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Topic: Tongass National Forest Fish Passage at Road-Stream Crossings Status
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Issue Summary:

Fragmentation of aquatic habitat from road-stream crossings has a well-documented impact on salmon and other aquatic species. Undersized and poorly configured crossings on fish-bearing streams increases the risk of failure during flood events, with potential profound effects on fish and aquatic life due to higher water flows and increased sedimentation. The Tongass National Forest recognized the issue across its approximate 5,000 mile network of roads (including non-system decommissioned roads) in the early 1990's, and the USFS and other agency technical experts convened fisheries biologists, hydrologists and road engineers who developed and refined an assessment protocol used to survey and categorize fish stream crossings across the Tongass. The Forest has been a leader in Aquatic Organism Passage for more than 30 years.

Background:

- To date, 3,682 total fish stream crossings have been surveyed and assessed within the bounds of the Tongass, of which 1,294 are on anadromous streams, with another 2,388 on resident fish streams.
- As of 2019, the Tongass has documented a total of 1,120 crossings (30%) which do not meet current fish passage standards, otherwise known as RED crossings, as established by ADF&G and USFS. Crossings are denoted as RED for any of the following reasons:
    - **Culvert gradient** is too steep resulting in bedload loss and excessive water velocities within the culvert and can cause head cutting upstream
    - Stream is **constricted** by undersized culvert creating excessive water velocities within the culvert and bedload deposition or rapid change in water surface profile at the inlet
    - Culvert is **perched** at the outlet creating a vertical barrier fish may not be able to navigate
    - Culvert is **blocked** by debris restricting upstream migration
- Of the total RED crossings, 176 (14%) are on anadromous streams and 944 (40%) occur on resident fish streams.
- Fragmented habitat upstream of RED crossings is estimated to equal about 0.4 percent (65 miles) and 2 percent (178 miles) of all mapped anadromous and resident fish stream miles on the Forest, respectively.
- Between 1998 and 2019, the Tongass has replaced, retrofitted or removed approximately 642 crossings that were not previously meeting passage standards. Replaced crossings follow a stream simulation design by mimicking the natural channel.
- Estimated cost of remediation adjusted to 2019 dollars is $19 million
- The Forest has been working with partners in replacement prioritization efforts
- RED crossings are prioritized for replacement based on:
    - Extent to which the crossing is affecting passage and the quantity and quality of upstream habitat
    - Location of the site to Priority watersheds
    - Other projects occurring in the area with equipment mobilized

    - Failing structure due to service life being met
- Culvert surveys on the Tongass occur in concert with timber sale planning, watershed restoration planning, mining projects, and road maintenance projects. Additional RED crossings are identified and added to the database as these surveys occur.
- Upcoming work:
    - There are 10 RED crossings in contract for replacement in 2020 on Prince of Wales Island and Hoonah.
    - There are 3 RED crossings in the Hoonah Native Forest Partnership area that are contract ready with most of the funding obtained through USFWS for implementation. Additional USFS funds are needed to fully cover implementation costs.

Recommendation: Continue to prioritize and remediate RED road-fish stream crossings on the Tongass National Forest.