

User's Guide

Wild Steelhead Conservation Atlas
Steelhead Fishing Trip Planner

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About

The purpose of this user guide is to help you get oriented in our ArcGIS Online applications. We include three scenarios of use to further expound how these apps can be used.

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Notes on Use

A. Different layers are hosted by different organizations and government agencies. As a result their layers can sometimes be slow to load, or not work.

For instance the USFS Stream Temperature data can be slow to load.

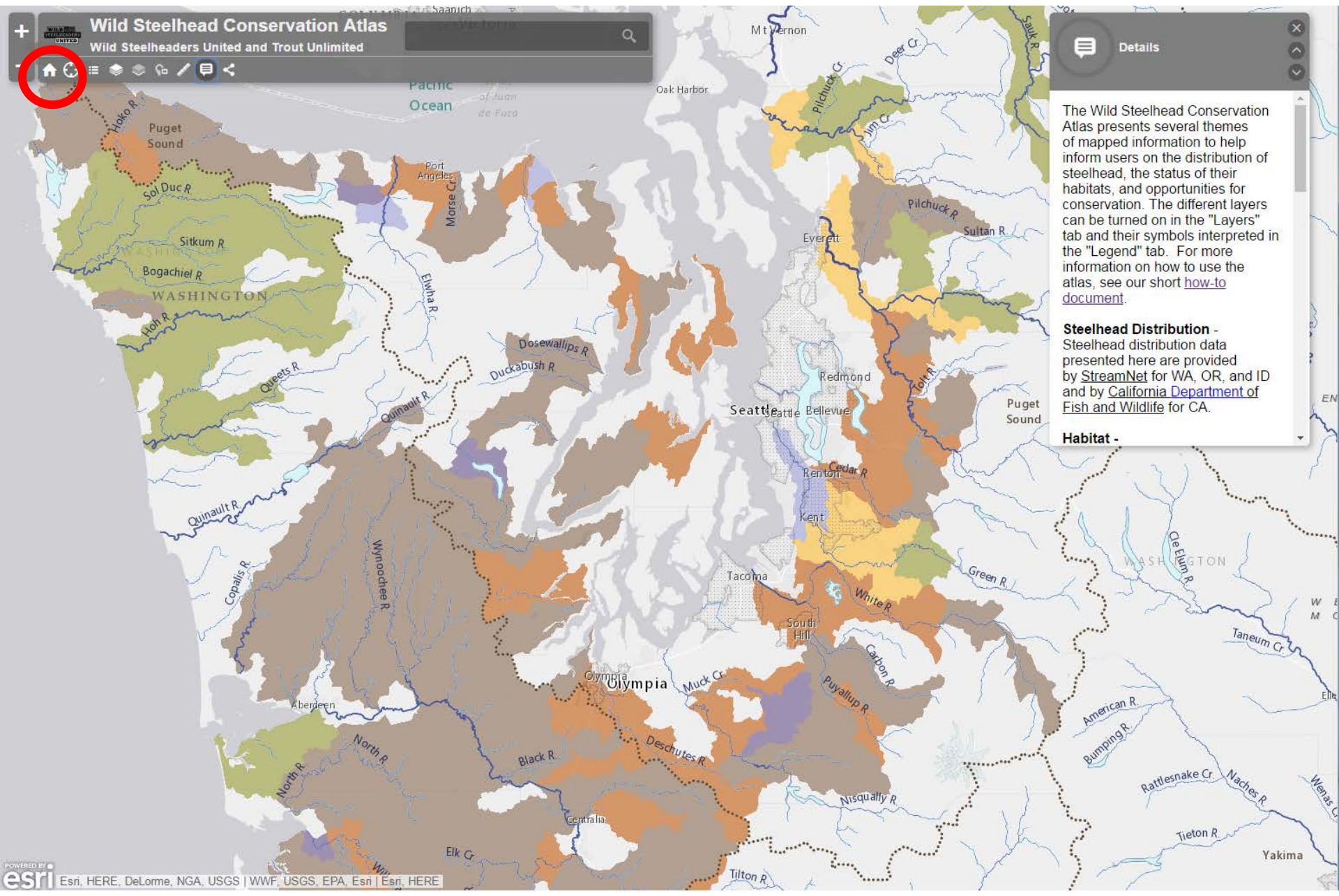
B. Some layers require you zoom into a pretty tight window before they load.

The USFS Stream Temperature data is subject to this kind of interaction.

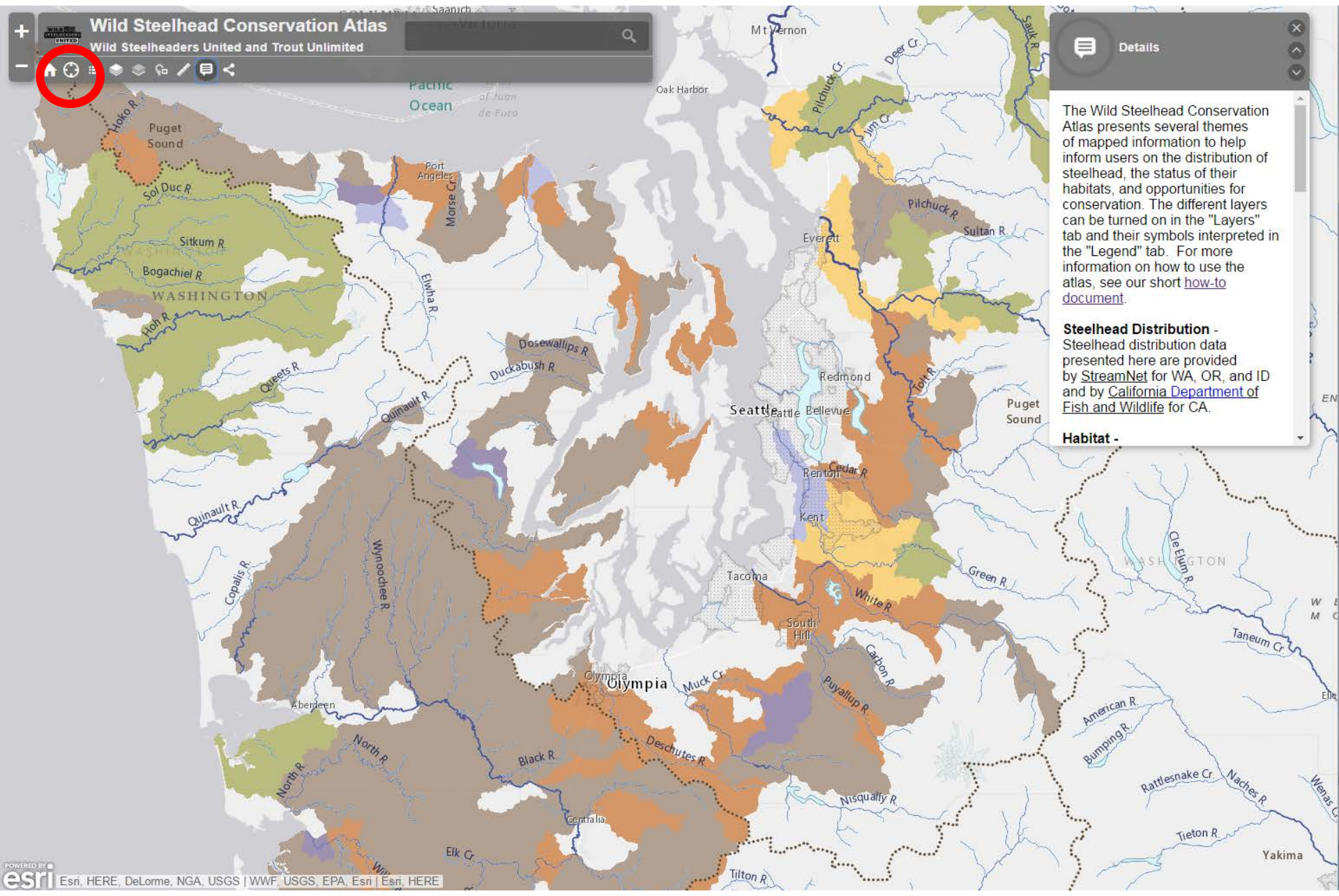
Part 1: Getting Oriented

This section applies to both the
Conservation Atlas and Fishing Trip
Planner

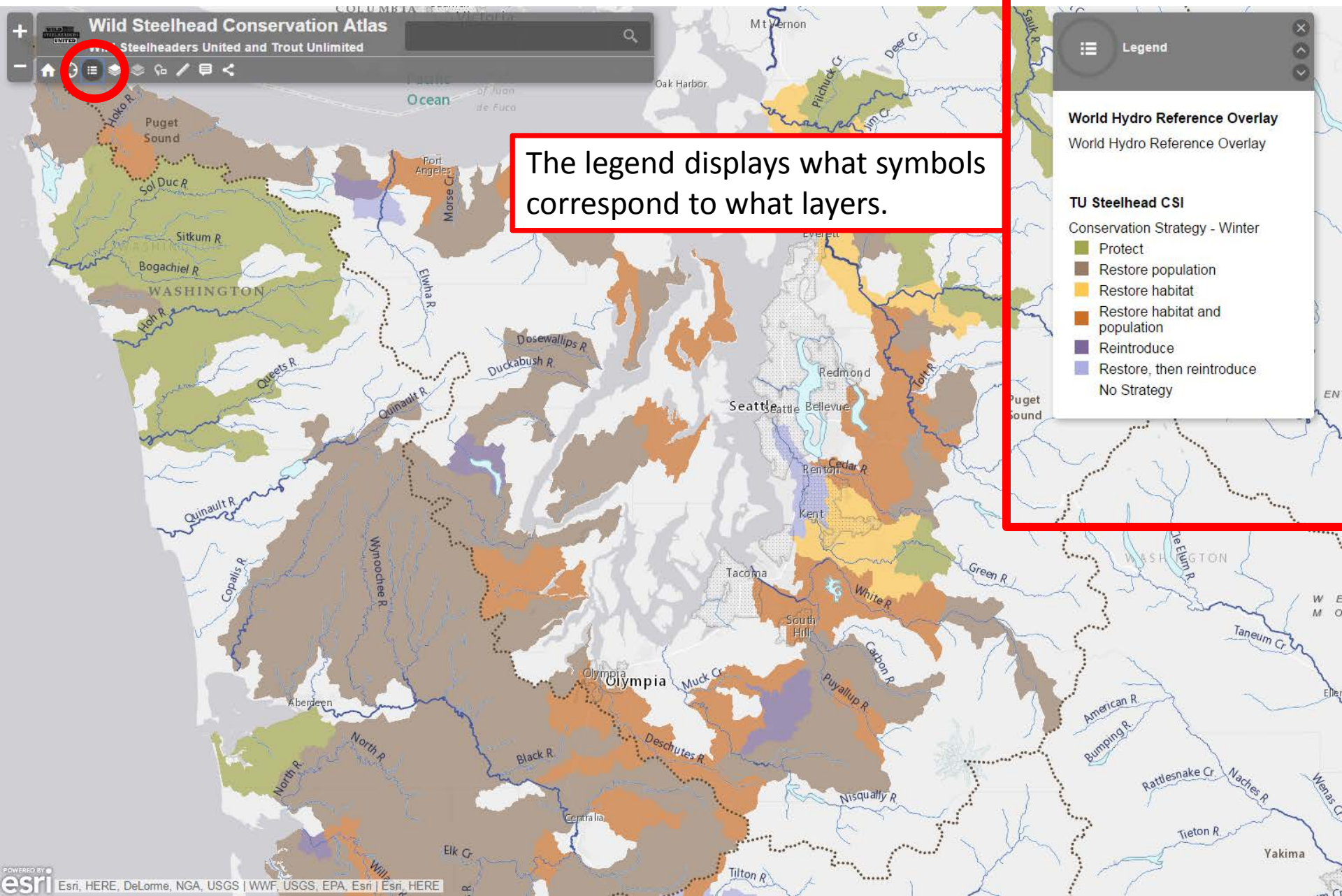
TOOL | Default Extent | Sets your map to its original view



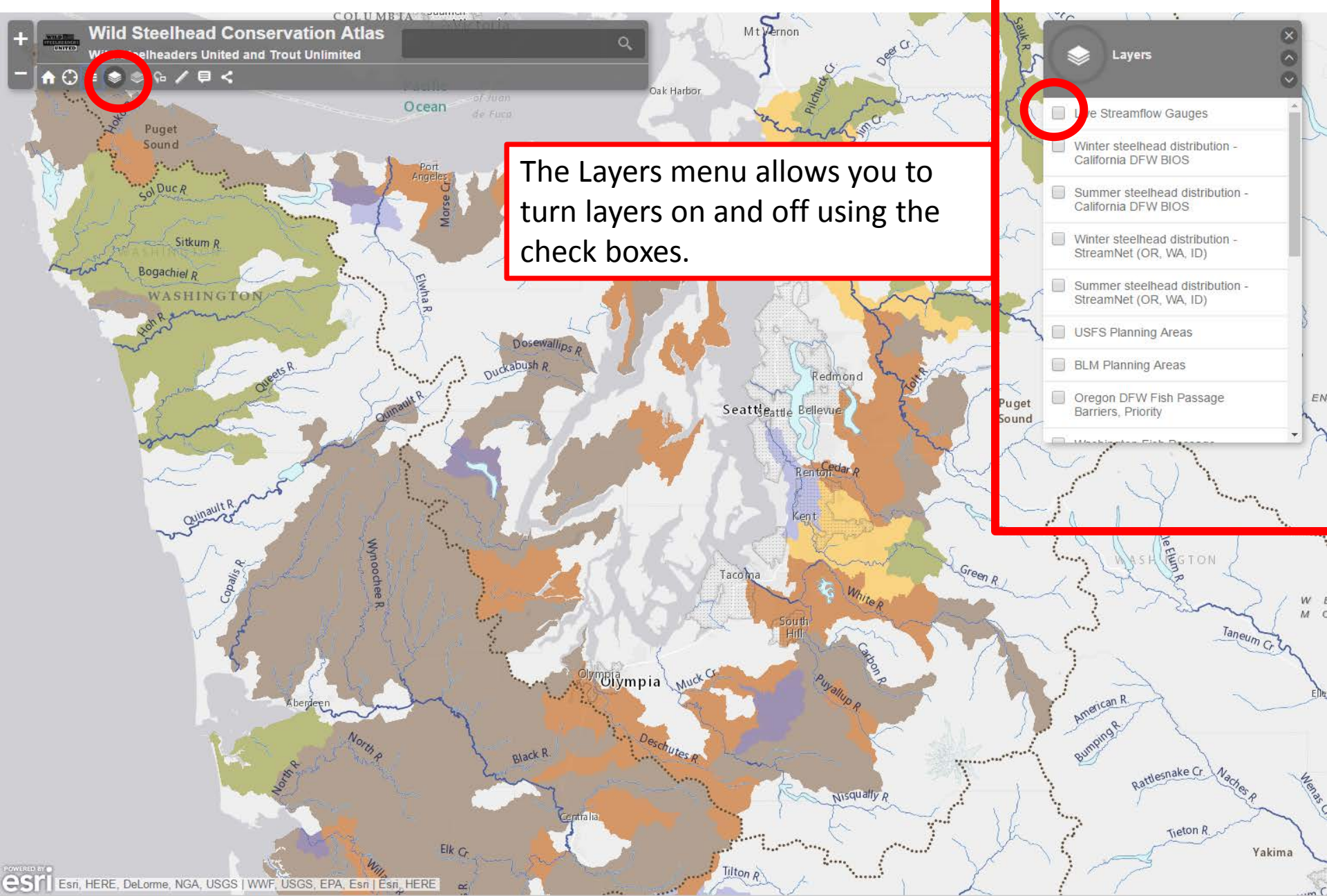
TOOL | Find My Location | Centers the map on your current location



TOOL | Toggle Legend | Brings up the Legend menu on the right



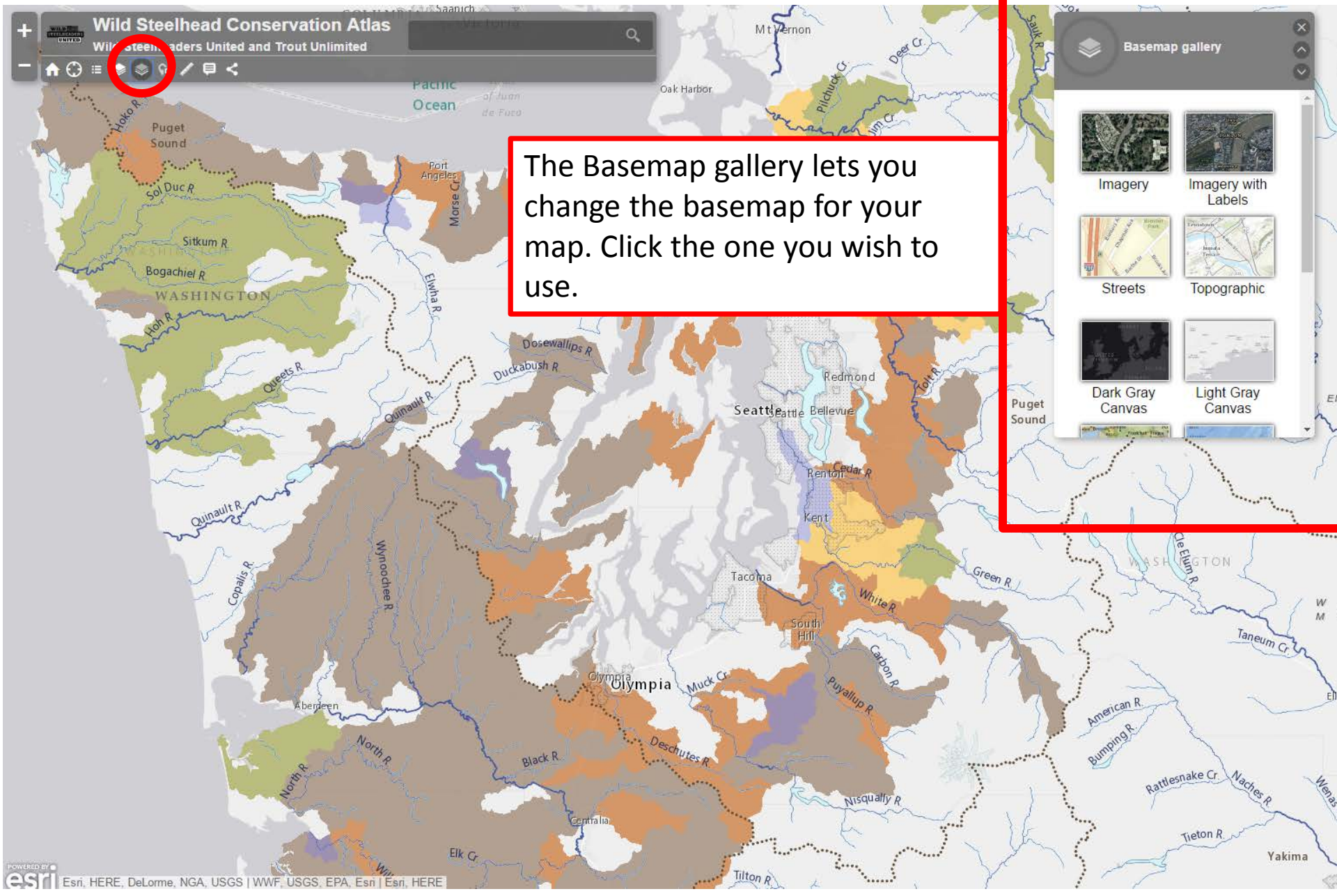
TOOL | Toggle Layers | Brings up the Layers menu on the right



The Layers menu allows you to turn layers on and off using the check boxes.

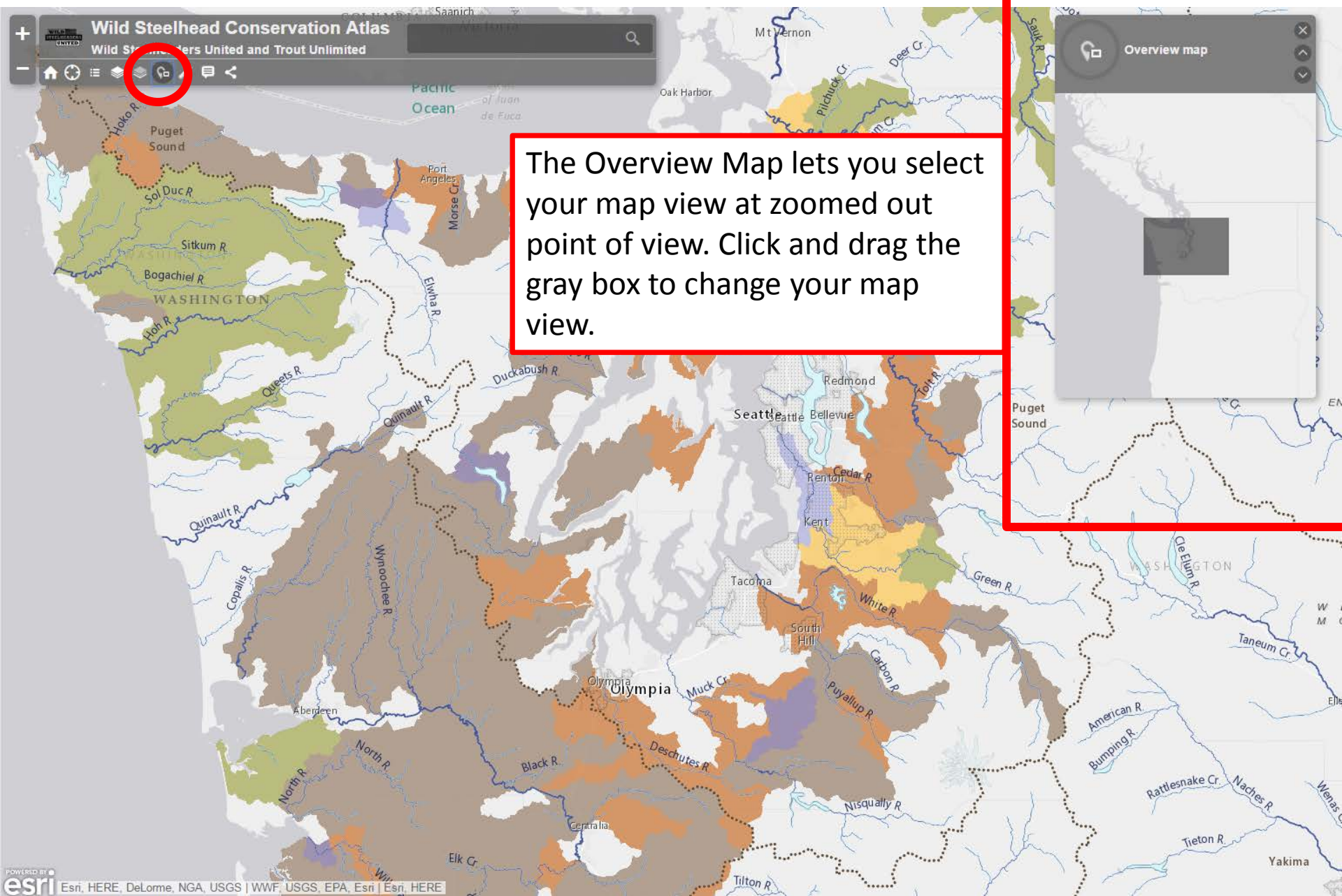
- Life Streamflow Gauges
- Winter steelhead distribution - California DFW BIOS
- Summer steelhead distribution - California DFW BIOS
- Winter steelhead distribution - StreamNet (OR, WA, ID)
- Summer steelhead distribution - StreamNet (OR, WA, ID)
- USFS Planning Areas
- BLM Planning Areas
- Oregon DFW Fish Passage Barriers, Priority

TOOL | *Toggle Basemap* | Brings up the Basemap menu on the right



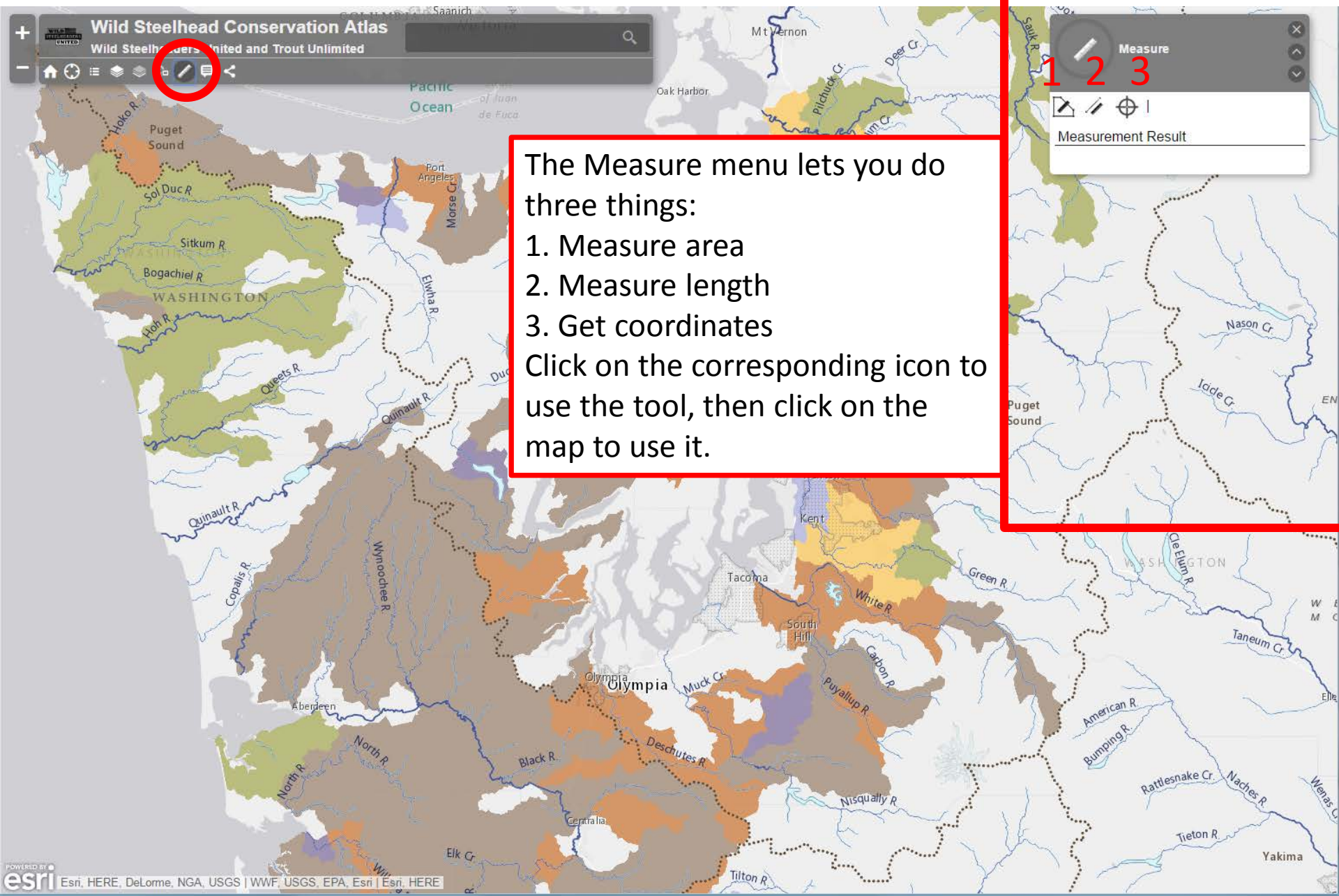
The Basemap gallery lets you change the basemap for your map. Click the one you wish to use.

TOOL | Toggle Overview | Brings up the Overview menu on the right



The Overview Map lets you select your map view at zoomed out point of view. Click and drag the gray box to change your map view.

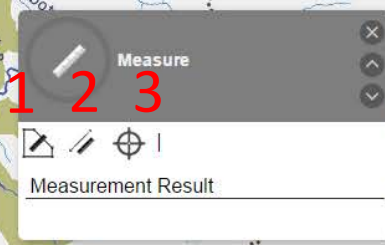
TOOL | Toggle Measure | Brings up the Measure menu on the right



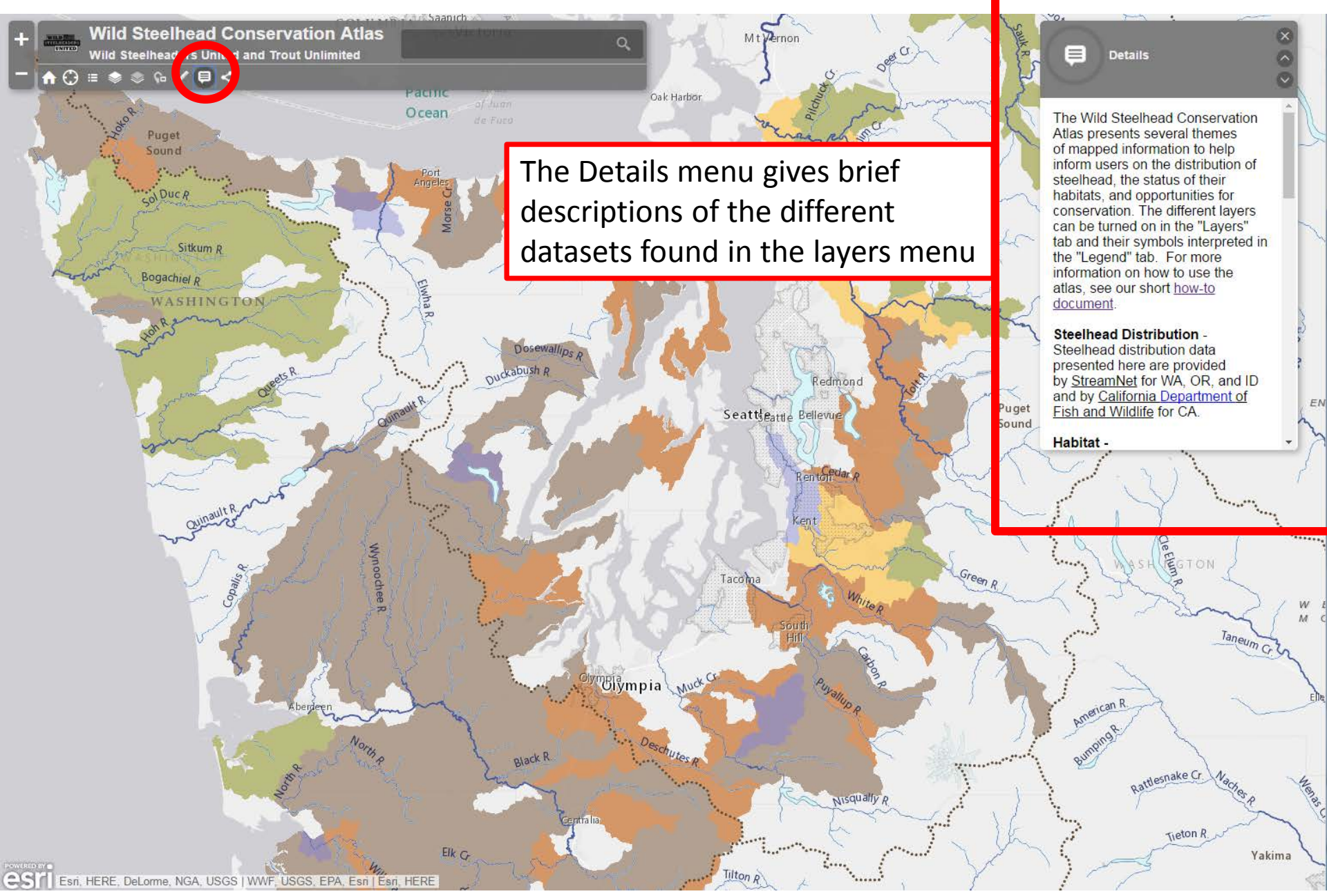
The Measure menu lets you do three things:

1. Measure area
2. Measure length
3. Get coordinates

Click on the corresponding icon to use the tool, then click on the map to use it.



TOOL | Toggle Details | Brings up the Details menu on the right



The Details menu gives brief descriptions of the different datasets found in the layers menu

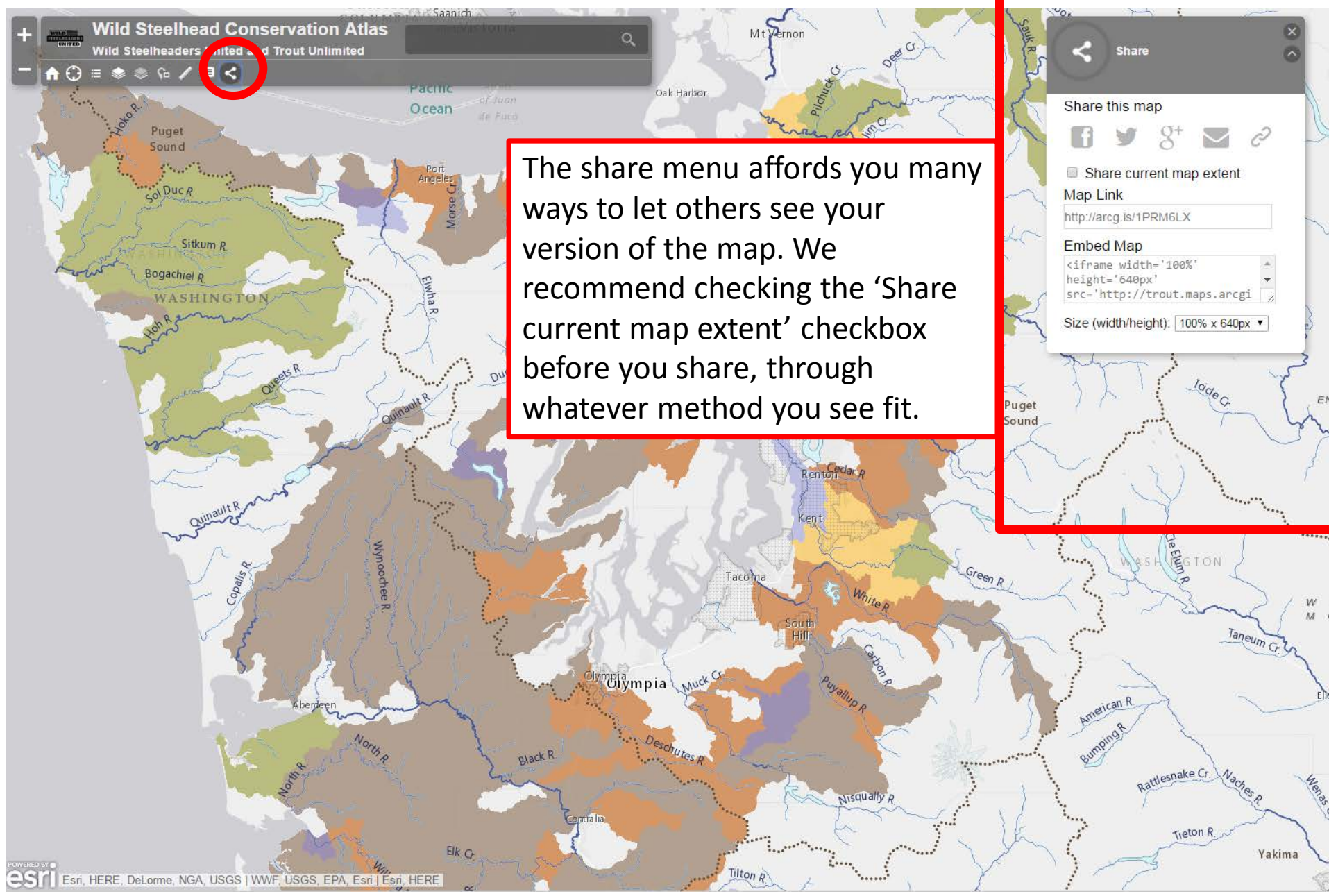
Details

The Wild Steelhead Conservation Atlas presents several themes of mapped information to help inform users on the distribution of steelhead, the status of their habitats, and opportunities for conservation. The different layers can be turned on in the "Layers" tab and their symbols interpreted in the "Legend" tab. For more information on how to use the atlas, see our short [how-to document](#).

Steelhead Distribution -
Steelhead distribution data presented here are provided by StreamNet for WA, OR, and ID and by California Department of Fish and Wildlife for CA.

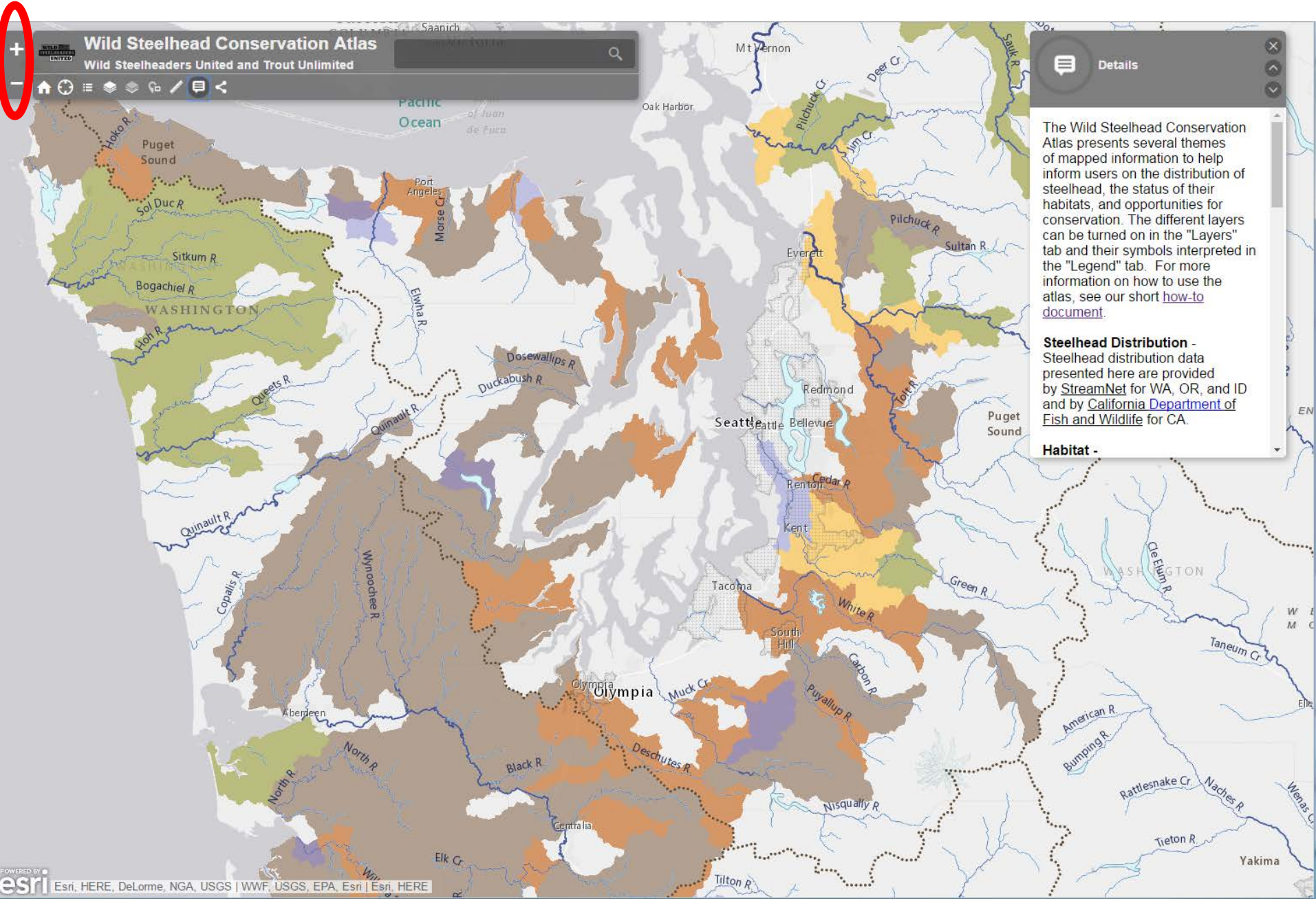
Habitat -

TOOL | Toggle Share | Brings up the Share menu on the right



The share menu affords you many ways to let others see your version of the map. We recommend checking the 'Share current map extent' checkbox before you share, through whatever method you see fit.

TOOL | Zoom In/Out | Click the '+' sign to zoom in, the '-' sign to zoom out. You can also Double Click on the map or use your mouse's scroll wheel to do the same.



To explore the layers you have turned on, click on the map and a dialogue box should appear. When multiple layers are turned on, they will often overlap. If you are interested in looking at the data for each of them (outside of the legend), you should click on the layer you are interested in. You may have to click through a few different layers.

Wild Steelhead Conservation Atlas
Wild Steelheaders United and Trout Unlimited

(1 of 5)

Road Crossings: Upper Hoh Rd

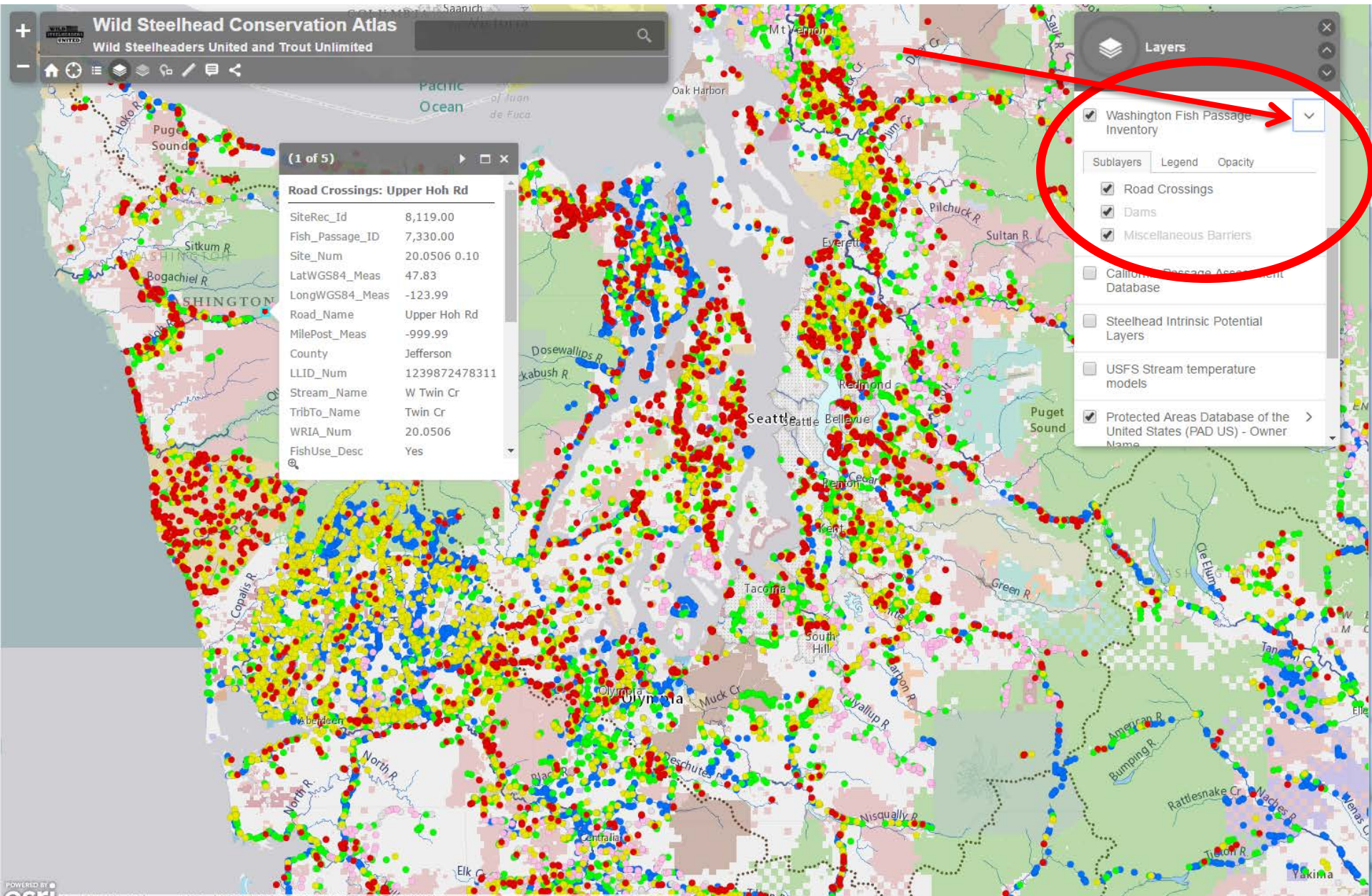
SiteRec_Id	8,119.00
Fish_Passage_ID	7,330.00
Site_Num	20.0506 0.10
LatWGS84_Meas	47.83
LongWGS84_Meas	-123.99
Road_Name	Upper Hoh Rd
MilePost_Meas	-999.99
County	Jefferson
LLID_Num	1239872478311
Stream_Name	W Twin Cr
TribTo_Name	Twin Cr
WRIA_Num	20.0506
FishUse_Desc	Yes

Layers

- Washington Fish Passage Inventory
- California Passage Assessment Database
- Steelhead Intrinsic Potential Layers
- USFS Stream temperature models
- Protected Areas Database of the United States (PAD US) - Owner Name
- World Hydro Reference Overlay
- USA NLCD Land Cover 2011
- USA NLCD Impervious Surfaces

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Some content includes sub-layers which can be accessed from the ">" symbol next to the layer name. In this example, the Washington Fish Passage Inventory includes 3 sub-layers: Road Crossings, Dams, and Miscellaneous Barriers. If a layer is "greyed-out" – as Dams and Miscellaneous Barriers are in this example – zoom in closer on the map and the layers will become visible.



Part 2: Scenarios

Scenario A applies to the Fish Trip Planner
Scenarios B and C apply to the Conservation
Atlas

Scenario A: Fishing Trip

Collect information about a pre-selected fishing area like:

- a. Live stream flow data
- b. Creel and dam counts of adult steelhead returns

Use the Steelhead Fishing Trip Planner to make an informed decision on where to go fishing in northern Idaho. First search for a town near the Clearwater that you're familiar with, in this case Orofino, ID.

The screenshot displays the Steelhead Fishing Trip Planner application. At the top left, the title bar reads "Steelhead Fishing Trip Planner" and "Wild Steelheaders United and Trout Unlimited". The search bar at the top center contains the text "Orofino, Idaho, United States" and is highlighted with a red circle. Below the search bar, a "Search result" popup window shows "Orofino, Idaho, United States" with a magnifying glass icon. The map shows a green line representing a stream or river, with "Orofino Creek" labeled. The right sidebar contains a legend with the following sections:

- Live_Stream_Gauges**: A single orange dot.
- Weather Stations (NOAA)**: A list of stations with corresponding wind speed and force indicators:
 - 0 km/h (Calm / No Reading)
 - < 12 km/h (Light Breeze)
 - < 39 km/h (Moderate Breeze)
 - < 62 km/h (Strong Breeze)
 - < 89 km/h (Gale Force)
 - < 118 km/h (Storm Force)
 - >= 118 km/h (Hurricane Force)
- Steelhead Harvest Reports and Creel Surveys**: A section with a downward arrow.

At the bottom left, the Esri logo is visible, along with the text "POWERED BY esri Esri, HERE, DeLorme, INCREMENT P, NGA, USGS | ©2015 Esri, NOAA | Source: USGS; NOAA; and the GIS Com..."

Next, check nearby stream gauges by clicking on one of the orange circles. According to this live stream gauge, the Clearwater is experiencing decreasing flows after a spike in flows – often a great time for steelhead fishing.

Steelhead Fishing Trip Planner
Wild Steelheaders United and Trout Unlimited

Orofino, Idaho, United States

Layers

- Live Stream Gauges
- World Hydro Reference Overlay
- Weather Stations (NOAA)
- Steelhead Harvest Reports and Creel Surveys
- Protected Areas Database of the United States (PAD US) - Owner Name
- GeoMAC Fire layers

Clearwater River At Orofino ID [USGS]

Last update November 2, 2015
Height (ft) 5.57
Flow (cfs) 7,710.00
Station details [More info](#)

WATER STREAM DISCHARGE AT OROFINO ID

Year	Discharge (cfs)
2012	~5000
2013	~5000
2014	~5000
2015	~5000
2016	~5000
2017	~5000
2018	~5000
2019	~5000
2020	~5000
2021	~5000
2022	~5000
2023	~5000
2024	~5000
2025	~5000
2026	~5000
2027	~5000
2028	~5000
2029	~5000
2030	~5000

Legend: Median daily discharge (10 year) — Discharge

Now determine what the most recent steelhead returns are. First make sure the 'Steelhead Harvest Reports and Creel Surveys' layer is on. Second, click on the river section you are interested in. Finally click the 'More Info' link... (Note the River Section name for the next step!)

The screenshot shows the 'Steelhead Fishing Trip Planner' web application. The top navigation bar includes the title 'Steelhead Fishing Trip Planner', the logo for 'Wild Steelheaders United and Trout Unlimited', and the location 'Orofino, Idaho, United States'. A search bar is also present. On the right side, there is a 'Layers' panel with several layers listed: 'Live Stream Gauges', 'World Hydro Reference Overlay', 'Weather Stations (NOAA)', 'Steelhead Harvest Reports and Creel Surveys' (which is highlighted with a red 'X' and a blue selection bar), 'Protected Areas Database of the United States (PAD US) - Owner Name', and 'GeoMAC Fire layers'. The main map area shows a topographic map with a cyan line representing the Clearwater River. A pop-up window titled '(2 of 2)' is open over the river, displaying the following information: 'River: Clearwater River', 'River: Clearwater River', 'Section: Clearwater River - Upstream from Orofino Bridge', and 'Click for numbers: [More info](#)'. A red circle highlights the 'More info' link, and a red arrow points to it from the right. The bottom of the page features the Esri logo and a footer with text: 'Esri, HERE, DeLorme, INCREMENT P, NGA, USGS | ©2015 Esri, NOAA | Source: USGS; NOAA; and the GIS Com...'

...to open Idaho Fish and Game's steelhead harvest report for the river section. 'Clearwater River - Upstream from Orofino Bridge' is the section (as labeled on the map) of interest.

fishandgame.idaho.gov/public/fish/?getPage=126

Idaho.gov Idaho Department of Fish and Game

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Fishing Planner

REGION INFO

Monday, November 2, 2015

Steelhead Harvest Report

October 19 to October 25, 2015

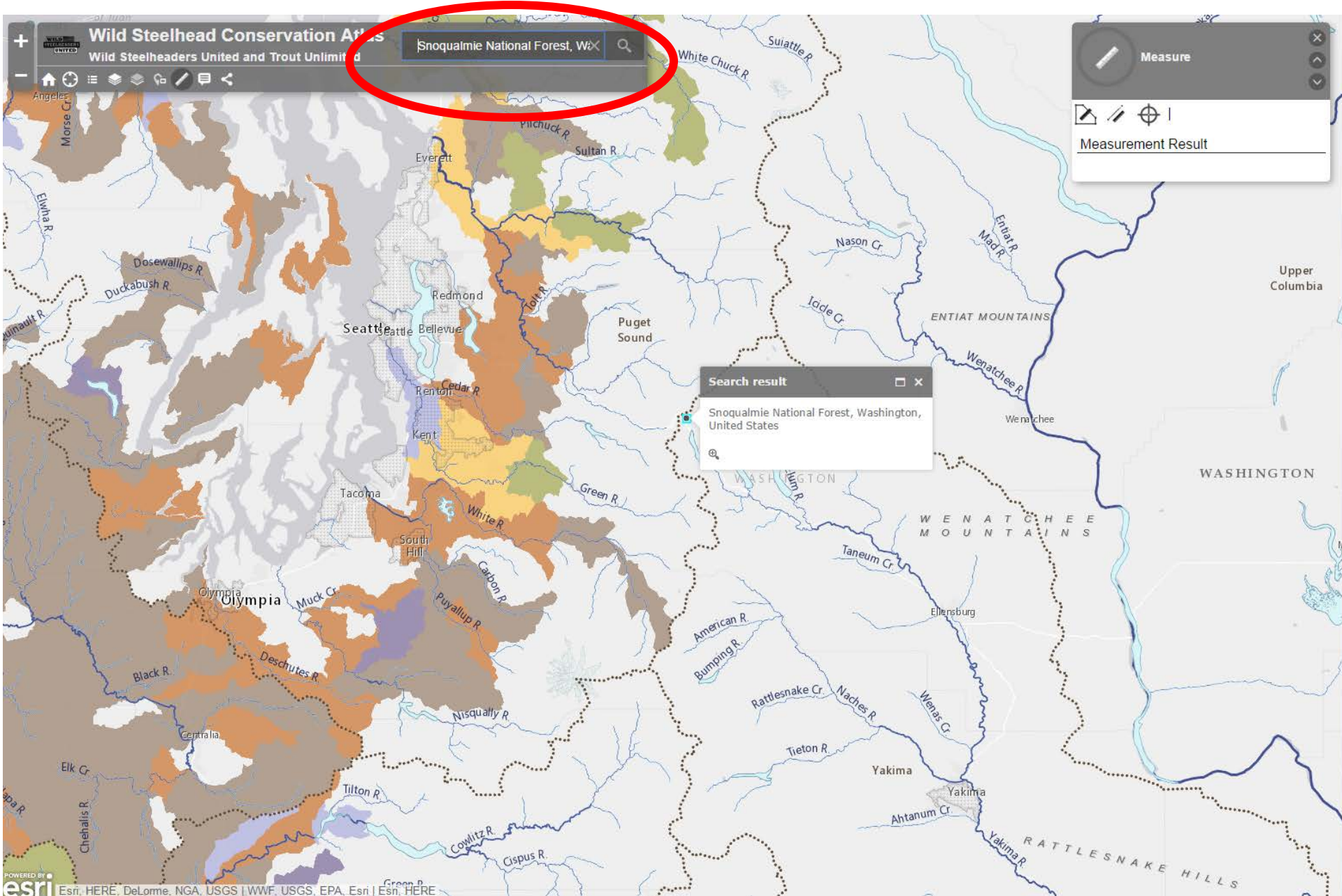
River Section Locations	Anglers Checked	Hours Fished	Fish Kept	Fish Released	Total	Hours Per Fish Caught	Hours Per Fish Kept	Water Temp	Water Conditions
Snake River Downstream from Salmon River	212	1,373	112	117	229	6	12	60° F	Clear
Snake River Mouth of Salmon River to Hells Canyon Dam tailrace	84	598	11	1	12	50	54	63° F	Clear
Clearwater River Mouth to Orofino Bridge	404	1,862	82	113	195	10	23	52° F	Clear
Clearwater River Upstream from Orofino Bridge	8	24	0	0	0	--	--	52° F	Clear
North Fork Clearwater River	51	180	13	4	17	11	14	49° F	Clear
North Fork Clearwater River From the mouth upstream to Dworshak Dam	--	--	--	--	--	--	--	--	--
South Fork Clearwater River	--	--	--	--	--	--	--	--	--
Salmon River Downstream from Whitebird Creek	50	187	10	12	22	8	19	52° F	Clear
Salmon River Whitebird Creek to Little Salmon River	99	482	7	17	24	20	69	52° F	Clear
Salmon River Little Salmon River to Vinegar Creek (Riggins Ck St)	100	497	7	13	20	25	71	52° F	Clear

Scenario B: Restoration

Identify areas within Baker-Snoqualmie National Forest where:

- a. No acute habitat stressors exist within the Forest
- b. Stream temperatures may be limiting for summer steelhead in the future
- c. Restoration may help mitigate those temperatures.
- d. Stream temperature monitoring may be appropriate

First search for our area of interest.



Turn on the 'USFS Planning Areas' to make sure you are within the boundary of the National Forest, then click on the area to verify the name and other possibly relevant information.

Wild Steelhead Conservation Atlas
Wild Steelheaders United and Trout Unlimited

Snoqualmie National Forest, WA

USFS Planning Areas:

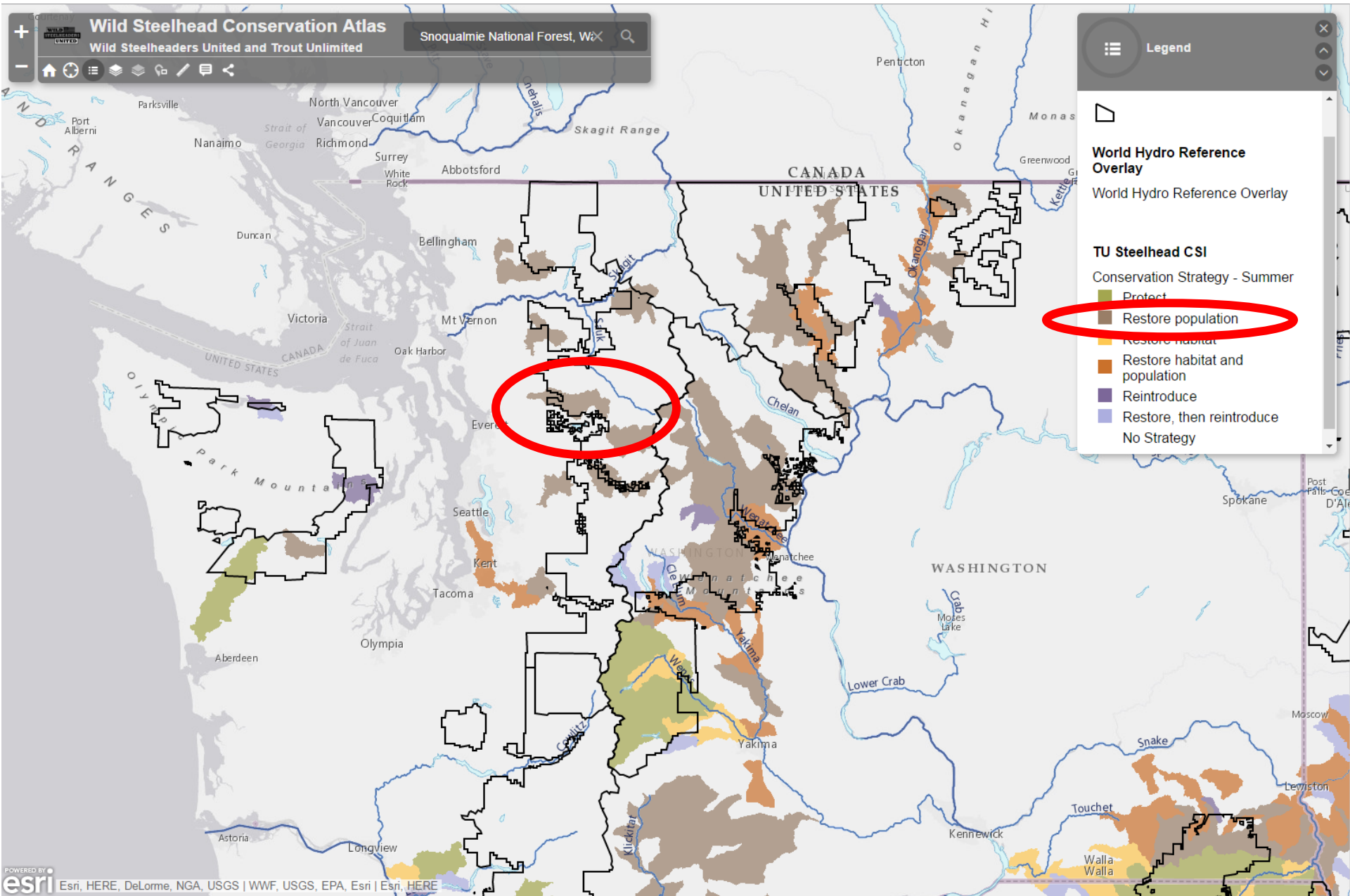
SUM_ACRES	1,989,001.00
SCP_Region	Northwest
State	Washington - cont.
FSUnit	Mt. Baker-Snoqualmie NF
Region	Region 6
Current LMP?	N
Year for new LMP	After 2016
Current TMP?	N
Year for new TMP	

Layers

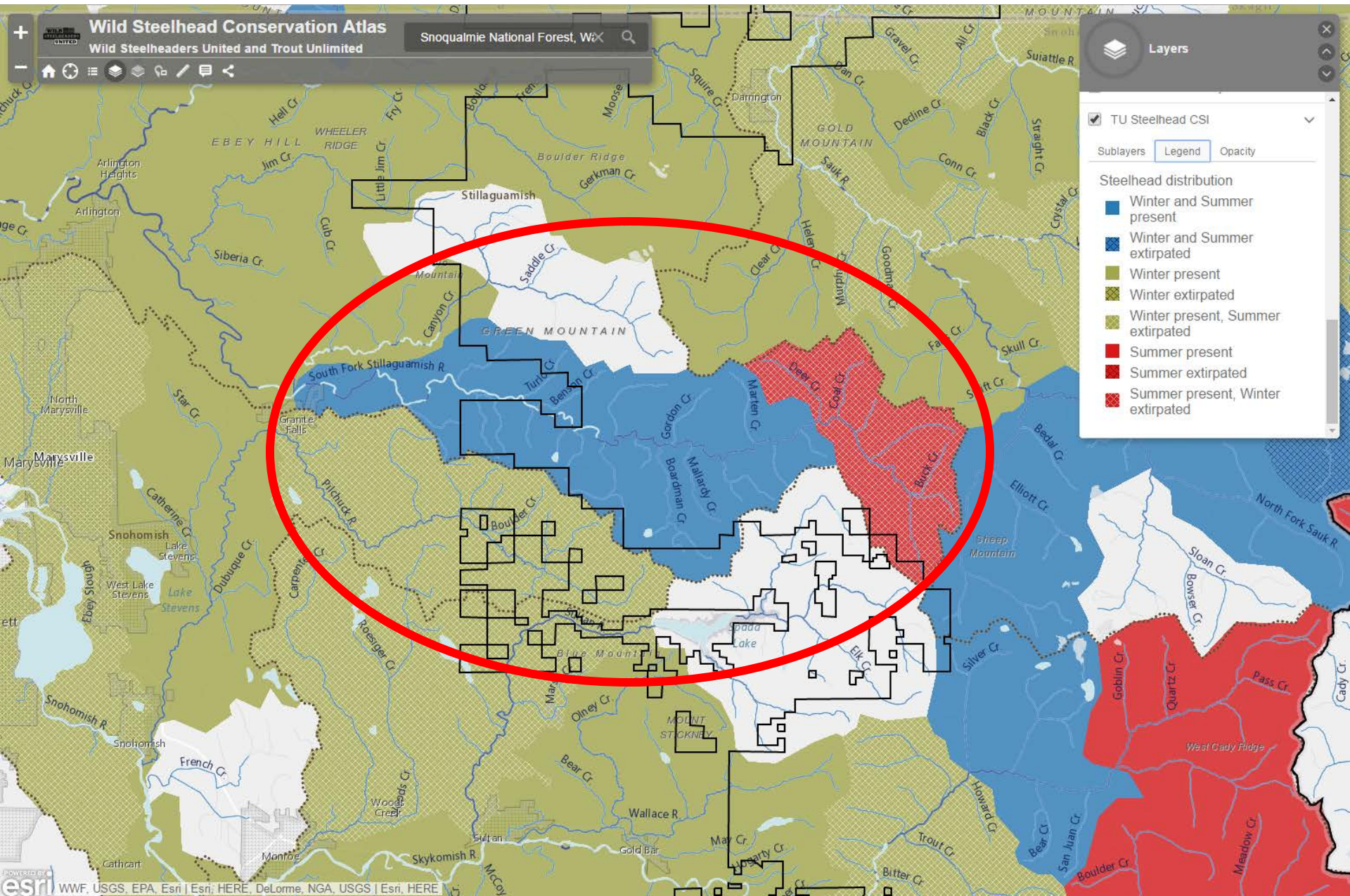
- Live Streamflow Gauges
- Winter steelhead distribution - California DFW BIOS
- Summer steelhead distribution - California DFW BIOS
- Winter steelhead distribution - StreamNet (OR, WA, ID)
- Summer steelhead distribution - StreamNet (OR, WA, ID)
- USFS Planning Areas
- BLM Planning Areas
- Oregon DFW Fish Passage Barriers, Priority
- Washington Fish Passage Barriers, Priority

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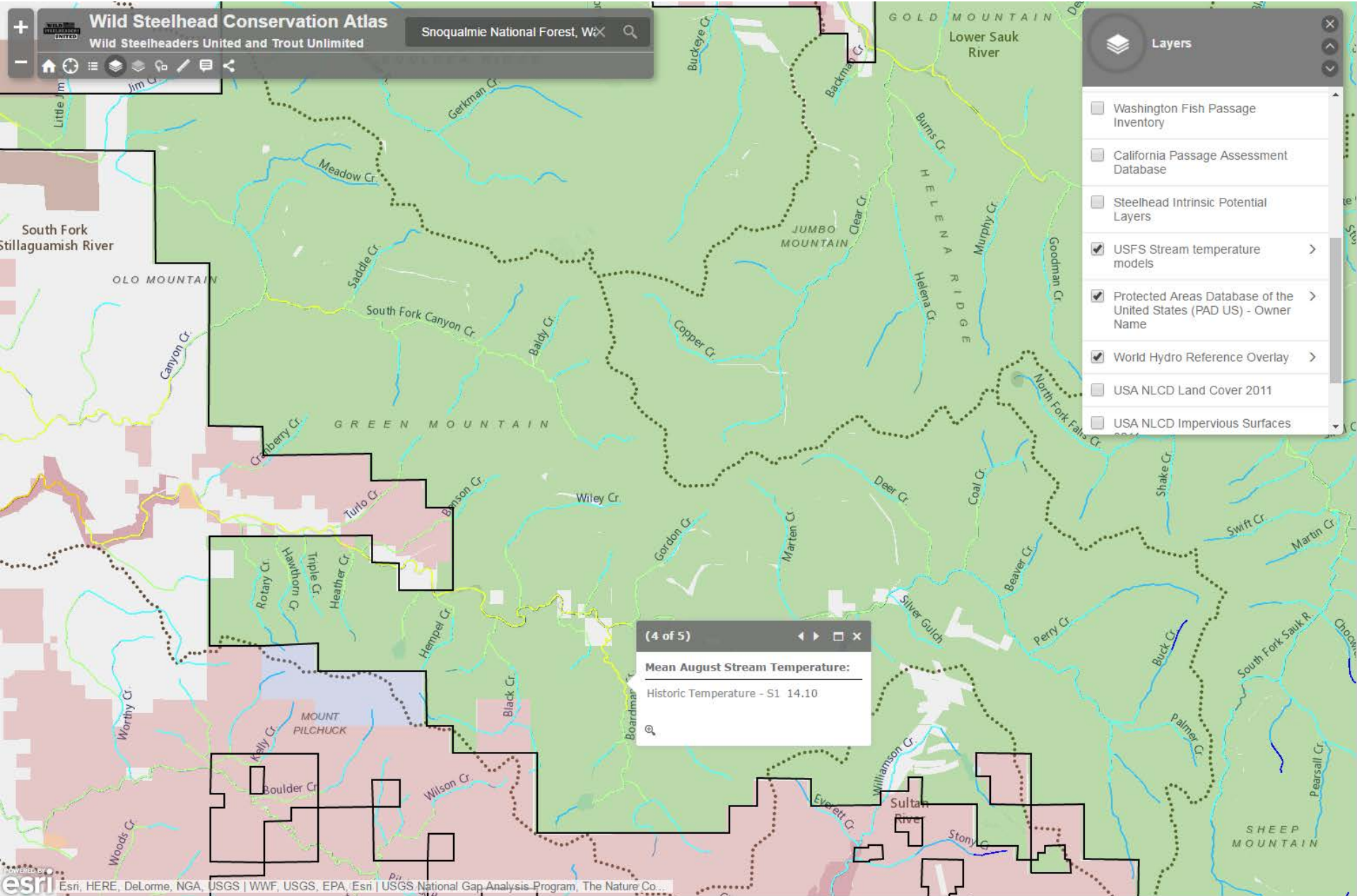
To make sure there are no acute habitat stressors present, we'll determine the most common conservation strategy in the Forest, using the TU CSI layers (specifically the 'Conservation Strategy – Summer' layer). Areas that are brown only require population restoration, indicating few acute habitat stressors.



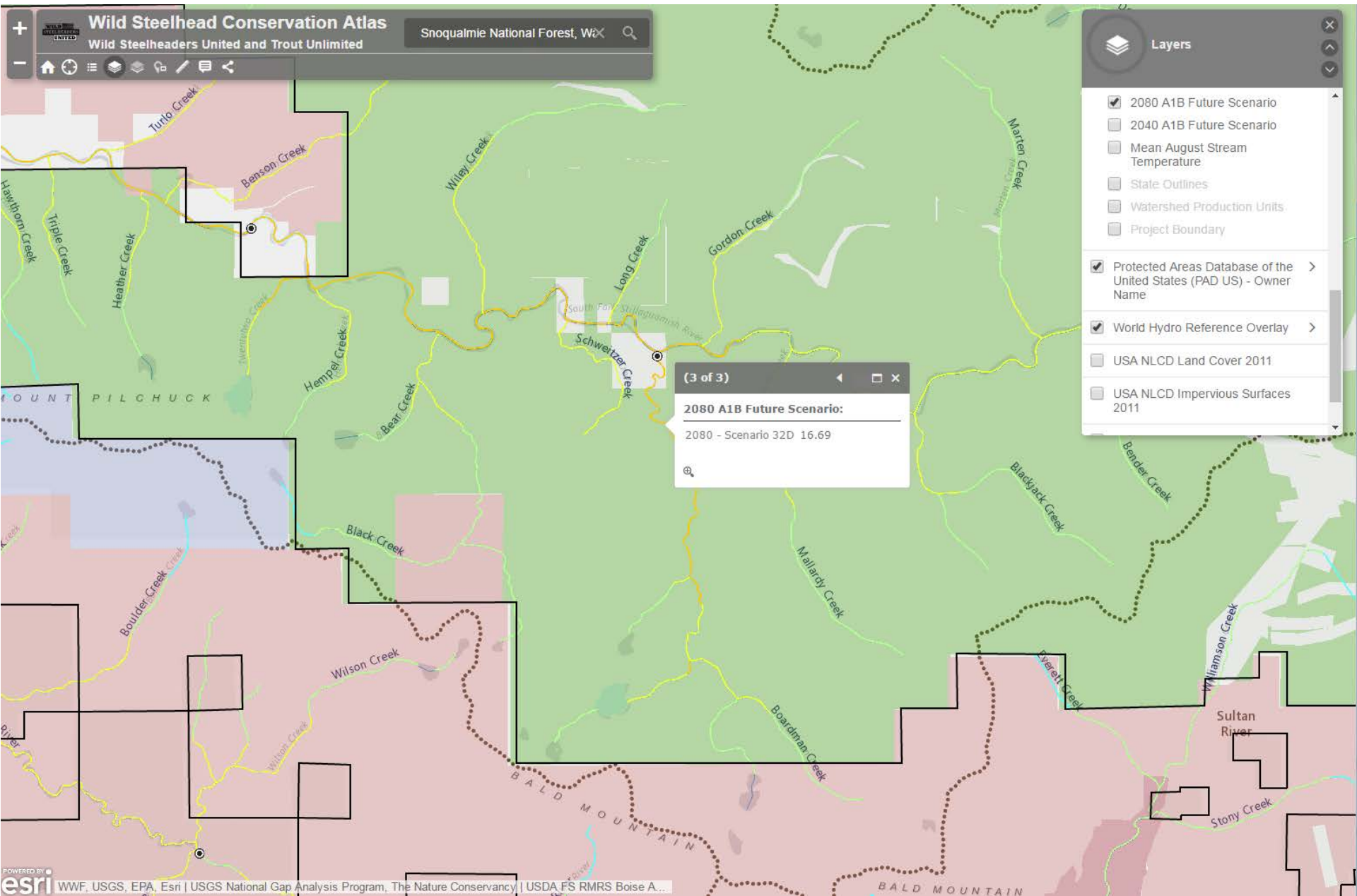
Turn on the TU Steelhead CSI 'Steelhead Distribution' layer to zoom and identify areas where Summer Steelhead are currently present. South Fork Stillaguamish River appears to support such a population.



Now examine current and future temperature and land ownership. The 'Mean August Stream Temperature' layer lets us know the current, general temperature. The 'Protected Areas Database...' shows land ownership. Boardman Creek appears to be the warmest tributary on USFS lands at 14°C (57°F).



The 2080 forecast stream temperature indicates temps may increase by nearly 3° C (5° F) to 62° F.



Change the basemap to aerial imagery and determine where additional streamside vegetation could potentially mitigate future stream temperature increases. This riparian zone looks well-forested, but with a visible logging history – forest management may provide opportunity to place large wood in stream, increasing channel complexity and creating pool habitat.

The screenshot displays a web-based GIS application interface. The main map area shows a satellite-style aerial view of a stream flowing through a dense, green forest. The stream channel is visible, showing some meandering and potential pool habitats. The interface includes a top navigation bar with the title "Wild Steelhead Conservation Atlas" and "Wild Steelheaders United and Trout Unlimited". A search bar on the right of the top bar contains the text "Snoqualmie National Forest, W&X". On the right side, a "Layers" panel is open, listing several data layers with checkboxes. The "World Hydro Reference Overlay" layer is checked, while others are unchecked. The layers listed are: Steelhead Intrinsic Potential Layers, USFS Stream temperature models, Protected Areas Database of the United States (PAD US) - Owner Name, World Hydro Reference Overlay, USA NLCD Land Cover 2011, USA NLCD Impervious Surfaces 2011, GeoMAC Wildfire layers, and TU Steelhead CSI.

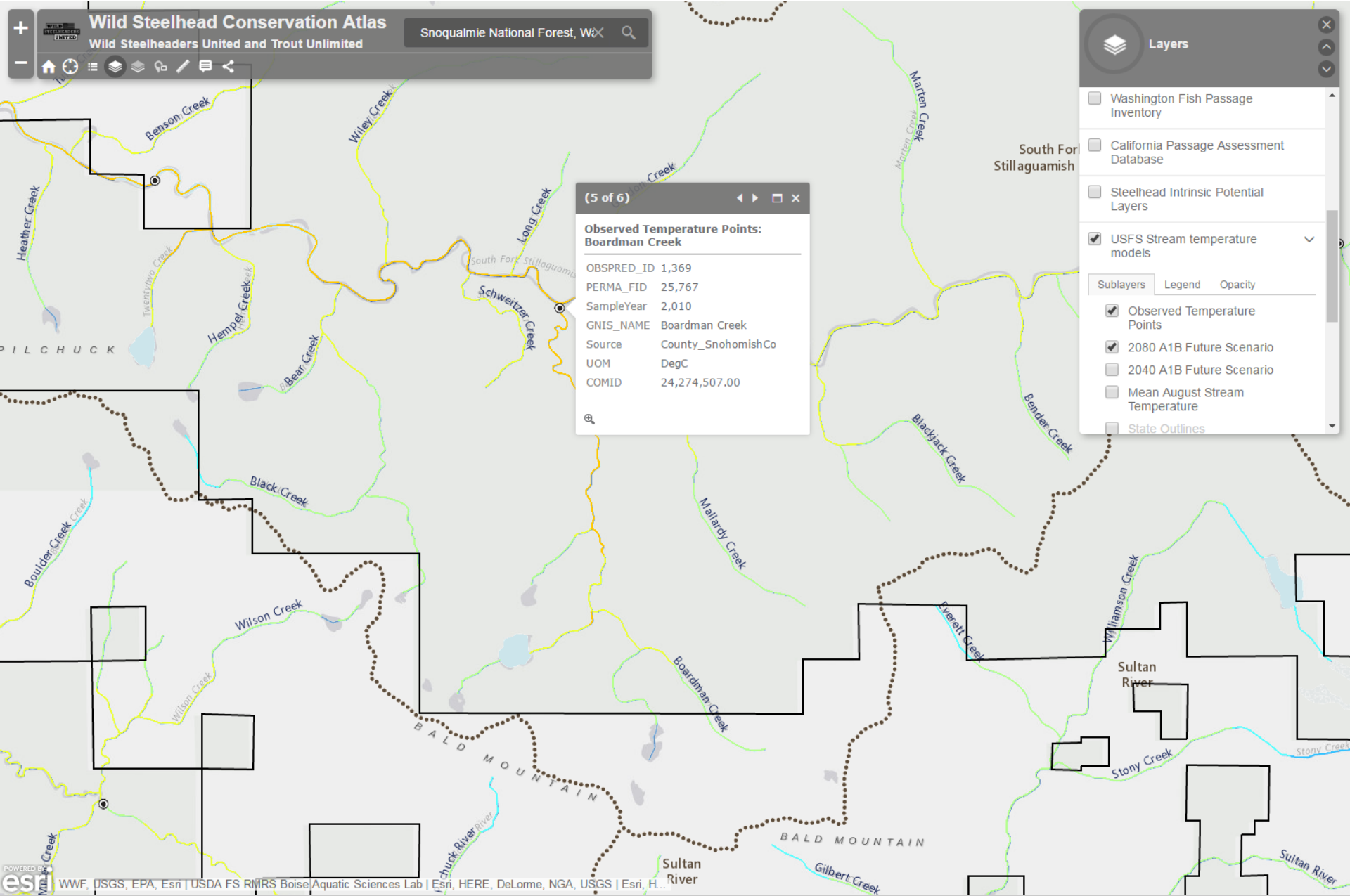
Wild Steelhead Conservation Atlas
Wild Steelheaders United and Trout Unlimited

Snoqualmie National Forest, W&X

Layers

- Steelhead Intrinsic Potential Layers
- USFS Stream temperature models
- Protected Areas Database of the United States (PAD US) - Owner Name
- World Hydro Reference Overlay
- USA NLCD Land Cover 2011
- USA NLCD Impervious Surfaces 2011
- GeoMAC Wildfire layers
- TU Steelhead CSI

Within the USFS stream temperature models layer, the locations of existing or historical monitoring are provided – these may help identify gaps in existing temperature models. TU has created another web-map to further identify existing monitoring and monitoring opportunities (<http://arcg.is/1TE0Aj8>)



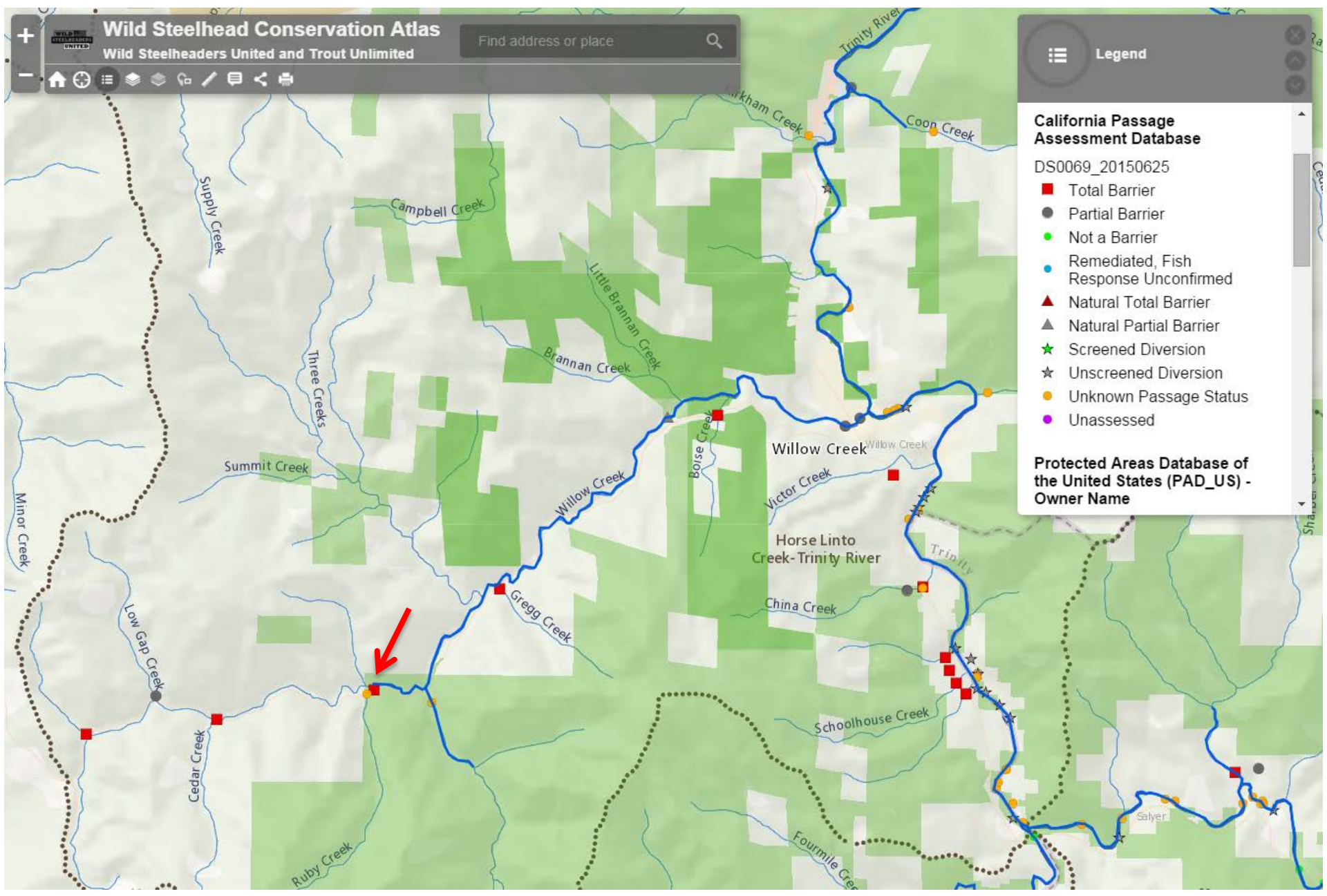
Scenario C: Habitat Evaluation

Identify tributaries to the Trinity River in California that winter run steelhead could potentially inhabit, but are unable to due to artificial barriers.

First, navigate to your basin of interest and turn on the relevant steelhead distribution and fish passage barrier dataset and land ownership layer

The screenshot shows a web-based map application interface. At the top left, the title bar reads "Wild Steelhead Conservation Atlas" and "Wild Steelheaders United and Trout Unlimited". Below the title bar is a search bar containing the text "Trinity River, California, United States", which is circled in red. A search result popup is visible in the center of the map, displaying "Trinity River, California, United States". On the right side, a "Layers" panel is open, listing several datasets with checkboxes: "Barriers, Priority", "Washington Fish Passage Inventory", "California Passage Assessment Database" (checked), "Steelhead Intrinsic Potential Layers", "USFS Stream temperature models", "Protected Areas Database of the United States (PAD US) - Owner Name" (checked), "World Hydro Reference Overlay" (checked), and "USA NLCD Land Cover 2011". The map itself shows a network of rivers and streams in California, with various colored points and polygons overlaid. The background map shows the state of California and parts of Oregon and Nevada, with major cities like Eugene, Medford, Redding, Chico, Sacramento, and San Francisco labeled. The bottom of the screen features a "POWERED BY" logo for Esri and a list of partners: WWF, USGS, EPA, Esri, USGS National Gap Analysis Program, The Nature Conservancy, Esri, HERE, DeLorme, NG...

Explore your basin of interest looking for areas where steelhead distribution stops at a barrier. Here is an example area in the Willow Creek drainage where winter-run steelhead distribution ends at a Total Barrier.



With the intrinsic potential layer, we can determine if the blocked-off area contains high-quality steelhead rearing habitat. A majority of this section of the Willow River has high intrinsic potential – this location might be a good candidate for evaluating opportunities for barrier removal.

