

Geospatial Data Collection Standard Policy for Fisheries

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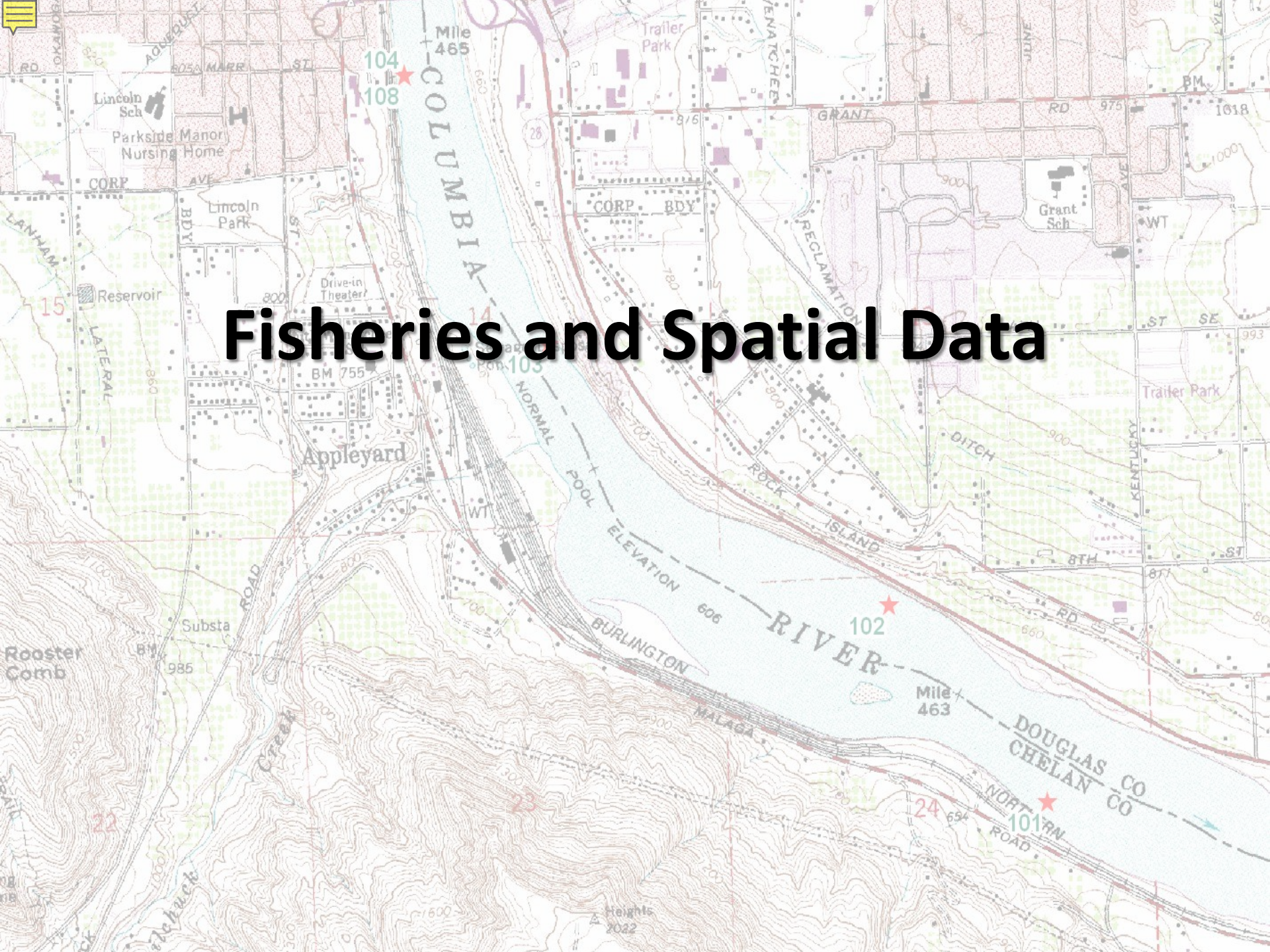


AFS Conference 2011

Powerdale
Dam

Parkdale
Fish
Facility

Fisheries and Spatial Data





Fisheries and Spatial Data

- Paper maps and notebooks – around for hundreds of years.



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- Besides the obvious geographers – many disciplines quickly standardized the use of spatial data.
 - Military, Urban Development, Forestry. . .
- Why not fisheries?



Second Bridge From the Mouth



Second Bridge From the Mouth

- Does this form of location notation work, and what good is it?



Second Bridge From the Mouth

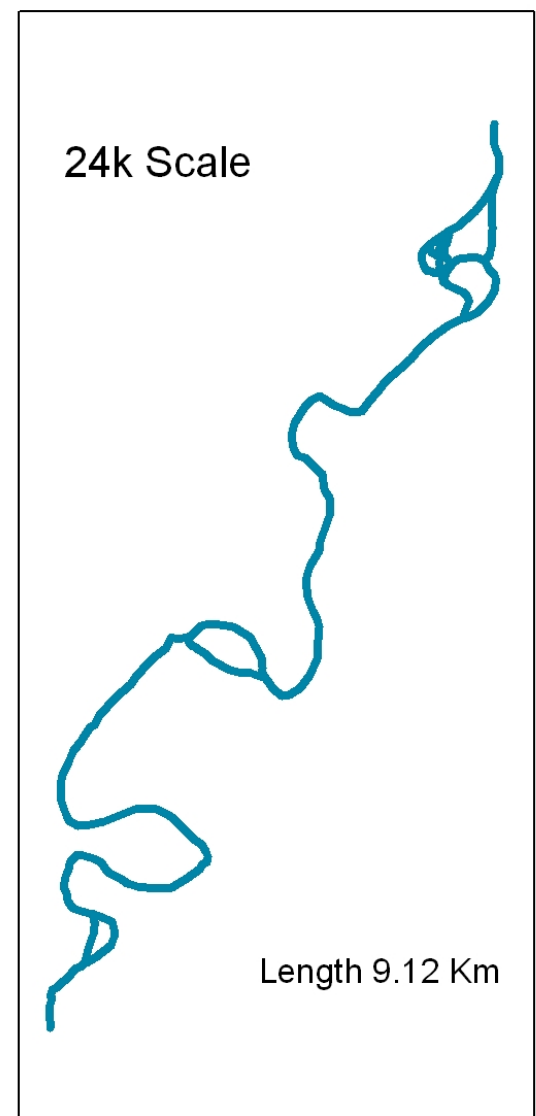
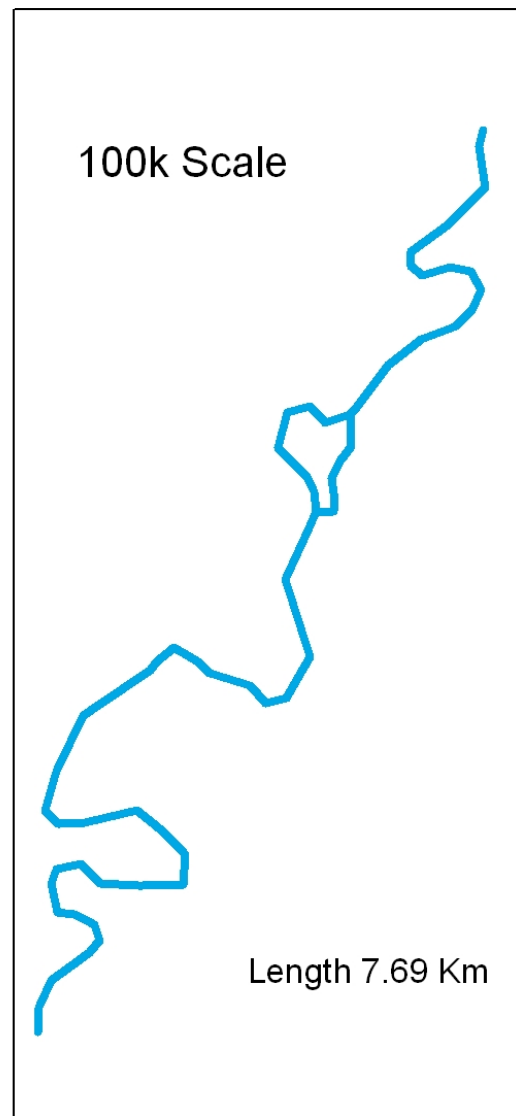
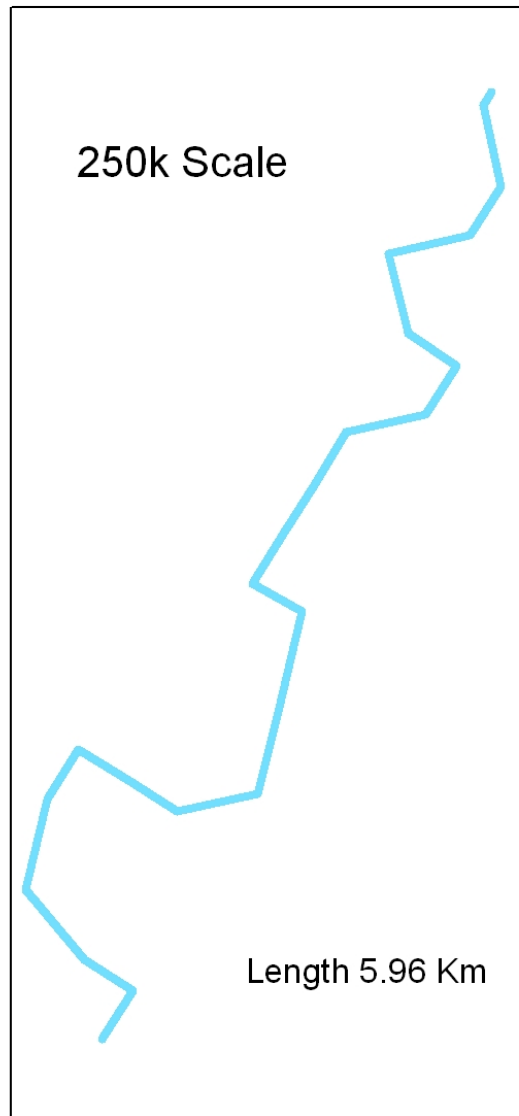
- “It’s good enough for our work and reports”- institutionalized field techniques.
- Only good for biologist with a local knowledge of the area.
- What if the number of bridges crossing the stream change?
- How do you define a bridge? Is it on a map, or visible from satellite/aerial imagery?
- What happens when your biologists retire or leave your employment?

An aerial photograph of a city area, showing a river, a bridge, and various urban structures. The image is used as a background for the slide.

Second Bridge From the Mouth

- Does this form of location notation work, and what good is it?
- So many scales to choose from – which to use?

A lot of work to create the data.

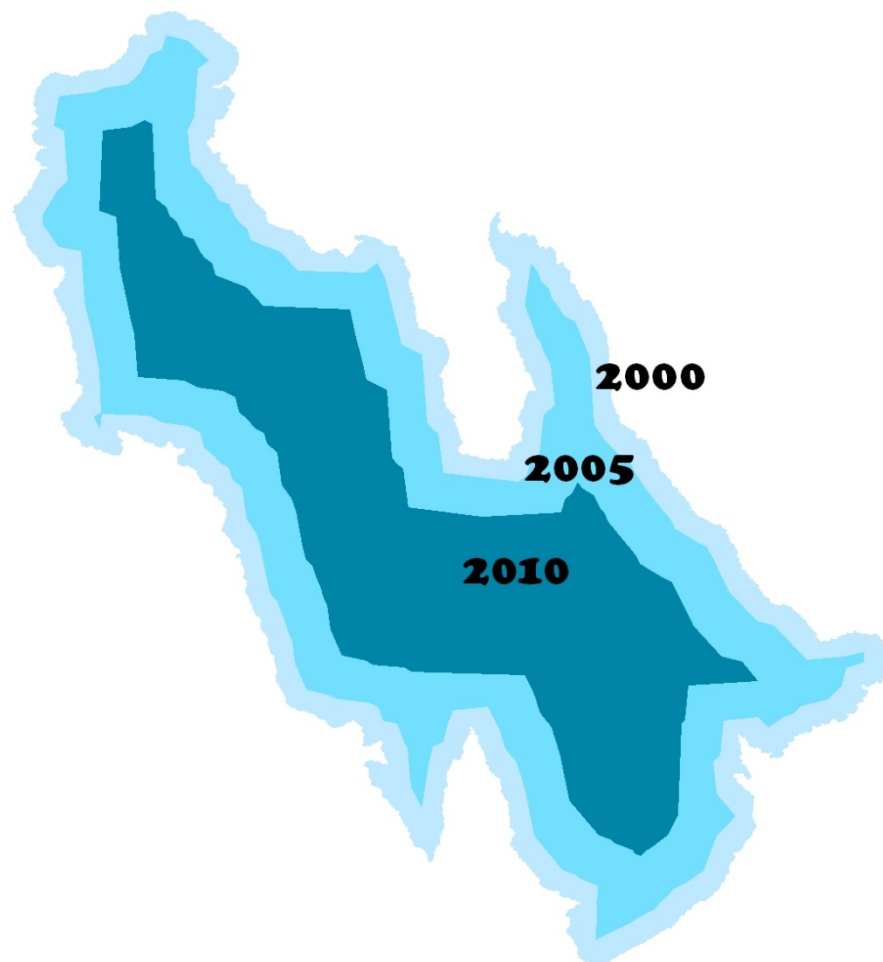




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- Does this form of location notation work, and what good is it?
- So many scales to choose from – which to use?
- Dynamic systems are hard to capture.

Second Bridge From the Mouth



An aerial photograph of a landscape featuring a river, urban areas with buildings, and green spaces. The image is used as a background for the slide.

Second Bridge From the Mouth

- Does this form of location notation work, and what good is it?
- So many scales to choose from – which to use?
- Dynamic systems hard to capture.
- Aquatic or fish habitat units are thin or small on the landscape and seem insignificant compared to upland habitats.

Second Bridge From the Mouth

There's a stream with pools and riffles in here somewhere.



A map with a red boundary and various colored regions. The map is filled with a complex pattern of irregular shapes in shades of yellow, green, brown, and pink. A prominent red line outlines a large, irregular area in the center of the map. The text "Standard Policy Now" is overlaid on the map in a large, black, sans-serif font.

Standard Policy Now



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- The use of online maps and simple GIS tools is common practice in today's society. Youth today expect data on maps.
- Technology has advanced – cell phones, PDA's, laptops with GPS functionality.

The background of the slide is a map with various colored regions in shades of green, yellow, and brown. A prominent red line, possibly representing a river or a boundary, winds across the map. In the top-left corner, there is a small yellow speech bubble icon.

Standard Policy Now

- The use of online maps and simple GIS tools is common practice in today's society. Youth today expect data on maps.
- Technology has advanced – cell phones, PDA's, laptops with GPS functionality.
- Web mapping – no more excuses, getting some spatial data is easy. Google Earth, MyTopo, Wikipedia. . .

The background of the slide is a map with various colored regions (green, yellow, brown, red) and a prominent red boundary line. In the top-left corner, there is a small yellow speech bubble icon.

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- **Models and tools for fisheries spatial data are available and most are free. NHD, NetStream, . . .**



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- Affordable software – free is good. GeoServer, eSpatial, ArcGIS Explorer . . .
- Models and tools for fisheries spatial data are available and most are free. NHD, NetStream, . . .
- Although good work has been completed (StreamNet, NOAA, BC Fisheries), most fisheries data are not available in a spatial format.

The background of the slide is an aerial photograph of a landscape. A prominent blue river or stream flows from the top-left towards the bottom-right. The surrounding land is a mix of green and brown, indicating different types of vegetation or terrain. The text "So What's It Good For?" is centered over the middle of the image.

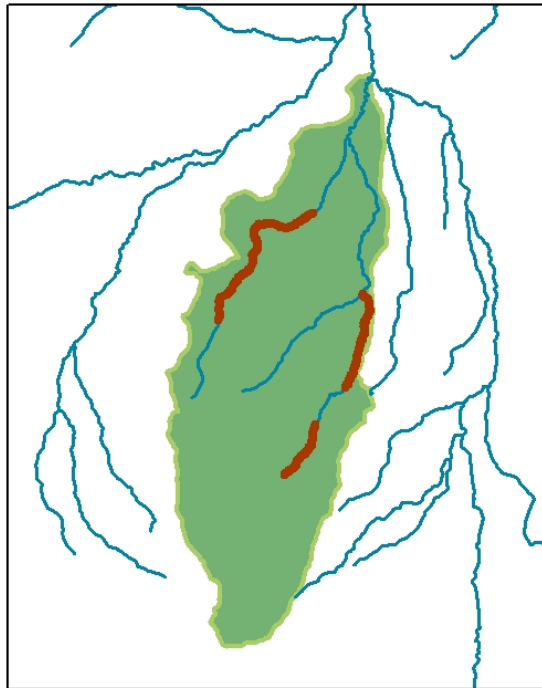
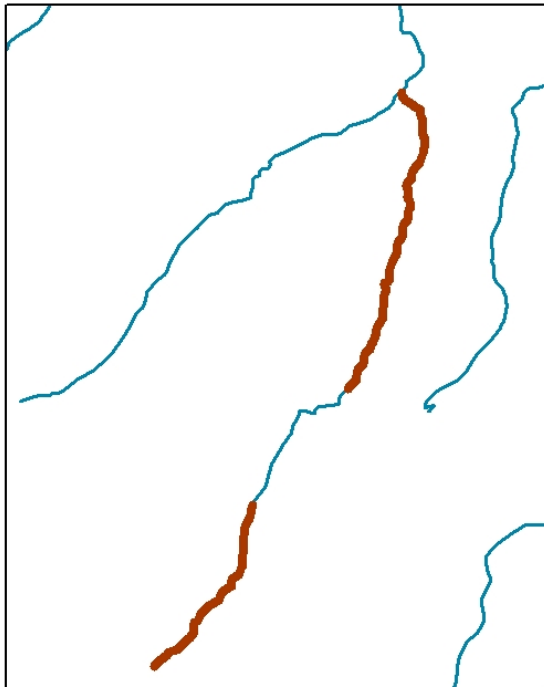
So What's It Good For?



So What's It Good For?

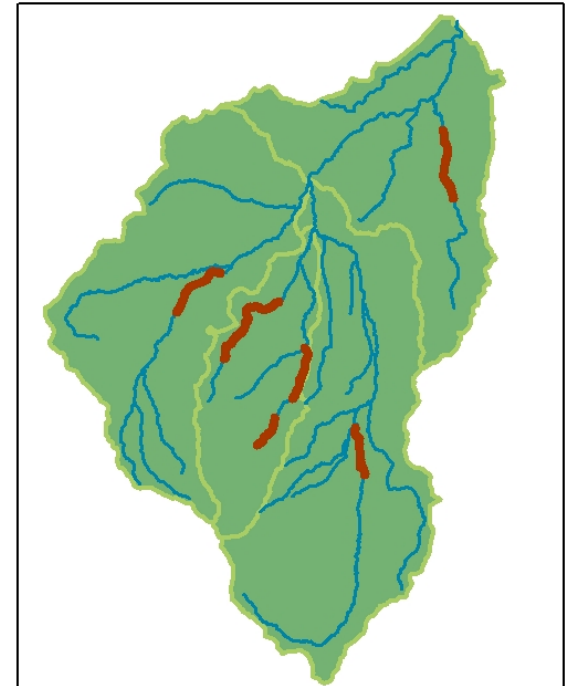
- Scaling in a landscape – imagine if everyone had spatial data and shared them.

Two Projects in a Stream



Several Projects in a Watershed

Analysis a Basin





So What's It Good For?

- Scaling in a landscape – imagine if everyone had spatial data and shared them.
- Landscape patterns– patterns in a table, patterns on a map, explore the reasons.

Over 500 Reaches with Temperature Ratings

REACHNAME	TMPMONMNP	REACHNAME	TMPMONMNP	REACHNAME	TMPMONMNP	REACHNAME	TMPMONMNP	REACHNAME	TMPMONMNP	REACHNAME	TMPMONMNP	REACHNAME	TMPMONMNP
Alder Cr (GR)		3 Chesnimnus Cr-8	2.5	Evans Cr	2.5	Grande Ronde-8		1.5 Little Minam Cr-2		3 Murphy Cr		3 Squaw Cr (Fly)	2
Alder Cr Trib (Chesnimnus)	2.5	Chesnimnus Cr-9		2.5 Fiddlers Hell		2 Grande Ronde-9		1.5 Little Minam Cr-3		3 OK Gulch Fork		2.5 Squaw Cr (Minam)	2
Alder Cr-1 (Chesnimnus)	2.5	Chicken Cr W		2 Finley Cr		2 Grossman Cr EF		2.5 Little Minam Cr-4		3 Parsnip Cr		2 Straight Whiskey Cr	2.5
Alder Cr-2 (Chesnimnus)	2.5	Chicken Cr-1		2.5 Fir Cr		2 Grossman Cr-1		2.5 Little Minam Cr-5		3 Peavine Cr (Joseph)		2.5 Sullivan Gulch	2
Applegate Canyon	1.5	Chicken Cr-2		2 First Cr		2.5 Grossman Cr-2		2.5 Little Phillips Cr		2.5 Peavine Cr EF (Chesnimnus)		2.5 Sumac Cr	2.5
Bailey Cr		2 Clark Cr MF		2.5 Fisher Cr		3 Grossman Cr-3		2.5 Little Rock Cr		2.5 Peavine Cr WF (Chesnimnus)		2.5 Summer Cr	2
Battle Cr		2 Clark Cr NF		2.5 Five Points Cr-1		2.5 Grouse Cr-1		2.5 Little Whiskey Cr		2.5 Peavine Cr-1 (Chesnimnus)		2.5 Summit Cr	2.5
Bear Cr (2nd GR)	1.5	Clark Cr-1		2.5 Five Points Cr-2		2 Grouse Cr-2		3 Lookingglass Cr-1		2.5 Peavine Cr-2 (Chesnimnus)		2.5 Swamp Cr-1	2.5
Bear Cr (3rd GR)		3 Clark Cr-2		2.5 Five Points Cr-3		2 Grouse Cr-3		2.5 Lookingglass Cr-2		2.5 Peavine Cr-3 (Chesnimnus)		2.5 Swamp Cr-2	1.5
Bear Cr (4th GR)		2 Clark Cr-3		2 Five Points MF		2 Grouse Cr-4		3 Lookingglass Cr-3		2.5 Pedro Cr		2 Syrup Cr	2.5
Bear Cr (Meadow)		2.5 Clark Cr-4		2 Fly Cr-1		2 Grouse Cr-5		2.5 Lookingglass Cr-4		3 Peet Cr		2 Tanner Gulch	2
Bear CR EF (1st GR)	1.5	Clark Cr-5		2 Fly Cr-2		2.5 Grouse Cr-6		3 Lookingglass Cr-5		2.5 Pelican Cr-1		2.5 Telephone Gulch Cr	2.5
Bear Cr Trib (4th GR)		2 Clear Cr (1st GR)		3 Fly Cr-3		2.5 Grouse Cr-7		1.5 Lookingglass Cr-6		2 Pelican Cr-2		2.5 Teepee Cr	2.5
Bear Cr WF (1st GR)		2.5 Clear Cr Trib Trib (2nd GR)		2 Fly Cr-4		2.5 Gunderson Cr		2 Lookingglass Cr-7		2 Phillips Cr EF-1		2 Third Cr	2
Bear Cr-1 (1st GR)	1.5	Clear Cr Trib-1 (2nd GR)		2 Fountain Canyon		2 Hayes Fork		2 Lookout Cr		2 Phillips Cr EF-2		2 TNT Gulch	2.5
Bear Cr-1 (Wallowa)	2.5	Clear Cr Trib-2 (2nd GR)		2 Goat Cr		3.5 Hoodoo Cr		2 Lostine-1		2 Phillips Cr-1		2.5 Tope Cr	2.5
Bear Cr-2 (Wallowa)		2.5 Clear Cr-1 (2nd GR)		2 Gooseberry Cr		1.5 Horse Cr		2.5 Lostine-2		Phillips Cr-2		2.5 Trout Cr (Minam)	3
Bear Cr-3 (Wallowa)	3.5	Clear Cr-2 (2nd GR)		2 Gordon Cr-1		2.5 Howard Cr		2.5 Lostine-3		2 Phillips Cr-3		2.5 Trout Cr (Wallowa)	1.5
Bear Cr-4 (Wallowa)	3.5	Clear Cr-3 (2nd GR)		2 Gordon Cr-2		2 Hurricane Cr-1		2.5 Lostine-4		2 Phillips Cr-4		2 Umapiine Cr	2
Bear Cr-5 (Wallowa)	3.5	Collins Cr		2 Grande Ronde EF		3 Hurricane Cr-2		2.5 Lostine-5		2.5 Pine Cr-1		2.5 Vance Draw	2.5
Beaver Cr (Wenaha)		2 Coon Cr		2 Grande Ronde-1		2.5 Hurricane Cr-3		Lostine-6		2.5 Pine Cr-2		2.5 Wallowa-1	2
Beaver Cr-1 (GR)		2 Cottonwood Cr-1 (GR)		1.5 Grande Ronde-10		3 Hurricane Cr-4		3 Lostine-7		3 Poison Cr		2.5 Wallowa-10	1.5
Beaver Cr-2 (GR)		2 Cottonwood Cr-1 (Joseph)		1.5 Grande Ronde-11		2.5 Hurricane Cr-5		Lostine-8		3 Prairie Cr-1		2 Wallowa-11	1.5
Billy Cr		2.5 Cottonwood Cr-2 (GR)		Grande Ronde-12		2.5 Hurricane Cr-6		3 Marion Cr		2 Prairie Cr-2		2 Wallowa-12	2
Bishop Cr		2.5 Cottonwood Cr-2 (Joseph)		2.5 Grande Ronde-13		1.5 Indian Cr EF		2 Marley Cr		2 Prairie Cr-3		2.5 Wallowa-13	1.5
Bobcat Cr	2.5	Cottonwood Cr-3 (GR)		2.5 Grande Ronde-14		1.5 Indian Cr NF		2 McAlister Cr		2.5 Prairie Cr-4		2 Wallowa-14	1.5
Boulder Cr		2 Cottonwood Cr-3 (Joseph)		1.5 Grande Ronde-15		1.5 Indian Cr-1		2.5 McCarty Gulch		2.5 Pyles Canyon-1		2.5 Wallowa-15	2
Broady Cr WF	2.5	Cougar Cr (GR)		2.5 Grande Ronde-16		1.5 Indian Cr-2		2.5 McCoy Cr-1		2 Pyles Canyon-2		2.5 Wallowa-16	2
Broady Cr-1	2.5	Cougar Cr (Joseph)		2.5 Grande Ronde-17		1.5 Indian Cr-3		2 McCoy Cr-2		2.5 Rattlesnake Cr W Branch		1.5 Wallowa-17	2
Broady Cr-2	2.5	Cougar Cr (Minam)		2 Grande Ronde-18		1.5 Indian Cr-4		2 McCoy Cr-3		2.5 Rattlesnake Cr-1		2.5 Wallowa-18	1.5
Buck Cr (Catherine)		2 Courtney Cr-1		2.5 Grande Ronde-19		1.5 Indian Cr-5		2 McCubbin Cr		2.5 Rattlesnake Cr-2		2 Wallowa-19	2
Buck Cr-1 (GR)	2.5	Courtney Cr-2		2.5 Grande Ronde-20		1.5 Indian Cr-6		2 McIntyre Cr		2 Rattlesnake Cr-3		1.5 Wallowa-2	2
Buck Cr-2 (GR)	2.5	Courtney Cr-3		2.5 Grande Ronde-21		1.5 Indiana Cr		2 Meadow Cr (1st GR)		3 Rattlesnake Cr-4		2.5 Wallowa-20	
Buford Cr-1	2.5	Courtney Cr-4		2.5 Grande Ronde-22		1.5 Jarboe Cr		2 Meadow Cr-1 (2nd GR)		3.5 Reagin Gulch		1.5 Wallowa-21	2
Buford Cr-2	2.5	Crooked Cr-1		2.5 Grande Ronde-23		1.5 Jaussaud Cr		2.5 Meadow Cr-2 (2nd GR)		3.5 Rock Cr (Wenaha)		2 Wallowa-22	3
Burnt Corral Cr EF		2 Crooked Cr-2		2.5 Grande Ronde-24		1.5 Jordan Cr		3 Meadow Cr-3 (2nd GR)		3.5 Rock Cr EF (GR)		2 Wallowa-3	2
Burnt Corral Cr-1	2.5	Crooked Cr-3		2.5 Grande Ronde-25		1.5 Joseph Cr-1		1.5 Meadow Cr-4 (2nd GR)		2.5 Rock Cr-1 (GR)		2 Wallowa-4	1.5
Burnt Corral Cr-2	2.5	Crooked Cr-4		2.5 Grande Ronde-26		1 Joseph Cr-2		2.5 Meadow Cr-5 (2nd GR)		3.5 Rock Cr-1 (Wallowa)		1.5 Wallowa-5	1.5
Burnt Corral Cr-3		2 Crow Cr-1		1.5 Grande Ronde-27		1.5 Joseph Cr-3		2.5 Meadow Cr-6 (2nd GR)		3.5 Rock Cr-2 (GR)		2.5 Wallowa-6	1.5
Burnt Cr	2.5	Crow Cr-2		2.5 Grande Ronde-28		1 Joseph Cr-4		2.5 Meadow Cr-7 (2nd GR)		3.5 Rock Cr-2 (Wallowa)		3 Wallowa-7	1.5
Butte Cr (Chesnimnus)	1.5	Dark Canyon		2 Grande Ronde-29		1.5 Joseph Cr-5		2.5 Meadow Cr-8 (2nd GR)		3.5 Rock Cr-3 (GR)		2 Wallowa-8	2
Butte Cr-1 (Wenaha)		2 Davis Cr		2.5 Grande Ronde-30		1 Joseph Cr-6		2.5 Meadow Cr-9 (2nd GR)		2 Rock Cr-4 (GR)		2 Wallowa-9	1.5
Butte Cr-2 (Wenaha)		2 Deep Cr		2.5 Grande Ronde-31		1.5 Ladd Cr-1		2.5 Meadowbrook Cr		2.5 Rysdam Canyon		2.5 Wallupa Cr	2.5
Buzzard Cr		2 Deer Cr (GR)		2.5 Grande Ronde-32		1 Ladd Cr-2		2.5 Medicine Cr		1.5 Sage Cr-1		Ward Canyon	2.5
Cabin Cr NF		2 Deer Cr-1 (Wallowa)		Grande Ronde-33		1 Lake Cr		2.5 Melton Cr		2.5 Sage Cr-2		3 Warm Springs Cr	2
Cabin Cr SF		2 Deer Cr-2 (Wallowa)		2.5 Grande Ronde-34		1 Lewis Branch		2 Menatchee Cr		2.5 Salmon Cr-1		2.5 Water Canyon	2.5
Cabin Cr-1	2.5	Deer Cr-3 (Wallowa)		3 Grande Ronde-35		3 Limber Jim Cr NF		3 Milk Cr (Wenaha)		2.5 Salmon Cr-2		2.5 Waucup Cr	3.5
California Gulch	2.5	Devils Run Cr-1		2.5 Grande Ronde-36		1.5 Limber Jim Cr SF		3 Milk Cr-1 (Catherine)		2 Sand Pass Cr		2 Weller Cr	2
Camp Cr		2 Devils Run Cr-2		2.5 Grande Ronde-37		1.5 Limber Jim Cr-1		2 Milk Cr-2 (Catherine)		2 Scout Cr		2 Wenaha NF	
Catherine Cr MF		2 Devils Run Cr-3		2.5 Grande Ronde-38		1.5 Limber Jim Cr-2		2 Mill Cr (Willow)		2 Second Cr		2.5 Wenaha SF-1	2
Catherine Cr NF-1		2 Devils Run Cr-4		2.5 Grande Ronde-39		1.5 Limber Jim Cr-3		2 Mill Cr-1 (Catherine)		2.5 Shamrock Cr		2.5 Wenaha SF-2	2.5
Catherine Cr NF-2		2 Dobbin Cr		2 Grande Ronde-40		1.5 Limber Jim Cr-4		3 Mill Cr-2 (Catherine)		2.5 Shaw Cr		2.5 Wenaha SF-3	2.5
Catherine Cr NF-3		2 Doc Cr		2.5 Grande Ronde-41		1.5 Limber Jim Cr-5		3 Minam N-1		2 Sheep Cr (GR Rock)		2.5 Wenaha-1	2
Catherine Cr SF-1		2 Doe Cr		2.5 Grande Ronde-42		1.5 Little Bear Cr-1		2.5 Minam N-2		2 Sheep Cr E (2nd GR)		2 Wenaha-2	2
Catherine Cr SF-2		2 Dry Cr (2nd GR Sheep)		2.5 Grande Ronde-43		2.5 Little Bear Cr-2		2.5 Minam N-3		2 Sheep Cr Trib (2nd GR)		2.5 Wenaha-3	2
Catherine Cr-1	2.5	Dry Cr-1 (Five Points)		Grande Ronde-44		1.5 Little Bear Cr-3		Minam-1		3 Sheep Cr-1 (1st GR)		2 Wenaha-4	2
Catherine Cr-2	2.5	Dry Cr-1 (Wallowa)		2.5 Grande Ronde-45		1.5 Little Bear Cr-4		3 Minam-2		3 Sheep Cr-1 (2nd GR)		3 Wenaha-5	2
Catherine Cr-3	2.5	Dry Cr-1 (Willow)		2.5 Grande Ronde-46		1.5 Little Catherine Cr		2 Minam-3		3 Sheep Cr-2 (1st GR)		2 Wenaha-6	2
Catherine Cr-4	2.5	Dry Cr-2 (Five Points)		2.5 Grande Ronde-47		2.5 Little Clear Cr		2 Minam-4		3 Sheep Cr-2 (2nd GR)		2.5 Whiskey Cr MF (Wallowa)	2.5
Catherine Cr-5	2.5	Dry Cr-2 (Wallowa)		2.5 Grande Ronde-48		Grande Ronde-49		2.5 Minam-5		3 Sheep Cr-3 (2nd GR)		2.5 Whiskey Cr NF-1 (Wallowa)	2.5
Catherine Cr-6	2.5	Dry Cr-2 (Willow)		2.5 Grande Ronde-49		2 Grande Ronde-50		2.5 Minam-6		3 Sheep Cr-4 (2nd GR)		2 Whiskey Cr NF-2 (Wallowa)	2.5
Catherine Cr-7	2.5	Dry Cr-3 (Wallowa)		2.5 Grande Ronde-51		1.5 Little Courtney Cr		2.5 Minam-7		3 Shumaker Cr		2.5 Whiskey Cr SF (Wallowa)	2.5
Catherine Cr-8		2 Dry Cr-4 (Wallowa)		2.5 Grande Ronde-52		1.5 Little Cr-1		2.5 Minam-8		3 Sickfoot Cr		2.5 Whiskey Cr-1 (GR)	2.5
Catherine Cr-9		2 Dry Salmon		2.5 Grande Ronde-53		1 Little Elk Cr		2.5 Minam-9		3 Sled Cr-1		2.5 Whiskey Cr-1 (Wallowa)	1.5
Chesnimnus Cr NF	2.5	Duncan Canyon		2.5 Grande Ronde-54		1 Little Fly Cr-1		2 Mottet Cr		2 Sled Cr-2		2.5 Whiskey Cr-2 (GR)	2
Chesnimnus Cr SF	2.5	Eagle Cr		2.5 Grande Ronde-55		1.5 Little Fly Cr-2		1.5 Mt Emily		2 Slick Ear Cr		2 Whiskey Cr-2 (Wallowa)	2.5
Chesnimnus Cr-1	2.5	Elbow Cr		2.5 Grande Ronde-56		1.5 Little Hurricane Cr		2 Mud Cr-1		2.5 Smith Cr		2 Wildcat Cr-1	2.5
Chesnimnus Cr-2	2.5	Elk Cr EF (Minam)		3 Grande Ronde-57		1.5 Little Indian Cr		2.5 Mud Cr-2		2.5 Spring Cr SF (GR)		2 Wildcat Cr-2	2.5
Chesnimnus Cr-3	2.5	Elk Cr-1 (Joseph)		3 Grande Ronde-58		1 Little Lookingglass Cr-1		2 Mud Cr-3		2.5 Spring Cr-1 (GR)		2 Willow Cr-1	2.5
Chesnimnus Cr-4	2.5	Elk Cr-1 (Minam)		3 Grande Ronde-59		3 Little Lookingglass Cr-2		3 Mud Cr-4		2.5 Spring Cr-1 (Wallowa)		1.5 Willow Cr-2	2.5
Chesnimnus Cr-5	2.5	Elk Cr-2 (Joseph)		3 Grande Ronde-60		3 Little Lookingglass Cr-3		3 Mud Cr-5		2.5 Spring Cr-2 (GR)		2 Willow Cr-3	2.5
Chesnimnus Cr-6	2.5	Elk Cr-2 (Minam)		3 Grande Ronde-61		3 Little Lookingglass Cr-4		3 Mud Cr-6		2.5 Spring Cr-2 (Wallowa)		Willow Cr-4	2
Chesnimnus Cr-7	2.5	End Cr		3 Grande Ronde-62		1.5 Little Lookingglass Trib		3 Mud Cr-7		2.5 Spring Cr-3 (Wallowa)		1.5 Willow Cr-5	2

Grande Ronde

Reaches Modeled in EDT

Ratings Defined

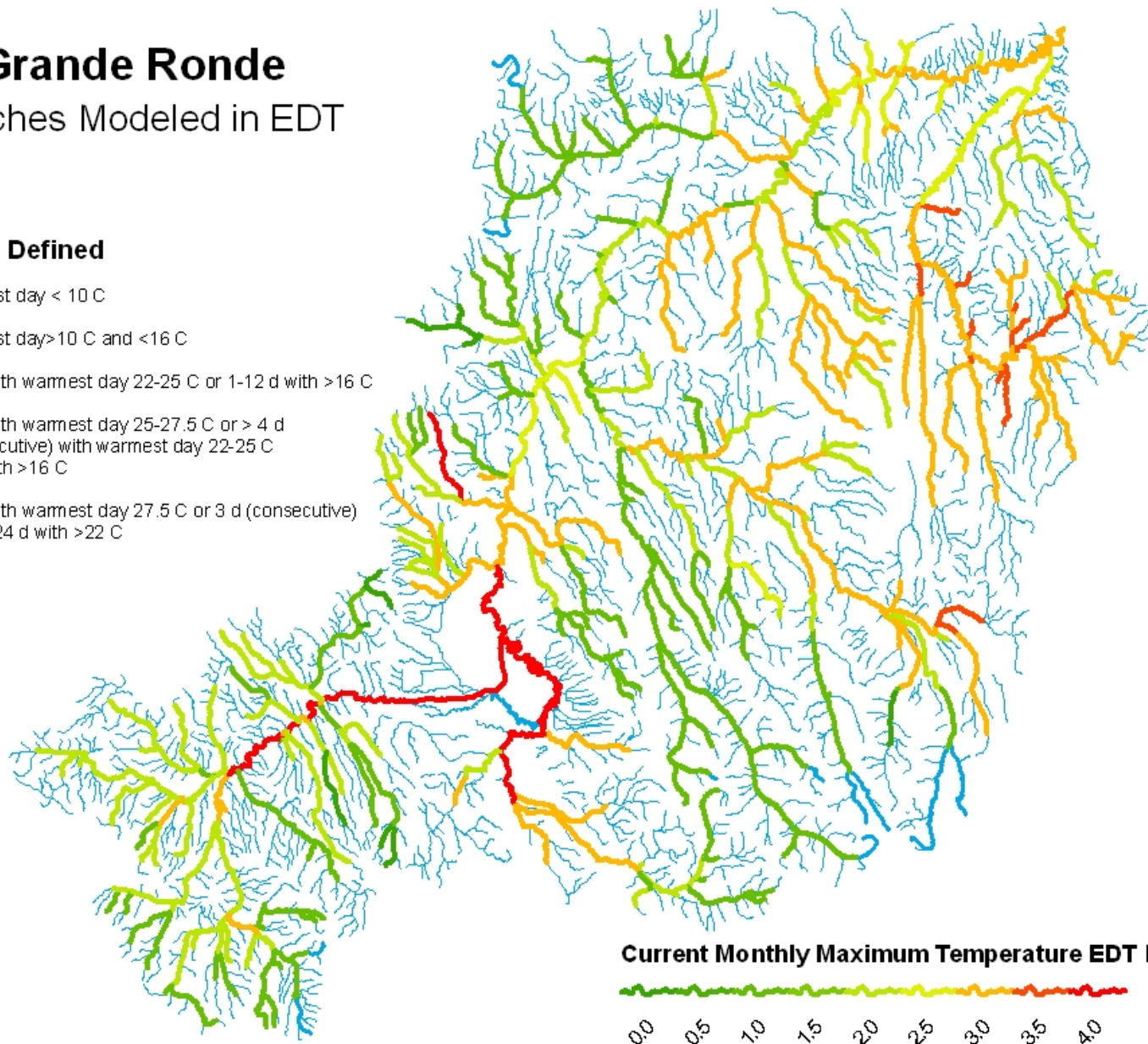
0 = Warmest day < 10 C

1 = Warmest day > 10 C and < 16 C

2 = > 1 d with warmest day 22-25 C or 1-12 d with > 16 C

3 = > 1 d with warmest day 25-27.5 C or > 4 d (non-consecutive) with warmest day 22-25 C or > 12 d with > 16 C

4 = > 1 d with warmest day 27.5 C or 3 d (consecutive) > 25 C or > 24 d with > 22 C



Current Monthly Maximum Temperature EDT Ratings

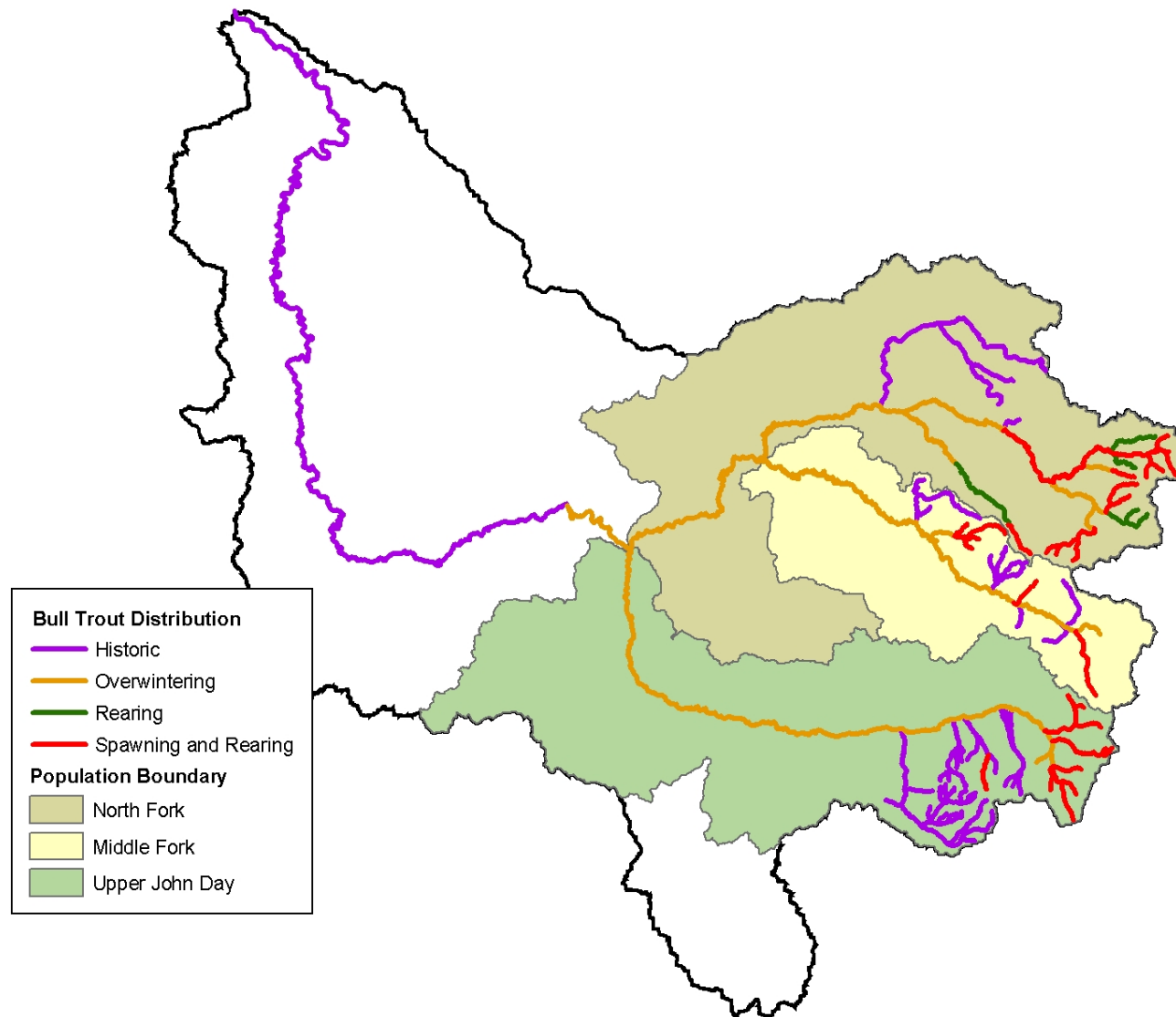




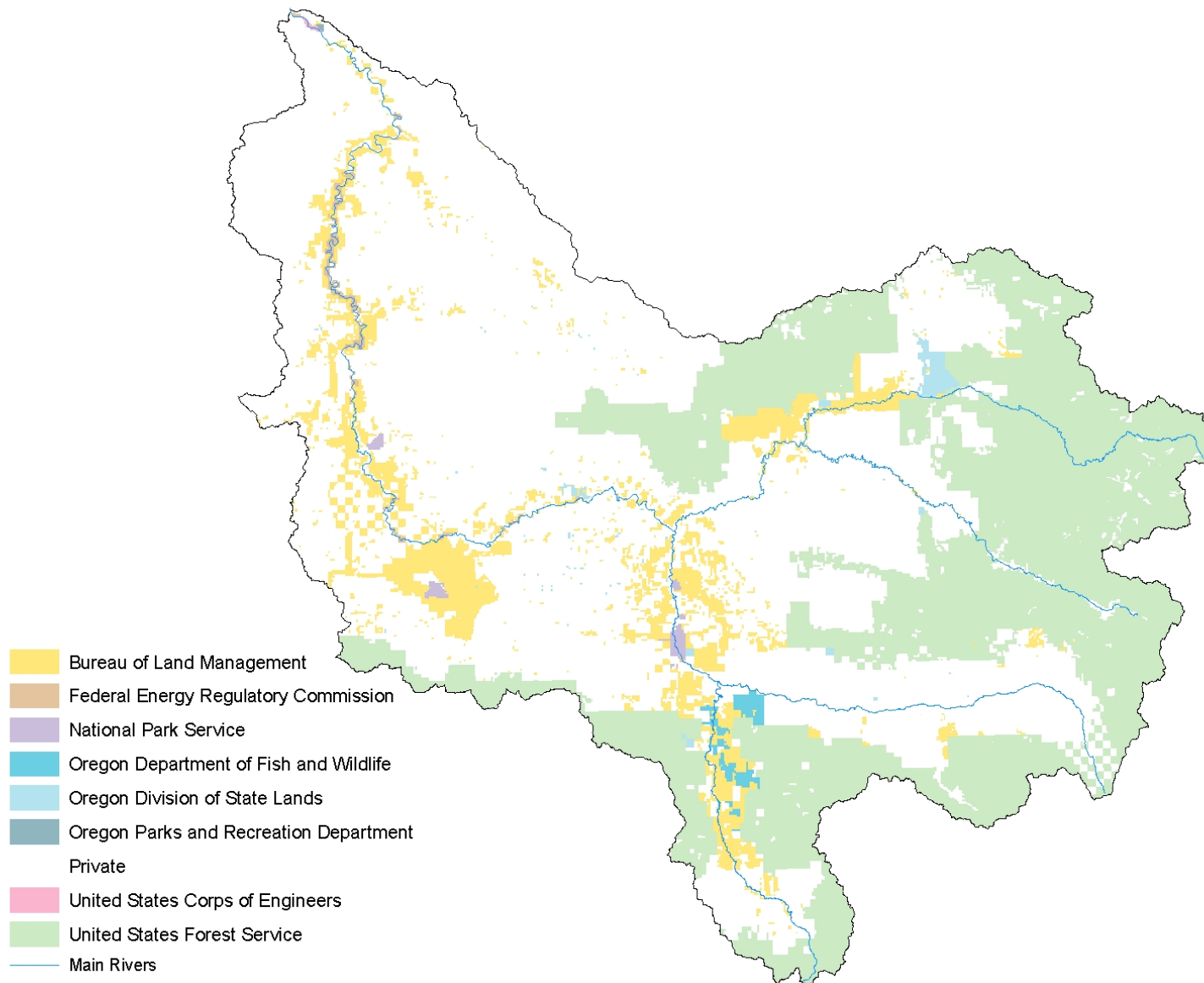
So What's It Good For?

- Scaling in a landscape – imagine if everyone had spatial data and shared them.
- Landscape patterns– patterns in a table, patterns on a map, explore the reasons.
- Discovered uses. Data collected for one reason can be used for another.

Bull Trout Distribution

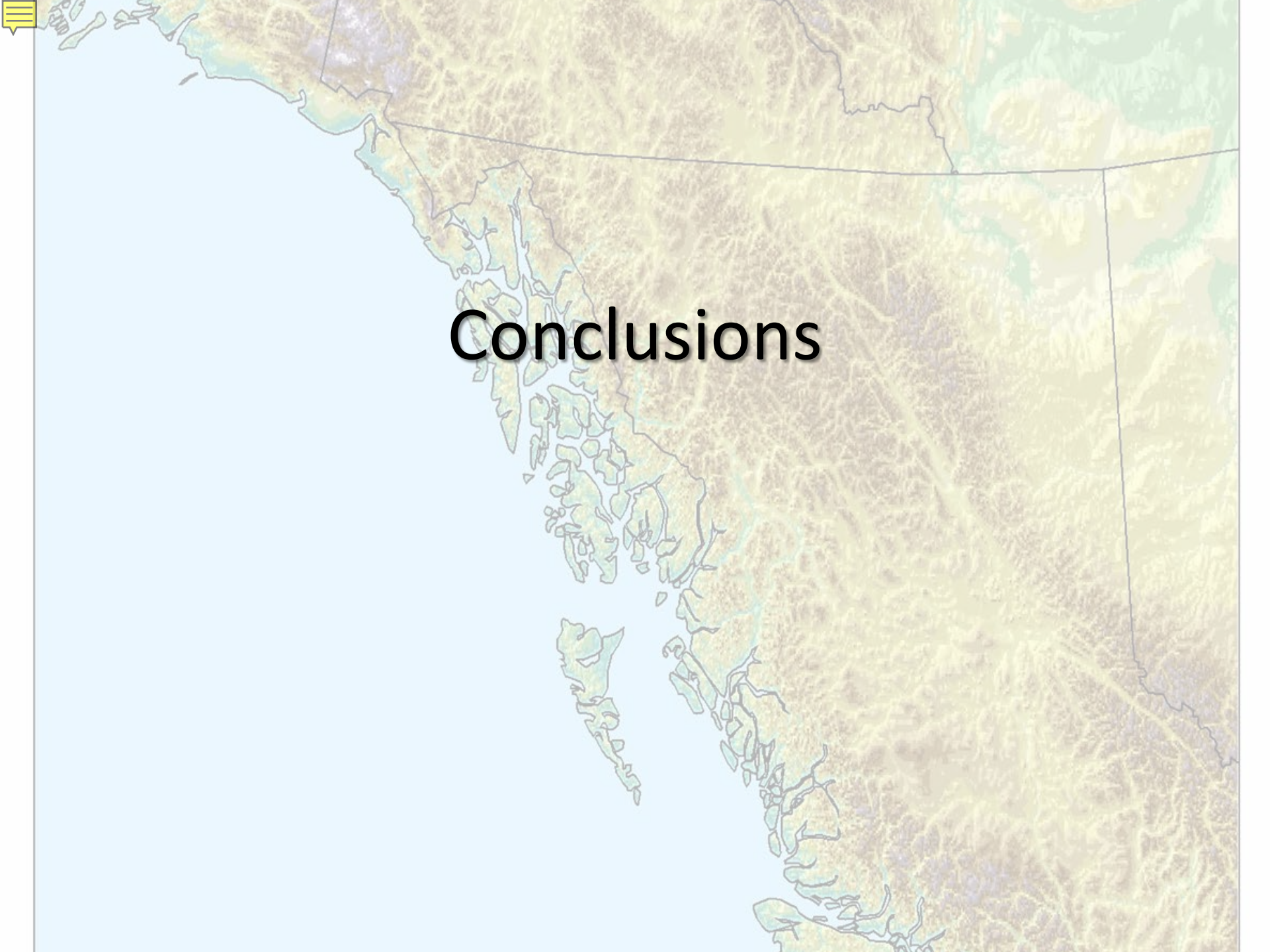


Distribution of Landownership



Results for North Fork Population

	Landowner	%	Length (miles)
Over-wintering	Private	41.46%	43.42
	BLM	26.15%	27.39
	USFS	28.48%	29.83
	ODSL	3.37%	3.53
	FERC	0.55%	0.58
	Total		104.74
Rearing	USFS	94.75%	31.06
	Private	5.25%	1.72
	Total		32.78
Spawning & Rearing	USFS	96.07%	72.55
	Private	3.93%	2.96
	Total		75.52

A topographic map of the Pacific Northwest coast of the United States, showing the coastline from Alaska down to the Oregon-California border. The map uses a color gradient to represent elevation, with greens and blues for lower elevations and browns and yellows for higher elevations. The word "Conclusions" is centered over the map.

Conclusions

A topographic map of the Pacific Northwest region of the United States, showing the coastline of Washington, Oregon, and California. The map uses color to represent elevation, with greens and blues for lower elevations and browns and yellows for higher elevations. The text 'Conclusions' is overlaid on the map.

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- **Maps, maps, maps. If a picture says a 1000 words, then a map (picture + data) > 1000 words.**

Make the most of your research
and project data by collecting
better information on
locations.

Any Questions?

