



State of Washington  
**DEPARTMENT OF FISH AND WILDLIFE**

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**From:** Justin Zweifel, WDFW Fish Passage Inventory and Assessment Unit Supervisor

**Date:** June 30, 2015

**Subject:** Final Report of County Fish Passage Inventory, 2013 - 2015

We are pleased to provide the 2013 - 2015 Fish Passage Inventory Final Report. This report provides the results for the inventory and assessment of county road crossings July 2013 – June 2015.

Detailed electronic reports were produced as a result of the inventory and assessment surveys. These will be provided to the Counties once our review for completeness and accuracy is completed in July.

We appreciate the opportunity to serve you and your partners and are available to continue to provide expert services in this field.

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# **Fish Passage Inventory Final Report for Washington Counties July 1, 2013 through June 30, 2015**



In partnership with the Washington State Association of Counties (WSAC) and the Washington State Department of Transportation's Highways and Local Programs (HLP), the Washington Department of Fish and Wildlife (WDFW) inventoried, assessed, and prioritized fish passage barriers in anadromous waters associated with county roads. The project also included a reassessment and update of available county inventory data. The inventories and associated habitat surveys were conducted utilizing methods described in WDFW's Fish Passage Barrier and Surface Water Diversion Screening Assessment and Prioritization Manual (WDFW 2009). This final report summarizes the results of the County Fish Passage Inventory work completed between July 1, 2013 and June 30, 2015. Detailed Fish Passage and Diversion Screening Inventory (FPDSI) database reports and Priority Index (PI) values will be provided directly to each county in Table 1.

## **METHODS**

WDFW, HLP, and WSAC selected counties within priority watersheds to conduct fish passage inventory and habitat assessment work.

To prepare for inventory field work, maps were created that included stream crossings, road names, existing FPDSI database records, and county boundaries. Areas within incorporated city boundaries were not assessed. This allowed WDFW field crews to drive to mapped county road crossings and document, photograph, and take the necessary measurements to evaluate the road crossings using the methodology described in the WDFW Fish Passage Barrier and Surface Water Diversion Screening Assessment and Prioritization Manual (WDFW 2009). WDFW crews also visited previously documented road crossings to verify and update existing data when necessary.

To prepare for habitat assessment field work, a query of the FPDSI database was completed to identify county barriers downstream of WSDOT barriers that had a recently completed Reduced Sample Full Survey (RSFS) as described in WDFW 2009. This allowed field crews to assess the habitat between the County and WSDOT barriers in order to combine the new data with the previous assessment to create a PI value for the county barrier.

Using a strategic approach, WDFW conducted habitat assessments for county barriers that were on streams adjacent to other ongoing surveys. This allowed WDFW to calculate PI values that may be used to prioritize county road crossings for future fish passage barrier correction. This inventory was focused on anadromous streams and therefore required field crews to verify anadromous access prior to conducting upstream habitat surveys. The field crews documented any natural barriers that preclude upstream migration, such as waterfalls and high-gradient stream sections. If anadromous access was verified, the field crews took measurements of the quality and quantity of potential fish habitat and documented additional barriers within the stream.

## DATA SUMMARY

Between July 1, 2013 and June 30, 2015, 177 newly inventoried crossings and 382 reassessed crossings were evaluated in 13 counties for a total of 559 fish passage barrier assessments on county roads. Of the 559 evaluated road crossings, 302 were determined to be fish passage barriers; 267 of the 302 fish passage barriers are barriers to anadromous salmon and steelhead. Stream habitat assessments for barrier prioritization were completed for 129 fish passage barriers. Table 1 summarizes the results of the road crossings inventoried for each county.

Some county road crossings were difficult to evaluate due to complex hydraulic conditions. Common examples include culverts that are several blocks long, culverts that are tied into stormwater or sewer systems, and culverts that consist of different material types. Other complex hydrologic field conditions included tidal influence, wetlands, or tributaries located immediately downstream of the road crossing that preclude Level B analysis. At these sites, barrier status is unknown and may require engineering review.

The following is a list of descriptions of the contents in Table 1:

- **Newly Inventoried Crossings:** crossings that were newly inventoried by WDFW and were entered into FPDSI during the contract period (July 1, 2013 – June 30, 2015)
- **Reassessed Crossings:** crossings that were already in FPDSI, due to an earlier assessment, and were updated during the contract period
- **Fish Passage Barriers Assessed:** fish passage barriers assessed during the contract period that block passage to resident or anadromous salmonids
- **Salmon & Steelhead Barriers Assessed:** fish passage barriers assessed during the contract period that inhibit access to at least one of the following species in its anadromous form: chum salmon (*Oncorhynchus keta*), pink salmon (*O. gorbuscha*), coho salmon (*O. kisutch*), sockeye salmon (*O. nerka*), chinook salmon (*O. tshawytscha*), or steelhead trout (*O. mykiss*)

- **Unknown Barrier Status Assessed:** sites assessed during the contract period where complex hydrological conditions exist and standard protocols could not determine passability (examples of this include wetland to wetland culverts or tidally influenced culverts)
- **Salmon & Steelhead Barriers Prioritized:** these sites were prioritized during the contract period using the habitat assessment protocols outlined in the WDFW publication “*Fish Passage Barrier and Surface Water Diversion Screening Assessment and Prioritization Manual*” (WDFW 2009)
- **Man-made Fish-Bearing Sites:** total sites in FPDSI that in fish bearing streams as determined by at least one of the following methods: average scour line width greater than 2 feet in Western Washington, streams identified as fish habitat (Type “F”) by Washington State Department of Natural Resources (DNR), documented salmonid use, or listed as fish bearing in *SalmonScape* (<http://wdfw.wa.gov/mapping/salmonscape/>).

Table 1. County Fish Passage Inventory: July 1, 2013 – June 30, 2015

County Name	Newly Inventoried Crossings	Reassessed Crossings	Fish Passage Barriers Assessed	Salmon & Steelhead Barriers Assessed	Unknown Barrier Status Assessed	Salmon & Steelhead Barriers Prioritized	Man-made Fish-Bearing Sites
*Clallam County	2	14	11	11	1	3	345
Grays Harbor County	5	19	17	17	1	4	407
**Island County	24	5	20	15	6	20	34
Jefferson County		13	5	4	4	3	269
King County	16	48	30	25	14	21	506
Kitsap County	62	46	66	62	14	19	259
Lewis County	3	54	28	20	6	2	404
Mason County	1	4	3	3		1	191
Pierce County	47	19	31	31	20	24	285
Skagit County	2	31	13	12	3	10	323
Snohomish County	8	46	27	24	7	14	633
Thurston County		34	10	8	2	2	275
Whatcom County	7	49	41	35	6	6	581
<b>Total</b>	<b>177</b>	<b>382</b>	<b>302</b>	<b>267</b>	<b>84</b>	<b>129</b>	<b>4,512</b>

\* Inventory efforts completed by Clallam County yielded data products that WDFW received in 2015. These data were not included in the summary of work completed above.

\*\* Island County inventory was predominantly funded through the county separately.

*Detailed FPDSI database reports and PI values will be provided directly to each county in Table 1.*

## REFERENCE

Washington Department of Fish and Wildlife. 2009. Fish Passage and Surface Water Diversion Screening Assessment and Prioritization Manual. Washington Department of Fish and Wildlife. Olympia, Washington.