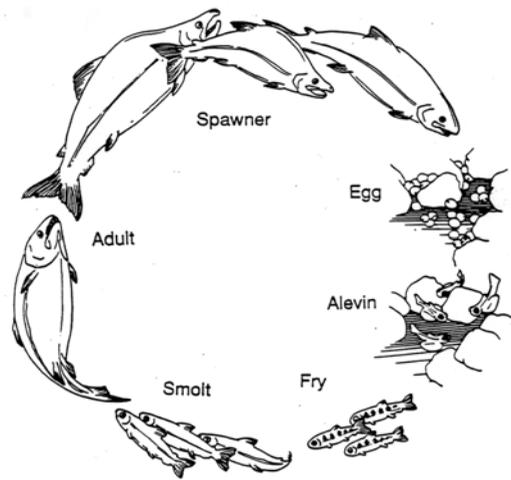


Critical Times for Fish Passage in the San Lorenzo River Watershed

- ◆ **November through May** is a critical period for adult steelhead trout and coho salmon passage. From the moment stream flow breaches the sand bar at the ocean, adults may begin to swim up river to spawn.
- ◆ **February through June** is a critical period when juvenile fish (called smolts) migrate from the streams to the ocean. Steelhead trout live in freshwater streams for their first 1-4 years, while coho salmon stay in freshwater streams for just their first year.
- ◆ **June through October** is a critical period for juvenile fish as they seek favorable conditions within and among streams.



salmonid life cycle

Common Human-Made Fish Passage Impediments in the San Lorenzo River Watershed

- ◆ Road crossings, particularly culverts.
- ◆ Permanent and seasonal dams.
- ◆ Structures installed to control stream gradient.



Fish Passage Problems Associated with Improperly Installed Culverts:

- ◆ Water inside culvert is too shallow during fish migration.
- ◆ Culvert outlet is perched above the streambed.
- ◆ Movement of water inside the culvert is too fast.



Photo provided by Swanson Hydrology & Geomorphology

What Can You Do to Improve Fish Passage?

You can be aware of the issue and participate in projects to restore fish passage. There are many opportunities to participate in local watershed groups and to attend local watershed educational workshops. A local non-profit organization identified more than 20 human-made migration impediments on the mainstem of the San Lorenzo River between the Felton Covered Bridge and the Waterman Gap Culvert during 2001. Most of those were legacy structures serving no useful purpose. Each of the impediments can be modified to improve fish passage.

You can include provisions for fish passage when planning new alterations to the river bed or banks. Local resource professionals and permitting agencies (see list of Informational Resources on the last page of this brochure) will provide pertinent guidelines. By seeking out the appropriate technical assistance you can minimize your impacts while you enjoy the river.

It is important to note that any type of dam put in the San Lorenzo River or its tributaries, be it a flashboard dam or a small rock dam, requires a permit consultation with the California Department of Fish and Game.

Santa Cruz County Resources Conservation District

The Santa Cruz County Resource Conservation District (SCCRCD) is a non-regulatory, non-for-profit entity. The mission of the SCCRCD is to help people protect, conserve, and restore natural resources through information, education, and technical assistance programs. The District provides an active program for the conservation of soil, water, plant, and wildlife resources in Santa Cruz County.

Informational Resources

Santa Cruz County Resource Conservation District
(831) 464-2950

Natural Resources Conservation Service
(831) 475-1967
www.nrcs.usda.gov

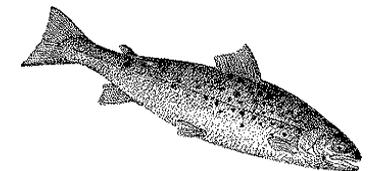
County of Santa Cruz Planning Department
(831) 454-2580
www.co.santa-cruz.ca.us

California Department of Fish and Game
(831) 649-2870
www.dfg.ca.gov

National Marine Fisheries Service
www.nmfs.noaa.gov

Army Corps of Engineers
www.sgn.usace.army.mil

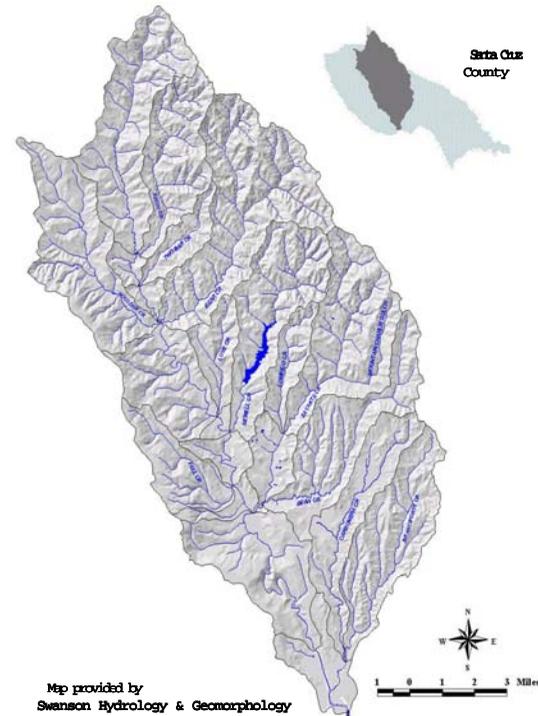
United States Fish and Wildlife Service
www.fws.gov



This brochure has been produced by the Santa Cruz County Resource Conservation District with Senate Bill 271 funds provided by California Department of Fish and Game.

Santa Cruz County
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Obstructions to Fish Passage



*In the
San Lorenzo River
Watershed*

THE SAN LORENZO RIVER WATERSHED

The San Lorenzo River watershed is habitat for steelhead trout and coho salmon. Anecdotes and estimates of fishing success suggest that steelhead trout and coho salmon were once plentiful in the watershed, and the San Lorenzo River was once described as one of the largest steelhead-producing rivers south of the Russian River. Steelhead trout and coho salmon populations began to decline in the 1960's. Steelhead trout are now listed as *threatened* under the Federal Endangered Species Act (ESA). Coho salmon are listed as *threatened* under the Federal ESA and as *endangered* under the California ESA. The decline of these fishes has been attributed to sedimentation, use of stream flow, and obstructions to migration. Compared to the efforts necessary to reduce sedimentation and conserve stream flow, elimination of obstructions to migration is simple and the rewards are immediately obvious.



coho salmon



steelhead trout

Why is Fish Passage Important for Steelhead Trout and Coho Salmon?

- ◆ To allow their yearly spawning migration.
- ◆ To maximize available spawning and rearing habitat.
- ◆ To diversify populations and genetics.
- ◆ To reduce competition among different species for limited resources.
- ◆ To find favorable over-wintering habitat.
- ◆ To find food.
- ◆ To find relatively cool and well-oxygenated water, particularly during summer.

What are the Effects of Impediments on Movement of Adult Fish?

- ◆ Disrupt spawning migrations.
- ◆ Under-utilization of tributary habitat.
- ◆ Over-crowding of available spawning habitat.
- ◆ Increased stress, injury, or predation/poaching.
- ◆ Less separation of competing species.

What are the Effects of Impediments on Movement of Juvenile Fish?

- ◆ Limit or prevent use of over-wintering habitat in tributaries.
- ◆ Increase predation.
- ◆ Limit or prevent summer migration from thermally-stressed mainstems to coolwater refugia.