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December 6, 2016

MEMORANDUM

TO: Committee members

FROM: Nancy Leonard

SUBJECT: Update on Mapping tool for Salmon and Steelhead Natural-Origin Abundance Objectives

BACKGROUND:

Presenter: Nancy Leonard (Council staff), Binh Quan (QW Consulting), and Chris Wheaton (StreamNet Program Manager)

Summary: Staff will present the revised mapping tool for natural-origin adult salmon and steelhead abundance objectives that facilitates viewing existing objectives by subbasin, major population group, and population. Existing objectives were compiled by QW Consulting and refined by Council staff. This version of the mapping tool leverages maps and tools maintained by StreamNet, including a real-time connection to the [CAX mapping tool](#) that displays the annual adult abundance estimates provided by the Coordinated Assessment effort. To ensure the mapping tool content remains current, Council staff can update the content as needed through a maintenance program.

Relevance: This mapping tool supports the Program [Emerging Priority # 2](#) and the Program task for [refining program goals and quantitative objectives](#). This mapping tool will inform regional discussions about quantitative objectives led by NOAA's Columbia Basin Partnership Task Force effort.

Background: Staff, working with QW Consulting and StreamNet, has revised the salmon and steelhead objectives mapping tool based on the guidance received from the Fish and Wildlife Committee during the [December 2015 meeting](#) and feedback from managers and other interested parties during a [May 11, 2016](#) technical work session and from individual communications. Staff continues to seek further improvements from the managers to have the mapping tool content as refined, streamlined, and accurate prior to the January 24-25, 2017 NOAA Columbia Basin Partnership task force.

The revised objectives mapping tool leverages existing population and major population group GIS layers maintained by StreamNet. The mapping tool integrates the StreamNet population codes to facilitate real-time links between the CAX mapping tool and the objectives mapping tool. The annual natural origin spawner abundance (NOSA) estimates for populations shown on the objectives mapping tool are displayed in real-time from the CAX database using StreamNet's CAX web services. The CAX mapping tool will also be connecting to the objectives mapping tool to redisplay the relevant population objectives for adult natural origin salmon and steelhead.

Staff has continued to collaborate with NOAA to ensure that this tool will be informative for the NOAA-lead [Columbia Basin Partnership Task Force](#) process. Staff will be sharing the content of the objectives mapping tool with NOAA staff and will be providing additional support as needed.

Staff will be posting in December the revised mapping tool, access database, and supporting PDF files, including summary reports, on the Council's Adaptive Management web-page.

More Info:

- Objectives Mapping tool and associated files is available on the Council's Adaptive Management – Program Goals and Objectives webpage: <http://www.nwcouncil.org/fw/am/goals-objective/>
- StreamNet's CAX Mapping tool: <http://cax.streamnet.org/>
- Information about the Coordinated Assessment effort that is coordinated by PNAMP and PSMFC StreamNet: <http://www.pnamp.org/project/3129>
- Information about the NOAA Columbia Basin Partnership Task Force: http://www.westcoast.fisheries.noaa.gov/columbia_river/index.html



Fish and Wildlife Program's Mapping tool for Salmon and Steelhead Natural-Origin Abundance Objectives

Nancy Leonard (Council staff)

Binh Quan (QW Consulting)

Chris Wheaton (StreamNet Program Manager)

2014 FW Program Task

1. Refining program goals and quantitative objectives

- Working with others the Council will survey, collect, identify, and refine a realistic set of quantitative objectives for the program
 - a) Objectives for natural-origin adult salmon/steelhead**
 - b) Other anadromous and resident fish objectives**
 - c) Ecosystem function, habitat, and hydrosystem objectives**
 - d) Public engagement quantitative objectives**

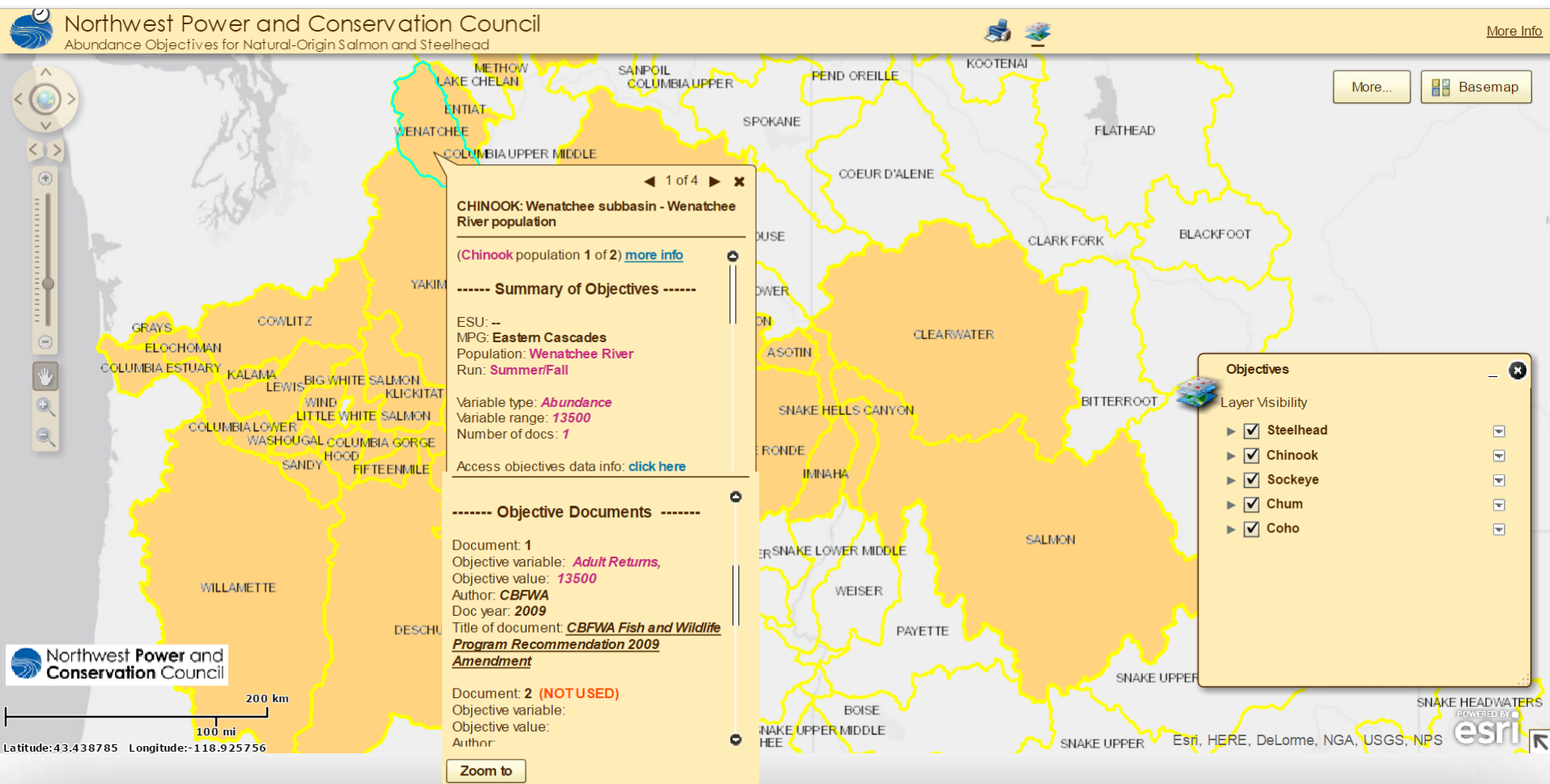
1. Refining program goals and quantitative objectives

Working with others in the region, including the state and federal fish and wildlife agencies and tribes, other federal agencies and the independent science panels, the Council will oversee a regional process to survey, collect, identify, and refine a realistic set of quantitative objectives. Their habitat related to the four broad themes and program goal statements. Program goals and objectives will occur through the [adaptive management](#) using program indicators [see Tracking [Status of the Basin's](#) Fish and Wildlife].

Where possible, the quantitative objectives identified through this region will be measurable, attainable, relevant, time-bound,^[1] and based on an explicit and appropriate. These objectives may include various types of measurements.



2015 Pilot Mapping Tool



Incorporating Regional and Committee Guidance to Improve Mapping Tool

- **Improving** content accuracy and comprehensiveness
- **Enhancing** flexibility for searching
- **Meeting** different audiences' needs
- **Integrating** complementary components from existing tools (GIS layers, abundance)
- **Organizing** to increase information accessibility (3 rungs)
- **Displaying current** (active) and past (superseded)
- **Updating program** to keep map relevant

June 2015
regional meeting

December 2015 FW
Committee meeting

May 2016
technical workshop

Ongoing
opportunities to
refine content

2016 Mapping Tool



Northwest **Power** and **Conservation** Council

Natural-Origin Salmon and Steelhead Objectives

Topic

Objectives

View by

Subbasin

Chinook

Steelhead

Chum

Coho

Sockeye

Run

All

Distribution ☒



1 Asotin



2 Grande Ronde



3 Imnaha



4 Snake Hells Canyon



5 Entiat



7 Methow



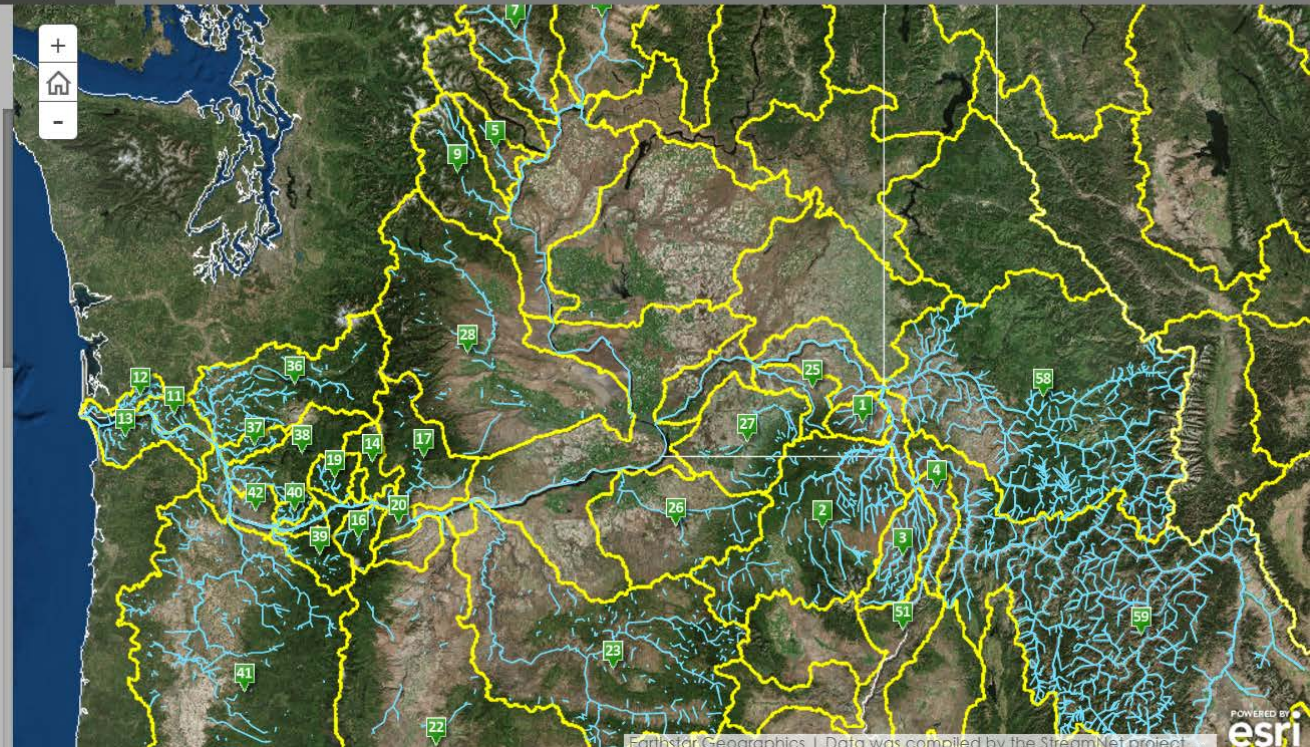
8 Okanogan



9 Wenatchee



11 Elochoman



Northwest **Power** and **Conservation** Council

nwcouncil.org

2016 Mapping Tool

Increased Filtering Ability



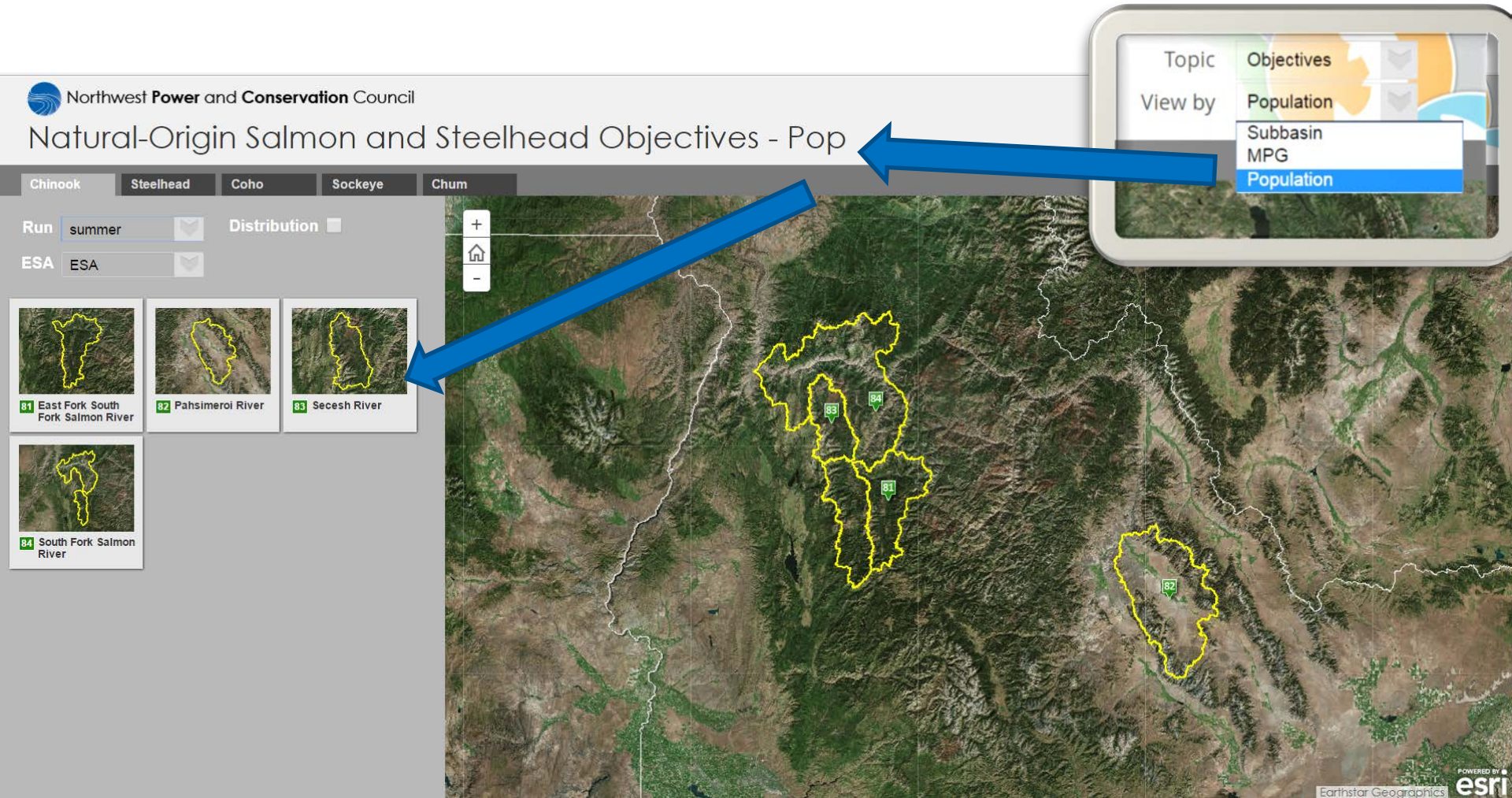
2016 Mapping Tool

Increased Filtering Ability



2016 Mapping Tool

Increased Filtering Ability



2016 Mapping Tool

Increased Filtering Ability



2016 Mapping Tool

Increased Filtering Ability

Chinook

Steelhead

Chum

Coho

Sockeye

Run

All

Distribution ☒

Zooming in closer on the map changes the 'tiles' shown on the left

11 map locations
= 11 tiles



1 Asotin



2 Grande Ronde



3 Imnaha



4 Snake Hells Canyon



25 John Day



26 Tucannon



27 Umatilla



51 Walla Walla



54 Snake Lower Middle



58 Clearwater

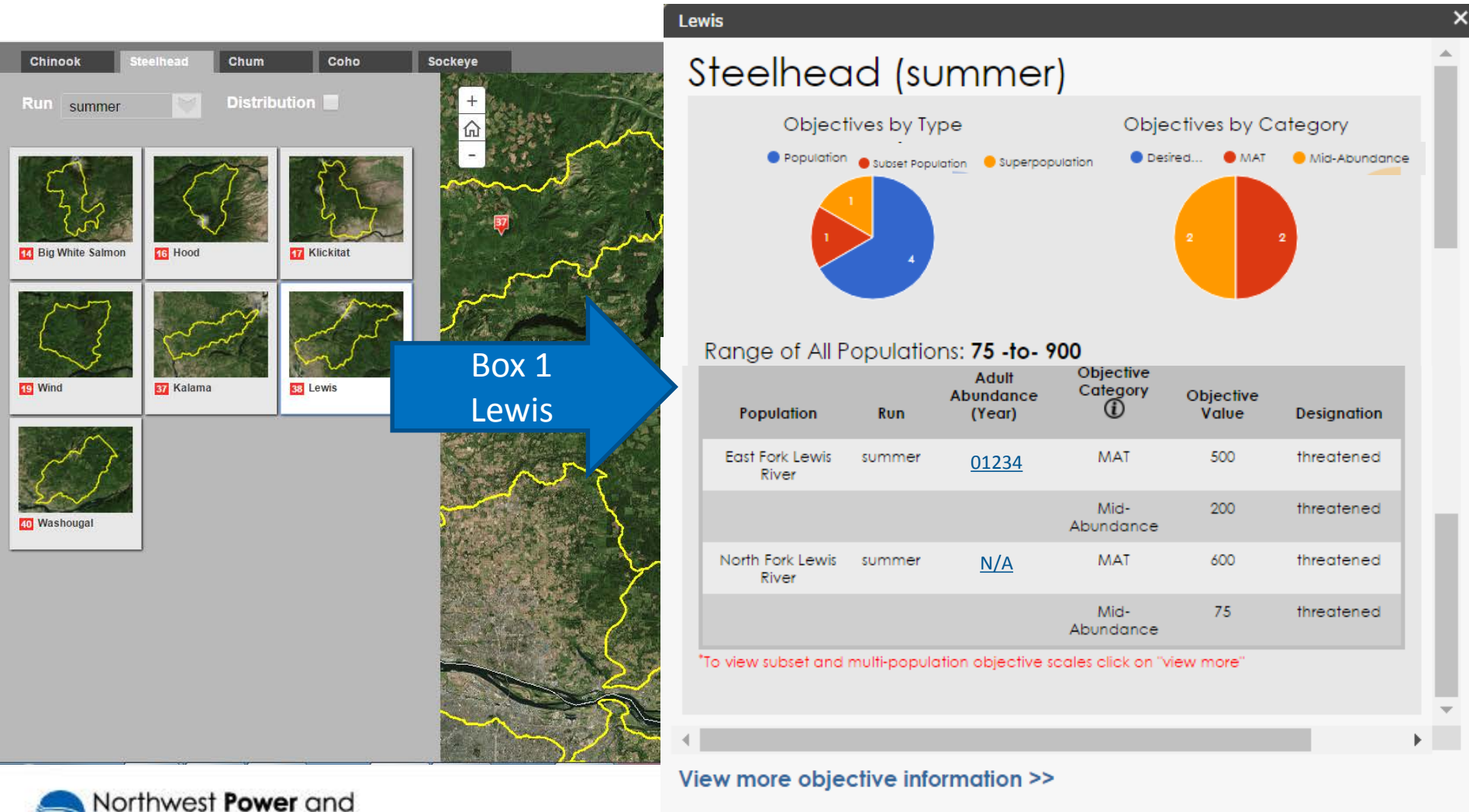


59 Salmon

2016 Mapping Tool

Different Audiences want Different Levels of Details

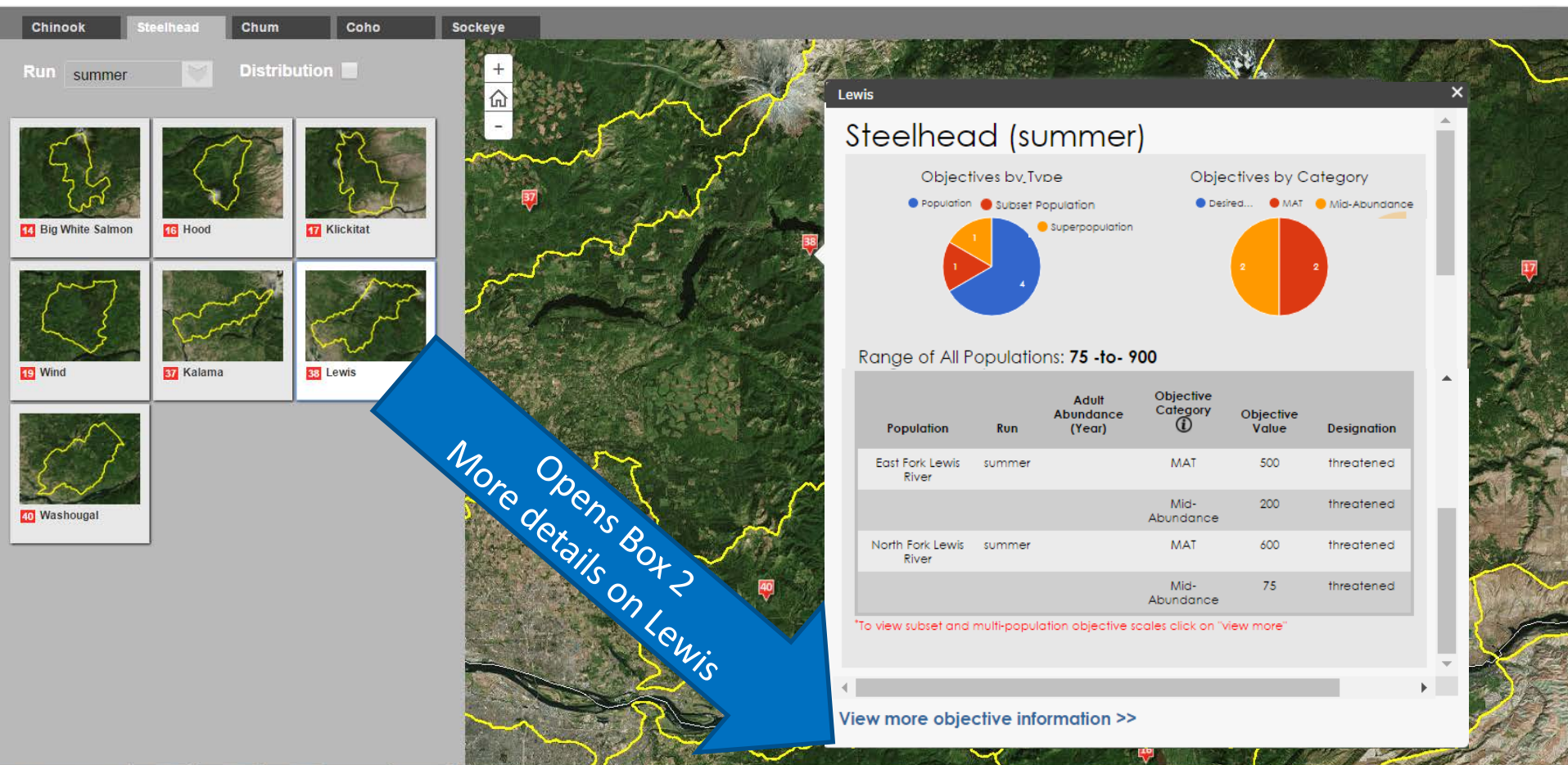
Pop-up boxes example: Lewis Subbasin Summer Steelhead



2016 Mapping Tool

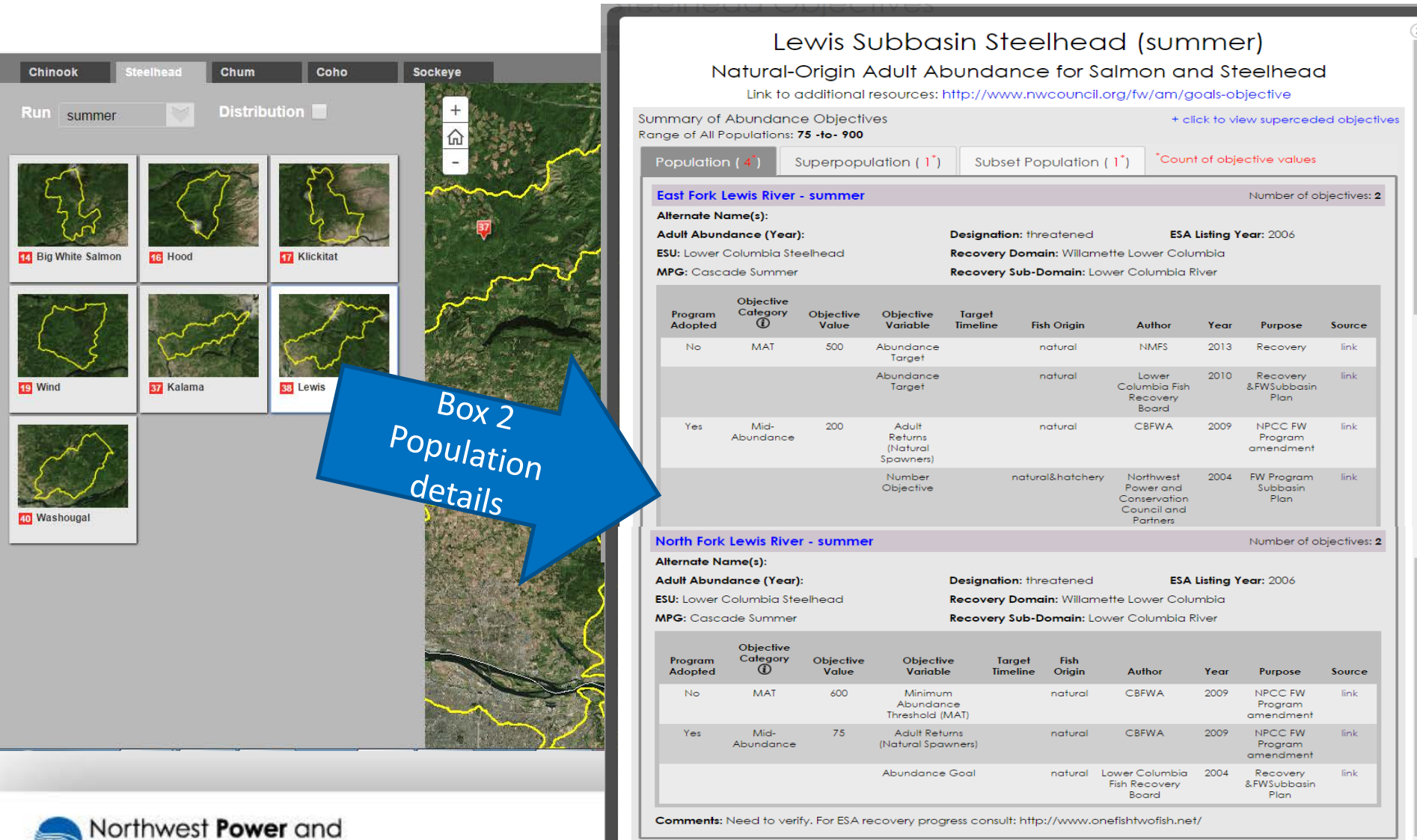
Different Audiences want Different Levels of Details

Pop-up boxes example: Lewis Subbasin Summer Steelhead



2016 Mapping Tool

Different Audiences want Different Levels of Details
Pop-up boxes example: Lewis Subbasin Summer Steelhead



The screenshot displays the 2016 Mapping Tool interface. On the left, a map shows the Lewis Subbasin with a yellow outline. A blue arrow points to a pop-up box titled "Box 2 Population details". The pop-up box contains the following information:

Lewis Subbasin Steelhead (summer)
Natural-Origin Adult Abundance for Salmon and Steelhead
Link to additional resources: <http://www.nwcouncil.org/fw/am/goals-objective>

Summary of Abundance Objectives
Range of All Populations: 75 -to- 900

Population (4) Superpopulation (1) Subset Population (1) *Count of objective values

East Fork Lewis River - summer Number of objectives: 2

Alternate Name(s):
Adult Abundance (Year):
ESU: Lower Columbia Steelhead
MPG: Cascade Summer

Designation: threatened
ESA Listing Year: 2006
Recovery Domain: Willamette Lower Columbia
Recovery Sub-Domain: Lower Columbia River

| Program Adopted | Objective Category ① | Objective Value | Objective Variable | Target Timeline | Fish Origin | Author | Year | Purpose | Source |
|-----------------|----------------------|-----------------|----------------------------------|-----------------|------------------|---|------|------------------------------|----------------------|
| No | MAT | 500 | Abundance Target | | natural | NMFS | 2013 | Recovery | link |
| | | | Abundance Target | | natural | Lower Columbia Fish Recovery Board | 2010 | Recovery & FWS Subbasin Plan | link |
| Yes | Mid-Abundance | 200 | Adult Returns (Natural Spawners) | | natural | CBFWA | 2009 | NPCC FW Program amendment | link |
| | | | Number Objective | | natural&hatchery | Northwest Power and Conservation Council and Partners | 2004 | FW Program Subbasin Plan | link |

North Fork Lewis River - summer Number of objectives: 2

Alternate Name(s):
Adult Abundance (Year):
ESU: Lower Columbia Steelhead
MPG: Cascade Summer

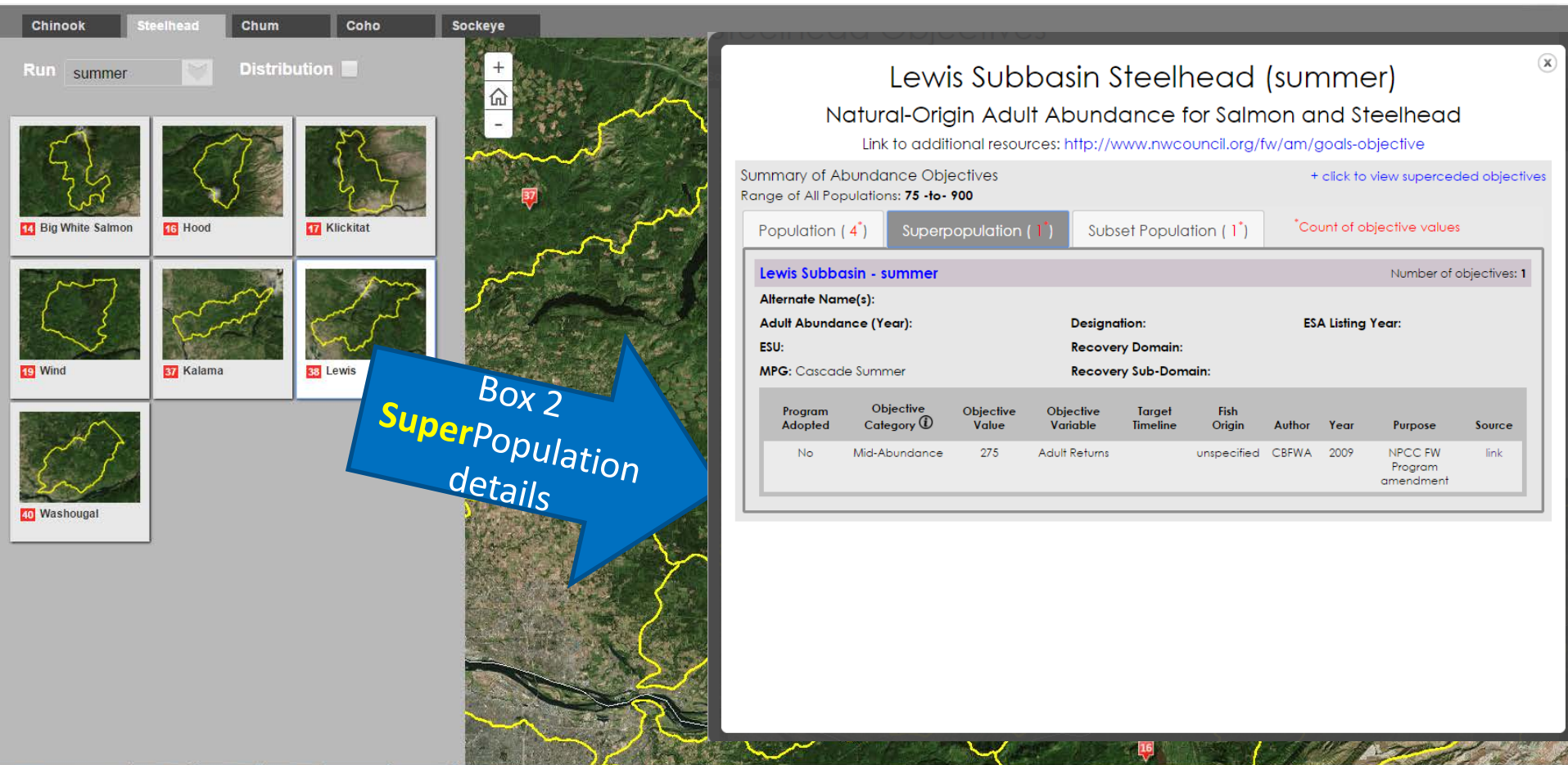
Designation: threatened
ESA Listing Year: 2006
Recovery Domain: Willamette Lower Columbia
Recovery Sub-Domain: Lower Columbia River

| Program Adopted | Objective Category ① | Objective Value | Objective Variable | Target Timeline | Fish Origin | Author | Year | Purpose | Source |
|-----------------|----------------------|-----------------|-----------------------------------|-----------------|-------------|------------------------------------|------|------------------------------|----------------------|
| No | MAT | 600 | Minimum Abundance Threshold (MAT) | | natural | CBFWA | 2009 | NPCC FW Program amendment | link |
| Yes | Mid-Abundance | 75 | Adult Returns (Natural Spawners) | | natural | CBFWA | 2009 | NPCC FW Program amendment | link |
| | | | Abundance Goal | | natural | Lower Columbia Fish Recovery Board | 2004 | Recovery & FWS Subbasin Plan | link |

Comments: Need to verify. For ESA recovery progress consult: <http://www.onefishwofish.net/>

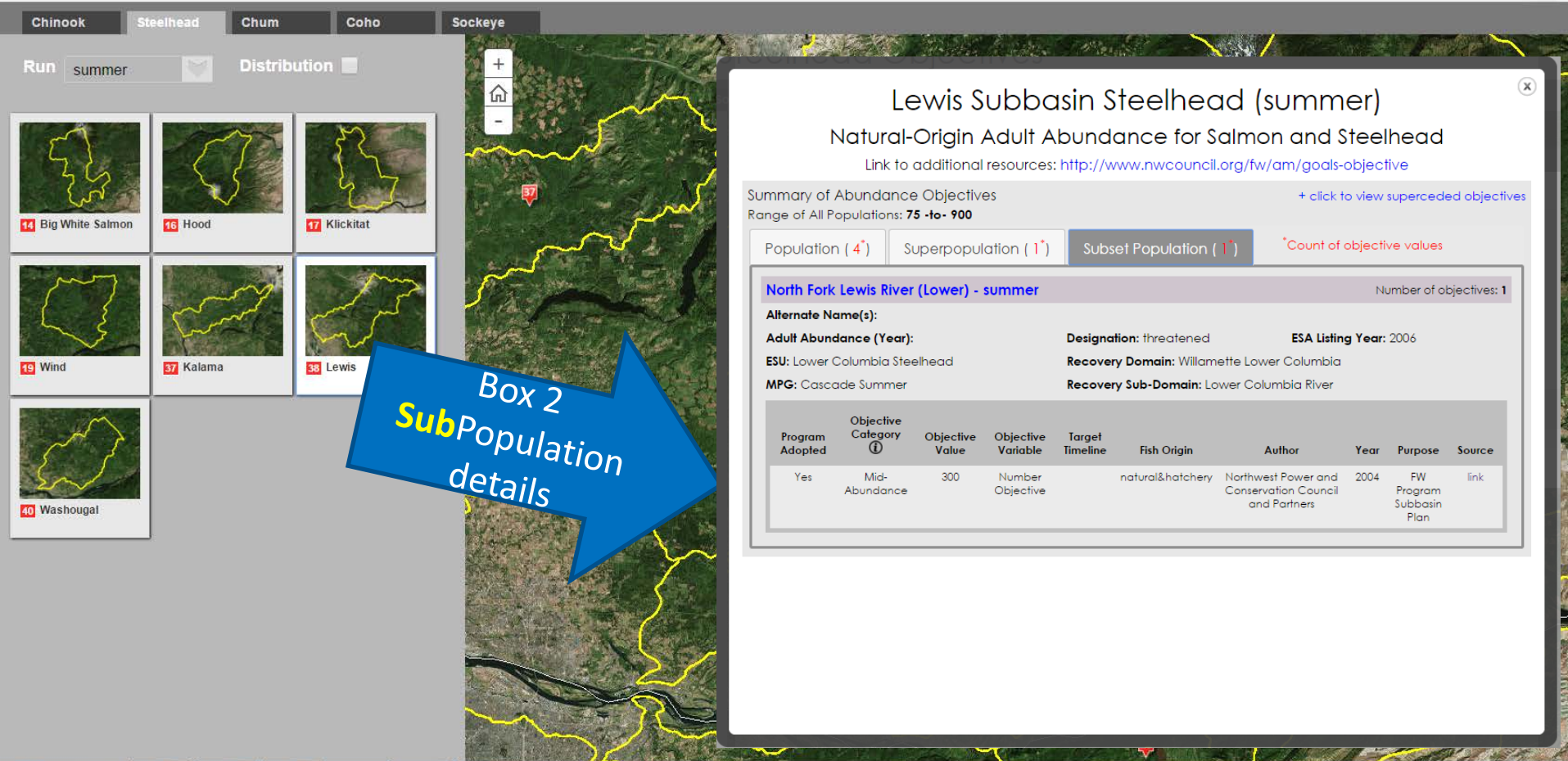
2016 Mapping Tool

Different Audiences want Different Levels of Details
Pop-up boxes example: Lewis Subbasin Summer Steelhead



2016 Mapping Tool

Different Audiences want Different Levels of Details
Pop-up boxes example: Lewis Subbasin Summer Steelhead



2016 Mapping Tool

Real-time connection to Coordinated Assessment

CAX tool <http://cax.streamnet.org/>

Northwest Power and Conservation Council
Natural-Origin Salmon and Steelhead Ok

Chinook Steelhead Chum Coho Sockeye

Run All Distribution

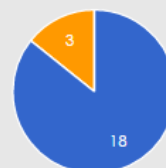


Grande Ronde

Chinook (All Runs)

Objectives by Type

Population 1/3



Objectives by Category

Desire... MAT Mid-A...



| Population | Run | Adult Abundance (Year) | Objective Category | Objective Value | Designation |
|-----------------------------------|--------|------------------------|--------------------|-----------------|-------------|
| Catherine Creek | spring | 242 (2015) | MAT | 1,000 | threatened |
| | | | Mid-abundance | 3,000 | threatened |
| | | | Desired abundance | 22,000 | threatened |
| Grande Ronde River Upper Mainstem | spring | 229 (2015) | MAT | 1,000 | threatened |
| | | | Mid-abundance | 4,100 | threatened |
| | | | Desired abundance | 31,000 | threatened |
| Wallowa/Lostine Rivers | spring | 368 (2015) | MAT | 1,000 | threatened |
| | | | Mid-abundance | 4,800 | threatened |
| | | | Desired abundance | 36,000 | threatened |
| Minam River | spring | 531 (2015) | MAT | 750 | threatened |
| | | | Mid- | 1,900 | threatened |

2016 Mapping Tool

StreamNet's fish distribution and MPG layers



Northwest **Power** and **Conservation** Council

Natural-Origin Salmon and Steelhead Objectives - MPG

Topic

Objectives

View by

MPG

Chinook

Steelhead

Coho

Sockeye

Chum

Run spring

Distribution ☒

ESA ESA

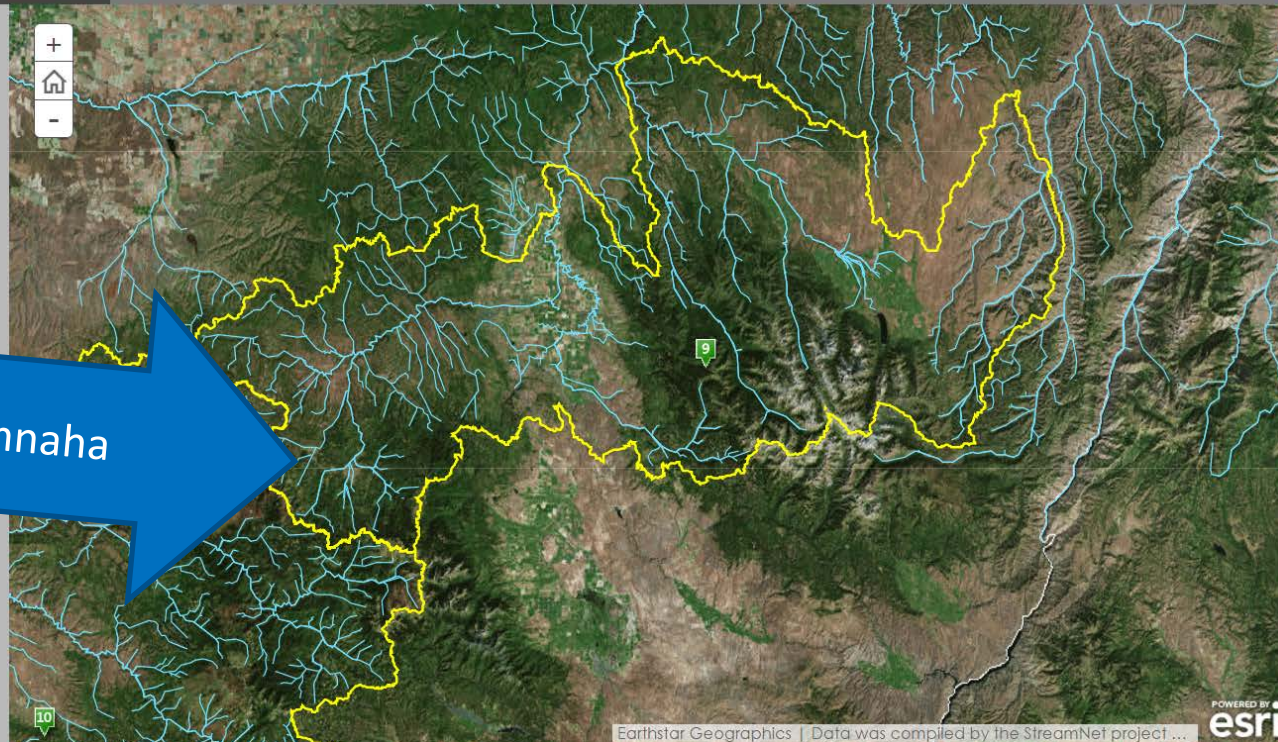


9 Grande Ronde/Imnaha



12 Lower Snake

Grande Ronde/ Imnaha



Earthstar Geographics | Data was compiled by the StreamNet project ...

POWERED BY
esri

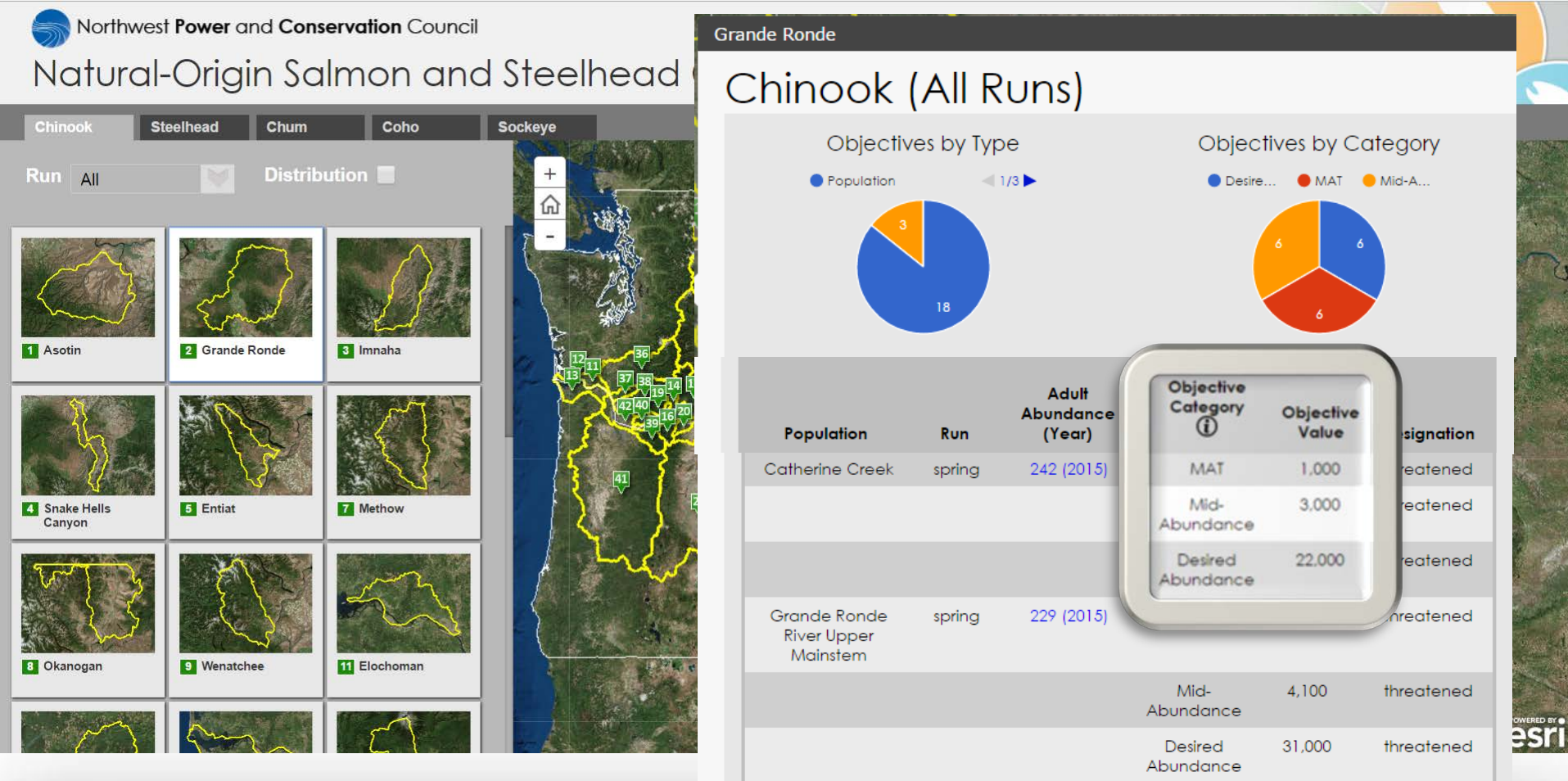


Northwest **Power** and **Conservation** Council

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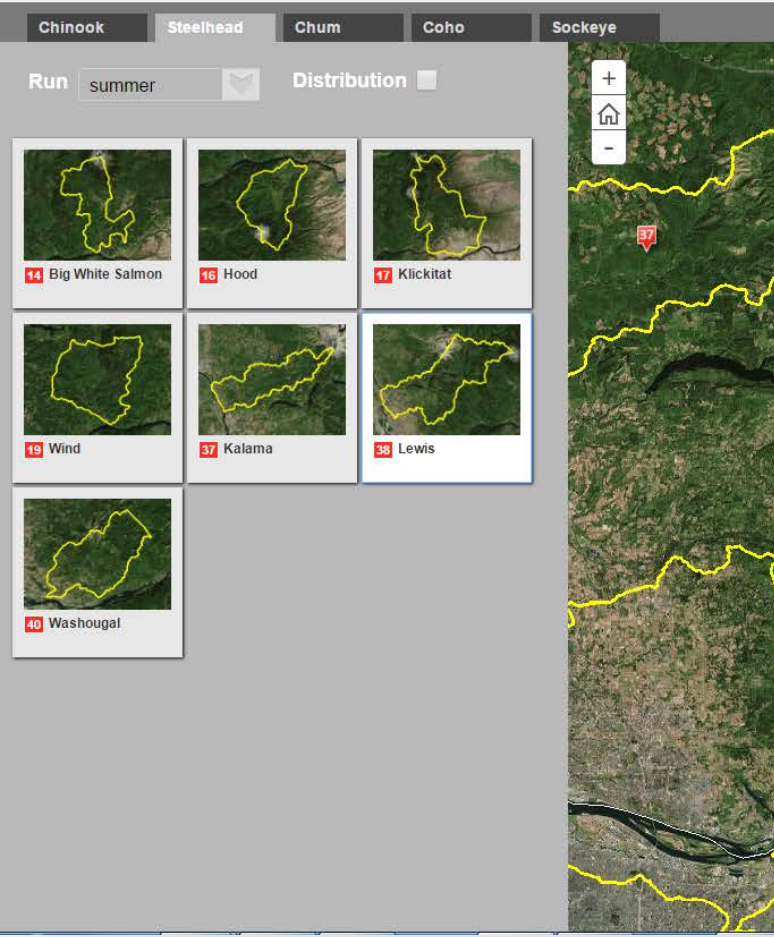
2016 Mapping Tool

3-Rung Ladder to Group Objectives



2016 Mapping Tool

Tracking of Currently Active vs. Superseded Values



Lewis Subbasin Steelhead (summer)

Natural-Origin Adult Abundance for Salmon and Steelhead

Link to additional resources: <http://www.nwcouncil.org>

Summary of Abundance Objectives

Range of All Populations: **75 -to- 900**

Population (**4***)

Superpopulation (**1***)

Subset Population (**1***)

- click to hide superseded objectives

Count of objective values

East Fork Lewis River - summer

Number of objectives: **2**

Alternate Name(s):

Adult Abundance (Year):

Designation: threatened

ESA Listing Year: 2006

ESU: Lower Columbia Steelhead

Recovery Domain: Willamette Lower Columbia

MPG: Cascade Summer

Recovery Sub-Domain: Lower Columbia River

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| No | MAT | 600 | Minimum Abundance Threshold (MAT) | | natural | CBFWA | 2009 | NPCC FW Program amendment | link |
| Yes | MAT | 200 | Abundance Goal | | natural | Lower Columbia Fish Recovery Board | 2004 | Recovery & FW Subbasin Plan | link |

North Fork Lewis River - summer

Number of objectives: **2**

Alternate Name(s):


2016 Mapping Tool

Maintenance Program for Easy Updates








NPCC Data Entry

Select a module:

Objectives
Report
Search



Objective Data Entry

Record Type: **Population**

Species: **Steelhead**

Run: **summer**

Name: **Methow River**

ESA Status: **Extant**

ESA Listing Year: **2009**

Designation: **threatened**

SubbasinID: **Methow**

ESU: **Upper Columbia River Steelhead**

MPG: **Wenatchee-Methow**

Alt Name 1: **StreamNet MPG = Upper Columbia**

Alt Name 2:

Alt Name 3:

Pop Image URL:

Comments: Validated by UCSRB, YN and Colville Tribes. For ESA recovery progress consult: <http://www.nps.gov/fish/>

ESA/NonESA Population (s): **Methow River**

To select multiple, hold the "ctrl" key and select

No. of items selected: 1

RecDomain: **Interior Columbia**

RecSubDomain: **Middle Columbia River**

StreamnetID: **106 - Methow River - summer Steelhead**

Distribution Link: <http://cax.streamnet.org/?species=Steelhe>

CA Abundance Link: <http://cax.streamnet.org/?species=Steelhe>








Master Lists

- ESA/Non-ESA Populations
- ESU/DPS
- MPG
- Documents
- Objective Variables
- Categories
- Miscellaneous

Rolled-Up Objectives

- Subbasin
- MPG

Objectives:

Objective 1 of 2

Category: **Minimum Abundance Threshold** (Threshold for recovery)

Min Value: **1000**

Max Value:

Value Label:

Superceded ☐

Program Adopted ☐

Target Timeline:

Comments: verified greer, YN via Tom Inverson, and John Arterburn. CBFWA doc states 1 pop of summer steelhead in methow subbasin.

| Objective Variable | Fish Origin | Target Timeline | Document | Order |
|---------------------------------------|-------------|-----------------|---|-------|
| Minimum 12-year Geometric Mean | natural | | Upper Columbia Spring Chinook Salmon and Steelhead Recovery | 3 |
| Minimum Abundance Threshold (natural) | | | CBFWA Fish and Wildlife Program Recommendation 2009 Amendment | 2 |

2016 Mapping Tool

SnapShot of Objectives Content Improvements

2015 version

Number of Objectives Variables (names)

- 69 variables

Number of Quantitative Objectives Value Records

All values (Active / superceded not distinguished)

- Chinook 1307
- Chum 245
- Coho 420
- Sockeye 58
- Steelhead 1380

Total number= 3390

2016 version

- 111 variables

Active Current values only

- Chinook 320
- Chum 38
- Coho 80
- Sockeye 18
- Steelhead 267

**Total number = 723 (+279
superceded)**

*Application of 3 organizing categories 'ladder rungs' (MAT, Mid, Desired)
Contributed to reduction in number of active value records from 3000+ to 700+ in 2016*

2016 Mapping Tool

SnapShot of **Chinook Objectives**

Content Improvements

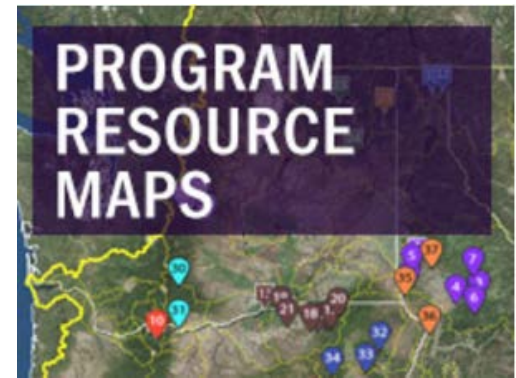
2015 version

- Chinook 1307 objective values (active not distinguished from superceded)

2016 version

- Chinook 320 active objectives (all types and all 3 categories 'ladder rungs')
 - 232 population type values
 - 109 MAT, 82 Mid, 41Desired
 - 23 sub population type values
 - 1 MAT, 22 Mid, 0 Desired
 - 65 super population type values
 - 3MAT, 60 Mid, 2 Desired

Next Steps



Database Content

- Dec 8th-Jan 12th, database content in review by managers
- Jan 12th – Jan 20th, Council staff will update database content

Mapping Tool and Files

- Dec 30th, mapping tool will be accessible on Council's <http://www.nwcouncil.org/fw/program/maps/>
- Feb 1st, 2017 PDF reports and data available <http://www.nwcouncil.org/fw/am/goals-objective/>

NOAA Columbia Basin Partnership Task Force

- Jan 24-25, 2017 meeting

Connecting CAX Tool to Objective Mapping Tool

- Display Objectives per CA population

Next Steps

Database

- Dec 8

- Jan 1

Mapping

- Dec 3

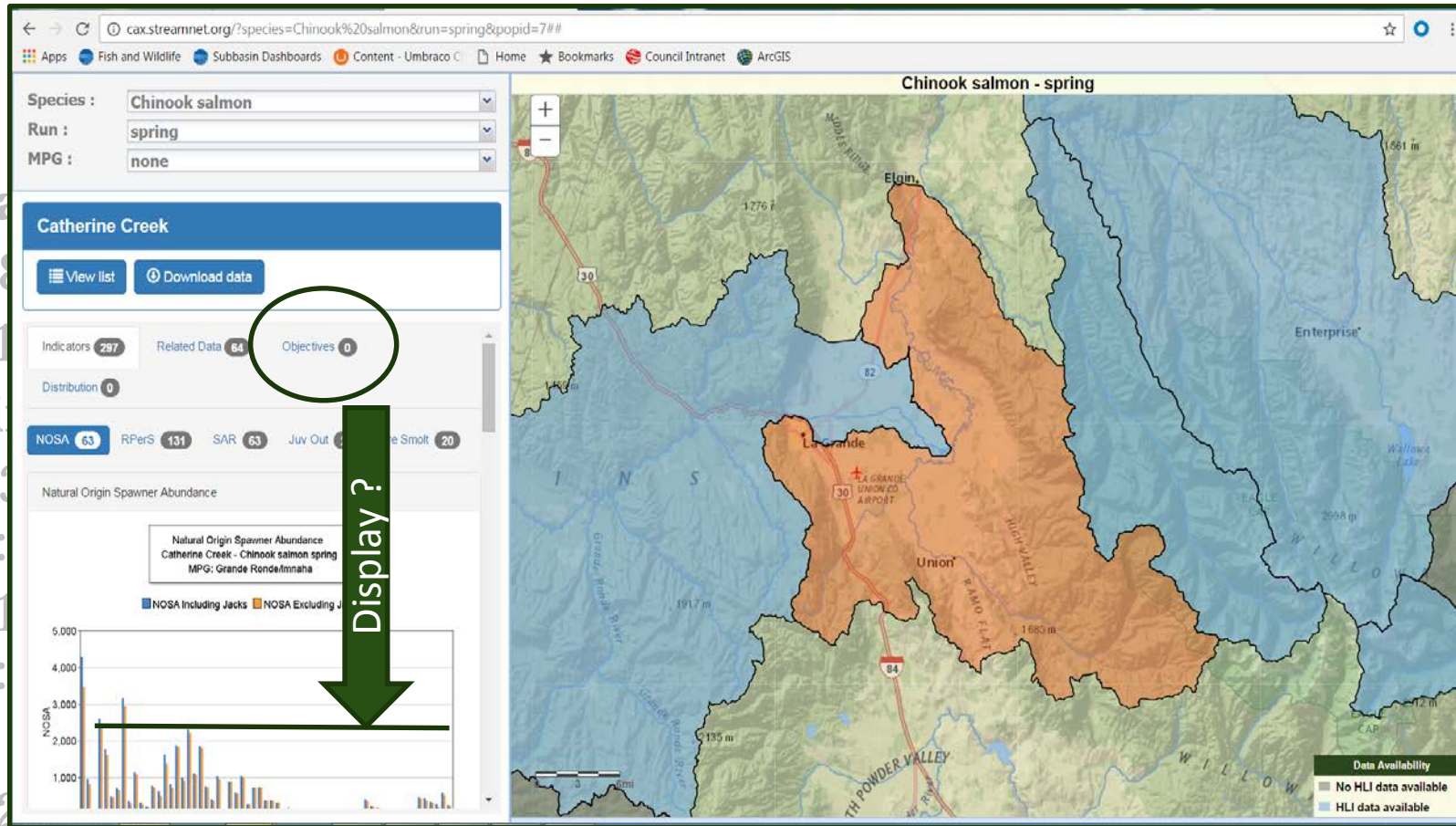
http:

- Feb 1

http:

NOAA

- Jan 2



Display objectives on CAX Tool

- Real-time link to selected objectives
- Discuss displaying which (if any) objectives on data graphics

PROGRAM RESOURCE MAPS

ARTIFICIAL PRODUCTION PROGRAMS O & M



Includes hatcheries,
acclimation sites, and
associated projects

FISH SCREENS O & M



Online as of Sep 2016

FISH OBJECTIVES



(Coming later in 2016)

LANDS



(Lands coming soon)

<http://www.nwcouncil.org/fw/program/maps/>

2016 Mapping Tool

SnapShot of **Chinook Objectives**

Content Improvements

2015 version

- Chinook 1307 active objective values

2016 version

- Chinook 320 active objectives (all types and all '3-ladder rungs')
 - 232 population type values
 - 109 MAT, 82 Mid, 41Desired
 - 23 sub population type values
 - 1 MAT, 22 Mid, 0Desired
 - 65 at super population type values
 - 3MAT, 60 Mid, 2 Desired

2016 Mapping Tool

SnapShot of **Chum Objectives**

Content Improvements

2015 version

- Chum 245 active objective values

2016 version

- Chum 38 active objectives organized by type and ‘3-ladder rungs’
 - 26 population type values
 - 17 MAT, 9 Mid, 0 Desired
 - 7 sub population type values
 - 1MAT, 6Mid, 0Desired
 - 5 super population type values
 - 2MAT, 3Mid, 0Desired

2016 Mapping Tool

SnapShot of **Coho Objectives**

Content Improvements

2015 version

- Coho 420 active objective values

2016 version

- Coho 80 active objectives organized by type and '3-ladder rungs'
 - 66 population type values
 - 26 MAT, 33Mid, 7Desired
 - 2 sub population type values
 - 0 MAT, 2Mid, 0 Desired
 - 12 super population type values
 - 0 MAT, 12Mid, 0 Desired

2016 Mapping Tool

SnapShot of **Sockeye Objectives**

Content Improvements

2015 version

- Sockeye 58 active objective values

2016 version

- Sockeye 18 active objectives organized by type and '3-ladder rungs'
 - 10 population type values
 - 5MAT, 4Mid, 1Desired
 - 8 super population type values
 - 0 MAT, 8Mid, 0 Desired
 - 0 sub population type values

2016 Mapping Tool

SnapShot of **Steelhead Objectives**

Content Improvements

2015 version

- Steelhead 1306 active objective values

2016 version

- Steelhead 267 active objectives organized by type and '3-ladder rungs'
 - 224 population type values
 - 99MAT, 79Mid, 46Desired
 - 6 sub population type values
 - 0MAT, 6Mid, 0Desired
 - 37 super population type values
 - 1MAT, 36Mid, 0Desired