



U.S. Fish & Wildlife Service

Alaska Fish Passage Program

Partnerships helping fish move freely between habitats

Why is fish passage important?

Juvenile and adult fish need to move on a daily basis to find food and cover. In Alaska, fish move among, and migrate between a huge variety of habitat types year-round and at most flows: small headwater streams, wetlands, lakes, sloughs, large rivers, clearwater side channels, estuaries, and the ocean. Feeding and spawning migrations take some fish thousands of miles up and down freshwater corridors and between freshwater, estuarine, and marine habitats.

The Issue: poor fish passage at roads

With tens of thousands of streams across Alaska, the fact that poor fish passage where roads cross streams could be a significant threat to Alaska's fisheries may come as a surprise. Recent surveys have, however, found that the thousands of culverts underlying Alaska's resource access roads, major state highways, and neighborhood streets block movement of juveniles and adults during all or certain times of year. They also alter natural stream processes that help create/maintain habitat.

The Service's Fish Passage Program

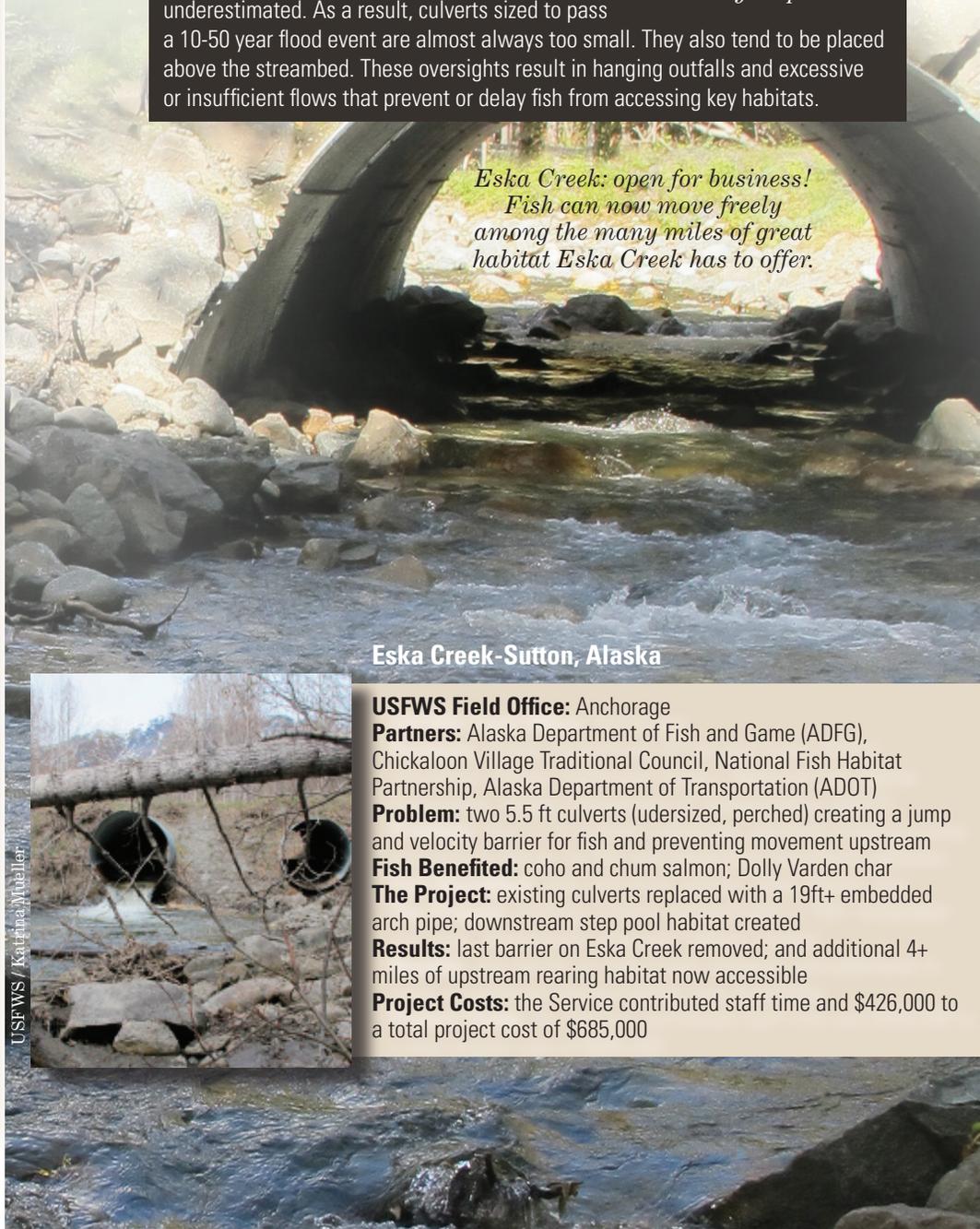
This program provides direct conservation assistance: we invest funding and staff time into partnerships and projects that restore fish passage and habitat connectivity. We also invest resources into projects that help prioritize the removal of fish passage barriers (e.g., barrier inventories and habitat assessments).



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Culverts: hiding in plain sight. Culverts channel streams under roads – we pass over them every day. Because accurate prediction of flows can be difficult in Alaska, floods are often underestimated. As a result, culverts sized to pass a 10-50 year flood event are almost always too small. They also tend to be placed above the streambed. These oversights result in hanging outfalls and excessive or insufficient flows that prevent or delay fish from accessing key habitats.

Fish can't get upstream.



*Eska Creek: open for business!
Fish can now move freely among the many miles of great habitat Eska Creek has to offer.*

Eska Creek-Sutton, Alaska



USFWS / Kathryn Mueller

USFWS Field Office: Anchorage

Partners: Alaska Department of Fish and Game (ADFG), Chickaloon Village Traditional Council, National Fish Habitat Partnership, Alaska Department of Transportation (ADOT)

Problem: two 5.5 ft culverts (undersized, perched) creating a jump and velocity barrier for fish and preventing movement upstream
Fish Benefited: coho and chum salmon; Dolly Varden char

The Project: existing culverts replaced with a 19ft+ embedded arch pipe; downstream step pool habitat created

Results: last barrier on Eska Creek removed; and additional 4+ miles of upstream rearing habitat now accessible

Project Costs: the Service contributed staff time and \$426,000 to a total project cost of \$685,000

Benefits of Fish-Friendly Crossings

Larger channel-spanning structures designed to let juvenile salmon move unimpeded among important rearing habitats not only boost fish production, but are also immensely valuable from a road maintenance and public safety perspective. Preliminary post-flood field evaluations of the 2012 floods in Alaska's Mat-Su Valley indicate that roads would have been over-topped or potentially compromised had the original culverts still been in place.

Leveraging Resources

Project partners typically match our Fish Passage funds by at least 1:1 (match can include in-kind services such as equipment use and time). We also work cooperatively with ADFG and other partners to assess barriers and prioritize projects.

Pullen Creek-16.5 Avenue crossing (Skagway, AK)

USFWS Field Office: Juneau

Partners: Taiya Inlet Watershed Council and City of Skagway

Problem: steep unnatural cascade at the culvert outlet preventing juvenile salmonids from accessing high quality rearing habitat upstream

Fish Benefited: coho and pink salmon, Dolly Varden char

The Project: provide low-gradient access channel to the culvert

Results: upstream rearing habitat is now accessible to salmon and char

Project Costs: the Service contributed staff time towards habitat assessment and restoration design, and approximately 90% of the total project cost of roughly \$8,000



Looking downstream from inside the culvert before (left) and after (right). The barrier cascade was replaced with a gently sloping 90ft roughened-channel fish ramp.

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Chena Slough-Nordale Road crossing (near North Pole, AK)

USFWS Field Office: Fairbanks

Partners: USDA Natural Resources Conservation Service, ADOT, Fairbanks Soil and Water Conservation District

Problem: fragmented/degraded fish habitat throughout the slough as a result of a series of undersized culverts

Fish Benefited: arctic grayling, longnose suckers, humpback/round whitefish, and chum salmon

Project: existing 4ft culverts were replaced with an 18ft culvert designed to provide fish passage and public access

Results: isolated fish populations reconnected; habitat for fish and water birds can now return to a more natural state

Project Cost: the Service contributed staff time and \$100,000 to the total project cost of \$321,500



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Coal Creek-Kalifornsky Beach Road crossing (Kenai Peninsula)

USFWS Field Office: Kenai

Partners: ADFG, ADOT, Kenai Watershed Forum

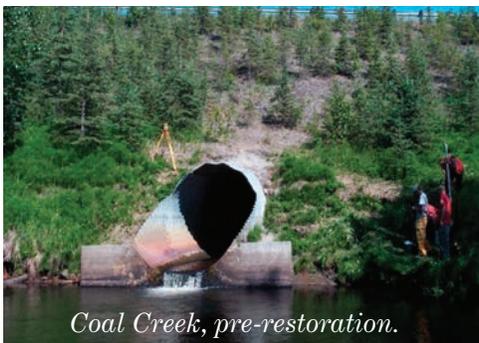
Problem: undersized/perched culvert blocking fish passage and disrupting stream processes

Fish Benefited: coho and pink salmon, steelhead trout, and Dolly Varden char

Project: replace existing 9ft culvert with 16ft culvert designed to provide fish passage; reconstruct stream channel

Results: natural stream processes can now occur and fish can move unimpeded through the culvert in either direction

Project Cost: the Service contributed staff time and approximately \$85,500 to the total project cost of \$2,366,650



Coal Creek, pre-restoration.



Coal Creek, post-restoration.

Alaska Regional Office

David Wigglesworth
1011 E. Tudor Rd
Anchorage, Alaska 99503
907/786-3925
david_wigglesworth@fws.gov

Anchorage Field Office

Bill Rice
605 West 4th Ave
Anchorage AK 99501
907/271-1798
william_rice@fws.gov

Fairbanks Field Office

Mitch Osborne
101 12th Ave, Rm 110
Fairbanks, AK 99701
907/456-0209
mitch_osborne@fws.gov

Juneau Field Office

Neil Stichert
3000 Vintage Park Blvd, Ste 201
Juneau, AK 99801
907/780-1180
neil_stichert@fws.gov

Kenai Field Office

Heather Fuller
43655 Kalifornsky Beach Rd
Soldotna, AK 99669
907/260-0130
heather_fuller@fws.gov