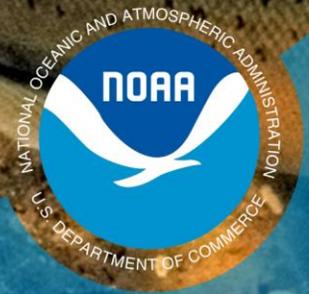


# Recovery Action Mapping Tool User Guide



**NOAA  
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**NOAA**  
**FISHERIES**

# **Recovery Action Mapping Tool**

## **User Interface Guide**

**West Coast Region: Protected Resources Division**

May 2015

## Version History and Timeline

Version	Implemented By	Revision Date	Task
.8	Shanna Dunn	5/6/2015	Completed initial draft
.9	Jacob Hodgen	5/7/2015	Revised and formatted content

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# 1. Introduction

Welcome to the Recovery Action Mapping Tool (RAMT)! This application allows users to visually interact with and query actions developed to recover species listed under the Endangered Species Act (ESA). Recovery actions are housed in a database and displayed in the web map. The original sources for these actions are documents published by NOAA Fisheries, including the following: recovery plans, recovery modules, biological opinions, and biological opinion supplements. This tool helps keep those documents alive by providing real-time access to updated action data and facilitating adaptive management of listed species. The geographic extent of the application is NOAA Fisheries' West Coast Region—as well as some drainage areas that traverse the Canadian and Mexican borders. Supported browsers include Google Chrome, Microsoft Internet Explorer, and Mozilla Firefox.

The RAMT was developed by i-TEN Associates Inc., the West Coast Region, and the Northwest Fisheries Science Center. For more information about the development and purpose of the tool, visit the NOAA Fisheries West Coast Region website for the [Recovery Action Mapping Tool](#). For more information about the Endangered Species Act, [click here](#). For more information about salmon and steelhead recovery plans, [click here](#).



# 2. About

The **about** tab displays general information about the Recovery Action Mapping Tool. Click the **get started** button to go to the **home** map view. The **get started** button will return the application to the last map view if it was different from the **home** map view.



## 3. Metadata

The **metadata** tab displays the following links to metadata: **hydrologic units (HU) - 2012 version** (Watershed Boundary Dataset or WBD), **recovery domains**, **recovery actions**, and **rivers and streams** (National Hydrography Dataset or NHD). Metadata is provided for all data added to the basemap. The **hydrologic units** and the **rivers and streams** are both from 2012. The United States Geological Survey (USGS) periodically updates the Watershed Boundary Dataset and the National Hydrography Dataset. Polygons, polylines, and values can change between different versions of these datasets. For example, an HU code from one year may not be the same as another year due to renumbering conventions or standardizations. Users who are interested in utilizing the 2012 versions of these spatial datasets, which currently match the recovery action data, can contact Shanna Dunn at [shanna.dunn@noaa.gov](mailto:shanna.dunn@noaa.gov) or 503-231-2135. The spatial layers cannot be downloaded from this tool. Only the recovery action data can be downloaded in .csv format. The recovery action database and tool will be updated every few years to consume new USGS versions of the WBD and NHD.



## 4. Mapping Methodology

Actions are mapped according to their location descriptions in source documents. The location equals the exact area or point where the action is being implemented. In other words, the location is the smallest geographic area that circumscribes the spatial extent of the action. The location does not include areas that will be affected by the action. For example, if an action states, “change hydropower operations at a specific dam to increase flow for migrating fish,” the location is the dam site; it does not include any downstream portions of the river that will be affected by the increased flow. The species that will be or are being affected by an action are listed in the action details to account for migration patterns. In the example above, any species that migrate through the river below the dam site would be considered affected by the action.

- A single action can be mapped to one point, multiple points, one HU, or multiple HUs. However, a single action cannot be mapped to a combination of points and polygons.
- A single action can only be mapped to one level of HUs in the Watershed Boundary Dataset hierarchy. The hierarchy levels are sub-basins (8 digit code), watersheds (10 digit code), and sub-watersheds (12 digit code).
- Mapping each action to one level in the Watershed Boundary Dataset enables manipulation of the code hierarchy to calculate the total number of unique actions in each polygon at any level.

The total number of unique actions within a given domain or HU is denoted in a symbol located at the polygon's centroid; this total number includes any actions mapped to points which lie within the boundary of that polygon.

Action locations described as being “in the ocean,” “offshore,” or “in a river plume” were mapped to HU polygons in the ocean. Ocean HUs extend out to the 3 nautical mile limit in the WBD. In Washington and Oregon, the coastal HUs are separated from the ocean HUs by a coastline boundary. In California, there is no coastline boundary; the coastal HUs include ocean areas. Why does this matter? With regards to this tool, actions mapped to ocean HUs in Washington and Oregon are not counted in the domain action count, but actions mapped to coastal/ocean HUs in California are counted in the domain action count.

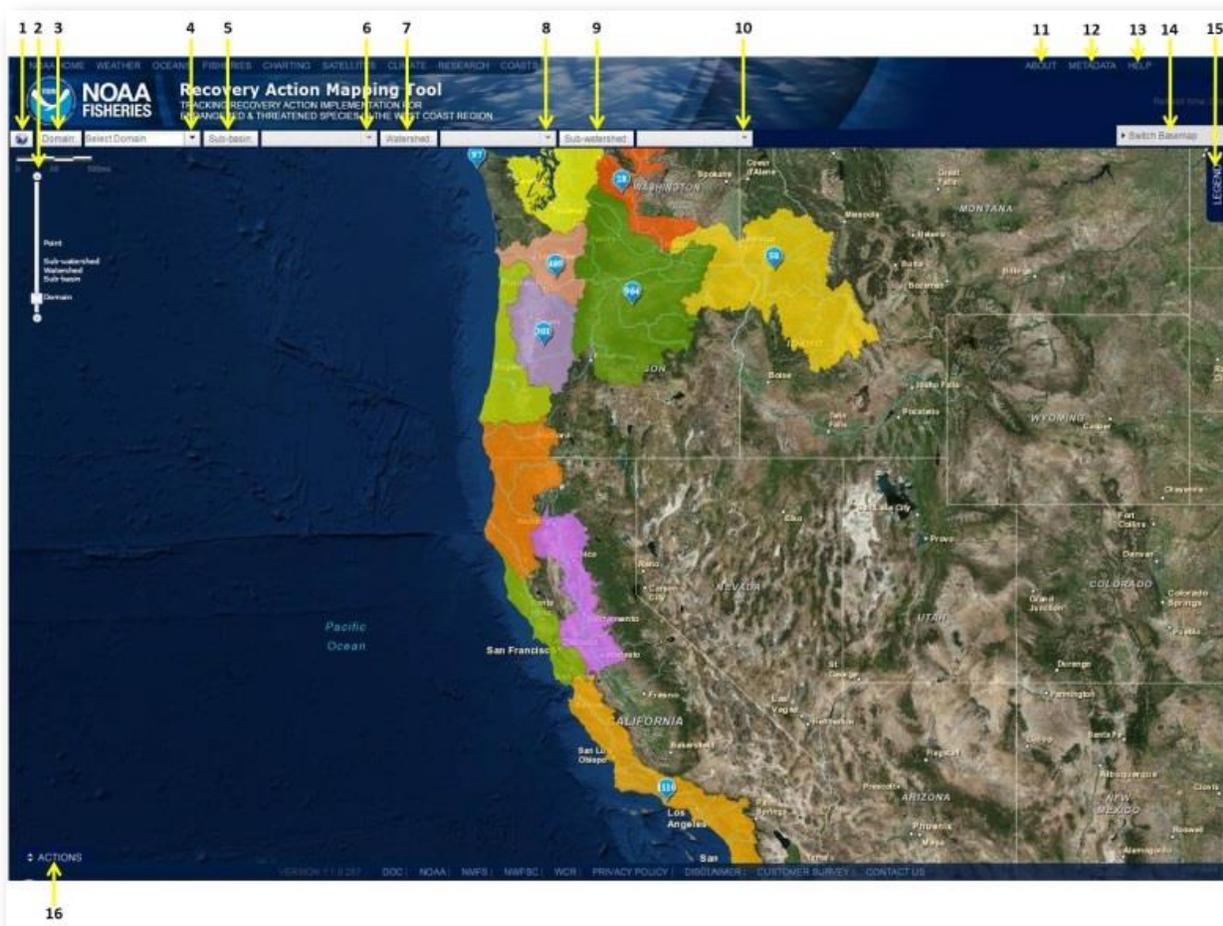
One important distinction is the difference between an action's source vs. location. Source refers to the document in which the action was written. Location refers to the exact area or point where the action is being implemented. Even though NOAA Fisheries publishes documents that are generally affiliated with recovery domains, not all actions in each document will be located within its affiliated recovery domain boundary. For example, the Middle Columbia River Steelhead Distinct Population Segment ESA Recovery Plan has actions written in the document that are located outside of the Middle Columbia River recovery domain boundary. An action in this plan states, “reduce predation on steelhead by non-native species in the lower Columbia River and estuary.” The action location is actually within the boundary of the Lower Columbia River recovery domain. Users should be aware of this mapping intricacy. There are two different kinds of queries that can be accomplished: (1) which actions were written in a specific source document?, and (2) which actions are located within a specific recovery domain boundary?

Additionally, there are actions mapped to locations that are completely outside of all recovery domain boundaries. These actions can be viewed by zooming in past the **home** map view, which only shows recovery domain action counts. The sub-basin, watershed, and sub-watershed map views will display all action counts, regardless of whether they are within a recovery domain boundary or not.

## 5. Tool Features

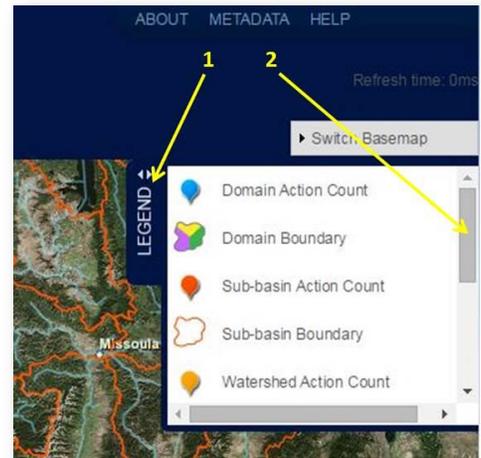
Users can navigate through the interactive map using mouse controls, map elements, and the keyboard. Selecting recovery domains and/or hydrologic units (HUs) from the drop-down menus across the top of the user interface will automatically zoom in the map. Selecting recovery domains, hydrologic units, or points on the map enables users to choose whether to zoom in or simply query data. Either method of drilling down through the map levels can return data to the table at the bottom of the interface. Clicking on the **actions** tab will open the data table and display recovery actions. The key features of the Recovery Action Mapping Tool user interface are shown below. Refer to the corresponding numbers to learn more about each feature.

1. The **home** (globe) button expands the map view to the entire west coast.
2. The **zoom slider** zooms the map display in and out.
3. The **domain** button expands the map view to the extent of the selected domain.
4. The **domain** drop-down menu allows users to select a domain for the map view.
5. The **sub-basin** button expands the map view to the extent of the selected sub-basin.
6. The **sub-basin** drop-down menu allows users to select a sub-basin for the map view.
7. The **watershed** button expands the map view to the extent of the selected watershed.
8. The **watershed** drop-down menu allows users to select a watershed for the map view.
9. The **sub-watershed** button expands the map view to the extent of the selected sub-watershed.
10. The **sub-watershed** drop-down menu allows users to select a sub-watershed for the map view.
11. The **about** link contains information about the Recovery Action Mapping Tool.
12. The **metadata** link contains links to metadata files associated with the spatial data layers.
13. The **help** link contains information on the user interface, a glossary, and field and value definitions.
14. The **switch basemap** drop-down menu allows users to select a basemap from five different options.
15. The **legend** tab contains the map symbology.
16. The **actions** tab contains a table with recovery action data.



## 6. Legend

1. Click on the **legend** tab, located in the upper-right corner of the map display, to open and close the map symbology.
2. Drag the **scroll bar** up/down to view more map symbols.



## 7. Basemaps

The **switch basemap** drop-down menu allows users to select a basemap from five different options: imagery, topography, streets, terrain base, and shaded relief.

1. Select an icon for one of the basemaps in the menu, the map display will automatically update.
2. Click the **ok** button or the **switch basemap** button to close the menu.

NOAA HOME WEATHER OCEANS FISHERIES CHARTING SATELLITES CLIMATE RESEARCH COASTS

NOAA FISHERIES Recovery Action Mapping Tool TRACKING RECOVERY ACTION IMPLEMENTATION FOR ENDANGERED & THREATENED SPECIES IN THE WEST COAST REGION

Domain: Middle Columbia River Sub-basin: Select Sub-basin Watershed: Sub-watershed: Refresh time: 0ms

Point Sub-watershed Watershed Sub-basin Domain

Switch Basemap

Imagery Topography Streets Terrain Base Shaded Relief OK

ACTIONS

Actions for: Middle Columbia River Action Count: 963 Export Actions Export Projects

Action ID	Action Code	Species Common Name	ESU DPS	Major Population	Population	Population ID	Title	Status	Pri
100000	RESEARCH, MONITORI...	Steelhead	Middle Columbia River St...	Cascades Eastern Slope ...	Rock Creek	STMCRsuRCK	Assess eutrophication an...		2
100001	HABITAT 4.3	Steelhead	Middle Columbia River St...	Cascades Eastern Slope ...	Rock Creek	STMCRsuRCK	Relocate beaver to suitab...		2
100002	HABITAT 2.1	Steelhead	Middle Columbia River St...	Cascades Eastern Slope ...	Rock Creek	STMCRsuRCK	Improve instream flow in l...		2
100003	RESEARCH, MONITORI...	Steelhead	Middle Columbia River St...	Cascades Eastern Slope ...	Rock Creek	STMCRsuRCK	Evaluate predation risks fr...		2
100004	RESEARCH, MONITORI...	Steelhead	Middle Columbia River St...	Cascades Eastern Slope ...	Rock Creek	STMCRsuRCK	Determine the predation e...		2

RECOVERY TOOL DOC NOAA NMFIS NWFS WCR PRIVACY POLICY DISCLAIMER CUSTOMER SURVEY CONTACT US

## 8. Navigation: Keyboard, Mouse, and Zoom Slider

### Pan

Several pan functions are available. Panning allows users to change the map extent to view data that is outside of the present view.

#### Panning with the Keyboard

1. Click the **up arrow** key on the keyboard to pan north.
2. Click the **down arrow** key on the keyboard to pan south.
3. Click the **right arrow** key on the keyboard to pan east.
4. Click the **left arrow** key on the keyboard to pan west.

#### Panning with the Mouse

1. Hold the mouse button down while the cursor is on the map display.
2. Drag the display to the desired location (the **crossed arrows pointer**  $\oplus$  appears), then release the mouse button.

### Zoom

Several zoom functions are available. Zooming allows users to change the scale of the map view.

#### Zooming with the Zoom Slider

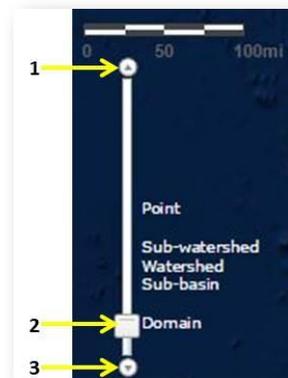
1. Click the **up arrow** of the **zoom slider** to zoom in on the map display.
2. Drag the **zoom slider** up or down to zoom in or out incrementally or to specified levels.
3. Click the **down arrow** of the **zoom slider** to zoom out on the map display.

#### Zooming with the Keyboard

1. To zoom in, use the **plus sign (+)** key on the keyboard.
2. To zoom out, use the **minus sign (-)** key on the keyboard.

#### Zooming with the Keyboard and Mouse

1. To zoom in, hold down **shift** and the mouse button while dragging a box around the desired location.
2. Release the mouse button.
3. To zoom out, hold down **shift + ctrl** and the mouse button while dragging a box around the location.
4. Release the mouse button.



### Zooming with the Mouse

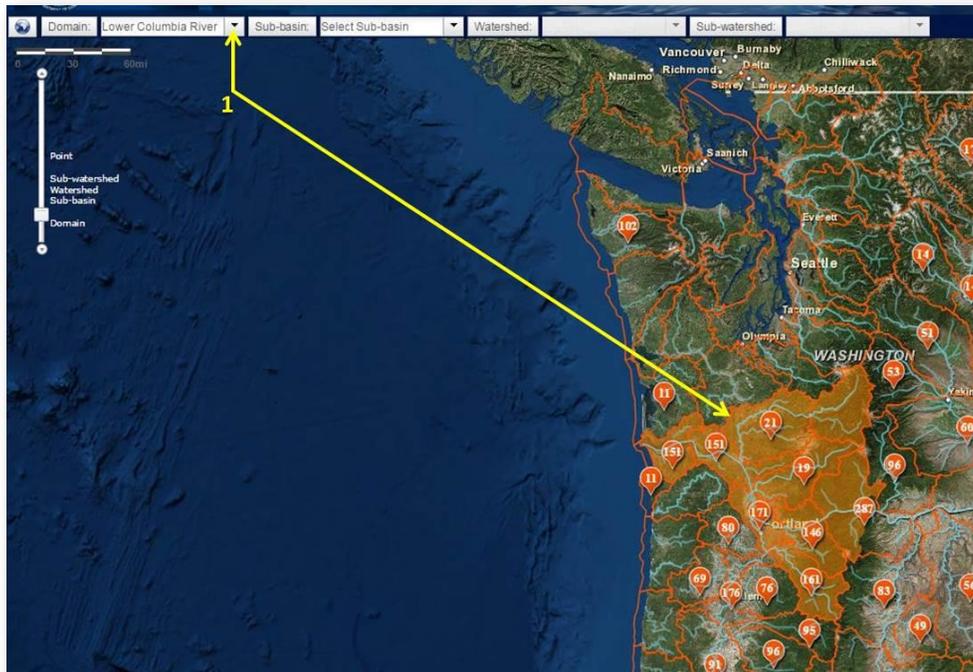
1. To zoom in, **double-click** on the map display.

### Zooming with the Mouse Scroll Wheel

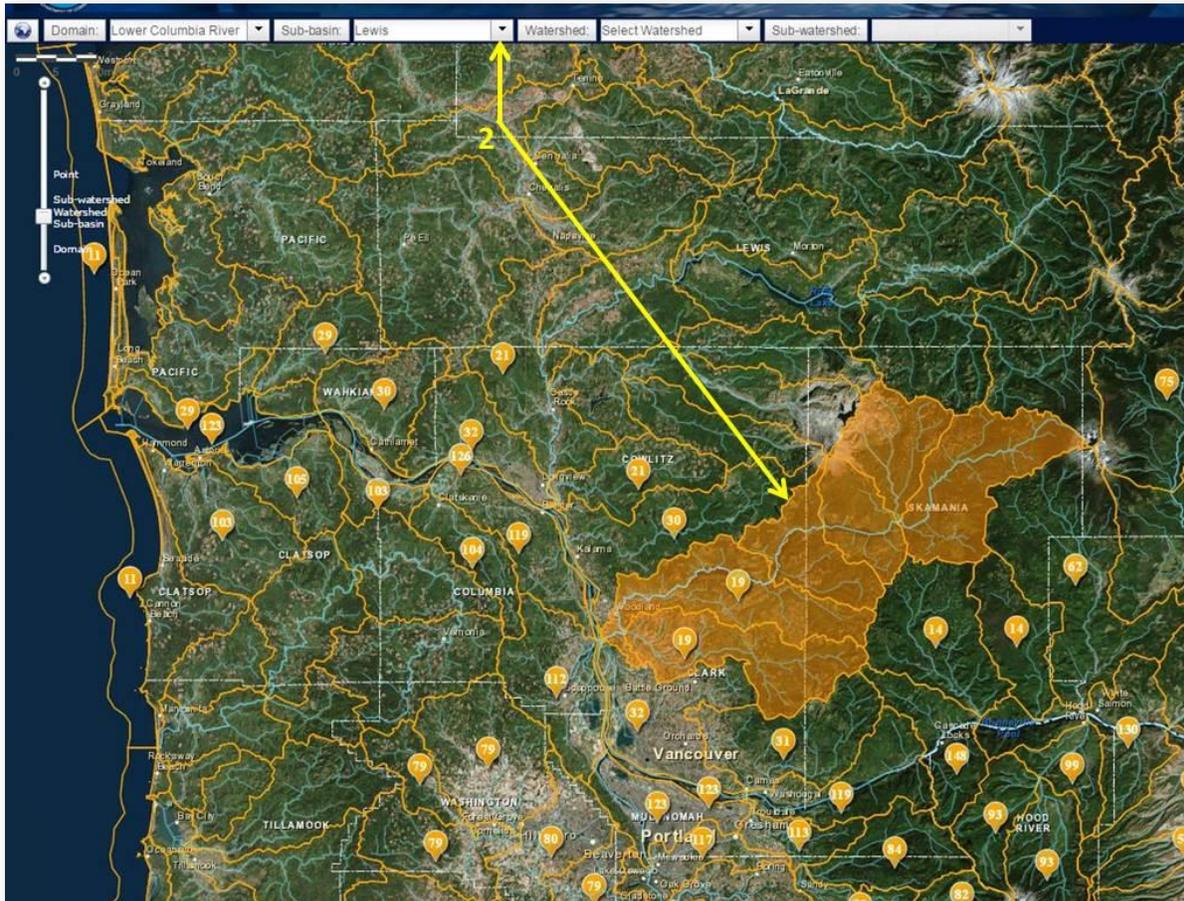
1. To zoom in, roll the **mouse wheel** forward (away from your hand).
2. To zoom out, roll the **mouse wheel** back (toward your hand).

## 9. Navigation: Drop-down Menu

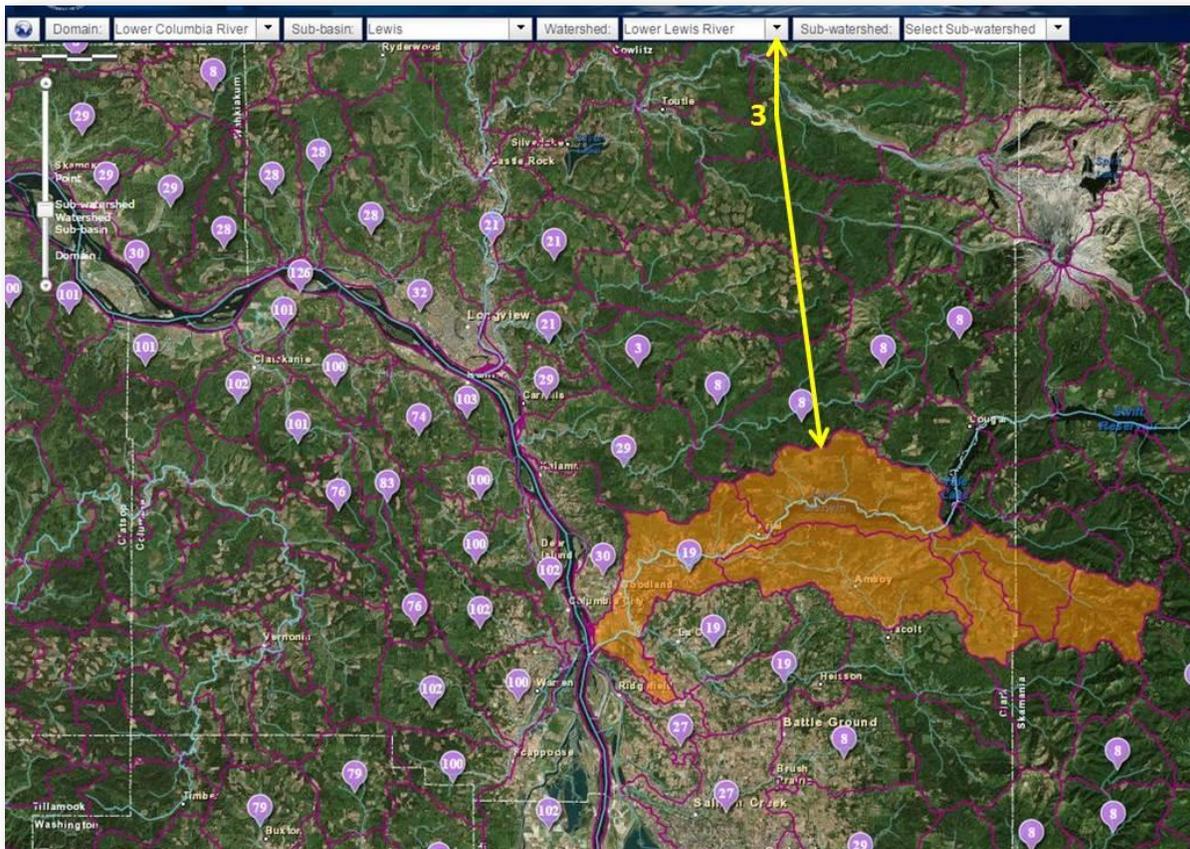
1. Select a recovery domain, the map will highlight the selected domain and zoom to its extent. Sub-basin boundaries will draw on the map with their associated action counts. The adjacent drop-down menu will be populated with only the sub-basins within the selected domain. Opening the action table will display actions located within the selected domain.



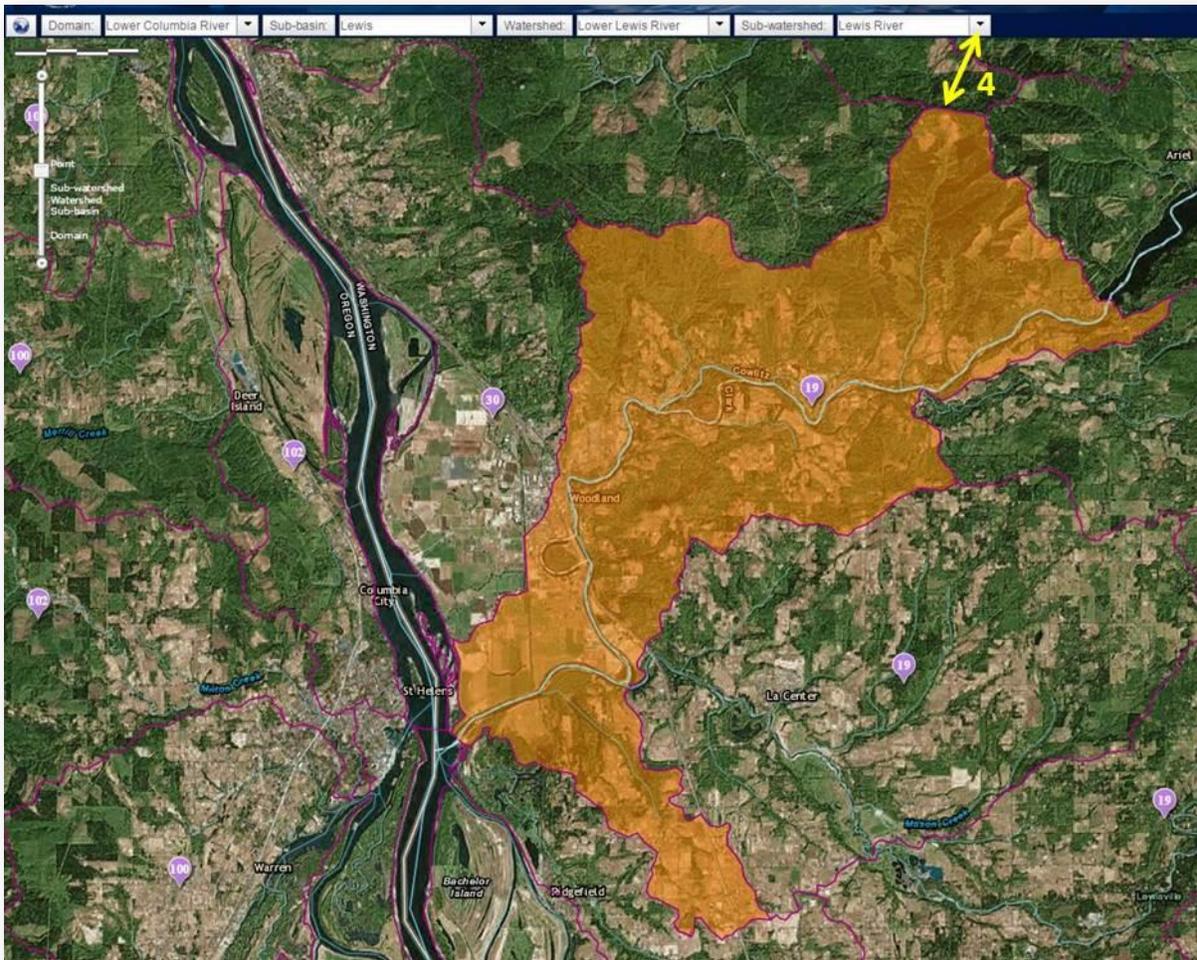
2. Select a sub-basin from the drop-down menu, the map will highlight the selected sub-basin and zoom to its extent. Watershed boundaries will draw on the map with their associated action counts. The adjacent drop-down menu will be populated with only the watersheds within the selected sub-basin. Opening the action table will display actions located within the selected sub-basin.



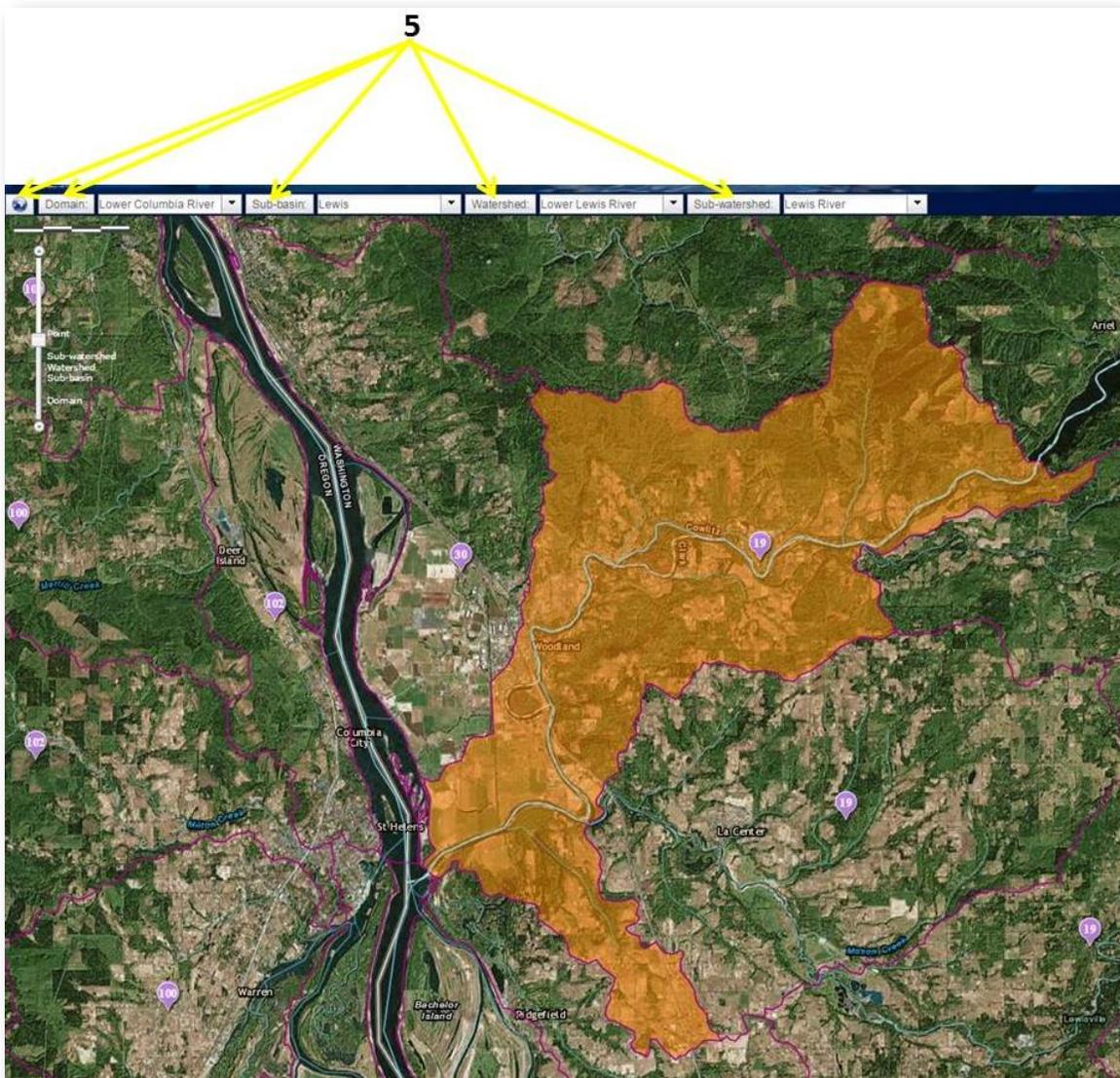
3. Select a watershed from the drop-down menu, the map will highlight the selected watershed and zoom to its extent. Sub-watershed boundaries will draw on the map with their associated action counts. The adjacent drop-down menu will be populated with only the sub-watersheds within the selected watershed. Opening the action table will display actions located within the selected watershed.



4. Select a sub-watershed from the drop-down menu, the map will highlight the selected sub-watershed and zoom to its extent. Sub-watershed boundaries will draw on the map with their associated action counts. Opening the action table will display actions located within the selected sub-watershed.

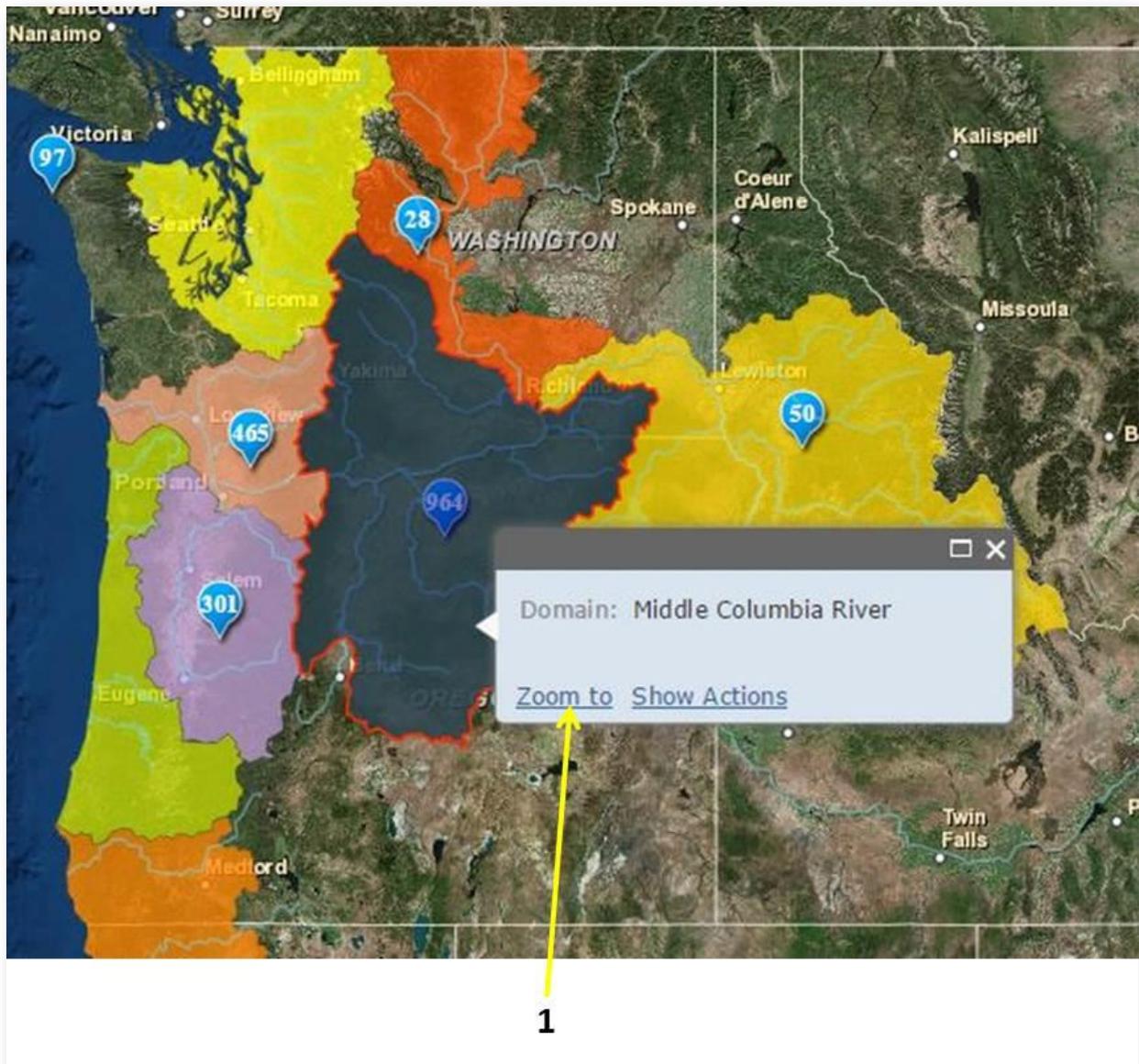


5. Click on the buttons for **home** (globe), **domain**, **sub-basin**, **watershed**, or **sub-watershed** in any order to zoom out. When a button is clicked, all menu selections to the right (smaller in scale) of that button will be cleared.

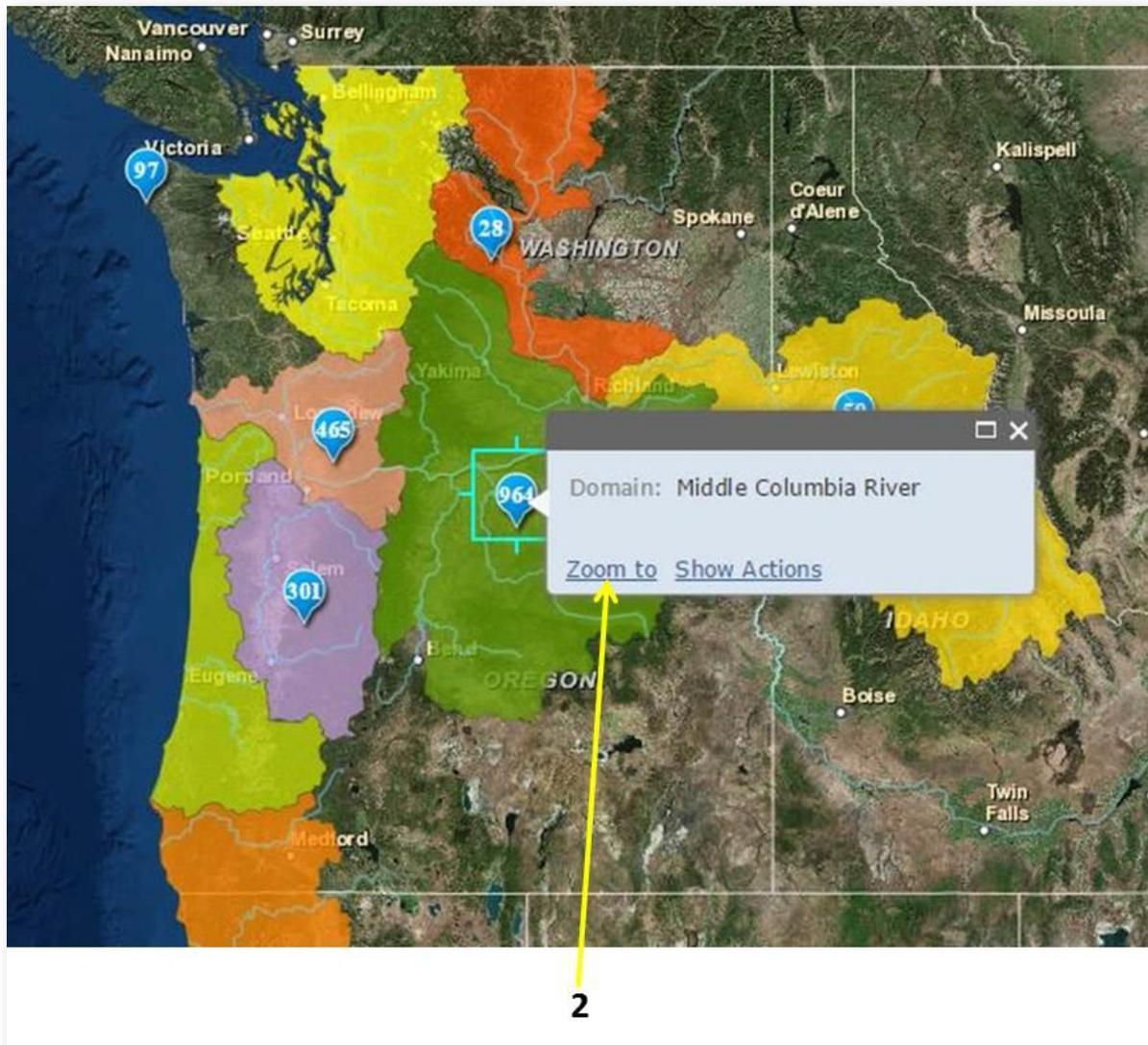


## 10. Navigation: Map Elements

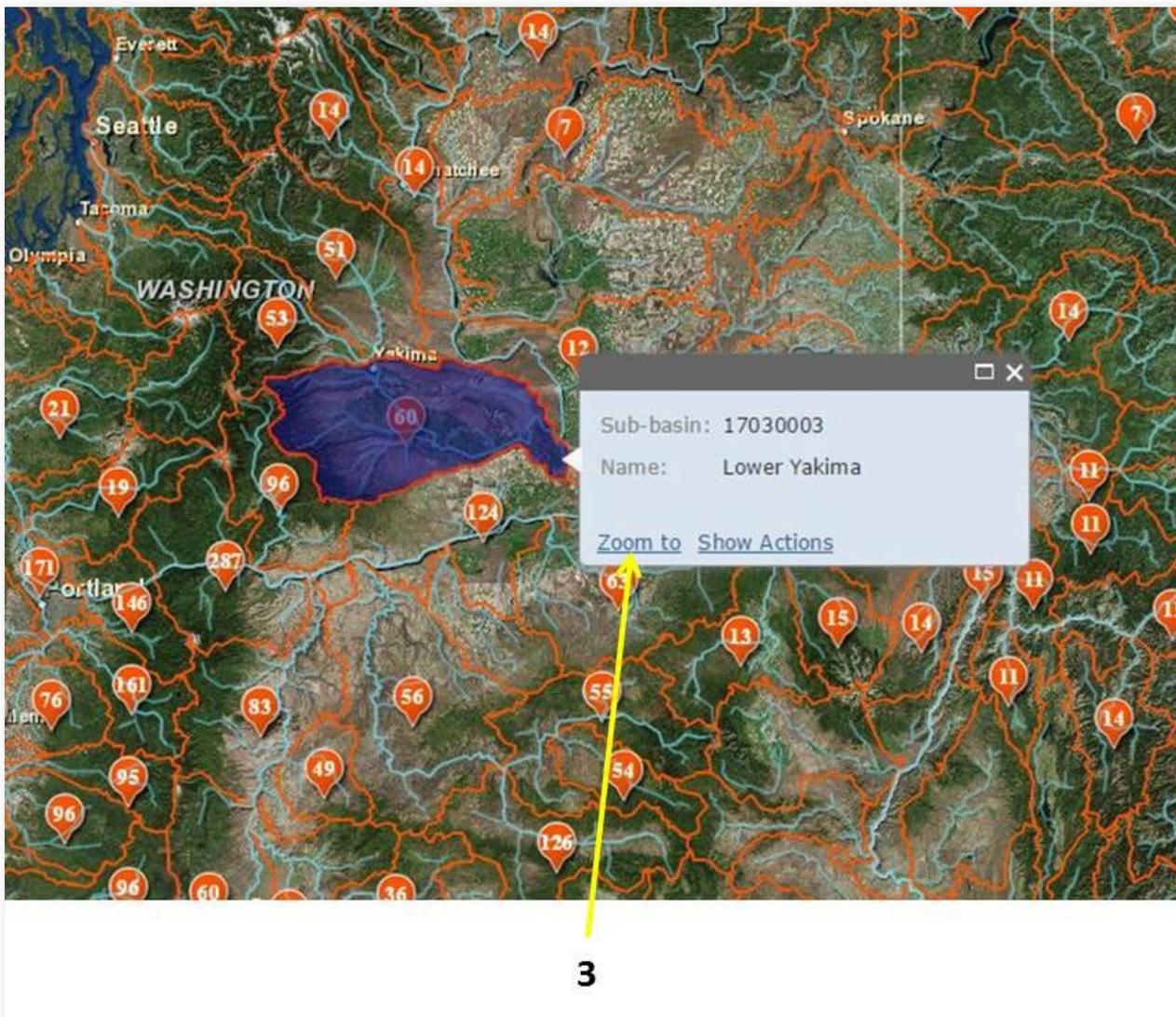
1. Click on a domain, the map will highlight the domain, and a popup will display the domain name. Two options are displayed in the popup: **zoom to** and **show actions**. The option **zoom to** will only zoom the map: it will not return data to the action table. The option **show actions** will open the action table and return actions located within the selected domain.



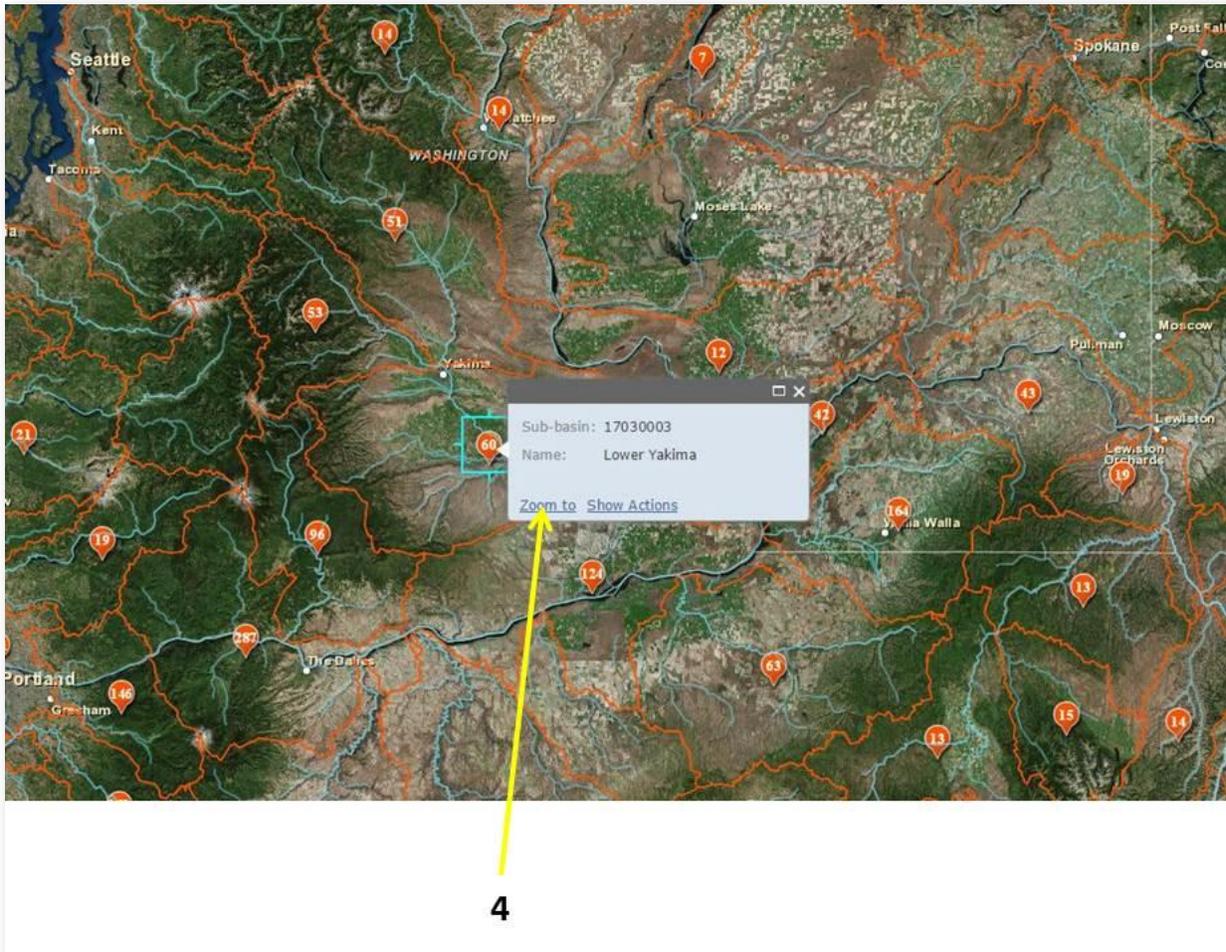
- Click on a domain action count symbol. The map will highlight the symbol with a target, and a popup will display the domain name. Two options are displayed in the popup: **zoom to** and **show actions**. The option **zoom to** will only zoom the map: it will not return data to the action table. The option **show actions** will open the action table and return actions associated with the selected action count. *Note: the action count symbol is clickable, but the number inside the symbol is not clickable.*



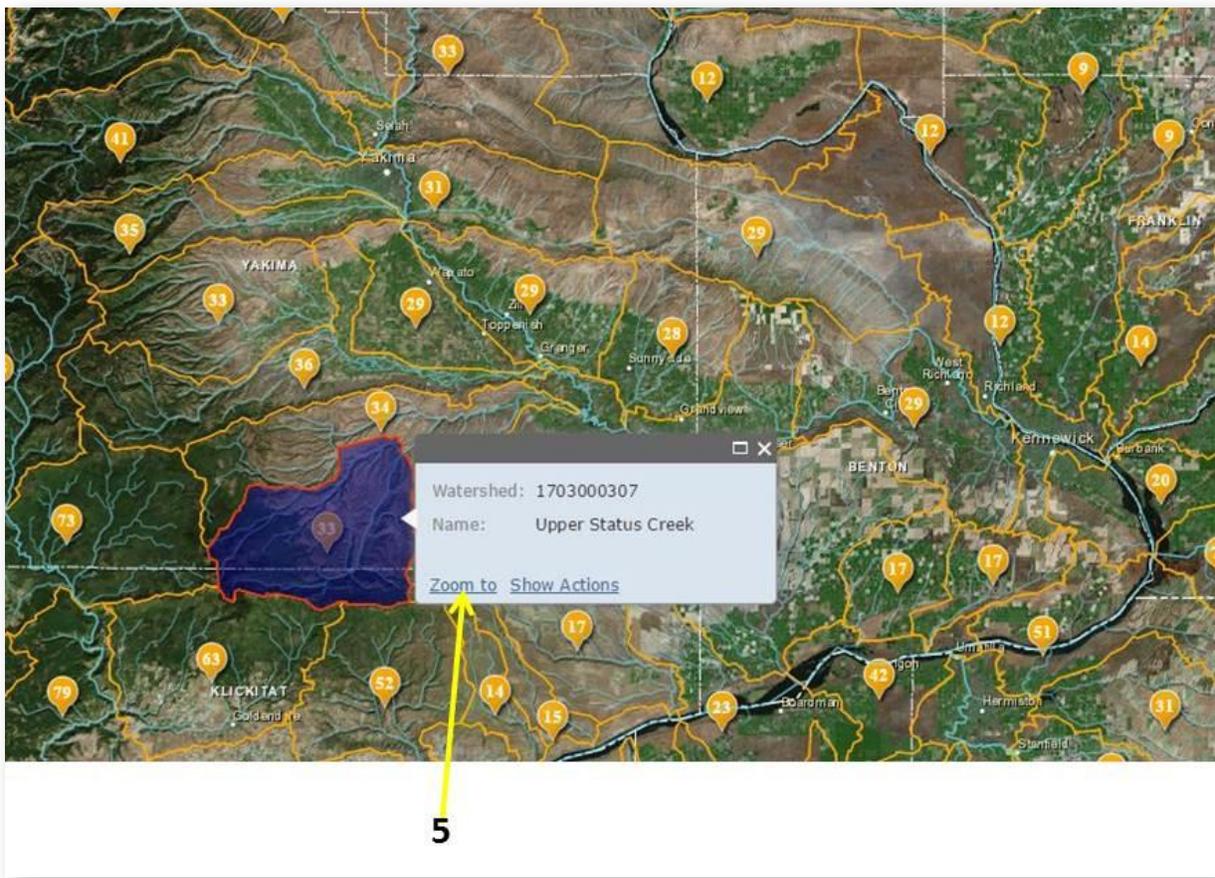
- Click on a sub-basin. The map will highlight the sub-basin, and a popup will display the sub-basin hydrologic unit code (8 digits, 4<sup>th</sup> Field, HUC 8) and name. Two options are displayed in the popup: **zoom to** and **show actions**. The option **zoom to** will only zoom the map: it will not return data to the action table. The option **show actions** will open the action table and return actions located within the selected sub-basin.



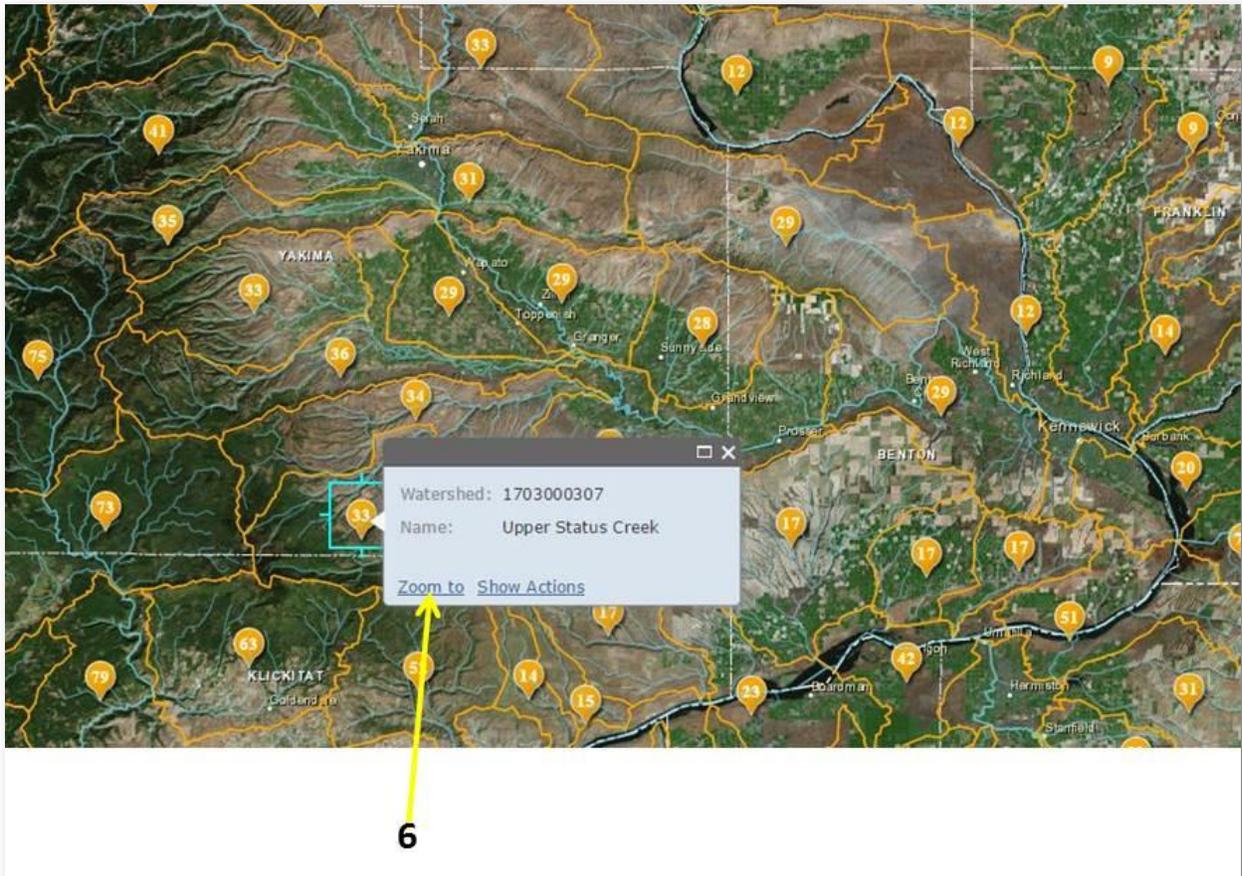
- Click on a sub-basin action count symbol. The map will highlight the symbol with a target, and a popup will display the sub-basin hydrologic unit code (8 digits, 4<sup>th</sup> Field, HUC 8) and name. Two options are displayed in the popup: **zoom to** and **show actions**. The option **zoom to** will only zoom the map: it will not return data to the action table. The option **show actions** will open the action table and return actions associated with the selected action count. *Note: the action count symbol is clickable, but the number inside the symbol is not clickable.*



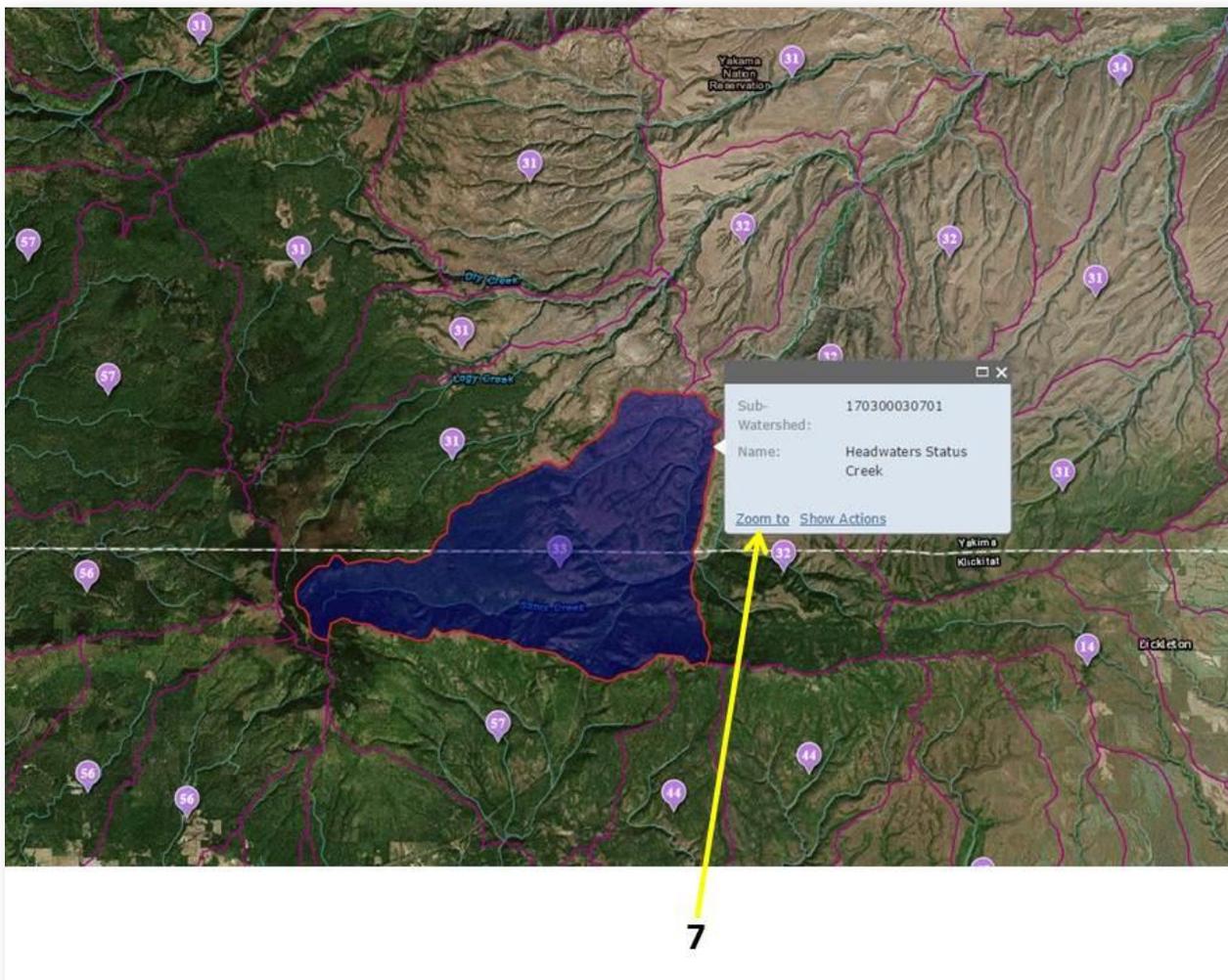
- Click on a watershed. The map will highlight the watershed, and a popup will display the watershed hydrologic unit code (10 digits, 5<sup>th</sup> Field, HUC 10) and name. Two options are displayed in the popup: **zoom to** and **show actions**. The option **zoom to** will only zoom the map: it will not return data to the action table. The option **show actions** will open the action table and return actions located within the selected watershed.



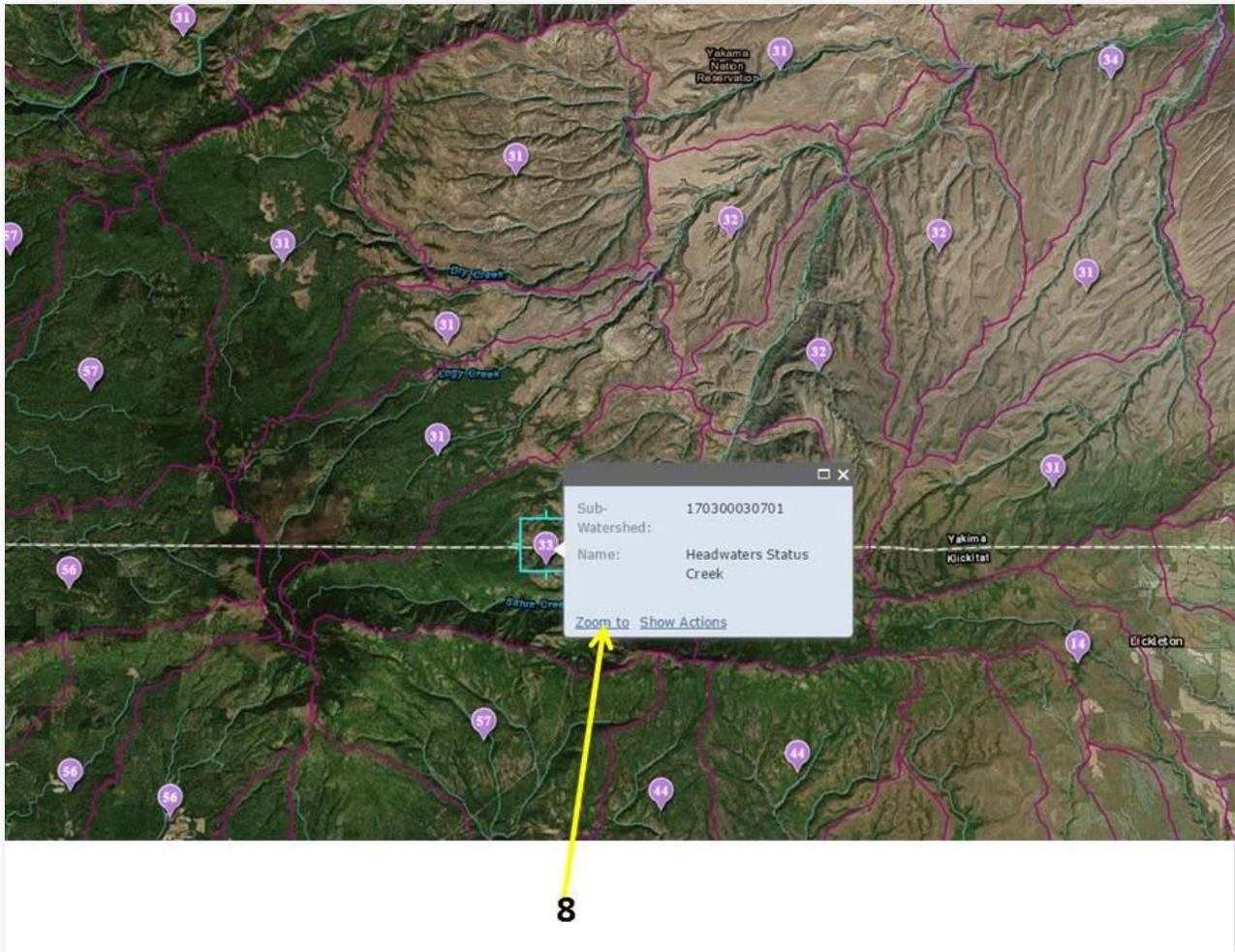
- Click on a watershed action count symbol. The map will highlight the symbol with a target, and a popup will display the watershed hydrologic unit code (10 digits, 5<sup>th</sup> Field, HUC 10) and name. Two options are displayed in the popup: **zoom to** and **show actions**. The option **zoom to** will only zoom the map: it will not return data to the action table. The option **show actions** will open the action table and return actions associated with the selected action count. *Note: the action count symbol is clickable, but the number inside the symbol is not clickable.*



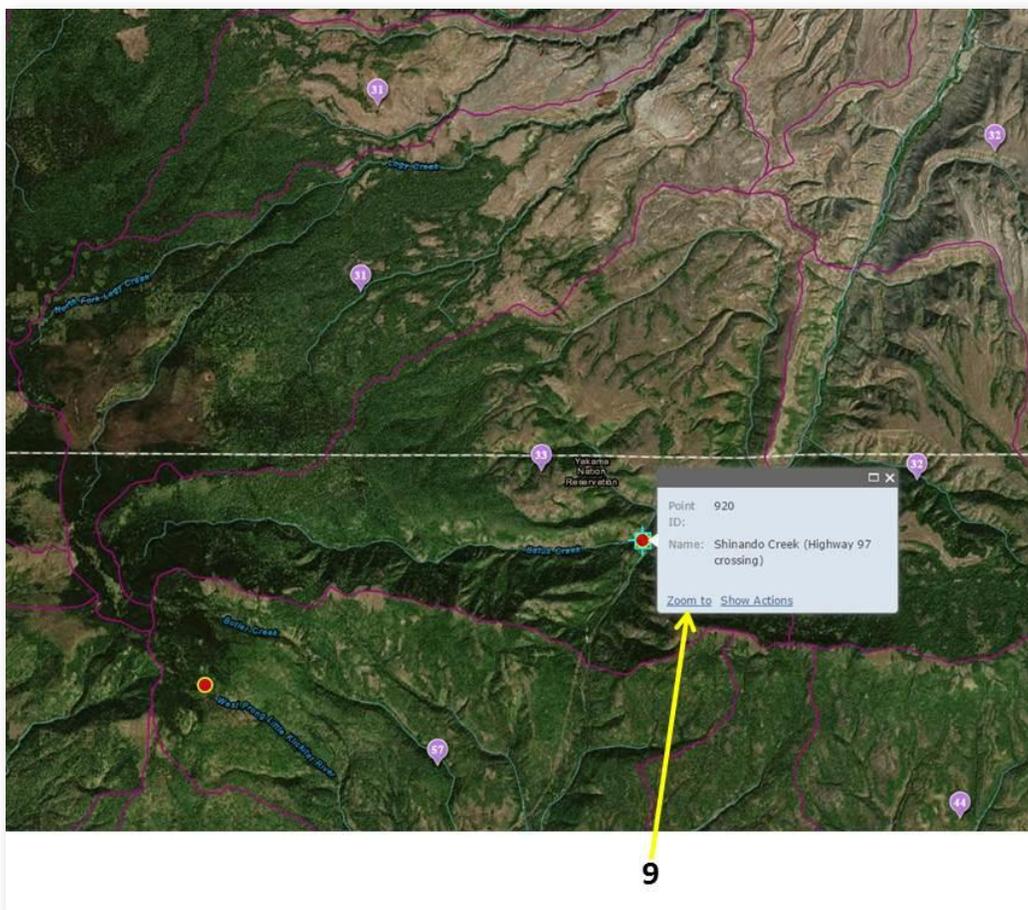
- Click on a sub-watershed. The map will highlight the sub-watershed, and a popup will display the sub-watershed hydrologic unit code (12 digits, 6<sup>th</sup> Field, HUC 12) and name. Two options are displayed in the popup: **zoom to** and **show actions**. The option **zoom to** will only zoom the map: it will not return data to the action table. The option **show actions** will open the action table and return actions located within the selected sub-watershed.



- Click on a sub-watershed action count symbol. The map will highlight the symbol with a target, and a popup will display the sub-watershed hydrologic unit code (12 digits, 6<sup>th</sup> Field, HUC 12) and name. Two options are displayed in the popup: **zoom to** and **show actions**. The option **zoom to** will only zoom the map: it will not return data to the action table. The option **show actions** will open the action table and return actions associated with the selected action count. *Note: the action count symbol is clickable, but the number inside the symbol is not clickable.*



- Click on a point symbol. The map will highlight the point with a target, and a popup will display the point ID and name. Two options are displayed in the popup: **zoom to** and **show actions**. The option **zoom to** will only zoom the map: it will not return data to the action table. The option **show actions** will open the action table and return actions associated with the selected point.



## 11. Action Table

The **actions** tab is located in the lower-left corner of the map display. Clicking on the tab will display a table, with each row representing a single recovery action. The table shows only a subset of fields from the database. To view more fields, users can click on an **action ID hyperlink** or **export** the data and view all of the fields in Excel worksheets. The **home** map view corresponds to the default table view, which shows **actions for: all areas**. Once an area of interest is selected, either from the map elements or the drop-down menus, the name of the selected area will be displayed in the table. Adjacent to the name, is a count of the total number of actions within the selected area. Users can choose which data to display, sort, filter, or export. The Excel icon buttons provide the options to export the displayed actions to .csv format and/or any projects related to those actions.

1. Click on the **actions** tab to open and close the table.
2. Display indicating the **viewing status** of action entries for the selected area of interest.
3. Display indicating the selected **area of interest**.
4. Display indicating the total **action count** for the selected area of interest.
5. Click on the Excel icon button to **export actions** to .csv (comma separated value) file format, which can be imported to Excel.
6. Click on the Excel icon button to **export projects** to .csv format. Only projects that are related to the currently displayed actions will be exported.
7. Click on the **navigation tools** to change the displayed entries. Each page consists of 5 entries, or rows of actions, unless there are less than 5 actions in the area of interest selected. The navigation tools allow users to select the **first, previous, next, and last** pages. Entries can also be displayed by **page number**.
8. Column **headers** with ascending and descending **sort** controls. Click on the **up/down arrows** to the right of each header to cycle data between ascending and descending order.
9. Click on the drop-down **filters** below column headers and select a value to filter data. To remove a filter, select the default “filter by.”
10. Click inside the **search boxes** and enter text to filter data. To remove the filter, delete the text in the search box.
11. **Rows** display action data as specified by the applied selection of an area of interest, as well as any specifications from sorting and filtering. Each row equals one action.
12. Click on the **scroll bar** and drag it to the right/left to view other columns.
13. Click on an **action ID hyperlink** to view all of the details for that action in a new window.

The screenshot shows the 'ACTIONS' tab in the Recovery Action Mapping Tool. The interface includes a map at the top, a table of actions, and a footer with navigation links. Yellow arrows and numbers 1 through 13 point to specific UI elements:

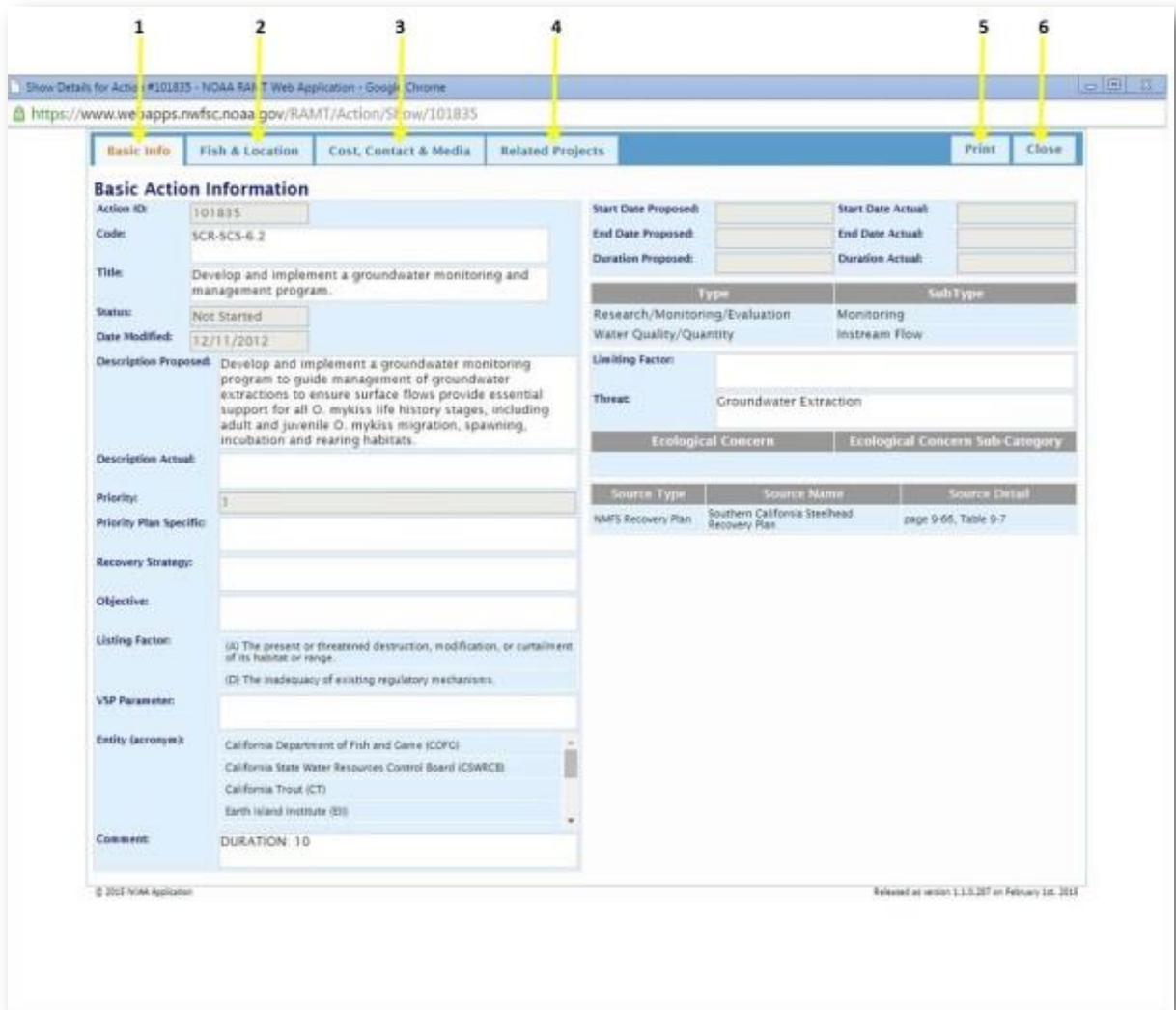
- 1: 'ACTIONS' tab
- 2: 'All Areas' dropdown
- 3: 'Action Count: 2599'
- 4: 'Export Actions' button
- 5: 'Export Projects' button
- 6: Navigation buttons (First, Previous, 1, 2, 3, 4, 5, Next, Last)
- 7: Search boxes for various columns
- 8: Column headers with sort arrows
- 9: Filter dropdown menu
- 10: Filter by dropdown
- 11: Action row (e.g., 100000)
- 12: Scroll bar
- 13: Action ID hyperlink (100000)

Action ID	Action Code	Species Common Name	ESU DPS	Major Population	Population	Population ID	Title	Status	Pr
100000	RESEARCH, MONIT...	Steelhead	Middle Columbia River St...	Cascades Eastern Slope ...	Rock Creek	STMCRsuRCK	Assess eutrophication an...		2
100001	HABITAT 4.3	Steelhead	Middle Columbia River St...	Cascades Eastern Slope ...	Rock Creek	STMCRsuRCK	Relocate beaver to suitab...		2
100002	HABITAT 2.1	Steelhead	Middle Columbia River St...	Cascades Eastern Slope ...	Rock Creek	STMCRsuRCK	Improve instream flow in l...		2
100003	RESEARCH, MONIT...	Steelhead	Middle Columbia River St...	Cascades Eastern Slope ...	Rock Creek	STMCRsuRCK	Evaluate predation risks fr...		2
100004	RESEARCH, MONIT...	Steelhead	Middle Columbia River St...	Cascades Eastern Slope ...	Rock Creek	STMCRsuRCK	Determine the predation a...		2

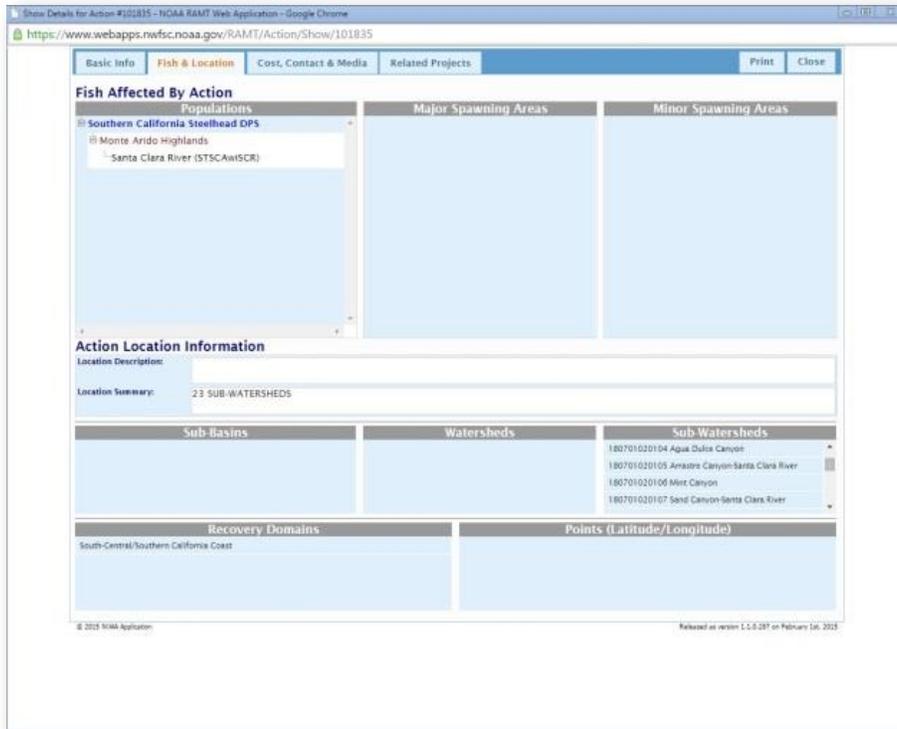
## 12. Action Details

Click on an **action ID hyperlink** in the table and the application opens a new window with all of the action's details grouped into four tabs. Click on each tab to learn more about the action. Go to [Field & Value Definitions](#) to learn more about the Recovery Action Mapping Tool database fields and the values associated with each field.

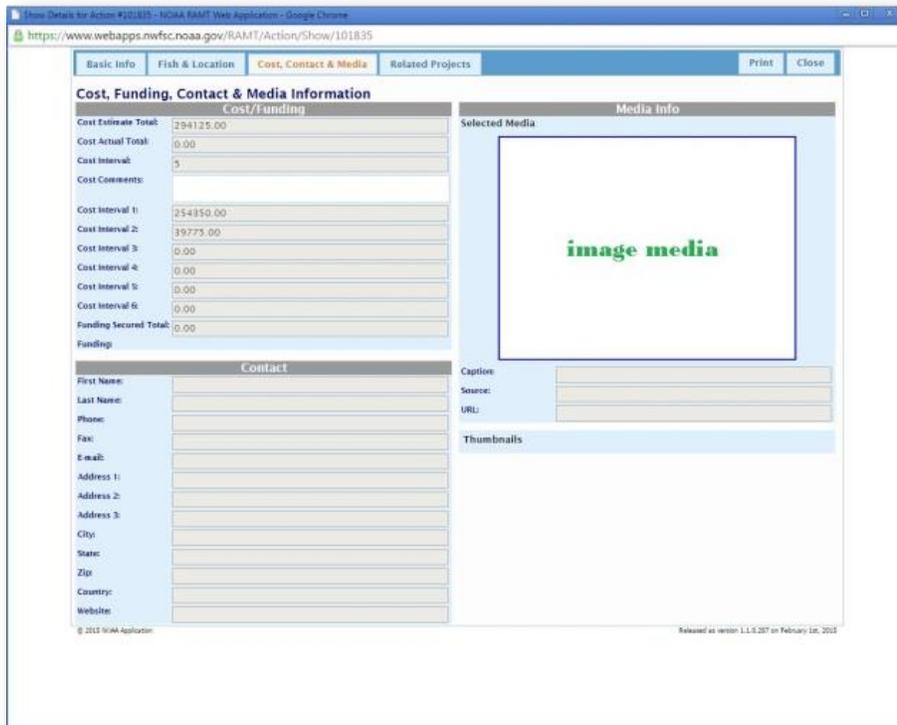
1. The **basic info** tab displays the core database fields.
2. The **fish & location** tab displays the fish that will be affected by the action and the exact location of the action. The hierarchy of fish units starts with listings under the Endangered Species Act, which include **Distinct Population Segments (DPS)** for most species and **Evolutionarily Significant Units (ESU)** for salmon species. These units of fish are broken down into smaller units. The middle unit in the hierarchy can have various names depending on where the fish live. This middle unit can be referred to as a major population group, diversity group, diversity strata, or biogeographic population group. Each grouping can have a different meaning. For purposes of standardization and data sharing, the header in the action table for the middle unit of the fish hierarchy is labeled as a major population group. The smallest unit in the fish hierarchy is called a population. Each population has a unique population ID in parentheses to the right of the name.
3. The **cost, contact, & media** tab displays additional fields.
4. The **related projects** tab displays projects that are related to the action. Projects can be stored in and related from 3 databases: the Recovery Action Mapping Tool database, the Pacific Coastal Salmon Recovery Fund (PCSRF) database, and the Pacific Northwest Salmon Habitat Projects (PNSHP) database. If no projects have been related to the action, this tab will be blank. The goal of relating projects to actions is to identify funded site-specific activities that can qualify as partially or fully implementing a recovery action.
5. The **print** button allows all four tabs of action details to be printed or saved as a .pdf file.
6. The **close** button closes the action details window.



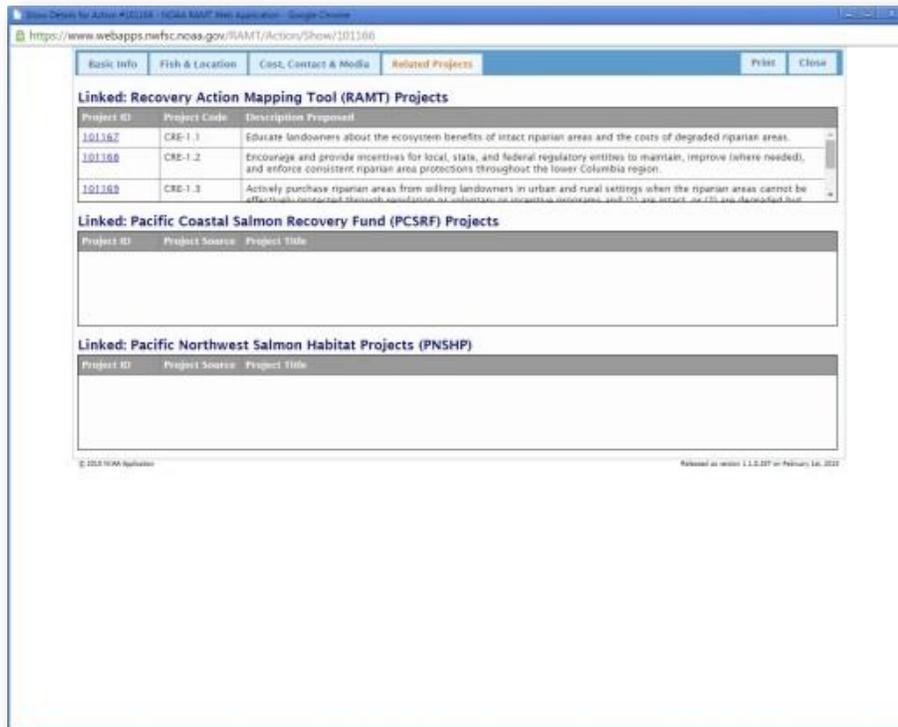
The Basic Info Tab



The Fish & Location Tab



The Cost, Contact, & Media Tab



The Related Projects Tab

For entries in the **Linked: Recovery Action Mapping Tool (RAMT) Projects** box, click on a **project ID hyperlink** and the application opens a new window with all of the project’s information. Go to [Field & Value Definitions](#) to learn more about the database fields and the values associated with each field.

Project Information		Edit	Close	Print
Project ID:	101169			
Project Code:	CRE-1.3			
Status:				
Date Modified:	06/17/2011			
Description Proposed:	Actively purchase riparian areas from willing landowners in urban and rural settings when the riparian areas cannot be effectively protected through regulation or voluntary or incentive programs and (1) are intact, or (2) are degraded but have good restoration potential.			
Description Actual:				
Priority Plan Specific:				
Entity (acronym):				
Location Description:				
Comment:				
Start Date Proposed:	2007	Start Date Actual:		
End Date Proposed:	2031	End Date Actual:		
Duration Proposed:	24 years	Duration Actual:		
		Type	SubType	
		Habitat Restoration/Management	Conservation	
<b>Cost</b>				
Cost Estimate Total:		25000000.00		
Cost Actual Total:		0.00		
Cost Interval:				
Cost Interval 1:		0.00		
Cost Interval 2:		0.00		
Cost Interval 3:		0.00		
Cost Interval 4:		0.00		
Cost Interval 5:		0.00		
Cost Interval 6:		0.00		
Cost Comments:		Rural: 3,500 acres @ \$5,000/acre. Acreage amounts are 25-year targets that depend on willing sellers and funding. Urban: 100 acres @ \$75,000/acre.		

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A Project Information Window

For entries in the **Linked: Pacific Coastal Salmon Recovery Fund (PCSRF) Projects** box and the **Linked: Pacific Northwest Salmon Habitat Projects (PNSHP)** box, the **project reference** can be used to find the project on the websites associated with [PCSRF](#) and [PNHSP](#). Only three fields are displayed from those databases in this tool and they are meant to help facilitate data discovery.