

Bob Snyder

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## Lagunitas Creek, Marin County

On September 16, 1993, you and I walked Lagunitas Creek from Irving Bridge to Shafter Bridge to evaluate fish habitat and the potential for habitat enhancement. This section of the stream is moderately confined with a slope, taken from the USGS topo map, of 0.4 percent. It probably matches the stream type C4 from the Dave Rosgen classification system. The streambed through most of this reach is very sandy gravel with short sections of cobble and bedrock in the middle and upper portions. There are extensive gravel bar deposits along the entire reach. The gravel is probably quite mobile during high-flow events.

I estimated and recorded lengths of habitat types as we walked the stream. The riffle:run:pool ratio is 22:73:5 for this 1.5-mile reach of stream. Most the riffles are very low gradient with poor to moderate spawning quality for steelhead trout or coho salmon, although coho spawning in this reach is well documented, and, in some years, more coho have been seen in this reach than in other similar reaches of Lagunitas or San Geronimo creeks. Only about three percent of the stream bank was undercut sufficiently to provide any fish habitat value. Approximately three percent of the stream length had cover provided by woody debris; most of this cover was associated with the pools. Most of the woody debris cover was down tree trunks in the water along the bank parallel, or nearly so, to the stream axis. A small percentage of the cover was small debris associated with tree trunks, branches, or root balls.

Following our walk through this reach of Lagunitas Creek, we electro-fished in the area just upstream of Irving Bridge. We found abundant roach associated with the runs, steelhead in the pools and riffles, and some coho in the pools. Virtually all the coho and most of the steelhead were associated with woody debris cover. We shocked around some of the boulders that had been placed in the stream several years ago and found no fish.

The Dave Rosgen system, as printed in the California Salmonid Stream Habitat Restoration Manual, suggests that a C4 stream type with its unstable stream banks and highly mobile substrate would not be an appropriate site for channel aggrading structures,

Bob Snyder  
December 23, 1993  
Page Two

boulders, or flow deflectors without opposing bank armor. I agree. I would be concerned that any constructed habitat structure might increase bank erosion and cause more problems than benefits. Because of the fineness of the substrate, channel aggrading structures such as log "V" weirs would have no benefit. The pools which may form downstream of "V" weirs normally have no cover and have little fish habitat value.

There may be benefits from increasing the amount of large woody debris in this reach of Lagunitas Creek. Any logs, root balls, or stumps added to the stream should only be placed parallel to, and adjacent to, the banks and in such a manner as to avoid substantial deflections of the flow. Flow along or under these structures will scour out small pools and the structure will provide overhead cover. To get the maximum benefit, structures should be placed in runs just downstream from riffles where localized scour will create small pools under the structures.

Any habitat enhancement project should consider the impacts of installing the habitat improvements. Developing access for heavy equipment or materials could cause impacts to streamside vegetation or water quality which might outweigh the value of the habitat restoration. Care should be taken to avoid any damage to existing fish or wildlife habitat.



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