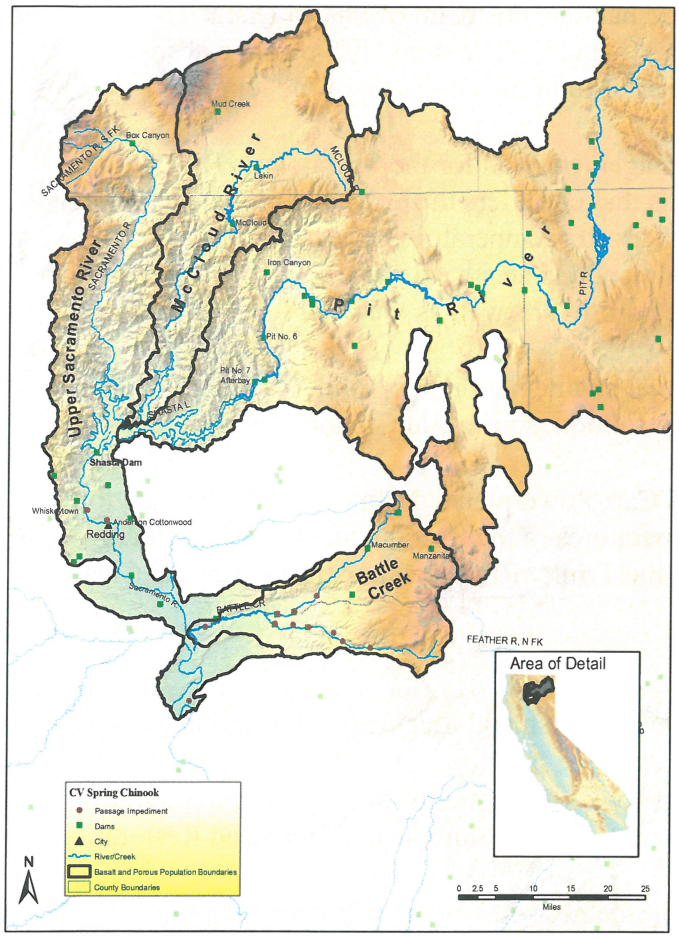
# Basalt and Porous Lava Diversity Group




## Core 1 Populations

- Sacramento River below Keswick Dam winter-run Chinook salmon
- Battle Creek spring-run Chinook salmon and steelhead

## Primary Areas for Reintroduction

- McCloud River (winter-run Chinook salmon, spring-run Chinook salmon, steelhead)
- Battle Creek (winter-run Chinook salmon)

## Core 2 Populations

- Sacramento River below Keswick Dam spring-run Chinook salmon and steelhead
- Cow Creek steelhead
- Redding-area tributary steelhead

## Key Threats

- Keswick and Shasta Dams blocking access to historical habitat
- Flows and water temperatures below Keswick and Shasta Dams affecting all life stages
- Lack of spawning gravel
- Introgression of fall- and spring-run below Keswick and Shasta Dams
- Passage impediments in Battle Creek
- Lack of biological data for steelhead in the Diversity Group

## Priority 1 Recovery Actions in the Basalt and Porous Lava Diversity Group[1]

Sacramento River

- Develop and implement a program to reintroduce winter-run Chinook salmon, spring-run Chinook salmon, and steelhead to historic habitats upstream of Shasta Dam. The program should include feasibility studies, habitat evaluations, fish passage design studies, and a pilot reintroduction phase prior to implementation of the long-term reintroduction program.
- Develop and implement a river flow management plan for the Sacramento River downstream of Shasta and Keswick dams that considers the effects of climate change and balances beneficial uses with the flow and water temperature needs of winter-run Chinook salmon, spring-run Chinook salmon, and steelhead. The flow management plan should consider the importance of instream flows as well as the need for floodplain inundation.
- Develop and implement a long-term gravel augmentation plan to increase and maintain spawning habitat for winter-run Chinook salmon, spring-run Chinook salmon, and steelhead downstream of Keswick Dam.
- Avoid full power peaking at Trinity and Carr Powerplants during sensitive periods for water temperatures to reduce water temperatures in the Sacramento River. Evaluate impacts of power peaking operations in the Trinity River, Sacramento River and Clear Creek.

Battle Creek

- Fully fund and implement the Battle Creek Salmon and Steelhead Restoration Project through Phase 2.
- Develop and implement a winter-run Chinook salmon reintroduction plan to re-colonize historic habitats made accessible by the Battle Creek Salmon and Steelhead Restoration Project.
- Implement the Battle Creek Salmon and Steelhead Restoration Project Adaptive Management Plan.
- Develop an Adaptive Management Plan for Coleman National Fish Hatchery and continue to integrate hatchery operations with Battle Creek Salmon and Steelhead Restoration Project activities.
- Enhance watershed resiliency in Battle Creek by developing a strategy to identify and prioritize vegetation and fuels treatments that would reduce the potential extent and/or the magnitude of high severity wildfires.

[1] Not all priority 1 recovery actions for this diversity group are shown here.