 steelhead) and Woodacre Creek (453 coho, 388 steelhead). A single non-native largemouth bass was

exterminated (from Larsen Creek). Additional native species relocated (from Larsen Creek) included 2 sculpin (*Cottus* sp.)

Discussion

In 2005, the majority of juvenile salmonids relocated were coho (59 percent), and the remainder were coho (41%). 2,971 less individual salmonids were relocated than in 2004, yet this decrease really only reflects the later rains of the previous winter that resulted in prolonged creek flows rather than a reflection of actual population size.

During relocation efforts, salmonids were relocated to several pools rather than depositing all individuals into one pool. This was done to minimize over-stocking pools with too many fish. In addition, effort was made to assure that relocation sites were not near sites near those of other researchers (e.g. UC Davis and MMWD) who are conducting juvenile salmonid population estimate studies. SPAWN will continue to coordinate with these and other researchers in the watershed.

Acknowledgements

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Figure 1. Map of San Geronimo Creek and it tributaries