Making More Salmon AND Reducing Flood Damage Where Roads Cross Streams: Spotlight on Tyonek, Alaska!

Photo: Shorezone

The Native Village of Tyonek (NVT), with a population of less than 200, is located 40 air miles from Anchorage, on the western shore of Cook Inlet.

Indian Creek flows through Tyonek into Cook Inlet and supports important subsistence fisheries for salmon and rainbow trout. Last spring, heavy spring flows washed out the original 4ft diameter culvert where a road crossed Indian Creek (left). A temporary 2ft culvert was installed (see back).

The Indian Creek culvert washed out in spring 2012. Wash-outs and chronic road maintenance where roads cross streams are a common symptom of too-small culverts: there is just too much water for the culvert to handle and it has nowhere else to go but over (or through) the road. These too-small culverts also cause big problems for migrating fish by constricting the streamflow into a very small space. This creates a high velocity situation that juvenile fish can't move beyond and often results in a "perch" at the culvert outlet that they can't jump into.

In October 2012, the creek was fitted with a much larger (8ft diameter) fish- and flood-friendly culvert designed by the U.S. Fish and Wildlife Service's (USFWS) Alaska fish passage engineer. Habitat through fish-friendly culverts mimics the natural stream channel, allowing fish to pass through similar conditions under the road that they'd encounter elsewhere in the stream. Culverts designed to let juvenile salmon move freely among important rearing habitats not only boost fish production, but are also immensely valuable from a road maintenance and public safety perspective...they keep fish habitat and communities connected, no matter what the weather!

"*For the first time in a long time, this creek crossing did not wash out during the spring melt*," said Christy Cincotta, Executive Director of the Tyonek Tribal Conservation District (TTCD). "*NVT machinery operators did a great job and this project provided a great opportunity for local operators to learn the techniques involved with installing a fish-friendly culvert.*"

The temporary 2ft culvert was replaced with a 8ft fish- and flood-friendly culvert (above) in October 2012. Upstream habitat includes over a mile of stream habitat and an estimated 80 acres of lakes.

Following the culvert upgrade, fish habitat was further improved along Indian Creek in early June 2013 by layering 100 feet of live willow clippings just downstream of road-stream crossing. Vegetated streambanks provide habitat for fish and wildlife, as well as bank protection and erosion control. TTCD hopes to continue to work with NVT and other partners on future culvert installation projects. With this kind of example, interest in fixing more culverts in and around tribal lands has increased.

As typical with habitat restoration projects, a variety of partners worked together to make it happen—this particular fish passage project is an outgrowth of a strategic planning project completed by TTCD and funded by USFWS's Alaska Coastal Program. The plan identified a wide range of potential habitat improvements and helped TTCD develop a partnership with the Service's Fish Passage Program and the Alaska Department of Fish and Game. The strategic planning process also resulted in TTCD becoming involved with both the Kenai Peninsula and Mat-Su Basin Fish Habitat Partnerships. This project is a good example of the Alaska Region's Habitat Conservation Partnership Programs complimenting each other to achieve on-the-ground conservation benefiting fish and wildlife and the needs of our partners.

Project partners:

Tyonek Tribal Conservation District
Native Village of Tyonek
Tyonek Native Corporation
USFWS Anchorage and Kenai Field Offices
Alaska Department of Fish and Game
Kenai Peninsula Fish Habitat Partnership
Mat-Su Salmon Habitat Partnership

Indian Creek's bank, just downstream of the new culvert, was revegetated in early June 2013 with live, native willows and will also be hydroseeded to promote growth of native grasses.