

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.

Contact

Sean McFall

Spatial Analyst

Trout Unlimited Science

Boise, ID

smcfall@tu.org

208 345 9800

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.

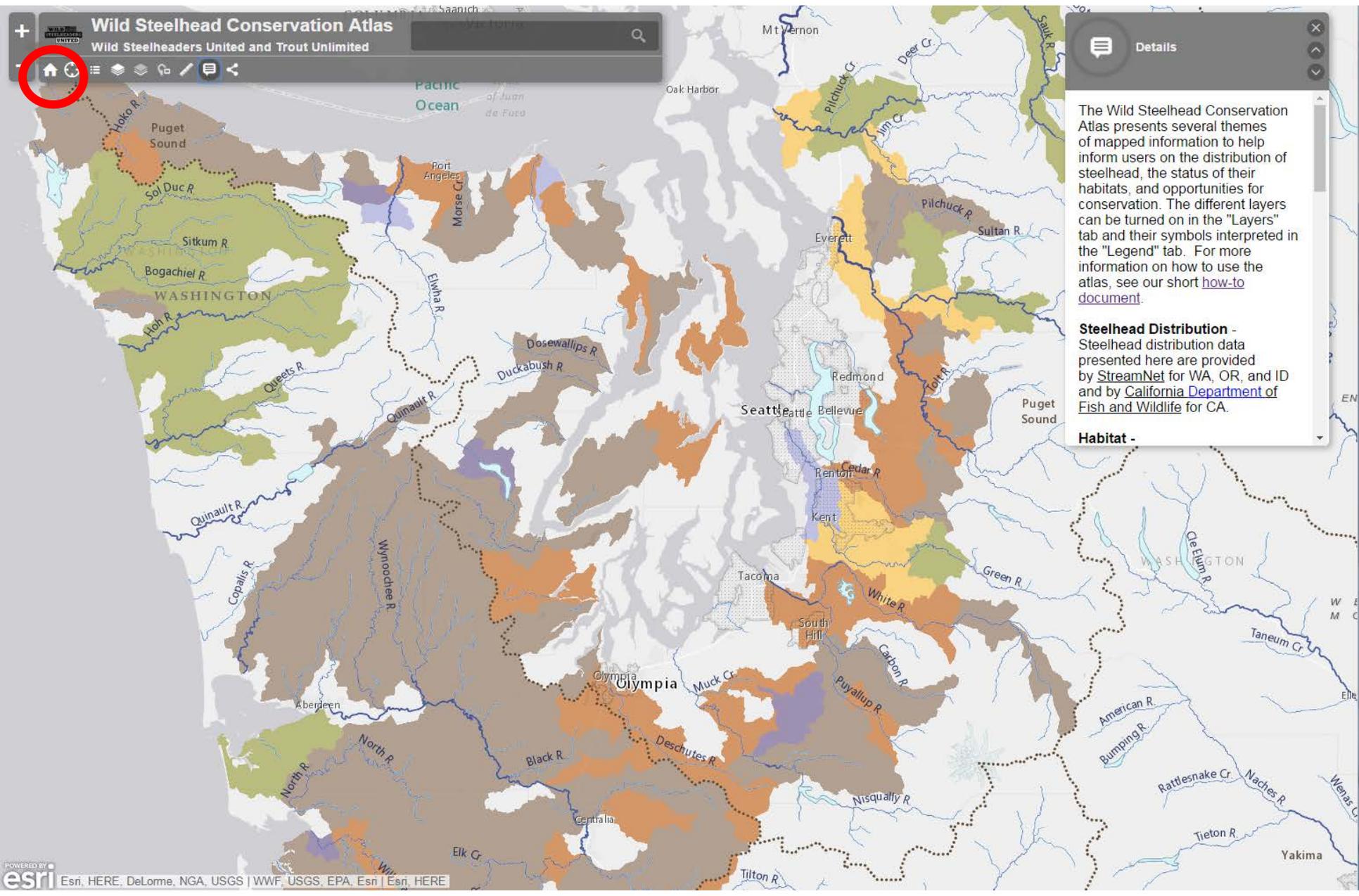
B. Some layers require you zoom into a pretty tight window before they load.

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

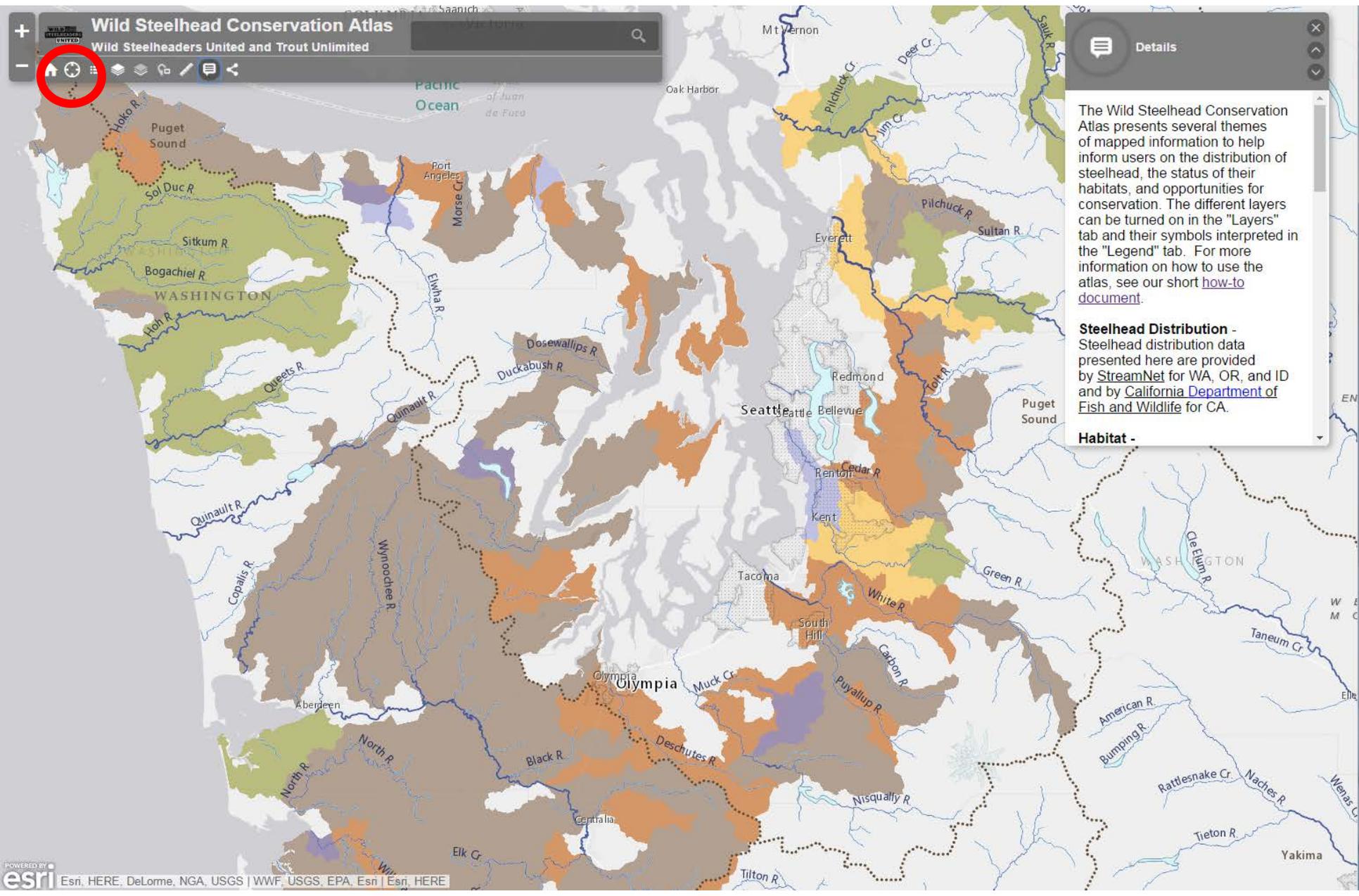
Part 1: Getting Oriented

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

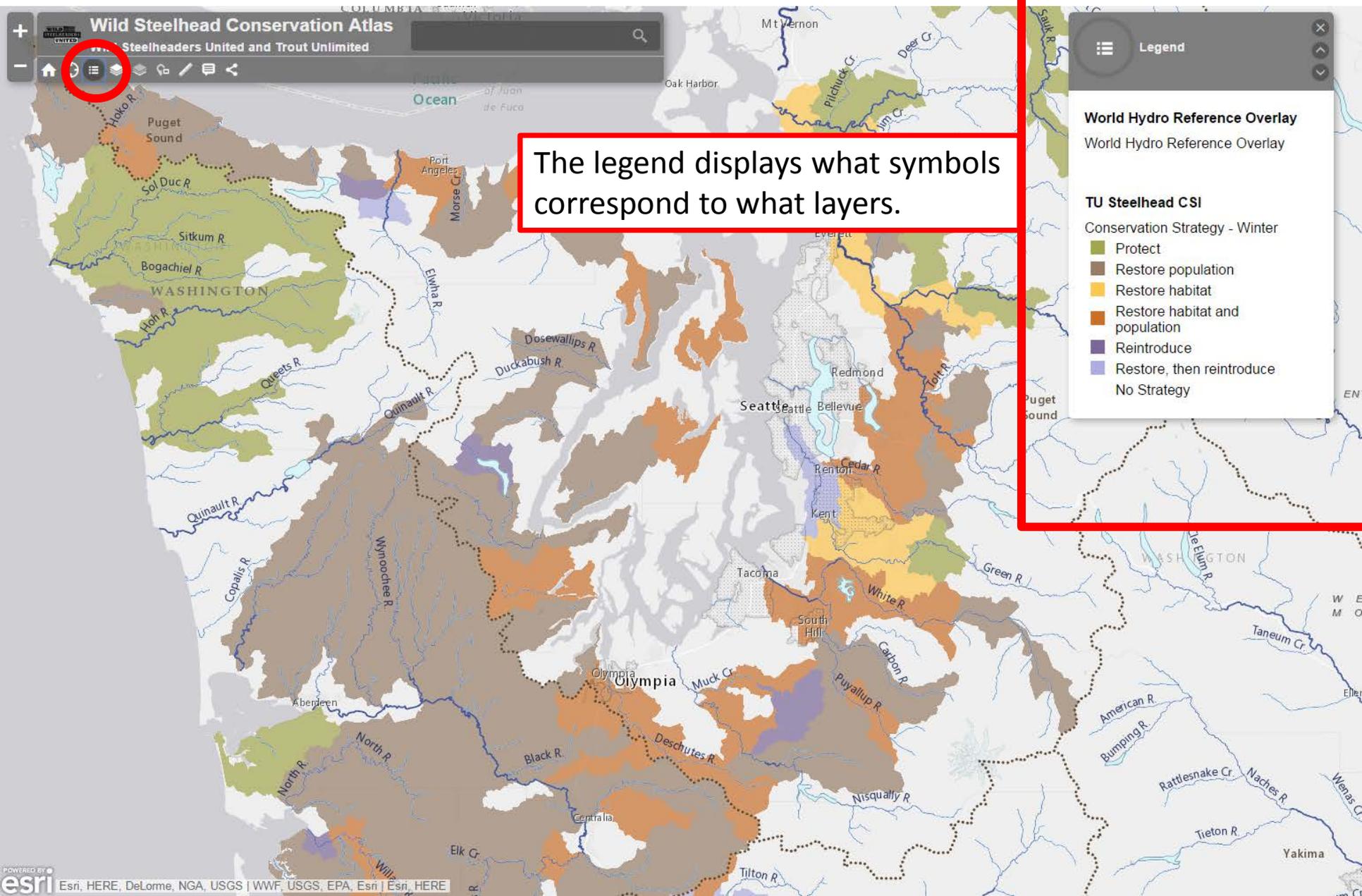
TOOL | Default Extent | Sets your map to its original view



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



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



The legend displays what symbols correspond to what layers.

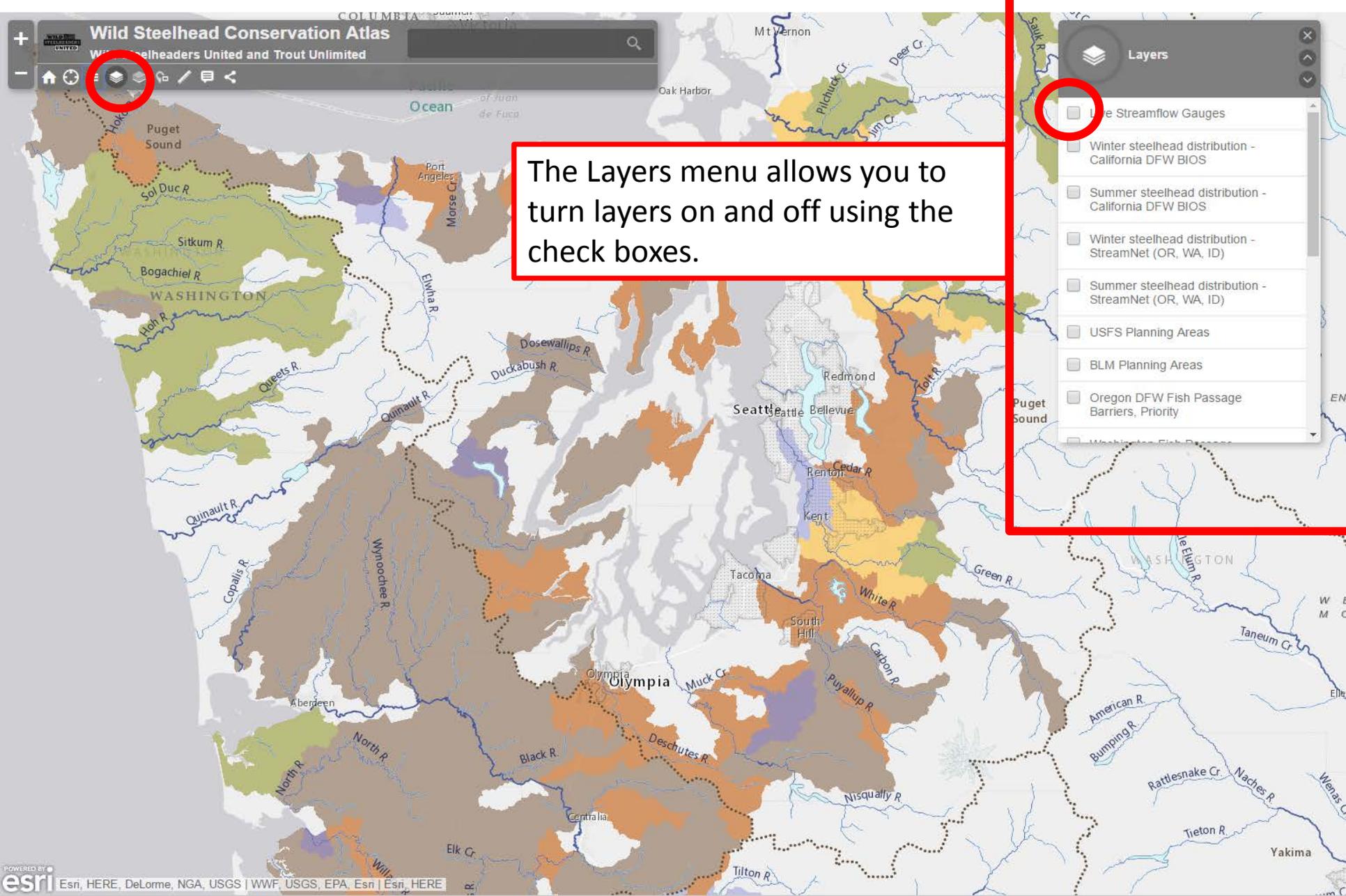
Legend

World Hydro Reference Overlay
World Hydro Reference Overlay

TU Steelhead CSI
Conservation Strategy - Winter

- Protect
- Restore population
- Restore habitat
- Restore habitat and population
- Reintroduce
- Restore, then reintroduce
- No Strategy

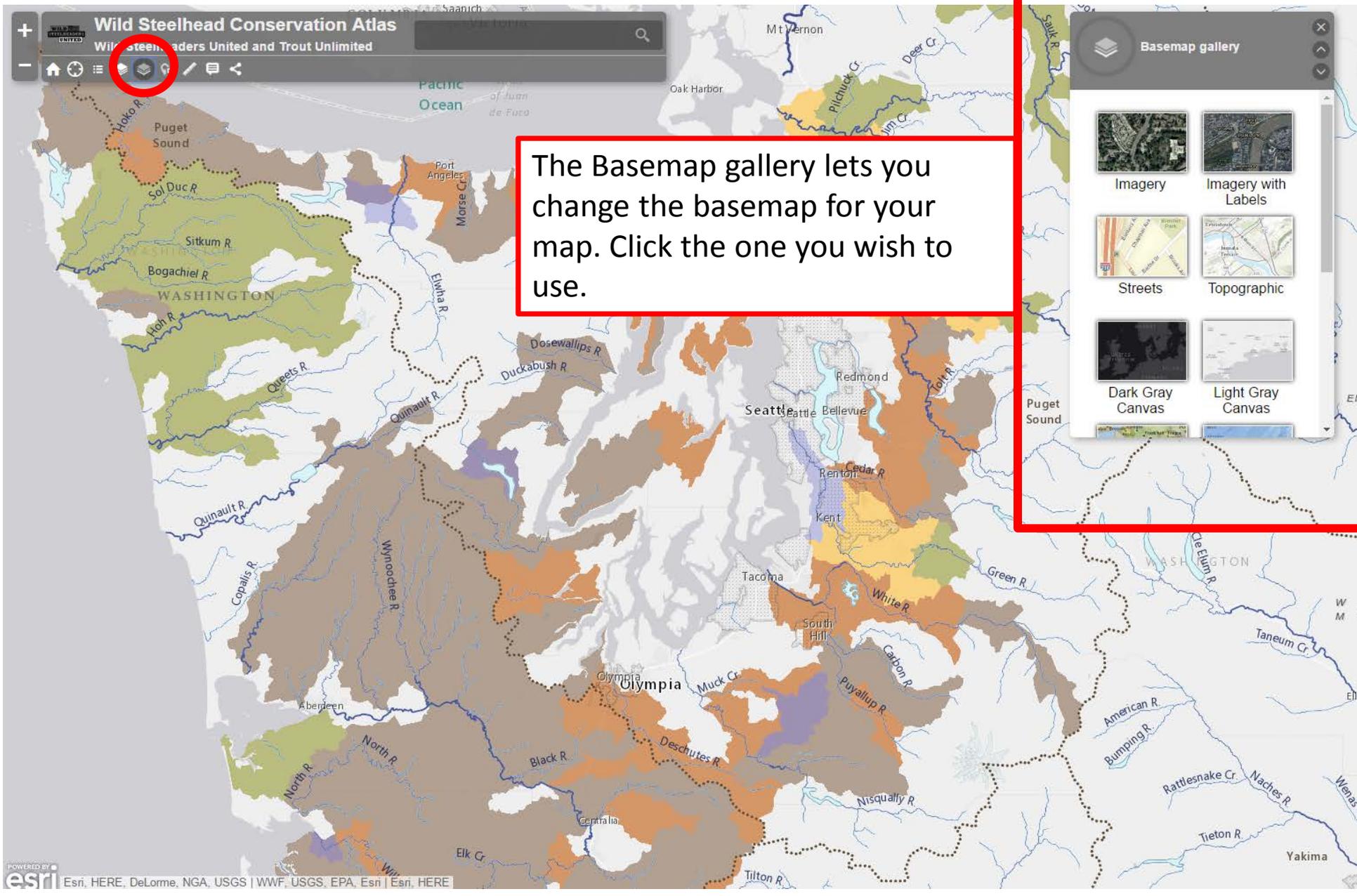
TOOL | Toggle Layers | Brings up the Layers menu on the right



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

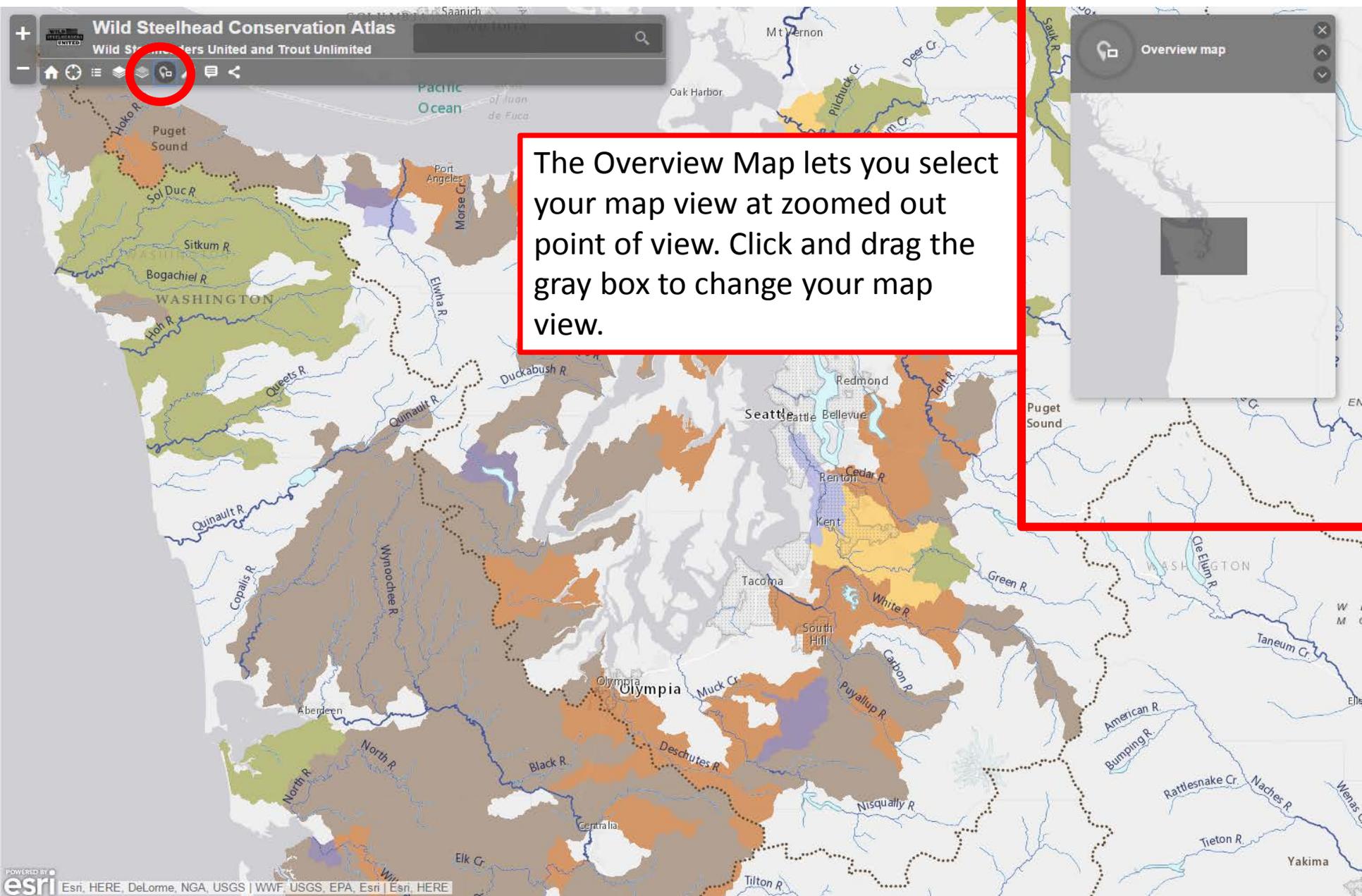
- Live Streamflow Gauges
- Winter steelhead distribution - California DFW BIOS
- Summer steelhead distribution - California DFW BIOS
- Winter steelhead distribution - StreamNet (OR, WA, ID)
- Summer steelhead distribution - StreamNet (OR, WA, ID)
- USFS Planning Areas
- BLM Planning Areas
- Oregon DFW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

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



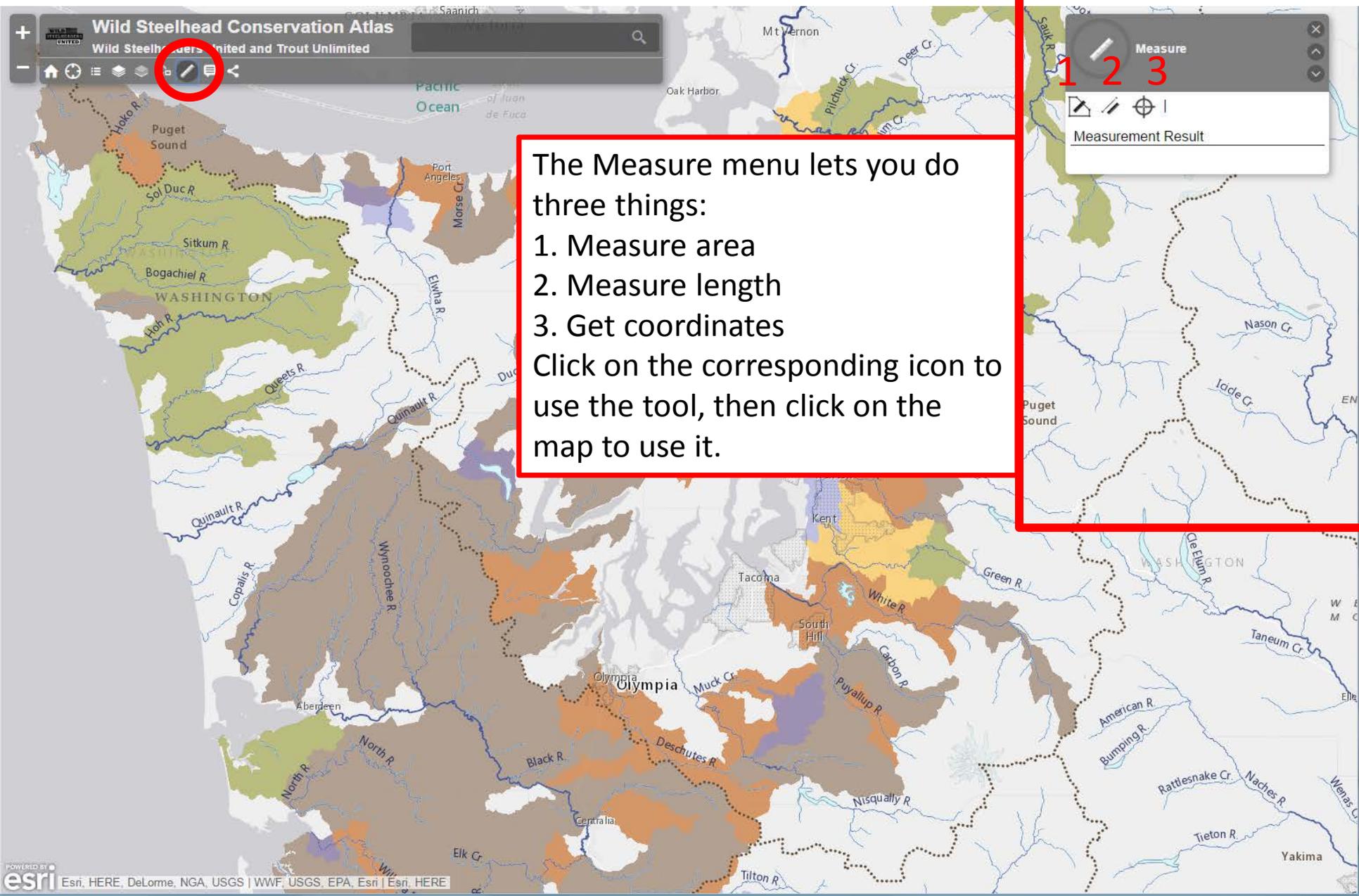
The Basemap gallery lets you change the basemap for your map. Click the one you wish to use.

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

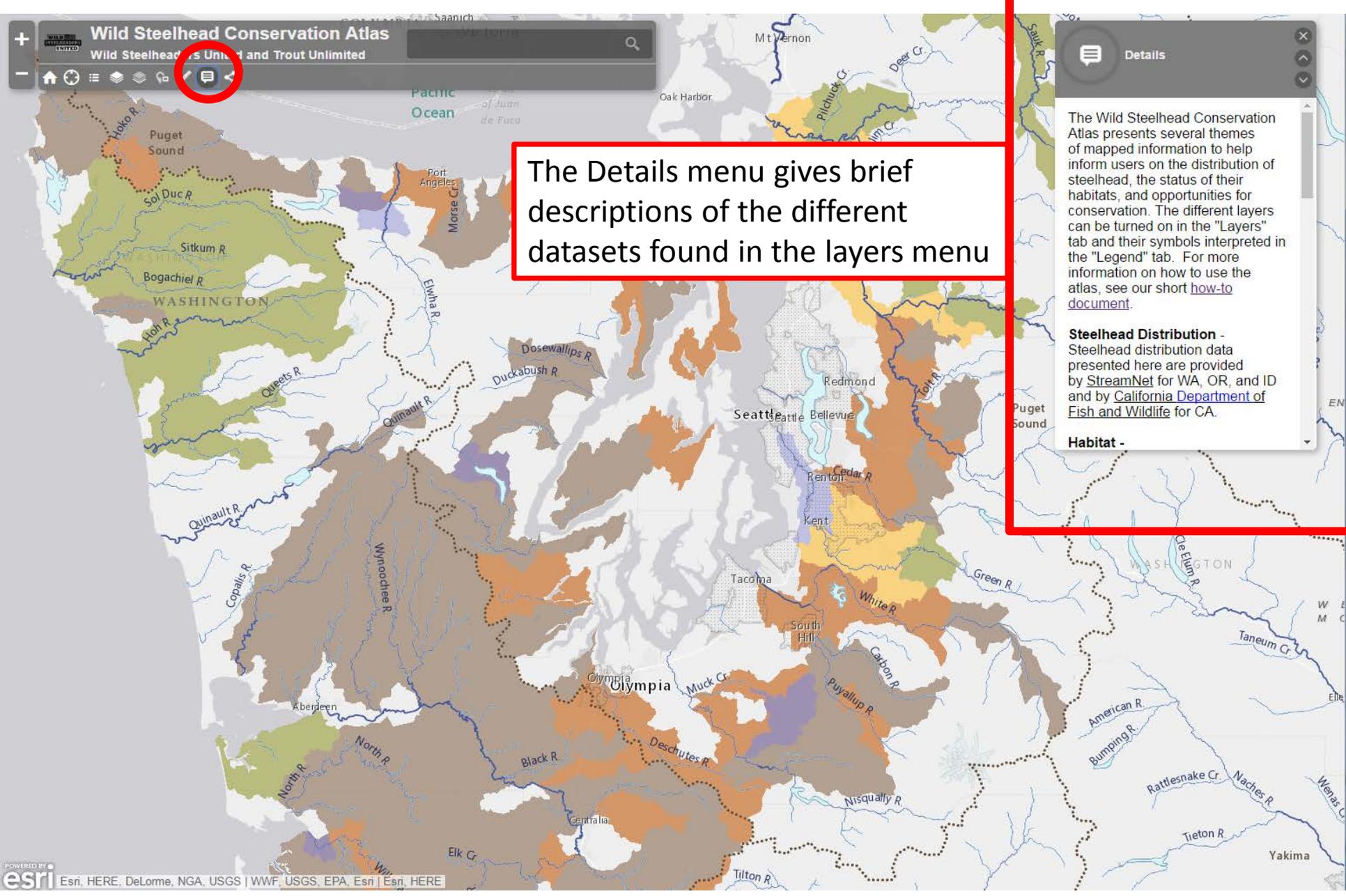


The Overview Map lets you select your map view at zoomed out point of view. Click and drag the gray box to change your map view.

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

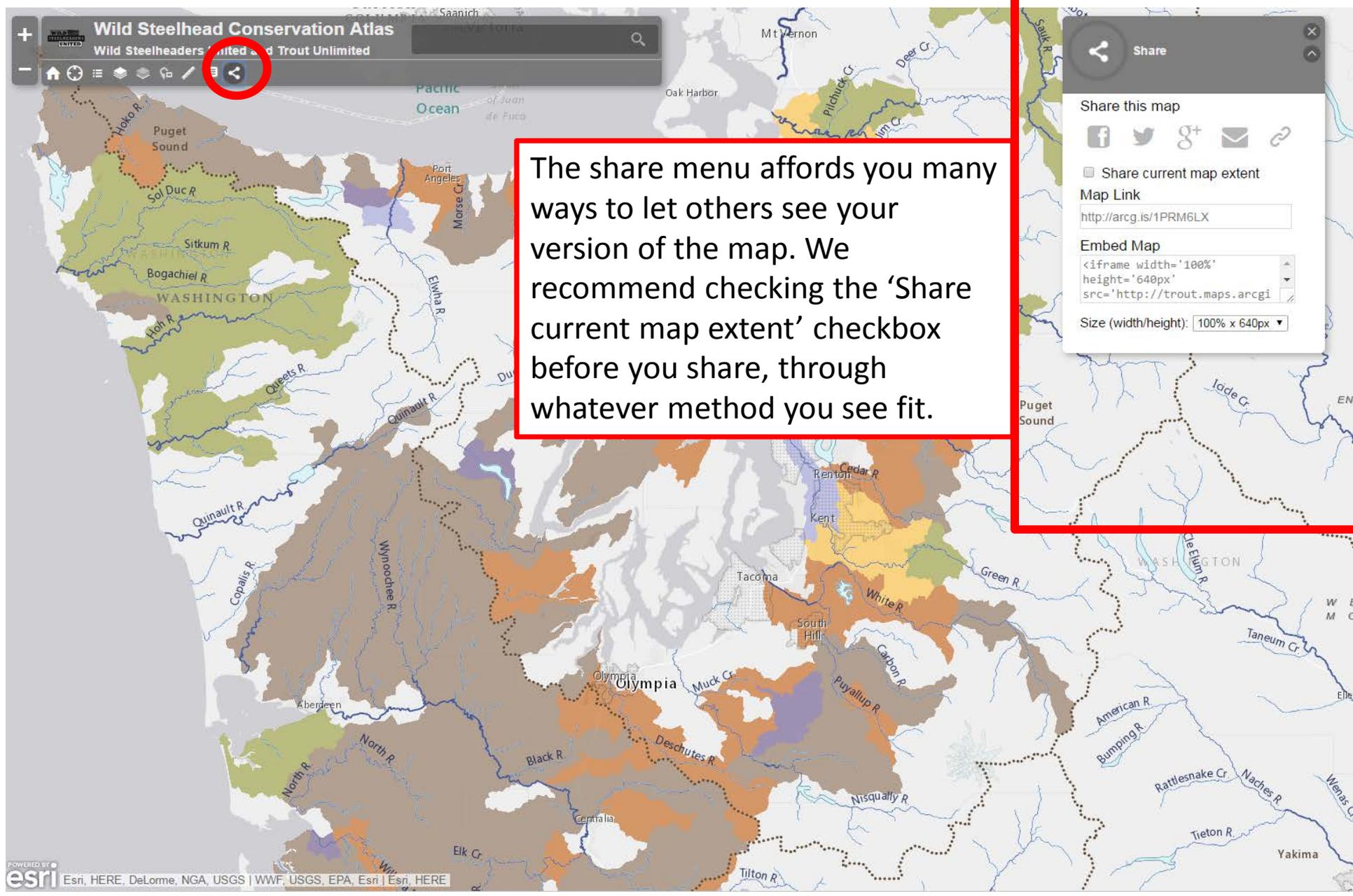


TOOL | Toggle Details | Brings up the Details menu on the right



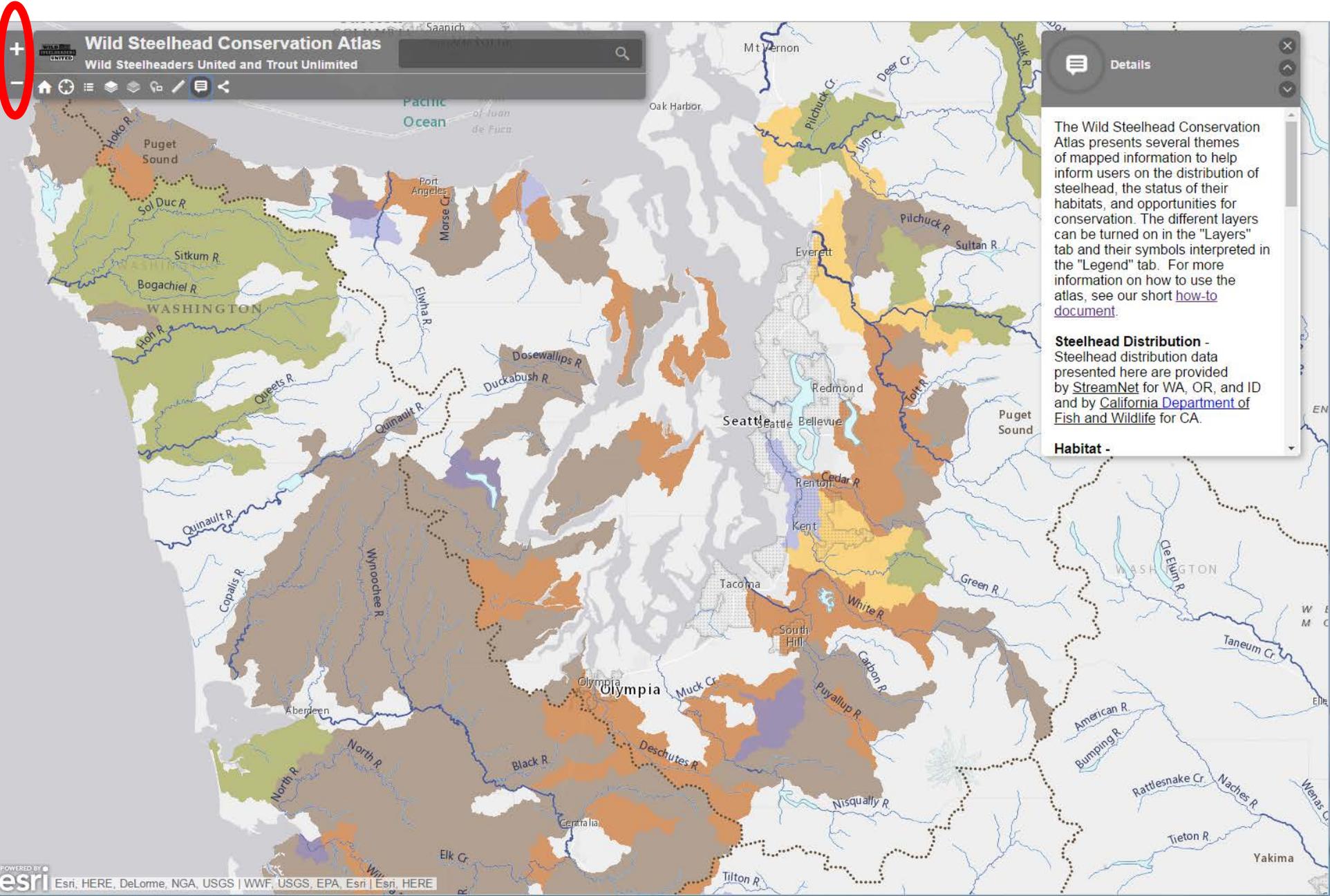
The Details menu gives brief descriptions of the different datasets found in the layers menu

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

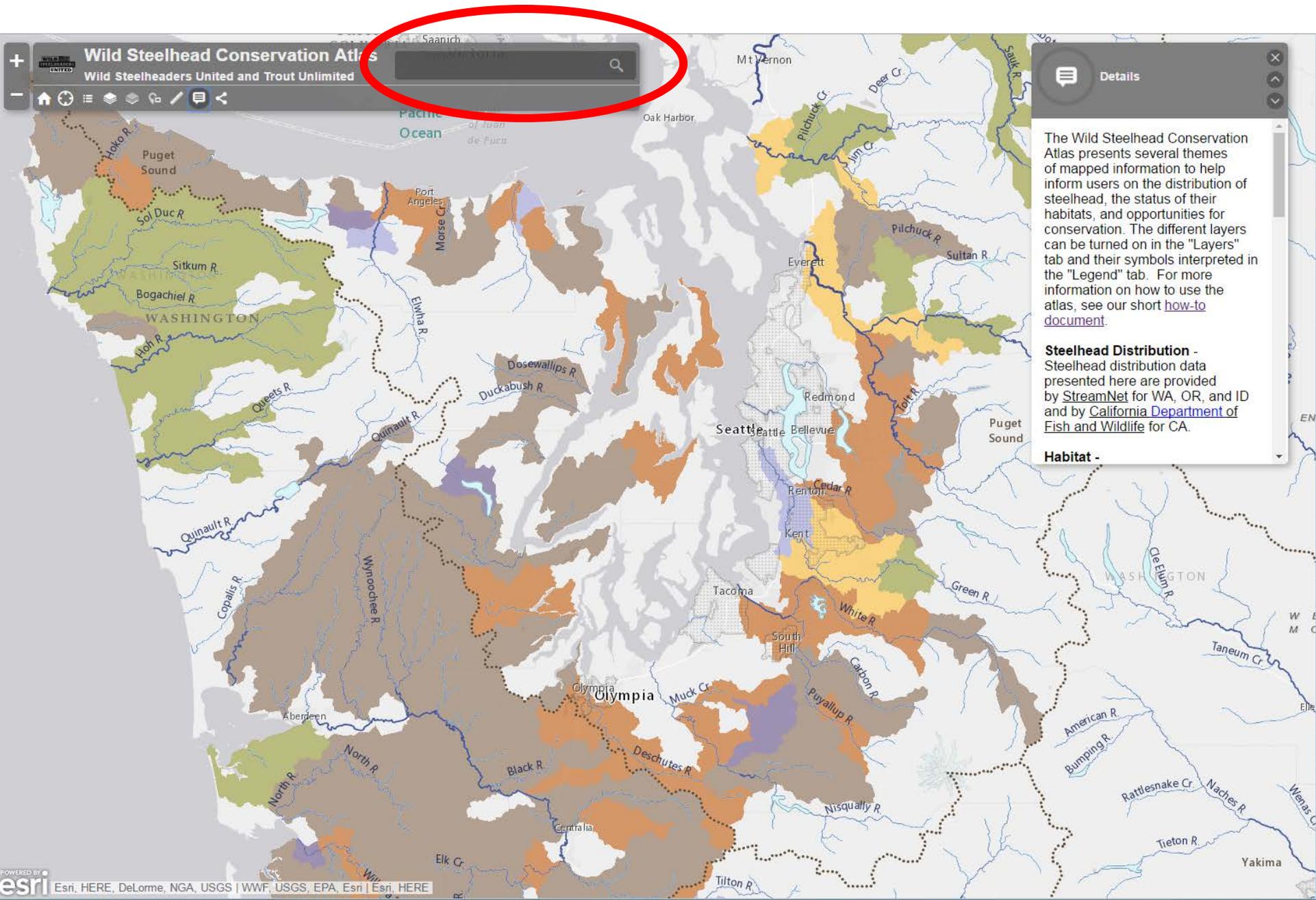


The share menu affords you many ways to let others see your version of the map. We recommend checking the 'Share current map extent' checkbox before you share, through whatever method you see fit.

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.



TOOL | Location Search | Enter a location of interest, the map will center on that location



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

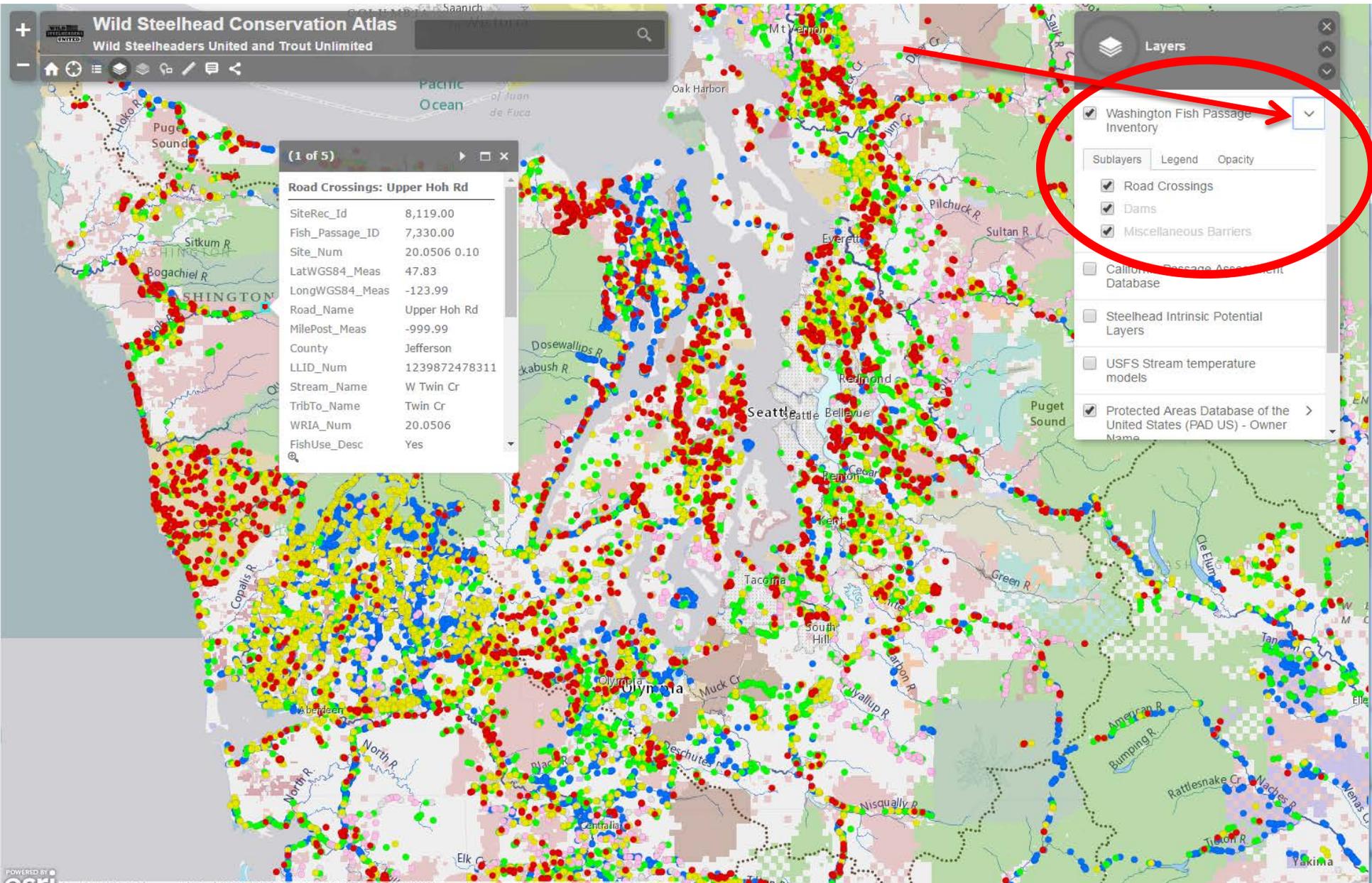
SiteRec_Id	8,119.00
Fish_Passage_ID	7,330.00
Site_Num	20.0506 0.10
LatWGS84_Meas	47.83
LongWGS84_Meas	-123.99
Road_Name	Upper Hoh Rd
MilePost_Meas	-999.99
County	Jefferson
LLID_Num	1239872478311
Stream_Name	W Twin Cr
TribTo_Name	Twin Cr
WRIA_Num	20.0506
FishUse_Desc	Yes

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 shows 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". Below the title bar is a search bar containing the text "Orofino, Idaho, United States", which is circled in red. To the right of the search bar is a legend panel with the following sections:

- Live_Stream_Gauges**: A single orange dot is shown on the map.
- Weather Stations (NOAA)**: A list of stations with corresponding wind speed icons:
 - 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.

A "Search result" popup is visible over the map, showing "Orofino, Idaho, United States" and a search icon. The map displays a green line representing a stream or river, with "Orofino Creek" labeled. The background is a topographic map of the area.

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

Clearwater River At Orofino ID [USGS]

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

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

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

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 displays the 'Steelhead Fishing Trip Planner' web application interface. At the top, the title bar shows 'Steelhead Fishing Trip Planner' and 'Wild Steelheaders United and Trout Unlimited'. The location is set to 'Orofino, Idaho, United States'. On the right side, a 'Layers' panel is visible, with the 'Steelhead Harvest Reports and Creel Surveys' layer checked and highlighted in blue. The main map area shows a topographic view of a river system. A pop-up window titled '(2 of 2)' is open over a specific river section. The pop-up contains the following information:

- River: Clearwater River
- Section: Clearwater River - Upstream from Orofino Bridge
- Click for numbers: [More info](#)

A red circle highlights the 'More info' link, and a red arrow points to it from the right. The 'Layers' panel also shows other layers like 'Live Stream Gauges', 'World Hydro Reference Overlay', 'Weather Stations (NOAA)', 'Protected Areas Database of the United States (PAD US) - Owner Name', and 'GeoMAC Fire layers'.

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...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.

The screenshot shows the Idaho Fish and Game website interface. At the top, there is a navigation bar with the following categories: [Hunting](#), [Fishing](#), [Licenses](#), [Wildlife](#), [Education](#), [Media](#), [Science](#), [Enforcement](#), and [About Us](#). Below this, there are more specific links: [Seasons / Rules](#), [Chinook Salmon](#), [Steelhead](#), [Fish Stocking](#), [Sockeye Salmon](#), [Fishing Reports](#), [Family Fishing Waters](#), [Ice Fishing](#), [Learn To Fish](#), [Angler Etiquette](#), [Angler Guide](#), [Hatcheries](#), [Tagging Programs](#), [Record Fish](#), [Applications / Forms](#), [Sturgeon](#), [Tournaments](#), [Private Ponds](#), and [Programs and Plans](#). A [Fishing Planner](#) link is also present. On the right side, there is a 'REGION INFO' map of Idaho with regions numbered 1 through 7. The date 'Monday, November 2, 2015' is displayed in the top right corner.

Steelhead Harvest Report

Monday, November 2, 2015

October 19 to October 25, 2015

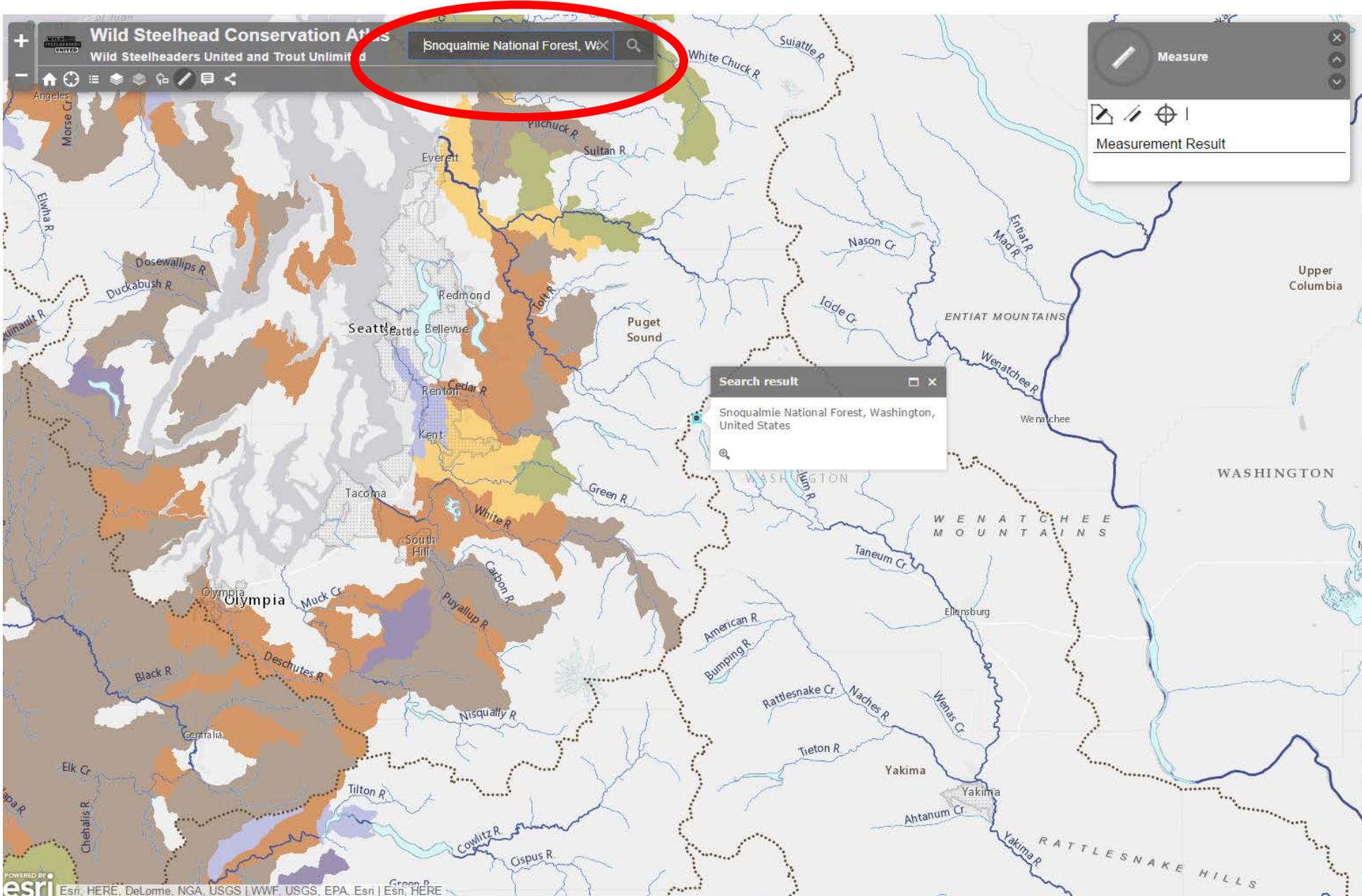
River Section Locations	Anglers Checked	Hours Fished	Fish Kept	Fish Released	Total	Hours Per Fish Caught	Hours Per Fish Kept	Water Temp	Water Conditions
Snake River Downstream from Salmon River	212	1,373	112	117	229	6	12	60° F	Clear
Snake River Mouth of Salmon River to Hells Canyon Dam tailrace	84	598	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

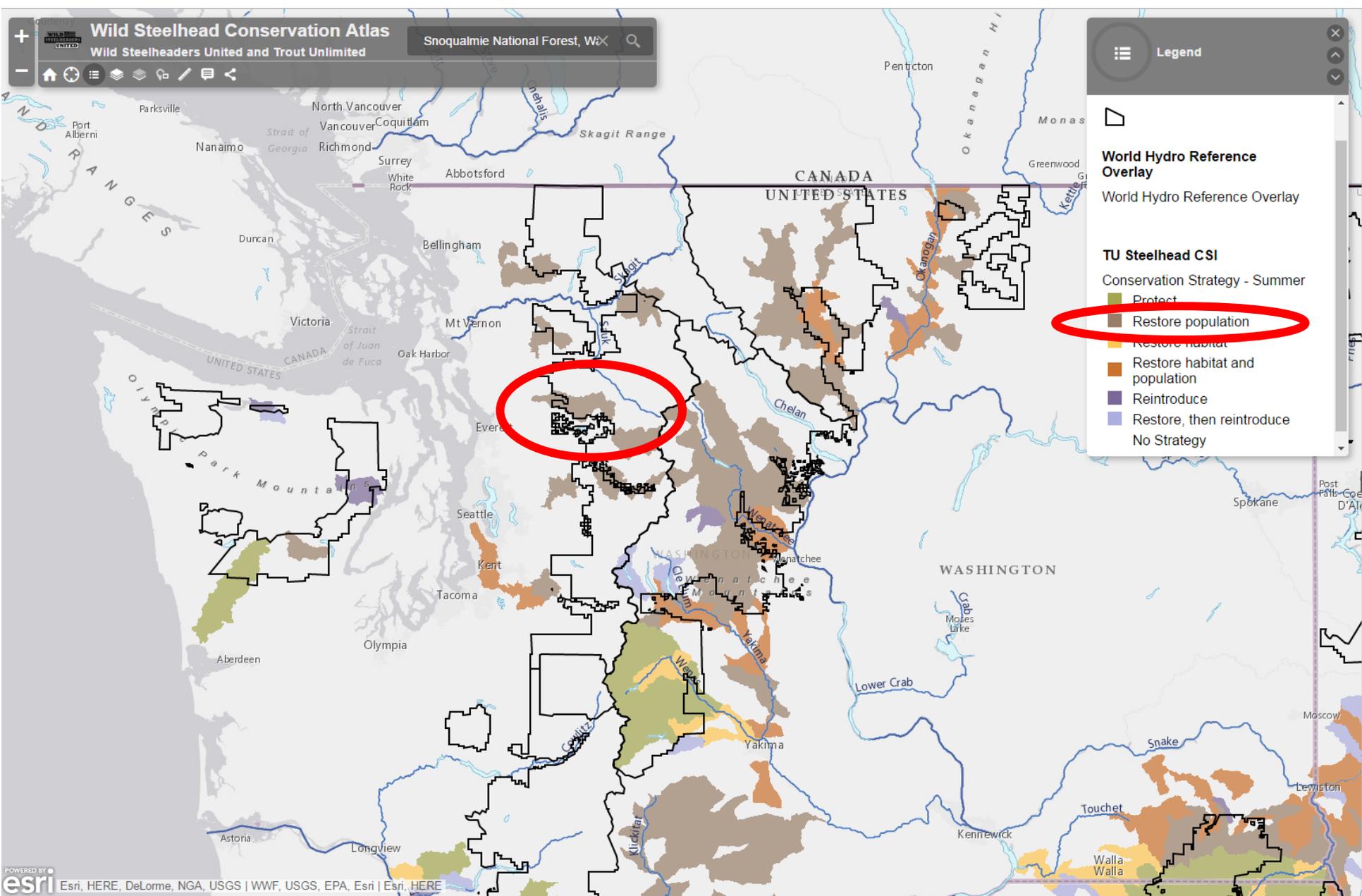
Identify areas within Baker-Snoqualmie National Forest where:

- 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

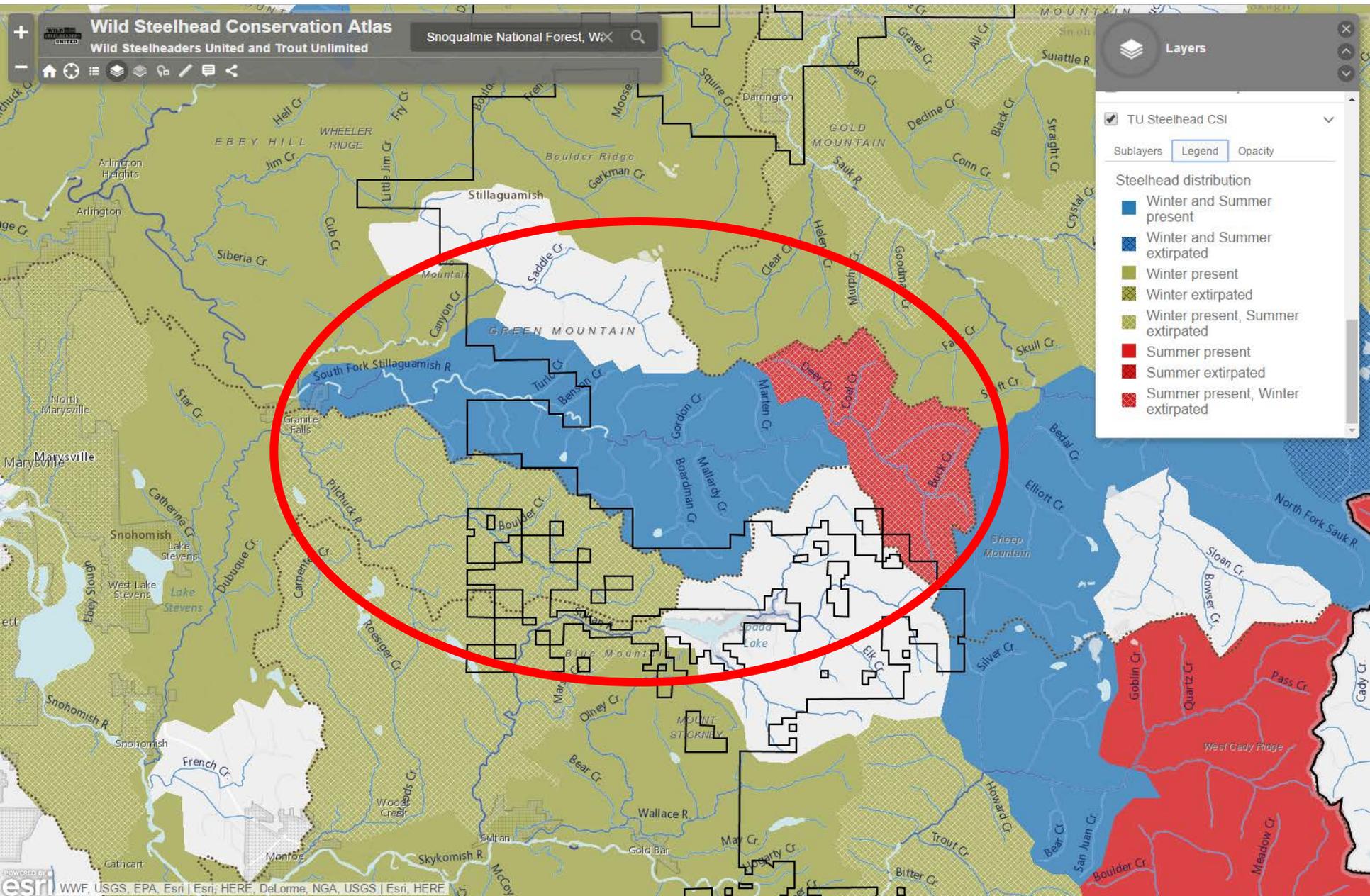
First search for our area of interest.



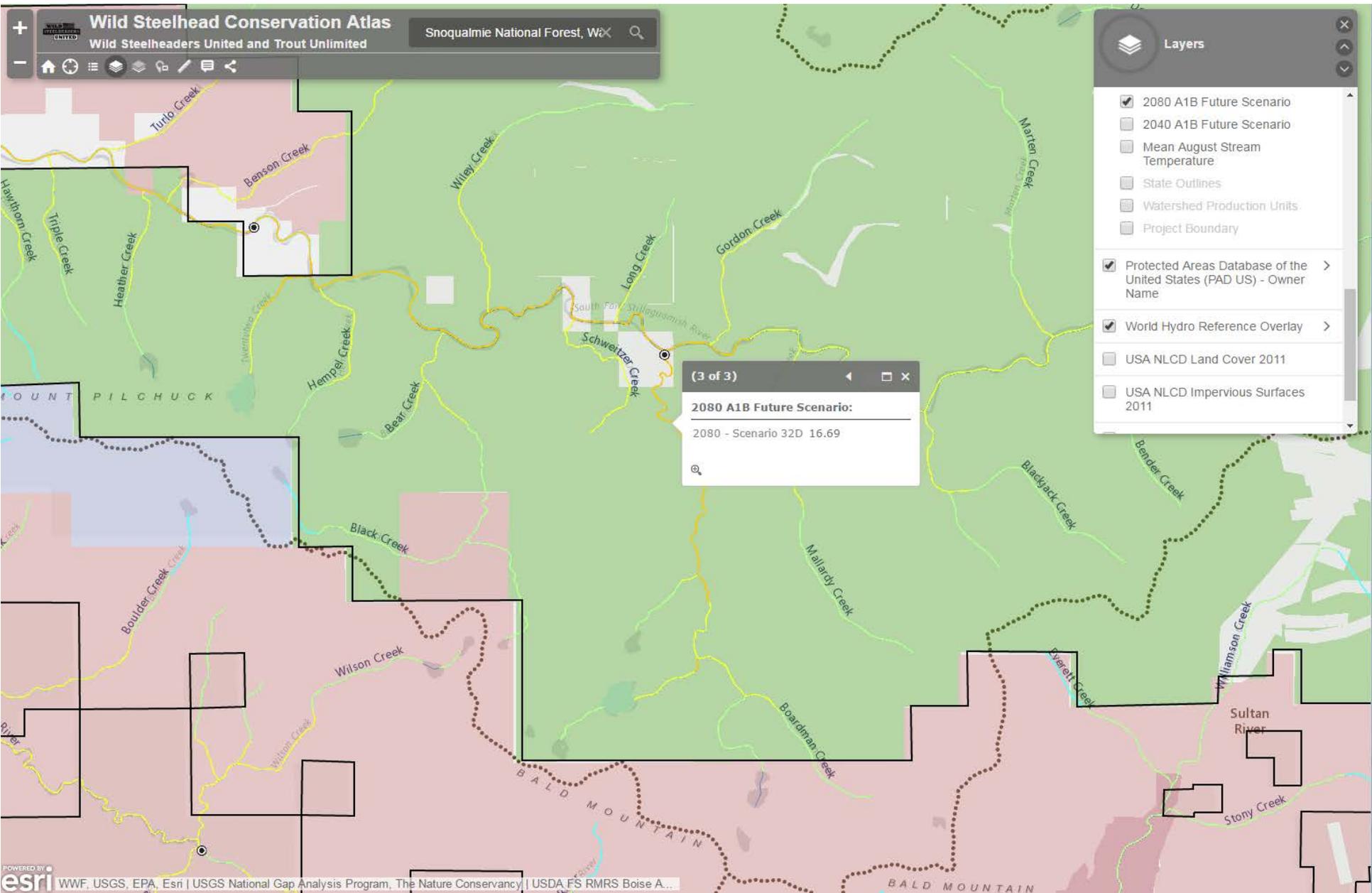
To make sure there are no acute habitat stressors present, we'll determine the most common conservation strategy in the Forest, using the TU CSI layers (specifically the 'Conservation Strategy – Summer' layer). Areas that are brown only require population restoration, indicating few acute habitat stressors.



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.



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

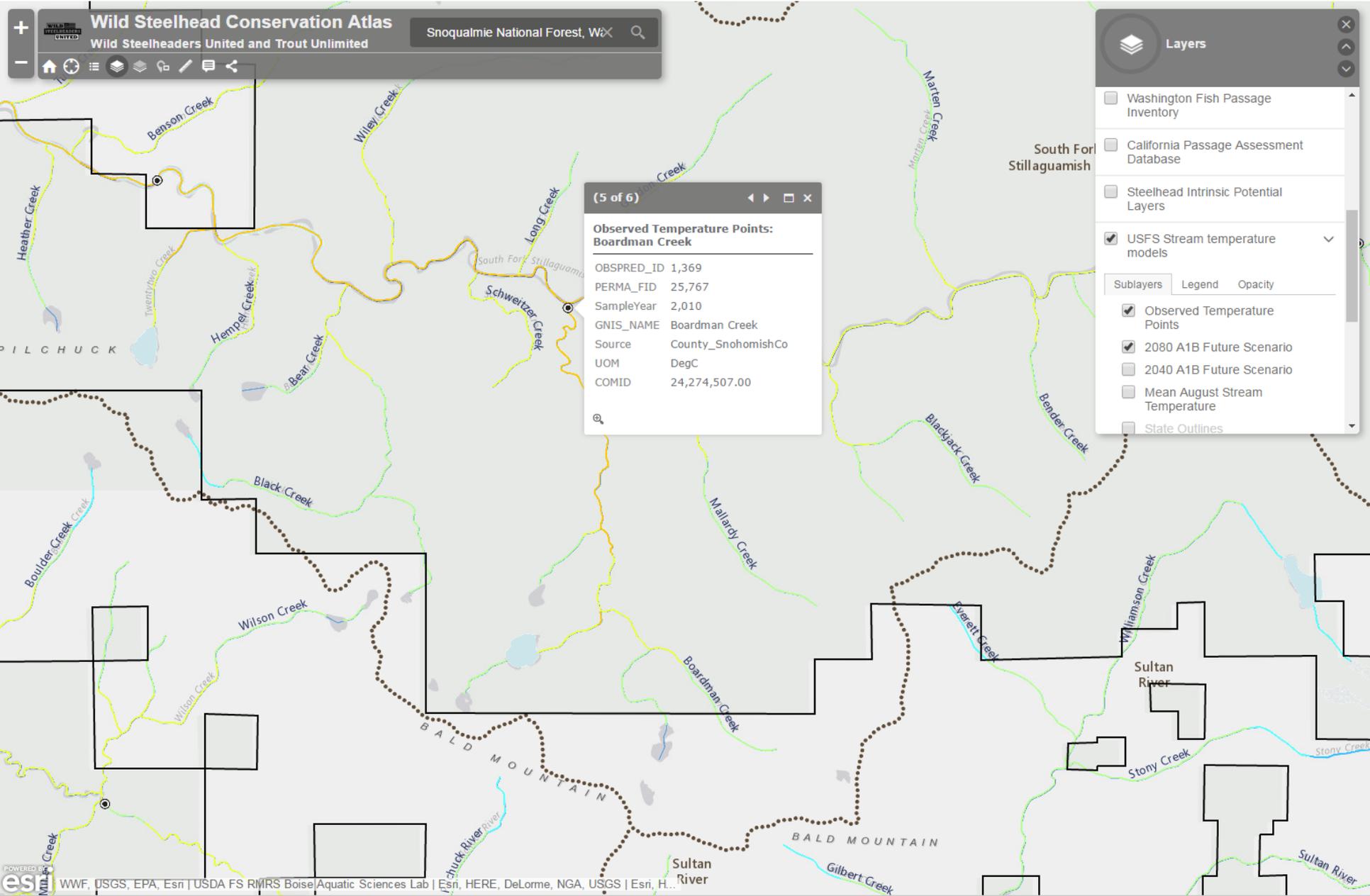


Change the basemap to aerial imagery and determine where additional streamside vegetation could potentially mitigate future stream temperature increases. This riparian zone looks well-forested, but with a visible logging history – forest management may provide opportunity to place large wood in stream,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

The screenshot displays a web-based GIS application interface. At the top, the title bar reads "Wild Steelhead Conservation Atlas" and "Wild Steelheaders United and Trout Unlimited". The search bar contains "Snoqualmie National Forest, W". The main map area shows aerial imagery of a stream flowing through a dense forest. The stream channel is visible, showing some meandering and potential logging history. On the right side, a "Layers" panel is open, listing several data layers with checkboxes:

- 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>)



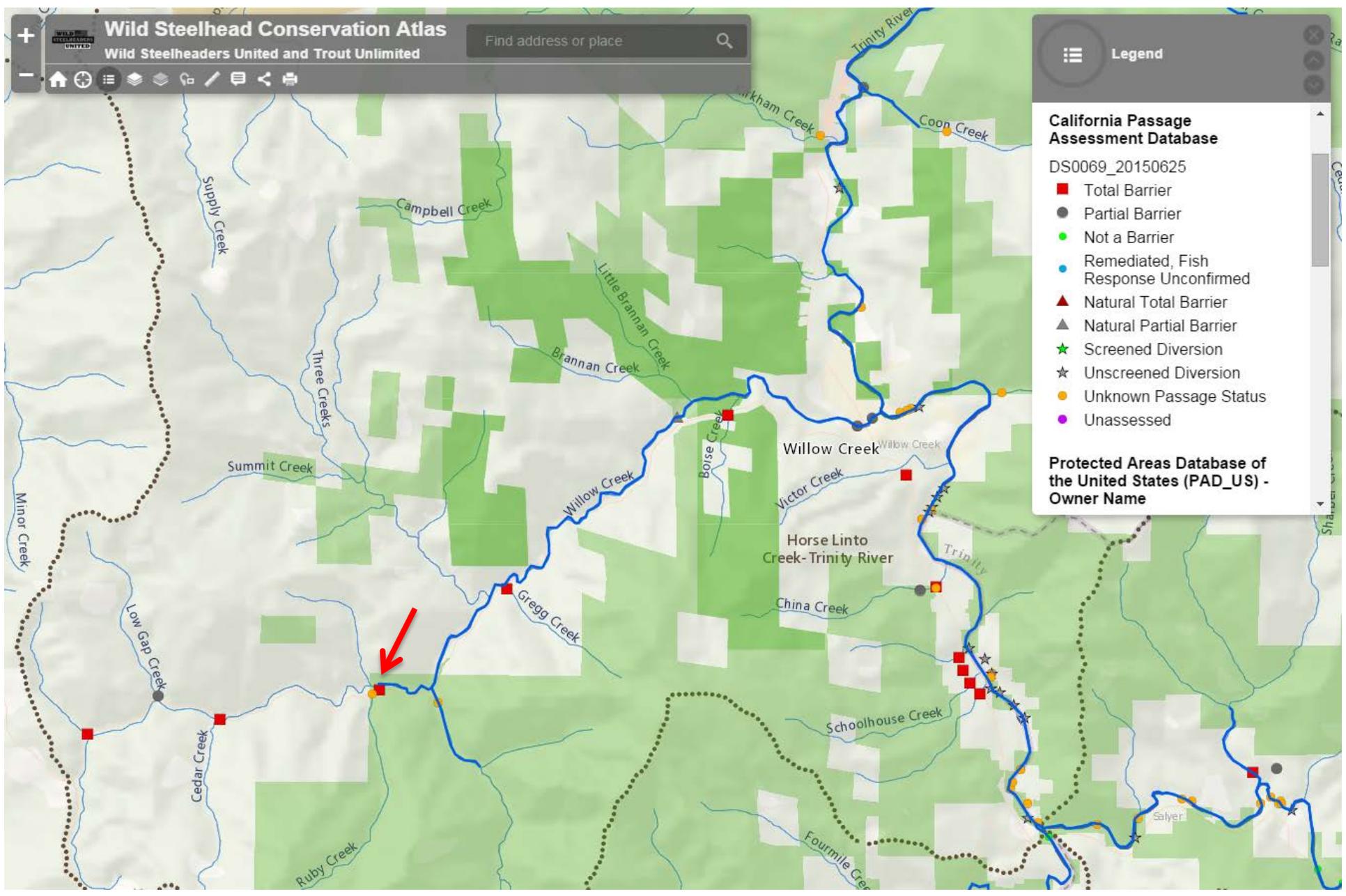
Scenario C: Habitat Evaluation

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". A search bar in the top center contains the text "Trinity River, California, United States" and is circled in red. Below the search bar, a "Search result" popup displays "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 markers (circles, squares, triangles) indicating data points. Major cities like Eureka, Redding, Chico, Sacramento, and San Francisco are labeled. The map also shows state boundaries for Oregon, Nevada, and California.

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.

