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October 2, 2018

MEMORANDUM

TO: Fish and Wildlife Committee members

FROM: Nancy Leonard

SUBJECT: Overview of Objectives for other Anadromous and Resident Fish

BACKGROUND:

Presenter: Nancy Leonard

Summary: The Northwest Power Act outlines the expectation for Program objectives based on recommendations from the Federal and the region's State fish and wildlife agencies and the region's appropriate Indian tribes. The 2014 Program outlined a multi-step task for collaboratively refining Program goals and quantitative objectives. To inform the refinement of Program objectives, Council staff has been working with the region, including the state and federal fish and wildlife agencies and tribes, on compiling and organizing existing objectives for fish species and habitat. Council staff will provide an update on the status of this work, with a focus on next steps for producing an initial objective mapping tool and online query tool for the remaining 9-fish species including 3 sub-species of cutthroat trout.

Relevance: This work supports implementation of the 2014 Program task for refining program goals and quantitative objectives (Program Part 3, Section III.A.1), as well as the adaptive management emerging Program priority (Program Part 6, Section II). The salmon and steelhead objectives component of this work informs the NOAA Columbia Partnership Task Force effort.

Background: Since the adoption of the 2014 F&W Program in October 2014, Council staff has been working with fish and wildlife managers, regional partnerships, and consultants to compile and organize existing fish objectives and advance habitat objectives to inform refinement of Program objectives. To facilitate communicating and understanding these objectives staff has displayed the objectives and related contextual information using story maps similar to those developed for the Program's fish hatcheries, fish screens, and wildlife lands long-term maintenance needs (see existing Program story maps).

The general process for compiling, organizing and displaying existing fish objectives on a story map tool to inform refinement of Program goals and objectives involves:

- Council staff lead effort to search and compile existing objectives from Columbia River Basin documents, including ESA recovery plans, state and tribal management plans, subbasin documents spanning about a 10 to 15-year time period.
- Fish managers assisting Council staff in confirming that all relevant documents are captured and verifying that the relevant goals and objectives statements are extracted from these documents.
- Council staff and QW Consulting proposing a draft structure, with alternatives, to organize and display objectives on a story map.
- Seeking input from managers and Council members to inform development of the draft story map tool, including requested functionalities such as being able to view content by subbasin or populations, addition of contextual content, link to other information, and search/filtering options.
- Testing the functional story map tool with managers and Council members to inform further modifications to the story map.
- Posting on the Council's Resource Tools and Map webpage the story map tool and complementary online query tool for downloading content.
- Developing staff data entry tool to facilitate update and maintenance of objectives content of the story map tool.
- Subsequent Council staff updates to the content of the fish objective story map tools follows specific update process that is included as a hyperlink to all fish objectives story map tools.

Summarized below is the status for: (1) objectives for adult salmon and steelhead; (2) other anadromous and resident fish objectives; and, (3) ecosystem function, habitat, and hydrosystem objectives.

(1) Objectives for adult salmon and steelhead

Status: completed story map and query tool are on Council website.

- Council staff worked with fish managers and the Fish and Wildlife Committee members between 2015 and 2017 to finalize compilation and the story map tool for existing salmon and steelhead adult abundance objectives for Chum, Coho, Sockeye, Chinook, and Steelhead.
- After the February 2017 Council meeting, the story map tool and online query tool for salmon and steelhead were posted on the Council's Program Resources Tools and Map webpage.
- Council staff maintains the objective content, making corrections and additions to the objectives following the specified update process, and continues to support the NOAA Columbia Basin Task Force Partnership effort.

(2) Other anadromous and resident fish objectives

Status: first version of mapping tool planned for November 2018

- During 2017, Council staff with QW Consulting completed an initial mining of existing objectives for seven-fish species: bull trout, three sub-species of cutthroat trout, redband trout, kokanee, Pacific lamprey, white sturgeon, and eulachon resulting in the extraction of 1162 goals and objectives statements.
- To request the assistance from fish managers in vetting the initial compilation of existing objectives for these seven-fish species Council staff held several meetings with fish managers (in-person meeting on April 12, 2017, conference call on February 5, 2018, and nine individual phone calls between February 14 and 28, 2018). These meetings were attended by fish managers from 7 federal (USACE, USBLM, USBR, USFWS, USFS, USGS, NOAA), 4 states (IDFG, MTFWP, ODFW, WDFW) , and 8 tribal agencies (CdA, CTGR, CTUIR, CTWS, KTOI, STOI, Shoshone-Paiute Tribes, YN), as well as representatives of 5 other organizations (CRITFC, UCUT, USRT, OSU, Mid-Columbia Fisheries Enhancement Group). Additions and modifications to this initial compilation were made per the fish managers' input. Also, per fish managers' requests, existing goals and objectives for Oregon chub and Burbot were added to the compilation. Addition of these two-fish species resulted in an additional 130 statements resulting in a total of 1292 compiled statements for the 9-fish species.
- Between April and May 2018, Council staff and QW Consulting met with fish managers from 2 states (IDFG, MTFWP) and 10 tribes (NPT, KT, CCT, STOI, CDAT, CTWS, CTUIR, CTGR, YN, BPT) through a series of in-person meetings, to discuss a draft organization for displaying these fish objectives on a story map tool.
- To inform the program amendment process, Council staff and QW Consulting will use the input from fish managers and the Fish and Wildlife Committee to develop an initial, functional, objectives story map tool and online query tool for these nine-fish species to be shared in November 2018. The online query tool and this initial functional site

will provide access to the compiled objectives for these nine-fish species in advance of the December 13th program recommendation submittal deadline and subsequent public comment period. Discussion about additional functionalities, such as viewing objectives by management unit, and other needed refinements will be explored through discussions with fish managers and the Fish and Wildlife Committee after the November 2018 version is released.

(3) Ecosystem function, habitat, and hydrosystem objectives

Status: Habitat portion in-development

- During the April 2015 Pacific Northwest Aquatic Monitoring Partnership (PNAMP) Steering Committee meeting PNAMP partners and the Northwest Power and Conservation Council staff agreed to collaborate to identify regional habitat questions, indicators, and objectives of common interest that could be informed by existing monitoring, specifically water flow, water temperature, water quality index, and macroinvertebrates.
- Work is ongoing through the collaborative PNAMP regional habitat indicator project (RHIP) facilitated by project team Nancy Leonard (Council staff) and Amy Puls (PNAMP staff). RHIP efforts are currently focused on understanding data accessibility and compatibility for the selected management questions and their indicators.

More Info:

Existing Council Program Resource [Tools and Maps](#) include Operations and Maintenance maps and Fish Objectives maps.

Summary of objectives related workshops and updates to Council Members:

[February 13, 2018 update](#) to the Fish and Wildlife Committee members on the Status of the Fish and Wildlife Program's Story Maps, including fish objectives and Program operation and maintenance maps.

[February 5, 2018 meeting](#) with fish managers about existing objectives for bull trout, redband trout, cutthroat trout, kokanee, Pacific lamprey, white sturgeon and eulachon.

[April 12, 2017 workshop](#) with fish managers about bull trout objectives.

[February 14, 2017 update to](#) the Fish and Wildlife Committee on Natural Origin Salmon and Steelhead Adult Objective Mapping Tool.

[December 13, 2016 presentation](#) to the Fish and Wildlife Committee on the Objectives Mapping Tool (salmon and steelhead objectives).

[August 9, 2016 work-session](#) with fish and wildlife managers to provide input on PNAMP's Regional Habitat Indicator Project.

[May 11, 2016 Technical Work Session](#) for Objective Mapper Content to clarify and refine with fish managers the objective information in the Council's Objective Mapping Tool related to abundance for salmon and steelhead populations.

[December 15, 2015 presentation](#) to the Fish and Wildlife Committee on a basic mapping tool to facilitate viewing natural origin salmon and steelhead abundance objectives within a subbasin.

[June 2015, regional meeting](#) for the Refinement Process for Program Goals and Objectives Salmon and Steelhead.

[2015-ongoing, Regional habitat indicator project](#) (RHIP) led by PNAMP that supports the 2014 Program task related to Ecosystem function, habitat and hydrosystem objectives. The RHIP is a pilot project to develop recommendations for regional habitat indicators. The pilot will focus on management questions, indicators, and objectives for water quality index, macroinvertebrates, water temperature, and flow.

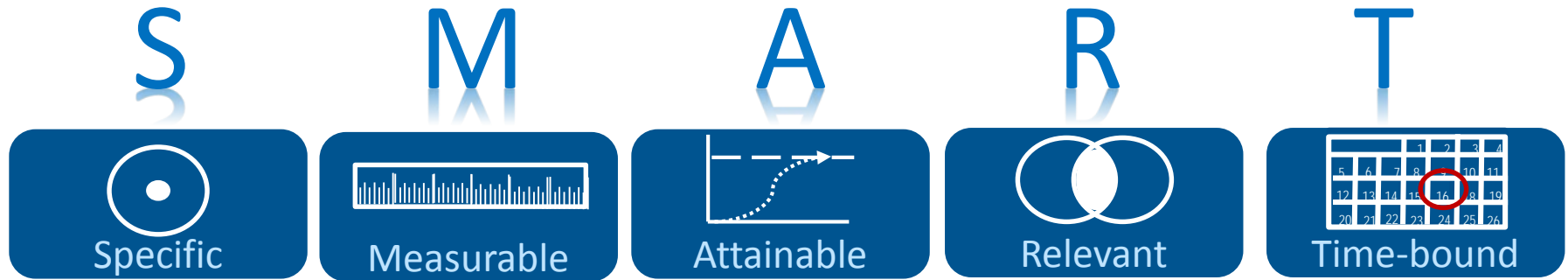
- [April 16, 2015](#) PNAMP Steering Committee meeting PNAMP partners and the Northwest Power and Conservation Council staff agreed to collaborate to identify regional habitat questions, indicators, and objectives of common interest that could be informed by existing monitoring, specifically water flow, water temperature, water quality index, and macroinvertebrates ([see more here](#)).
- [March 16, 2016](#) first meeting of the regional habitat indicator project (RHIP) facilitated by PNAMP's project team Nancy Leonard (Council staff) and Amy Puls (PNAMP staff).
- [July 20, 2016](#) RHIP combined indicators work to discuss progress made on identifying aquatic habitat management questions of greatest common interest
- [November 9, 2016](#) RHIP workshop #1 to vet recommendations for management questions and related indicators
- [September 19, 2017](#), [December 14, 2017](#), and [February 15, 2018](#), check-in meetings on progress made by the RHIP sub-groups on indicators for the management questions.
- [March 22, 2018](#), RHIP workshop #2, focus on improving data accessibility and compatibility for the selected management questions and their indicators.

Fish and Wildlife Program Objectives Task Update

Nancy Leonard, Fish Wildlife and Ecosystem Monitoring and
Evaluation Report Manager

Patty O'Toole, Program Implementation Manager

Fish and Wildlife Program Objectives



- Qualitative goals and SMART numerical objectives
- Achievement depends on coordinated actions of many parties
- 2014 Program Appendix D contains 22 goal statements needing new/refined SMART objectives

Note: the 62 subbasin plans adopted during 2004, 2005, 2010, and 2011 contain more than 8,000 subbasin level goals and objectives, of which some are SMART.

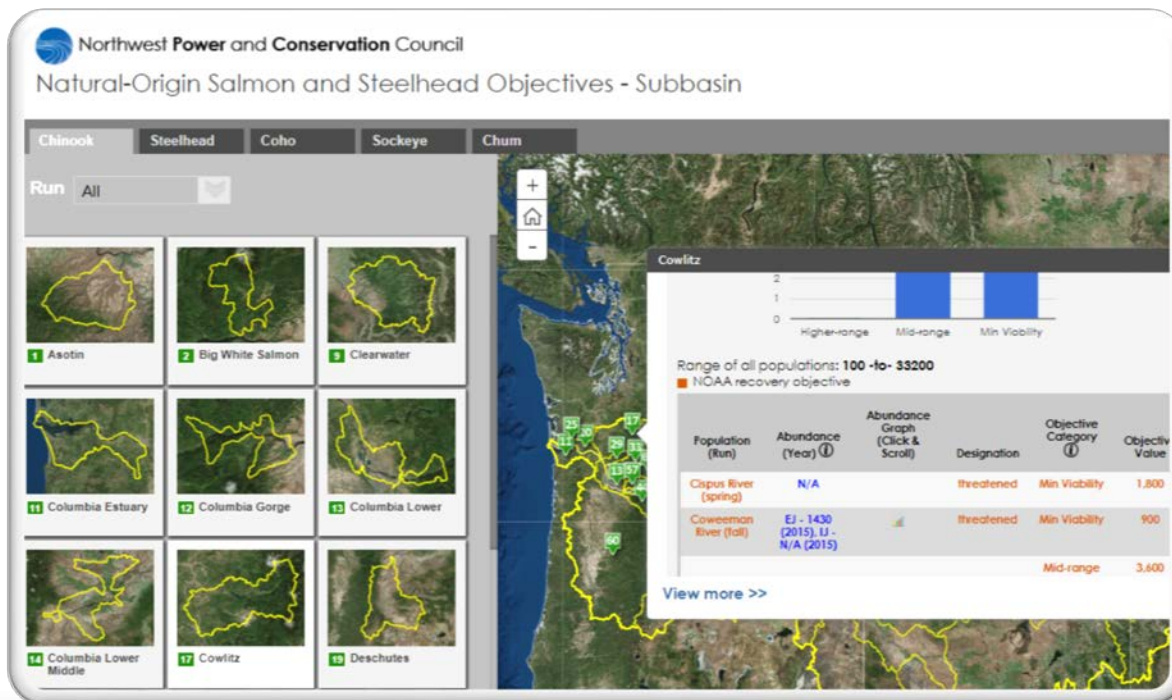
2014 Program Refinement Tasks

- The Council, working with others, will **survey, collect, identify,** and refine objectives for program focal species and habitat:
 - Objectives for adult salmon and steelhead
 - Other anadromous and resident fish objectives
 - Ecosystem function, habitat, and hydrosystem objectives
 - Public engagement quantitative objectives

2014 Program / A. Program goals and quantitative objectives / 1. Refining program goals and quantitative objectives section.

2014 Program Refinement Tasks

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 - Objectives for adult salmon and steelhead
 - Compilation is mapped; informing NOAA CBPTF process



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 - Initial map of compilation in progress; today's focus

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 - Other anadromous and resident fish objectives
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 - Ecosystem function, habitat, and hydrosystem objectives
 - Ongoing collaborative effort with partners through Pacific Northwest Aquatic Monitoring Partnership (PNAMP)



pacific northwest aquatic
monitoring partnership

Regional Habitat Indicators Project

The goal of the pilot project is to come to agreement on a small set of water quality indicators for which data will be efficiently coordinated and communicated to allow comparisons at multiple scales across the region. During 2017 we identified a short list of indicators to best answer the selected management questions, and we also

2014 Program Refinement Tasks

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 - Other anadromous and resident fish objectives
 - Initial map of compilation in progress; today's focus
 - Ecosystem function, habitat, and hydrosystem objectives
 - Ongoing collaborative effort with partners through Pacific Northwest Aquatic Monitoring Partnership (PNAMP)
 - Public Affairs Division (internal work)

Other Anadromous and Resident Fish Objectives Task Update



Bull Trout



Eulachon



Pacific Lamprey



Burbot



Kokanee



Redband Trout



Cutthroat Trout
(Coastal, Westslope, Yellowstone)



Oregon Chub



White Sturgeon

Objective Compilation and Vetting by Managers

Other Anadromous and Resident Fish Objectives

- Initial document search and statement extractions (2017)
 - Located and surveyed ~165 relevant documents
 - Identified and collected 1,292 goal/objective statements
- Initial vetting of documents and statements (2017 & 2018)
 - In-person and conference call meetings with fish managers
 - Representatives from 7 federal agencies, 4 state agencies, 8 tribal agencies, and 3 tribal organizations


Objective Compilation and Vetting by Managers
Other Anadromous and Resident Fish Objectives

- Series of in-person meeting with subset of fish managers to discuss content and organization of objectives for Story Map Tool (April-May 2018)
 - representatives from 2 state and 10 tribal fish agencies
- Input used to inform proposed story map tool, version 1
 - additional content such as fish description and limiting factors
 - organization of more than 40 different goal/objectives topics

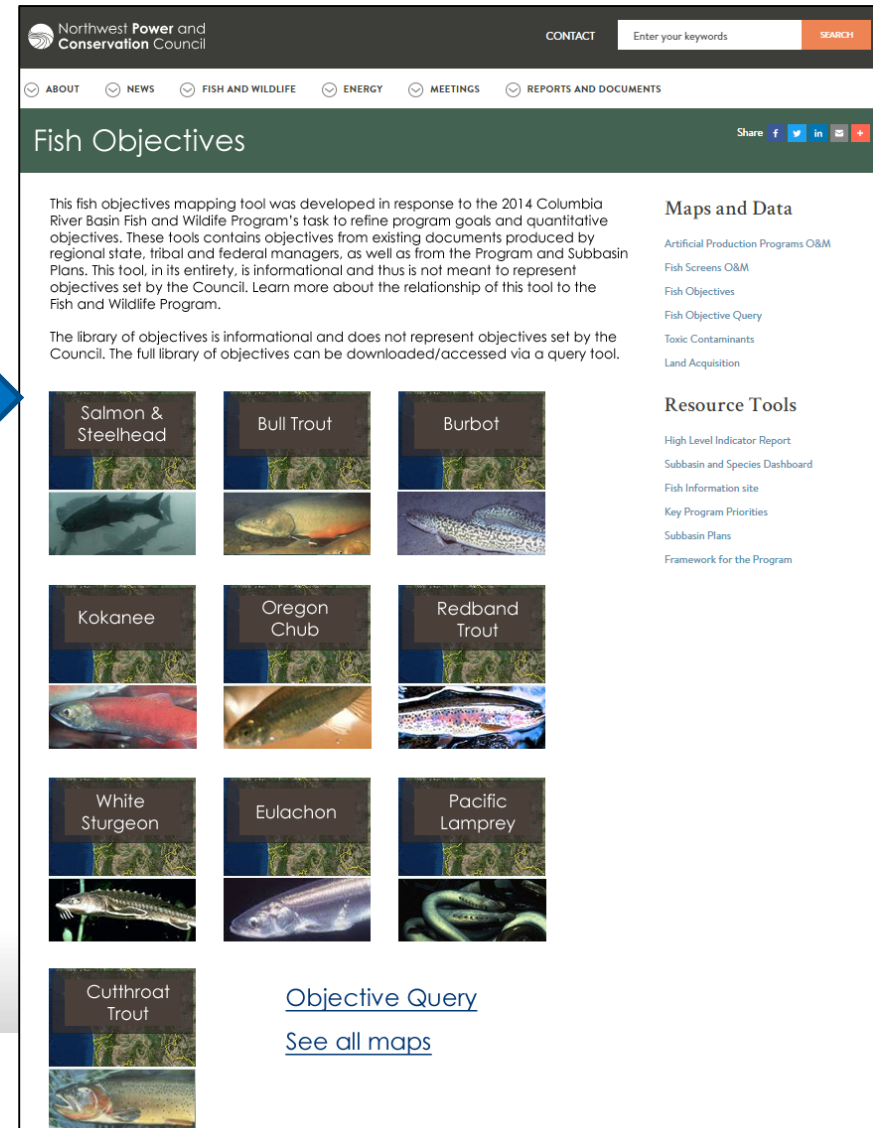
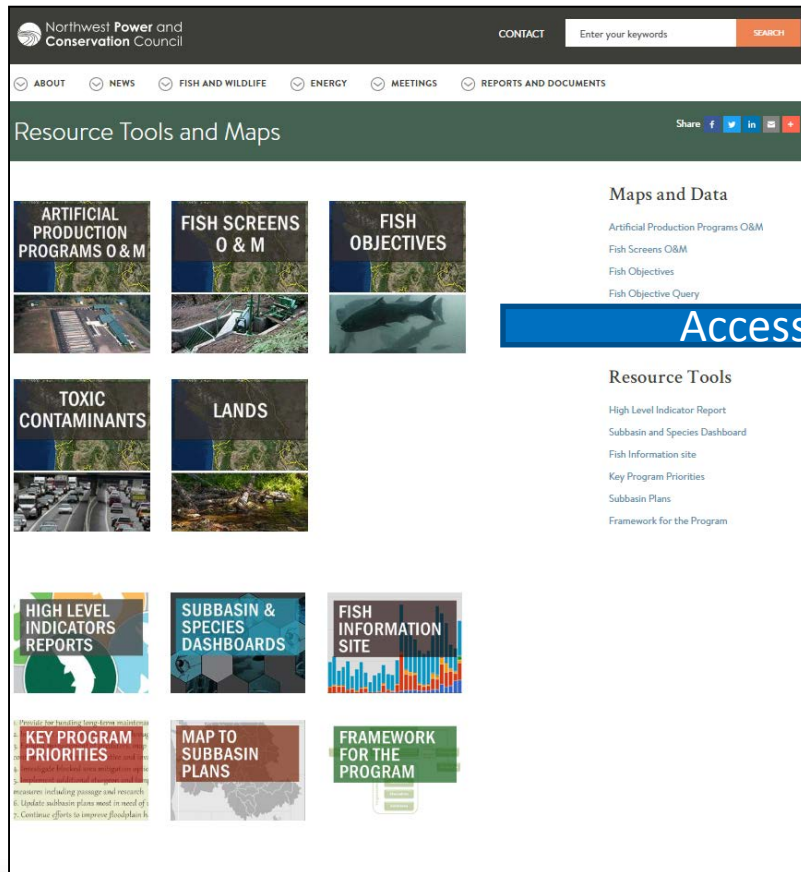


Timeline Progress Check

Other Anadromous and Resident Fish Objectives

Fish Species: <i>Bull trout, burbot, cutthroat trout (3), eulachon, kokanee, Oregon chub, Pacific lamprey, redband, white sturgeon</i>	2017	April 2017 & Feb. 2018	March- April 2018	April-May 2018; Oct. 2018	Nov. 2018	Nov 2018- Jan 2019	? 2019
Initial compilation	✓						
Fish managers vet content		✓					
Revise content, add 2 species, and mock-up of map content			✓				
Input on mock-up from managers and members							
Functional mapping tool and online query (version 1)							
Input from Fish managers and FW committee members							
Final mapping tool (version 2)							

Discussion of Proposed Version 1 Story Map Tool Content and Organization *Other Anadromous and Resident Fish Objectives*





Fish Objectives - Cutthroat Trout

All

Cutthroat

Redband

Kokanee

[Learn More](#)

[Show splash screen](#)

[Query Tool](#)

[Other tools](#)

[Report Corrections](#)

Display By Subbasin



Locations where objectives exist



A Bitterroot



B Blackfoot



C Clark Fork



D Clearwater



E Coeur d'Alene



F Fifteenmile Creek



G Flathead



H Hood River



I John Day



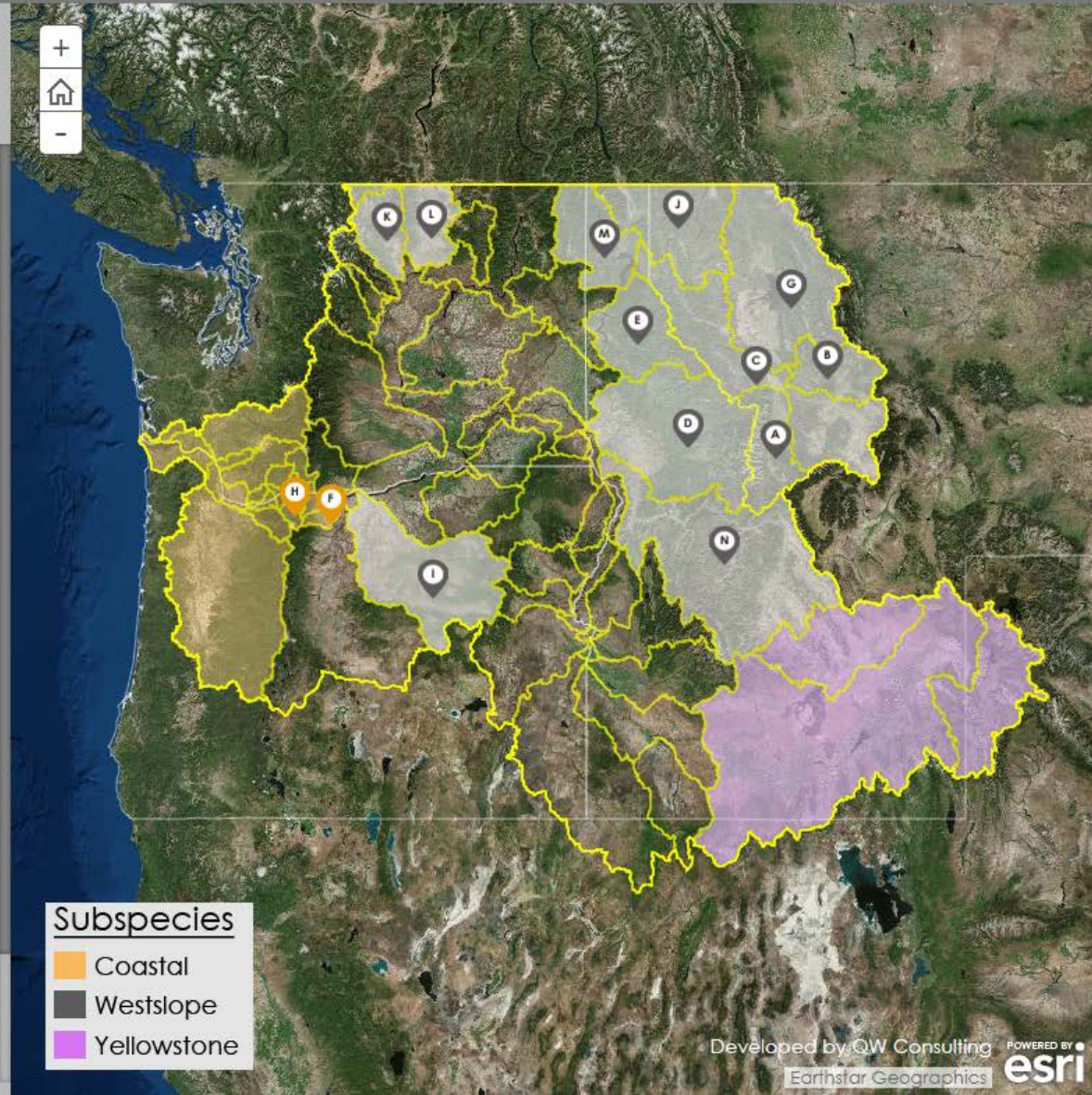
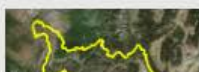
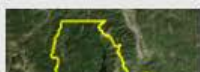
J Kootenai



K Methow



L Okanogan



Subspecies

- Coastal
- Westslope
- Yellowstone



Fish Objectives - Cutthroat Trout

Navigate
among maps

Topic Fish Objectives - Cutthroat Trout

Drop down list options

All

Cutthroat

Redband

Kokanee

Learn More

Show

Display By Subbasin



Locations where objectives exist



A Bitterroot



B Blackfoot



C Clark Fork



D Clearwater



E Coeur d'Alene



F Fifteenmile Creek



G Flathead



H Hood River



I John Day



J Kootenai



K Methow



L Okanogan



Subspecies

- Coastal
- Westslope
- Yellowstone

Artificial Production Program
Fish Screen Program
Land Acquisition
Fish Objectives

- Salmon & Steelhead
- Bull Trout
- Burbot
- Kokanee
- Oregon Chub
- Redband Trout
- White Sturgeon
- Eulachon
- Pacific Lamprey
- Cutthroat Trout



Fish Objectives - Cutthroat Trout

All

Cutthroat

Redband

Kokanee

Learn More

Show splash screen

Query Tool

Other tools ▾

Report Corrections

Display By Subbasin



Locations where objectives exist



A Bitterroot



B Blackfoot



C Clark Fork



D Clearwater



E Coeur d'Alene



F Fifteenmile Creek



G Flathead



H Hood River



I John Day



J Kootenai



K Methow



L Okanogan



Only "Subbasin" as option for Version 1.
Will build drop down to allow adding viewing options as requested by managers , such as viewing objectives by management units

Subspecies

- Coastal
- Westslope
- Yellowstone



Fish Objectives - Cutthroat Trout

All

Cutthroat

Redband

Kokanee

Learn More

Show splash screen

Query Tool

Other tools ▾

Report Corrections

Display By Subbasin



Locations where objectives exist



A Bitterroot



B Blackfoot



C Clark Fork



D Clearwater



E Coeur d'Alene



F Fifteenmile Creek



G Flathead



H Hood River



I John Day



J Kootenai



K Methow



L Okanogan



Subspecies

- Coastal
- Westslope
- Yellowstone

PINs represent objectives are present in subbasin

Shades represent subbasins where species are located

All

Cutthroat

Redband

K

Display By Subbasin



Locations where objectives exist



A Bitterroot



B Blackfoot



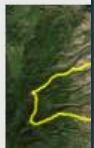
C Clark



D Clearwater



E Coeur d'Alene



F Fifteen



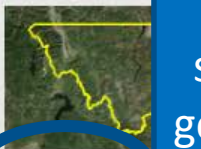
G Flathead



H Hood River



I John



J Kootenai

Opens
summary of
goals/objectiv
es



Westslope Cutthroat

(Kootenai Subbasin)

Westslope Cutthroat Trout are native to both sides of the continental divide in Montana, Idaho, and Canada, with a few scattered populations in Wyoming, Washington and Oregon. Spawning and rearing streams tend to be cold and nutrient poor. Westslope cutthroat trout primarily eat insects and zooplankton and do not grow very large, usually just between 6 and 12 inches.



Achieve Healthy Fish Populations

48

Abundance, productivity, diversity, fish health objectives & goals



Protect Fish Habitat

18

Habitat and distribution objectives



Provide Fish

20

Hatchery objectives & goals



Provide Harvest Opportunities

9

Catch, harvest, angling objectives & goals

View more >>

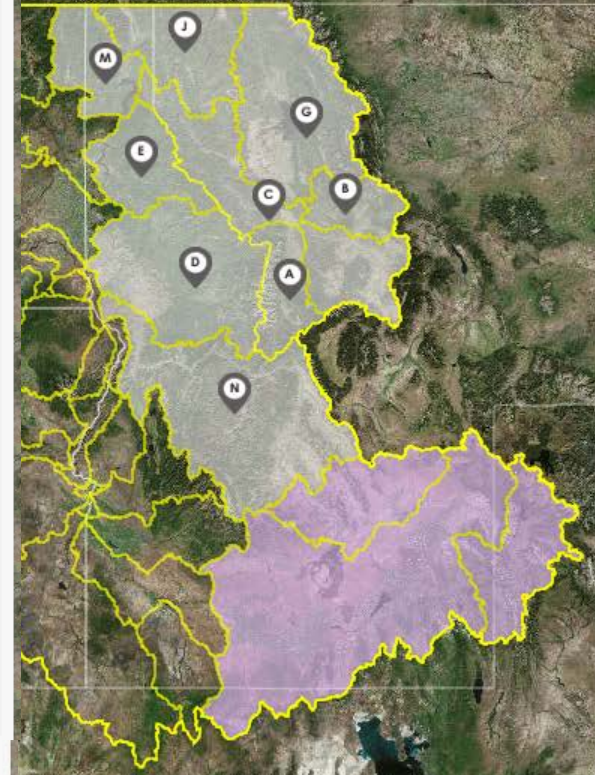
Topic Fish Objectives - Cutthroat Trout

Query Tool

Other tools

Report Corrections

Description of the fish species in this subbasin



Developed by QW Consulting

Earthstar Geographics

POWERED BY
esri

All

Cutthroat

Redband

K

Display By Subbasin



Locations where objectives exist



A Bitterroot



B Blackfoot



C Clark



D Clearwater



E Coeur d'Alene



F Fifteen



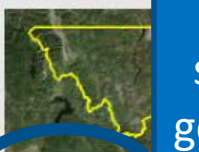
G Flathead



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Opens
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9

Catch, harvest, angling objectives & goals

View more >>

Topic Fish Objectives - Cutthroat Trout

Query Tool

Other tools

Report Corrections



The 4 broad groupings for the 40+ goals and objectives topics

Developed by QW Consulting

Earthstar Geographics

POWERED BY
esri

All

Cutthroat

Redband

K

Display By Subbasin



Locations where objectives exist



A Bitterroot



B Blackfoot



C Clark



D Clearwater



E Coeur d'Alene



F Fifteen



G Flathead



H Hood River



I John



J Kootenai



K Methow



L Okan



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(Kootenai Subbasin)

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Achieve Healthy Fish Populations

48

Abundance, productivity, diversity, fish health objectives & goals

& goals



Protect Fish Habitat

18

Habitat and distribution objectives & goals



Provide Fish

20

Hatchery objectives & goals & goals

Opens details goals/objectives

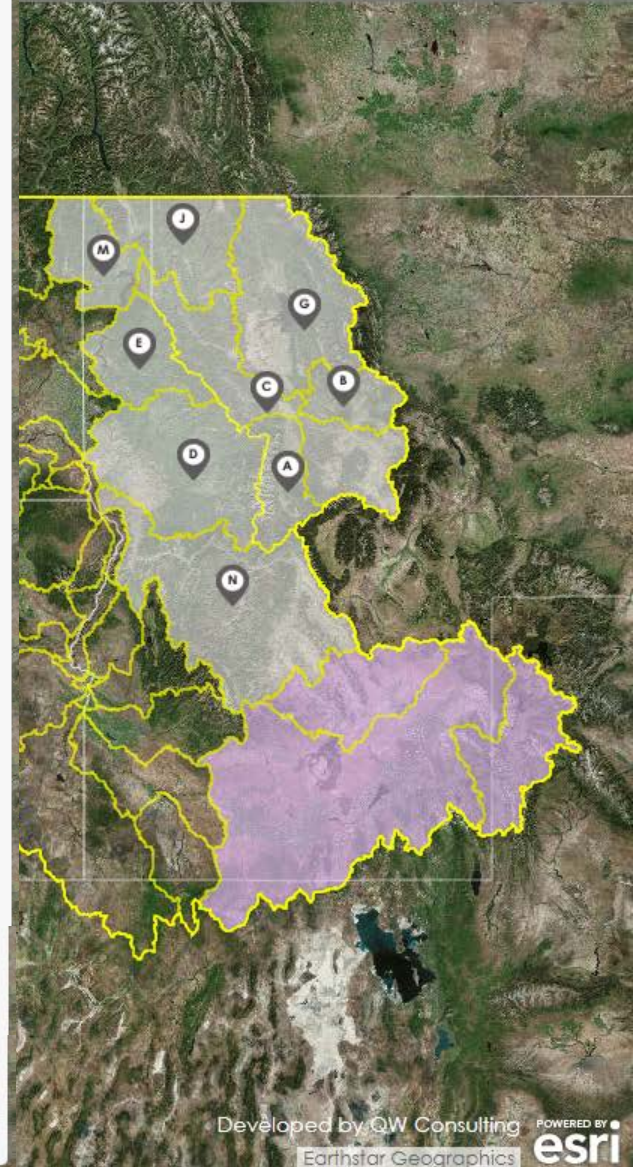
View more >>

Topic Fish Objectives - Cutthroat Trout

Query Tool

Other tools

Report Corrections



Developed by QW Consulting

Earthstar Geographics

POWERED BY
esri

All Cutthroat

Display By Subbasin

Locations where



A Bitterroot



B Blackfoot



D Clearwater



E Coeur d'Alene



G Flathead



H Hood River



J Kootenai



K Methow

Westslope Cutthroat

(Kootenai Subbasin)



Achieve Healthy Fish Populations

48
Objectives

Protect Fish Habitat

18
Objectives

Provide Habitat

2
Objectives

Clicking the group here changes the display below

Achieve Healthy Fish Populations

2014 Columbia River Basin Fish and Wildlife Program: Theme two - Ensure species survival

[Why Have These Goals](#)

Explain how this connects to the Program Theme 2 goals and objectives and how the goals/objectives contribute to achieving healthy fish populations and so forth and

Background text about this topical group of goals/objectives

Abundance (11)

Fish Health (12)

Distribution (5)

Diversity (19)

Size (2)

Subgroups of goals/objectives

Viability

Report Name: [Montana Statewide Fish Management Plan 2013-2018](#)

Statement: Enhance populations to meet native species goals

Subbasin	Location	Management Unit	Statement Group	Fish Origin	Objective Trend	Objective Value	Objective Timeline	Report Year	Superseded
Kootenai	Kootenai River Drainage - Ten Lakes Scenic Area lakes	to be assigned	Trend		Enhance			2013	

Number of Adults

Report Name: [The Fish and Wildlife Agencies and Tribes of the Columbia Basin Fish and Wildlife Authority Provide these Recommendations for Admendments to the Northwest Power and Conservation Council 2000 Columbia Basin Fish and Wildlife Program](#)

Statement: Number of adults/ subpopulation = 50

Subbasin	Location	Management Unit	Statement Group	Fish Origin	Objective Trend	Objective Value	Objective Timeline	Report Year	Superseded
Kootenai	Kootenai	To be assigned	Objective			50		2008	No

Report Name: [Kootenai subbasin Management Plan](#)

Statement: Achieve at least 5 genetically pure conservation populations (including British Columbia tributaries) with 50 adults in each of the subpopulations in Lake Koocanusa, Kootenai River and Kootenay Lake, with each of these conservation populations containing at least 500 adult westslope cutthroat trout.

Subbasin	Location	Management Unit	Statement Group	Fish Origin	Objective Trend	Objective Value	Objective Timeline	Report Year	Superseded
Kootenai	Kootenai	To be assigned	Number	Unspecified		500	2005 to 2020	2004	No

Number of Individuals



Fish Objectives - Cutthroat Tro

All

Cutthroat

Redband

Kokanee

Display By Sub



Locations



A Bitterroot



D Clearwater



E Coeur d'Alene



F Fifteenmile Creek



G Flathead



H Hood River



I John Day



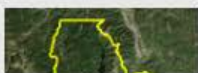
J Kootenai



K Methow



L Okanogan



Per manager request pull known limiting factors (summary graphic and individual limiting factors) from council dashboard to provide context to goals/objectives

Westslope Cutthroat

(Kootenai Subbasin)



Achieve Healthy Fish Populations

48

Protect Fish Habitat

18

Objectives

Provide Fish Harvest

20

Objectives

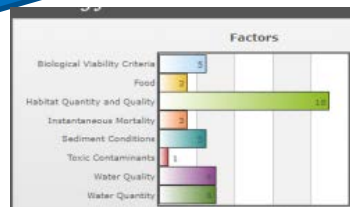
Limiting Factors

9

Limiting Factors

What are These Limiting Factors

Explain what are limiting factors, how these impact the species and how these related to the goals and objective statement and what type of work is done to address these limiting factors so that progress is made towards the goals and objectives etc,



Impairment	Habitat Affected	Threat Type	Threat Name	Life Stages	Description
Biological Viability Criteria					
Diversity		Fishery Management	Species Introduction	All	Non-native species introductions have lead to community shifts, predation issues, and problems with hybridization with native species.
Habitat Quantity and Quality					
Access and Availability	Freshwater - Instream	Dam or Hydropower Facility Management	Migration Impediments	All	Mainstem dams and tributary barriers function as migratory obstructions.
Morphologic al Changes	Freshwater - Floodplain	Agricultural Practices; Forest Management; Urbanization	Impervious Surfaces (Road Density); Diking; Wetland Loss	All	Road construction, diking, and drainage ditches have contributed to loss of connectivity to the floodplain.
Small-Scale Structural Complexity; Morphologic al Changes	Freshwater - Instream	Dam or Hydropower Facility Management; Agricultural Practices; Urbanization	Water; Storage or Withdrawal; Impervious Surfaces (Road Density); Diking	All	Spawning habitat has been lost due to hydro-development and operations. Transportation networks have led to straightened and rripped channels.
Small-Scale Structural Complexity; Morphologic al Changes	Freshwater - Riparian	Agricultural Practices; Forest Management; Urbanization	Impervious Surfaces (Road Density); Diking; Wetland Loss; Riparian Degradation	All	Channel straightening, diking, and creation of drainage ditches have modified or eliminated tributary and mainstem habitat throughout the subbasin. Transportation networks have led to straightened and rripped channels.
Instantaneous Mortality					
Anthropogenic Mortality		Fishery Management	Illegal Harvest	Adults	Illegal harvest is considered a risk: to bull trout recovery because of the well known and limited spawning areas.
Sediment Conditions					
Increased Sediment Quantity	Freshwater - Instream	Agricultural Practices; Forest Management; Urbanization	Impervious Surfaces (Road Density); Sediment; Bank Destabilization	All	Fine sediments are limiting throughout the subbasin including tributaries and the regulated mainstem. Road construction has resulted in increased water and sediment yields.
Water Quality					
Temperature		Agricultural Practices;	Riparian	All	High temperatures are limiting throughout the

Westslope

Yellowstone

Timeline Next Steps

Other Anadromous and Resident Fish Objectives

Fish Species: <i>Bull trout, burbot, cutthroat trout (3), eulachon, kokanee, Oregon chub, Pacific lamprey, redband, white sturgeon</i>	2017	April 2017 & Feb. 2018	March- April 2018	April-May 2018; Oct. 2018	Mid Nov. 2018	Nov 2018- Jan 2019	? 2019
Initial compilation	✓						
Fish managers vet content		✓					
Revise content, add 2 species, and mock-up of map content			✓				
Input from fish managers and FW committee members				✓Managers ✓Committee			
Functional mapping tool & online query (version 1)							
Input from Fish managers and FW committee members							
Final mapping tool							

After Nov. Council meeting, version 1 posted (map & query tool) to inform Program recommendations and comments

Thank you!

Version 1 of
Story Map and Query Tool

Will be presented to
FW Committee

Nov 13-14 2018

