Lower Columbia Fish Recovery Board
Presentation

Overview of the Salmon Recovery Regions

For FBRB Members

SEPTEMBER 16, 2014

Washington Department of
FISH and WILDLIFE

WA Salmon Recovery Regional Organizations

State Salmon Barrier Committee

September 16, 2014

Who we are?
What we do?
How can we help?

PugetSoundPartnership
LEADING PUGET SOUND RECOVERY


Snake River Salmon Recovery
YAKIMA BASIN FISH AND WILDLIFE RECOVERY BOARD

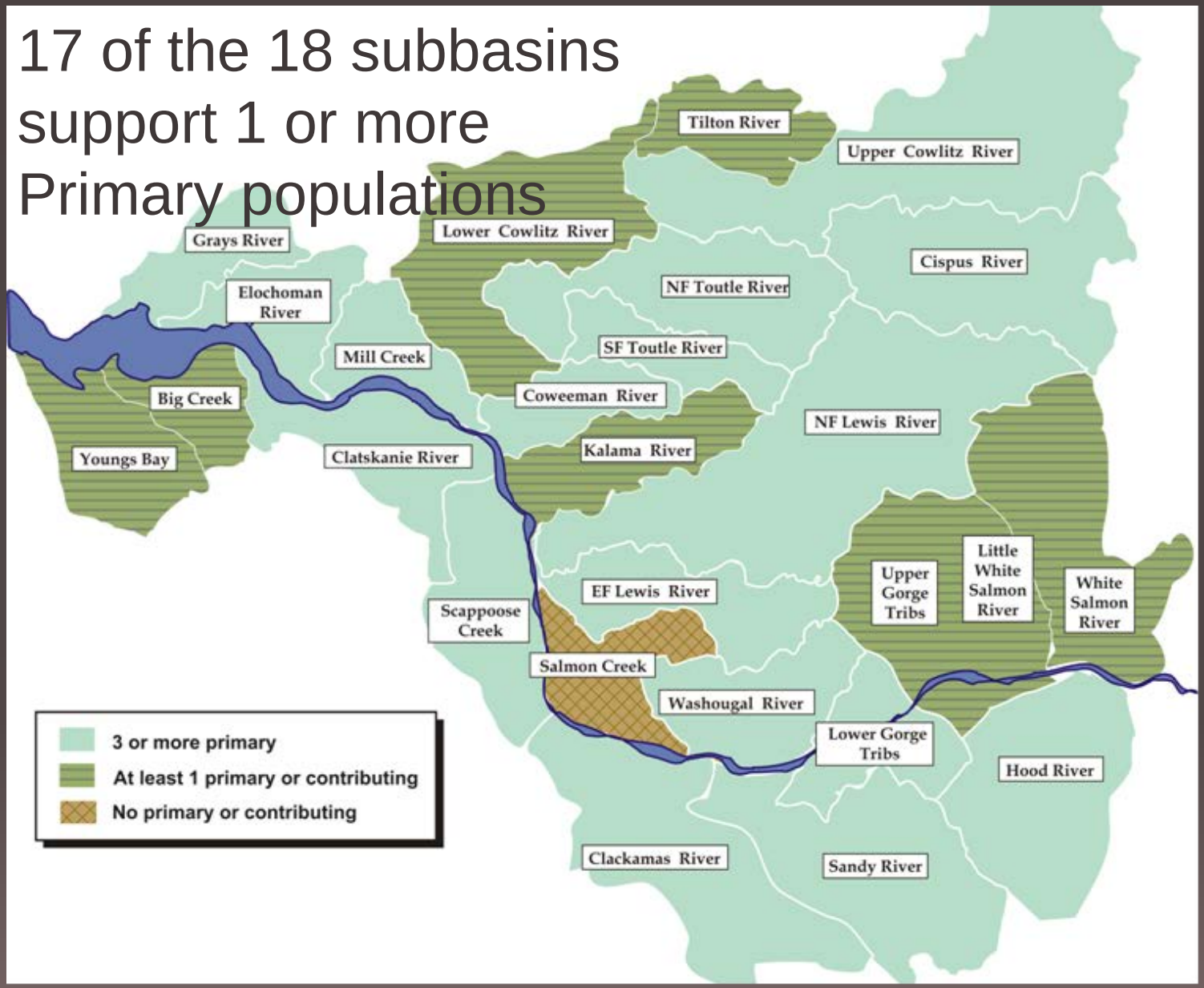

Regional Organizations

- Develop recovery plans to restore salmon, steelhead and bull trout to healthy harvestable levels
- Facilitate recovery plan implementation through federal, state and local partnerships
- Guide recovery investments
- Monitor progress
- Build public awareness and support

WA Salmon Recovery Facts

- Over 20,000 anadromous tributary and marine shore miles
- 224 distinct populations of Chinook, chum, steelhead, bull trout and sockeye listed as either Threatened or Endangered throughout the state
- Restoring habitat in 55 of the 64 WRIAs throughout the state

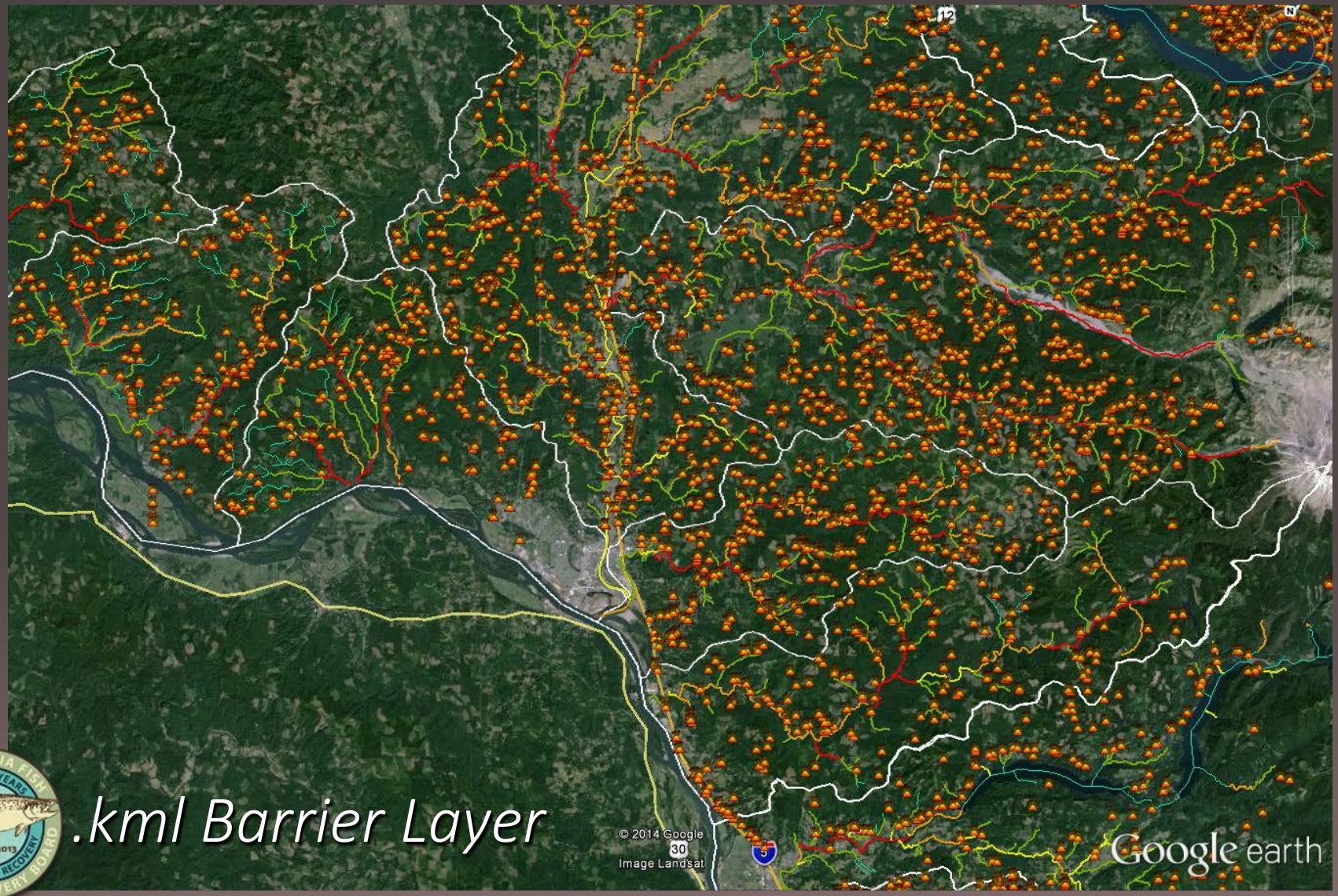
17 of the 18 subbasins support 1 or more Primary populations



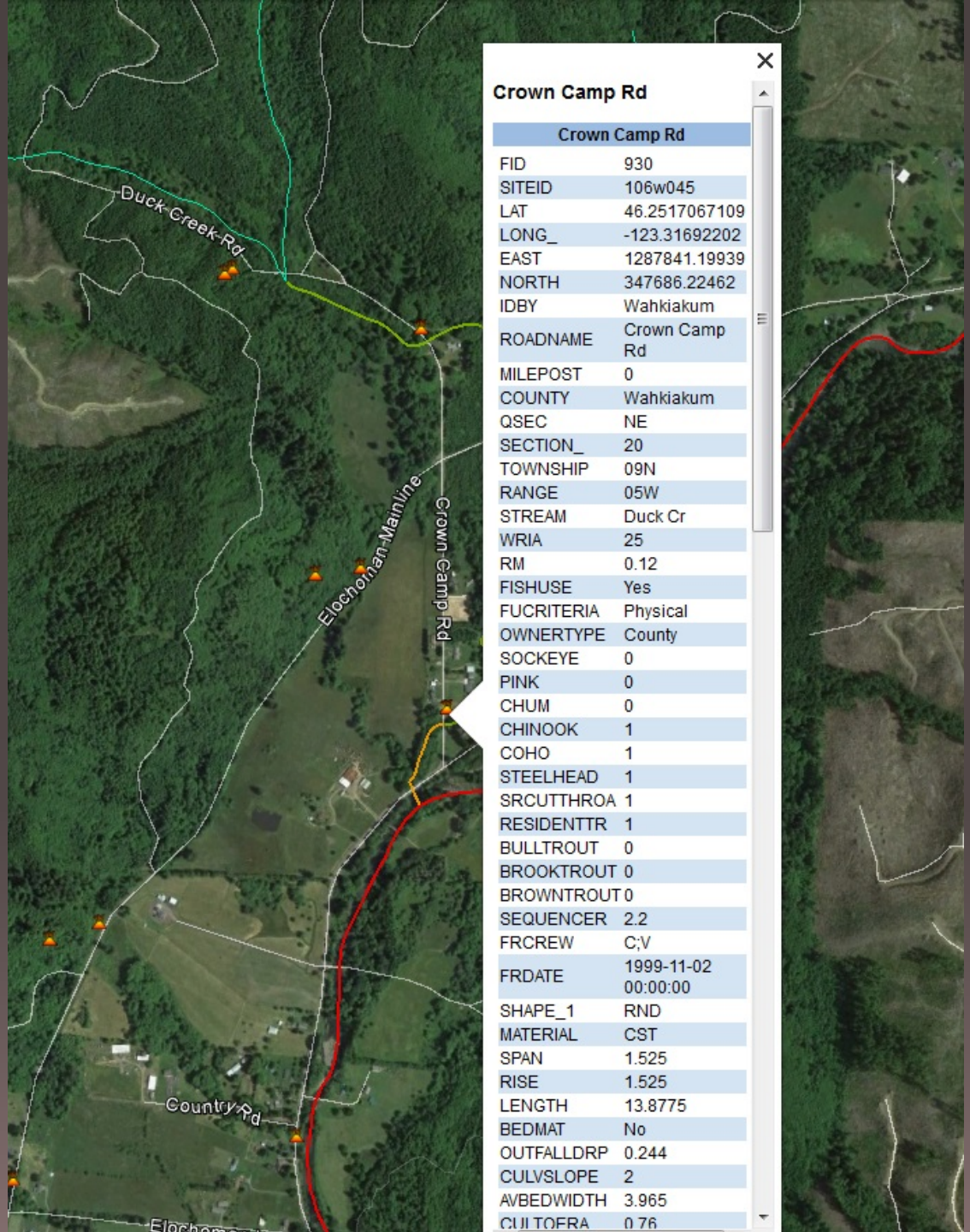
The Recovery Plan estimates that more than 50% of the habitat has been lost

Spring Chinook	↓75%
Fall Chinook	↓30-90%
Chum	↓95%
Coho	↓40-95%
Steelhead	↓40-90%

LCFRB Regional Culvert Inventory and Tidegate Assessment



Culvert data



Crown Camp Rd	
FID	930
SITEID	106w045
LAT	46.2517067109
LONG_	-123.31692202
EAST	1287841.19939
NORTH	347686.22462
IDBY	Wahkiakum
ROADNAME	Crown Camp Rd
MILEPOST	0
COUNTY	Wahkiakum
QSEC	NE
SECTION_	20
TOWNSHIP	09N
RANGE	05W
STREAM	Duck Cr
WRIA	25
RM	0.12
FISHUSE	Yes
FUCRITERIA	Physical
OWNERTYPE	County
SOCKEYE	0
PINK	0
CHUM	0
CHINOOK	1
COHO	1
STEELHEAD	1
SRCUTTHROA	1
RESIDENTTR	1
BULLTROUT	0
BROOKTROUT	0
BROWNTROUT	0
SEQUENCER	2.2
FRCREW	C;V
FRDATE	1999-11-02 00:00:00
SHAPE_1	RND
MATERIAL	CST
SPAN	1.525
RISE	1.525
LENGTH	13.8775
BEDMAT	No
OUTFALLDRP	0.244
CULVSLOPE	2
AVBEDWIDTH	3.965
CULTOERA	0.76

www.lowercolumbiasalmonrecovery.org

LOWER COLUMBIA FISH RECOVERY BOARD

Map | Project Tracking | Program Tracking | Plan Actions | Partners | Library | LCFRB | Contact Us

SALMONPORT

Welcome to the LCFRB's Online Habitat Strategy & Project Tracking System!

Lower Columbia salmon, steelhead, and bull trout are threatened to become extinct! Resourceful and creative solutions are needed to recover these important salmon runs. In response to this crisis the Washington Legislature created the Lower Columbia Fish Recovery Board to coordinate efforts in Southwest Washington to help reverse the declining trend. Our goal is to –

- Recover salmon, steelhead and bull trout to healthy, harvestable levels that will sustain sport, commercial, and tribal fishing;
- Restore the region's rivers and streams to support spawning, rearing and migrating fish by strategically implementing habitat protection and restoration projects; and
- Support programs that improve local land use measures, hydro-power and hatchery operations and harvest practices.

SalmonPORT is our way of tracking progress. For more than a decade our partners have been engaged in projects and programs that address more than 350 actions listed in the NOAA adopted recovery plan.

Project Tracking

Plan Actions

Program Tracking

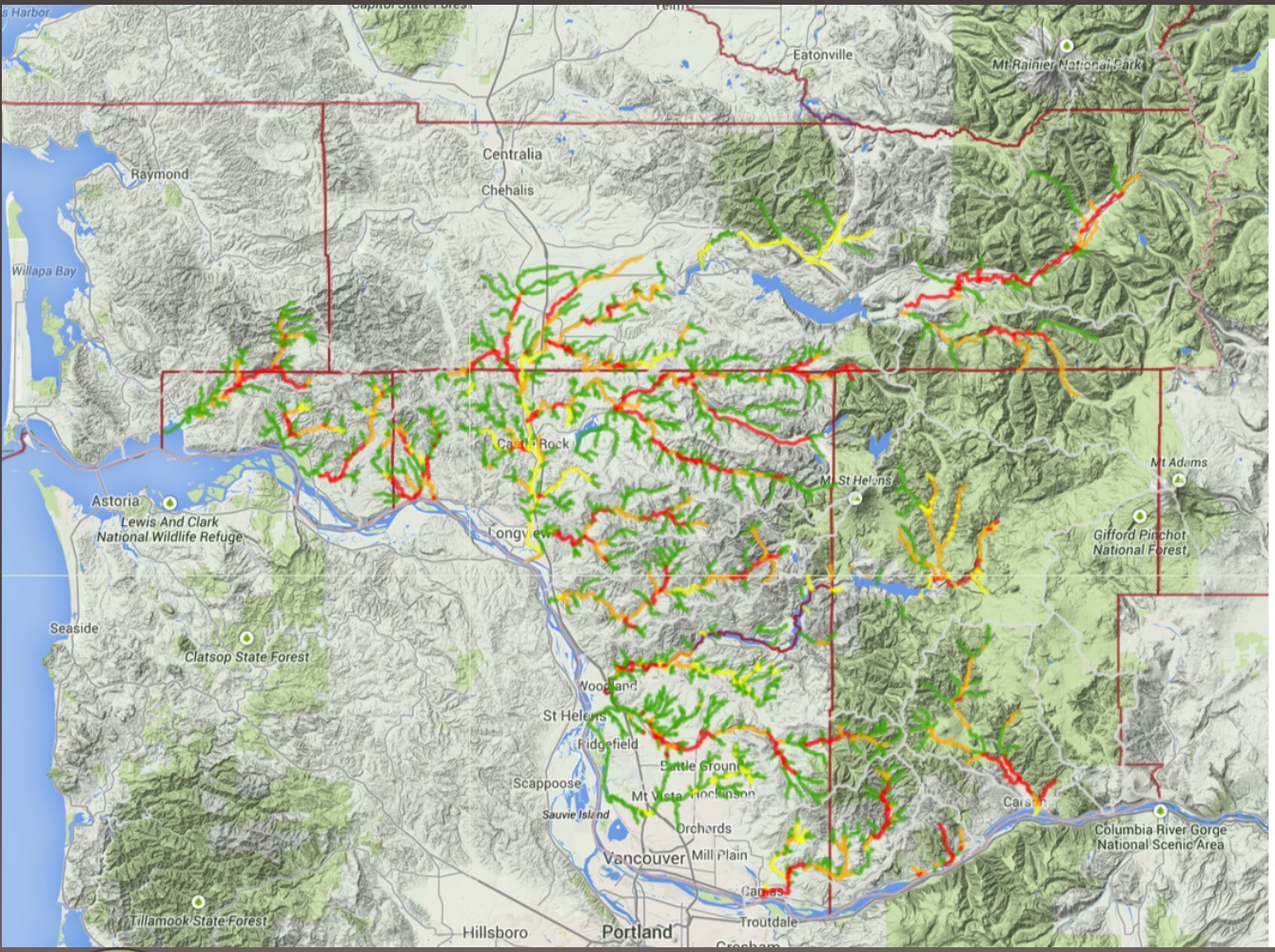
Habitat Strategy Google Maps

Habitat Strategy Google Earth

Photography © Steve & Cindy Manlow

SALMON PARTNERS ONGOING RECOVERY TRACKING

SalmonPORT Reach Prioritization



Layers **Glossary** Documents

WRIA - Water Resource Inventory Area

Strata - Designated Population Segments

- **Coast:** Estuary tributaries, Grays, Elochoman, Skamokawa, Abernathy, Mill, Germany
- **Cascade:** Lower Cowlitz, Upper Cowlitz, Upper Cowlitz-Cispus, Upper Cowlitz-Tilton, Toutle, Coweeman, Kalama, NF Lewis, EF Lewis, Salmon, Washougal
- **Gorge:** Lower Gorge Tributaries, Wind, Little White Salmon, Upper Gorge Tributaries, Big White Salmon

Population Classification

Class	Viability Goal	Description	Persistence Probability
P Primary	High & Very High	Low or negligible risk of extinction (represents a "viable" level)	95-99%
C Contributing	Medium	Medium risk of extinction	75-94%
S Stabilizing	Low	Stable, but relatively high risk of extinction	40-74%

Reach Tier Designations

- Tier 1 — All high priority reaches for one or more Primary populations.
- Tier 2 — All reaches not included in Tier 1 and which are Medium priority reaches for one or more Primary population and/or all high priority reaches for one or more Contributing populations.
- Tier 3 — All reaches not included in Tiers 1 and 2 and which are Medium priority reaches for Contributing populations and/or high priority reaches for Stabilizing populations.
- Tier 4 — Reaches not included in Tiers 1, 2, and 3 and which are Medium priority reaches for Stabilizing populations and/or low priority reaches for all populations.
- Estuary Reaches — Lower Columbia Mainstem and Estuary and tidally influenced tributary reaches may also benefit other Columbia River populations.

UPPER COWLITZ-1A

(Reach Information)

Tier: 1

Reach Length: 39593 ft.

Multi-Species Values
Restoration: 39%
Preservation: 61%

Description:

Species^	Designation	Reach Potential
Coho	Primary	H
Fall Chinook	Stabilizing	H
Spring Chinook	Primary	M
Winter Steelhead	Primary	L

Restoration Needs	Multi-Species Priority *
Floodplain function and channel migration processes	H
Off channel & side channel habitat	H
Riparian conditions & functions	H
Stream channel habitat structure & bank stability	H
Watershed conditions & hillslope processes	H
Instream flows	M
Access to blocked habitats	L
Regulated stream management for habitat functions	L
Water quality	L

Note: *Multi-Species Priority are derived from conditions of limiting factors and not from field observatio
^Species without a reach potential are present in the subbasin not in the reach

UPPER COWLITZ-1A

Upper Cowlitz Fall Chinook (Stabilizing)
Tier: 1

Primary limiting factors for Fall Chinook in Reach UPPER COWLITZ-1A:
Sediment
Channel Stability
Key Habitat Quantity

Top 5 Ranked Life Stages:	Primary Limiting Factors (in order of importance to life stage):
Egg Incubation	Sediment, Channel Stability
0-Age Transient Rearing	Key Habitat Quantity
Fry Colonization	Key Habitat Quantity
Prespawn Holding	
Prespawn Migrant	


Northeast Washington
Upper Columbia River
Puget Sound
Hood Canal
Columbia River
Pacific Ocean
Washington Coastal
Snake River
Middle Columbia River
Lower Columbia River
Snake River
Columbia River

How can we help?

Regional organizations are:

-Available to provide data on their recovery priorities and barrier removal

-Interested in partnering with you ensure recovery goals and priorities are a part of your decision making

-Offer a link to local governments, organizations, and landowners

Washington Department of Fish and Wildlife Presentation

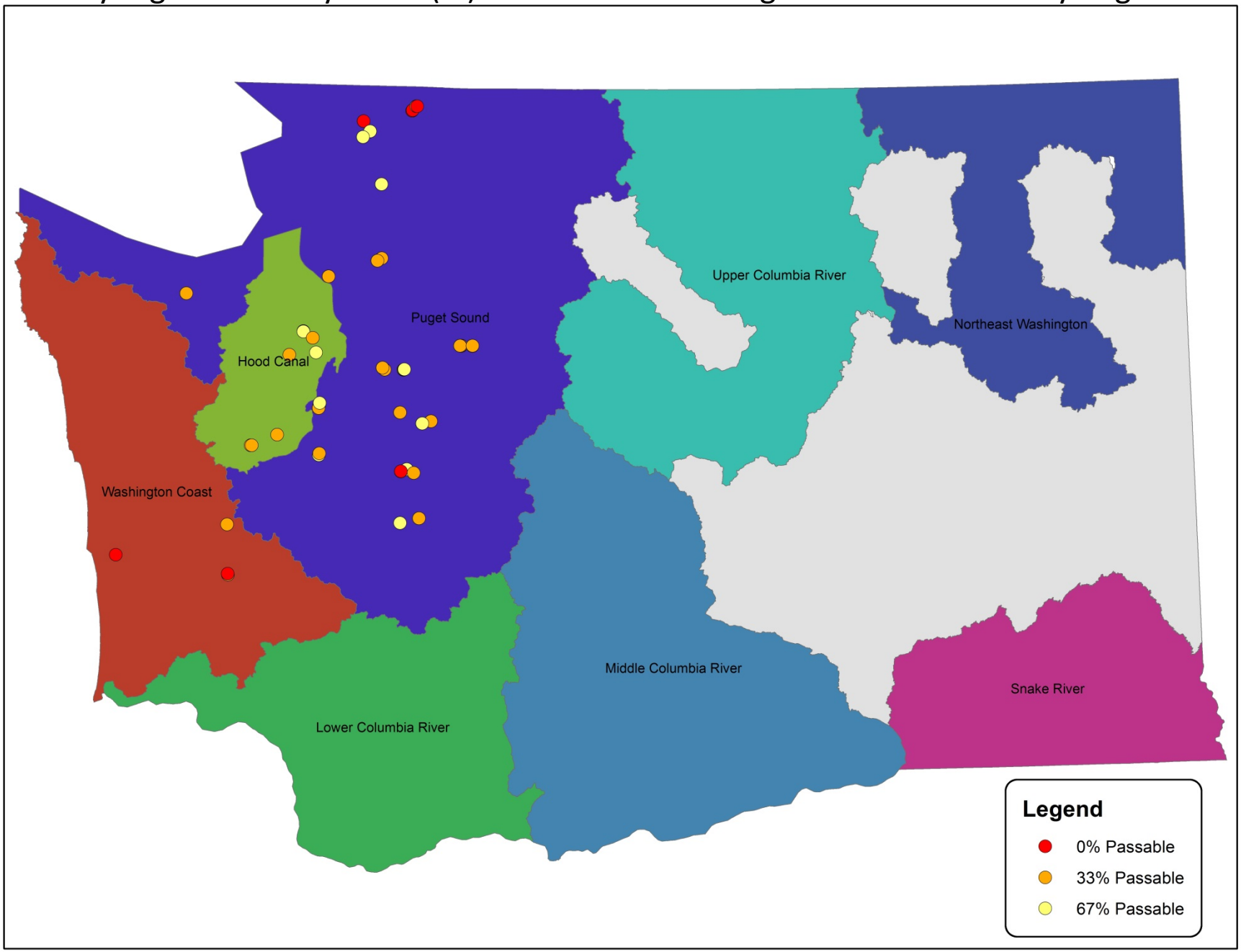
Example: Barriers by Priority Index in Salmon Recovery Regions

For FBRB Members

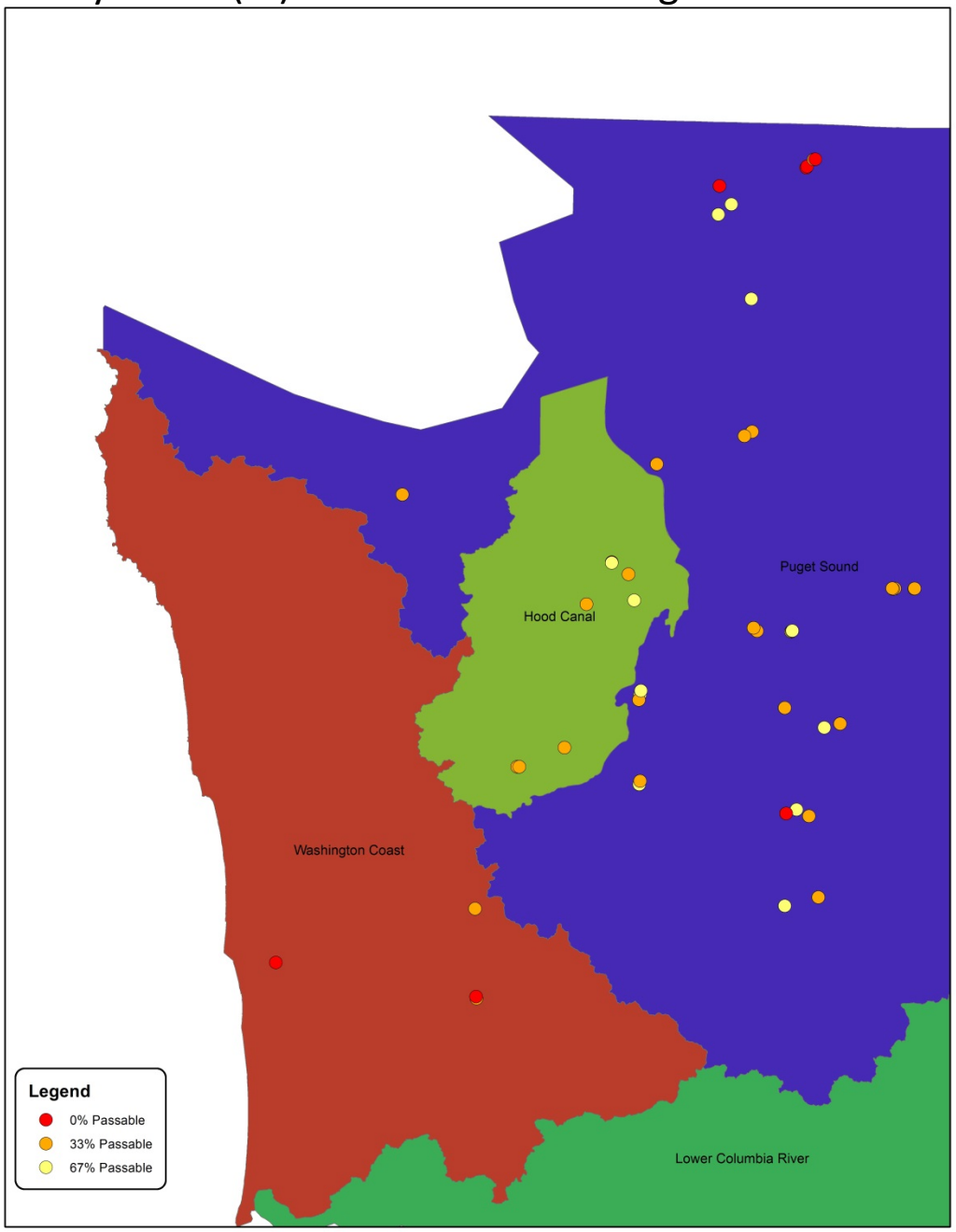
SEPTEMBER 16, 2014

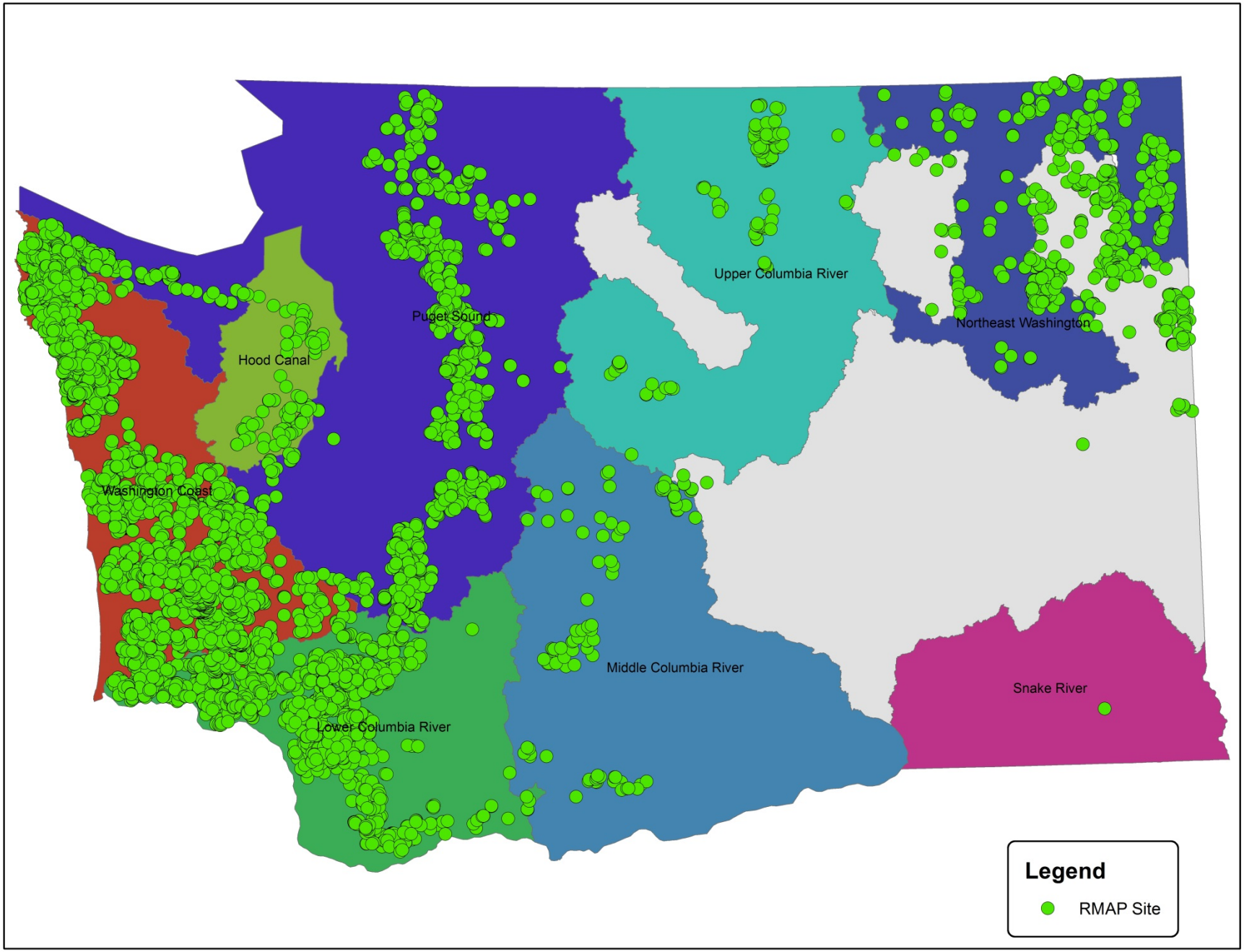
Washington Department of
FISH and WILDLIFE

Fifty Highest Priority Index (PI) Numbers in Washington Salmon Recovery Regions



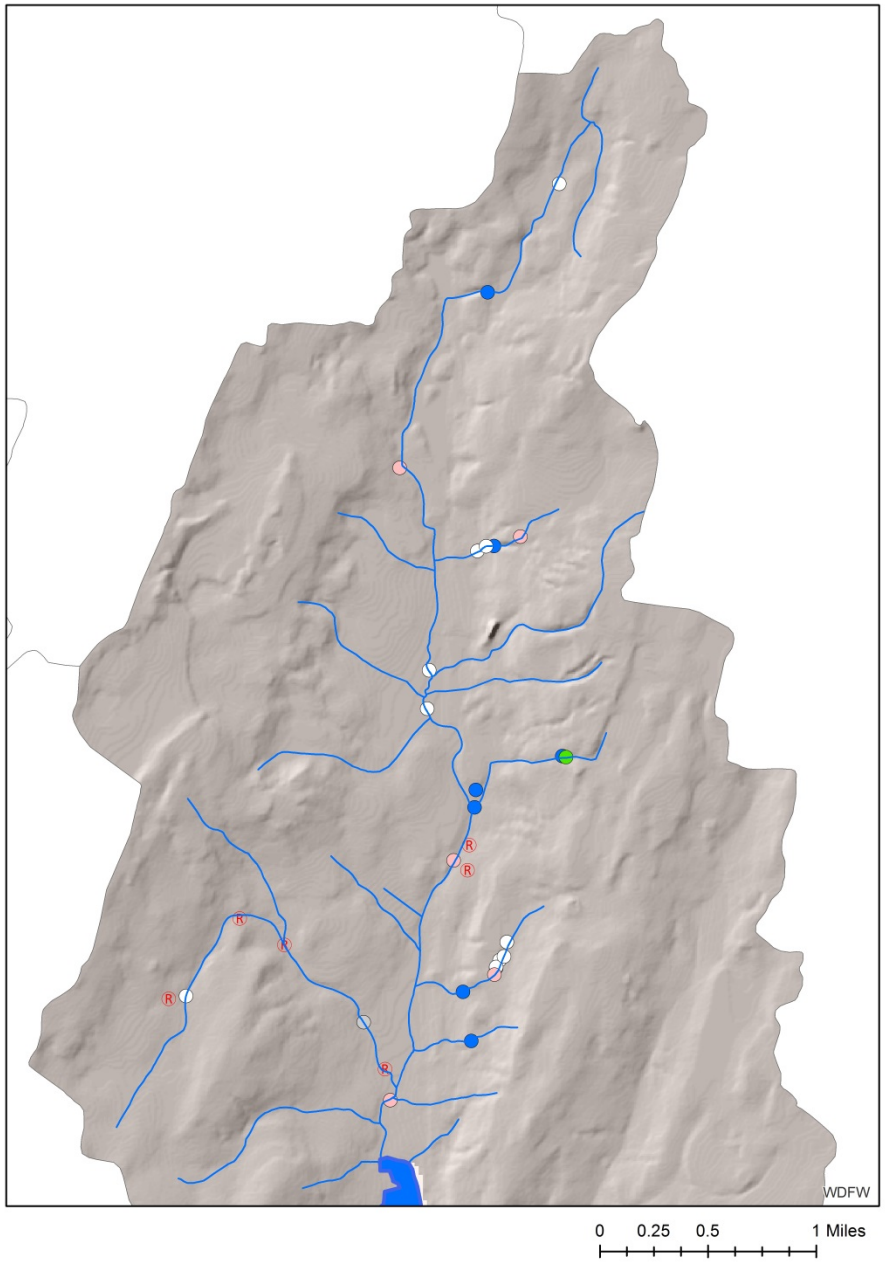
Fifty Highest Priority Index (PI) Numbers in Washington Salmon Recovery Regions



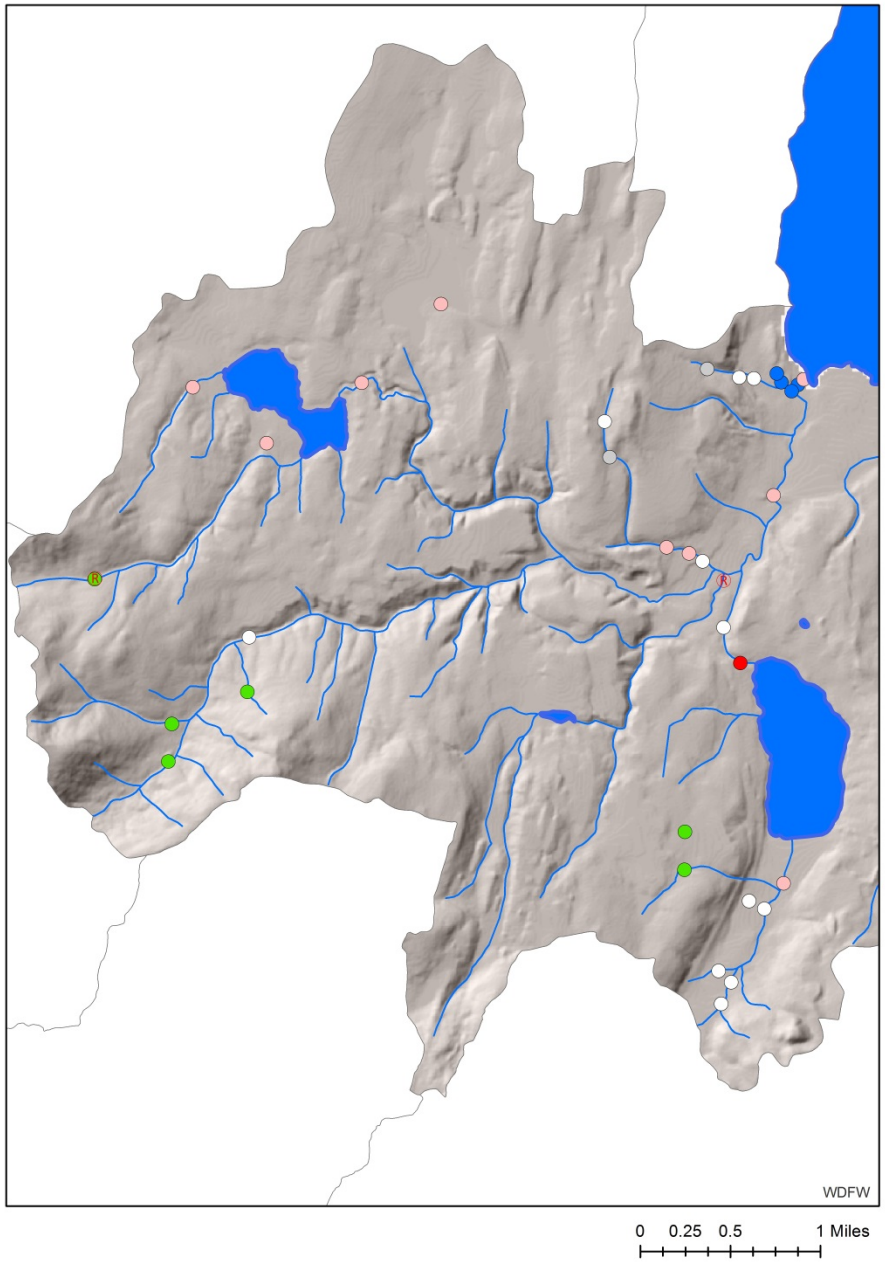

Upper Columbia River
Northeast Washington
Puget Sound
Hood Canal
Washington Coast
Middle Columbia River
Snake River
Lower Columbia River
Legend
RMAP Site

Recovery Region	Count of RMAP Points	% of RMAP Points	RMAP Site Density (sites per square mile)
Hood Canal	96	1.63	0.05026188
Lower Columbia River	1172	19.93	0.204023621
Middle Columbia River	100	1.7	0.010815396
No Region	274	4.66	0.018164976
Northeast Washington	327	5.56	0.061253453
Puget Sound	1065	18.11	0.072673273
Snake River	1	0.02	0.000227711
Upper Columbia River	102	1.73	0.012569949
Washington Coast	2745	46.67	0.443678372
Total	**5882**		

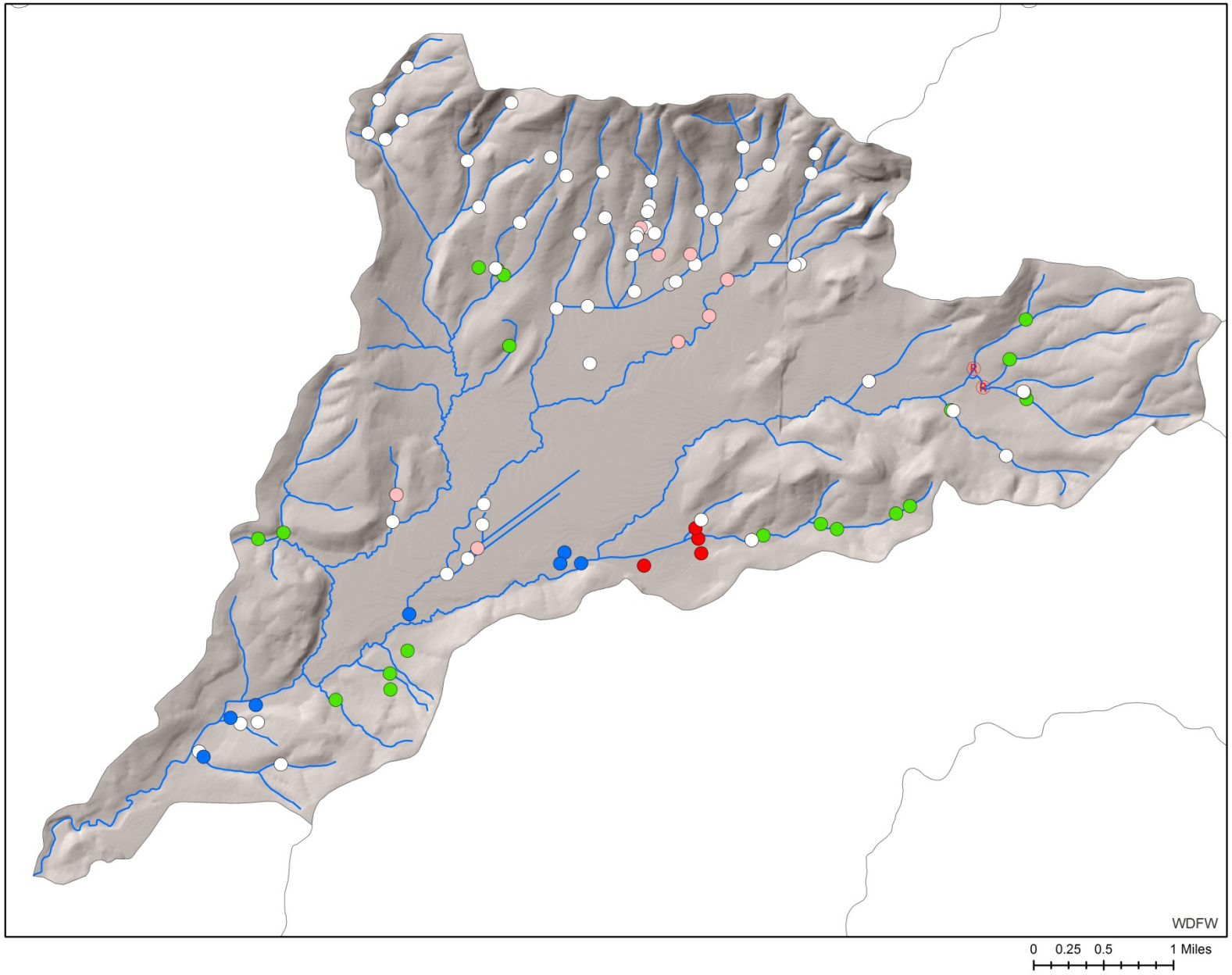
Burley Creek



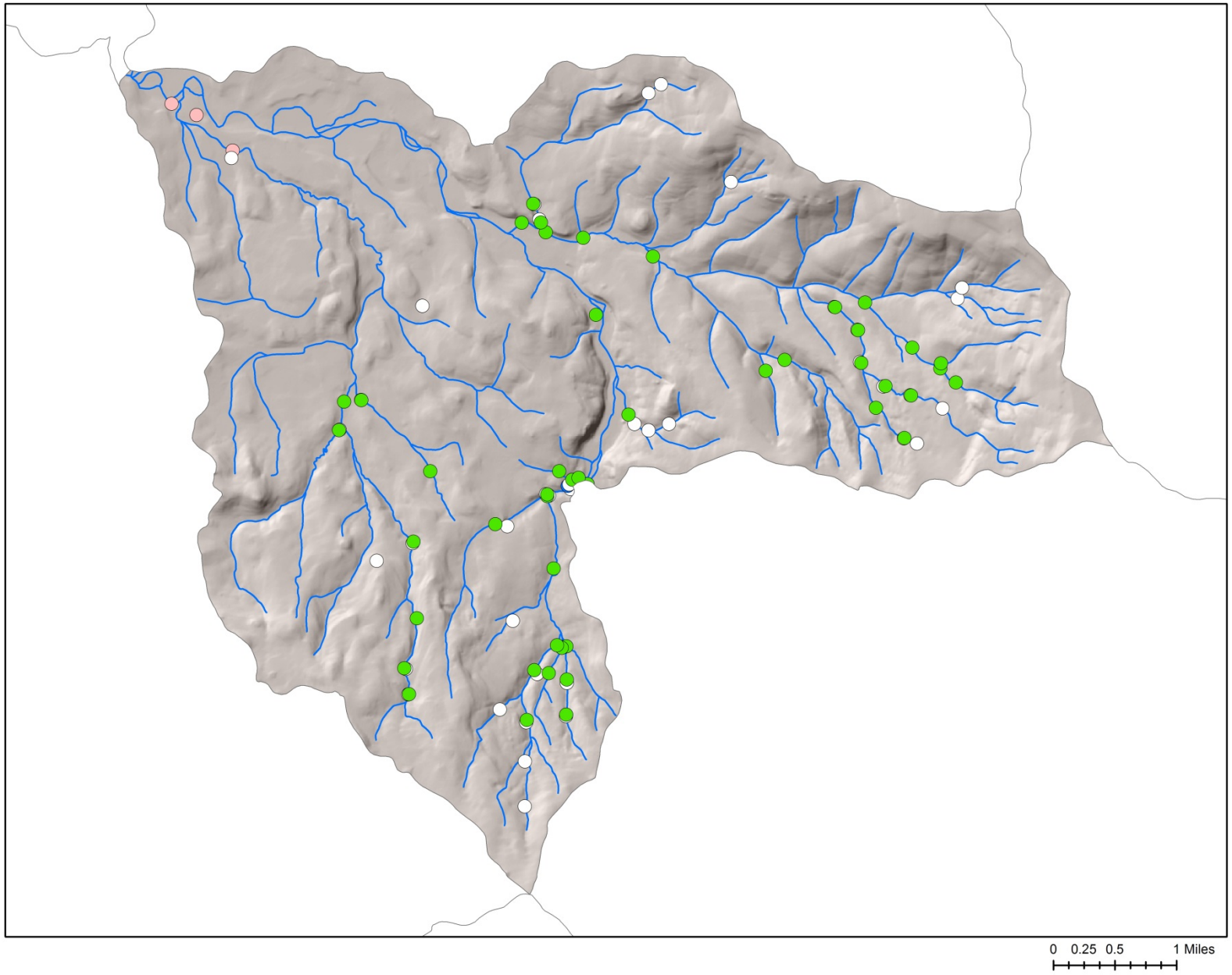
Chico Creek



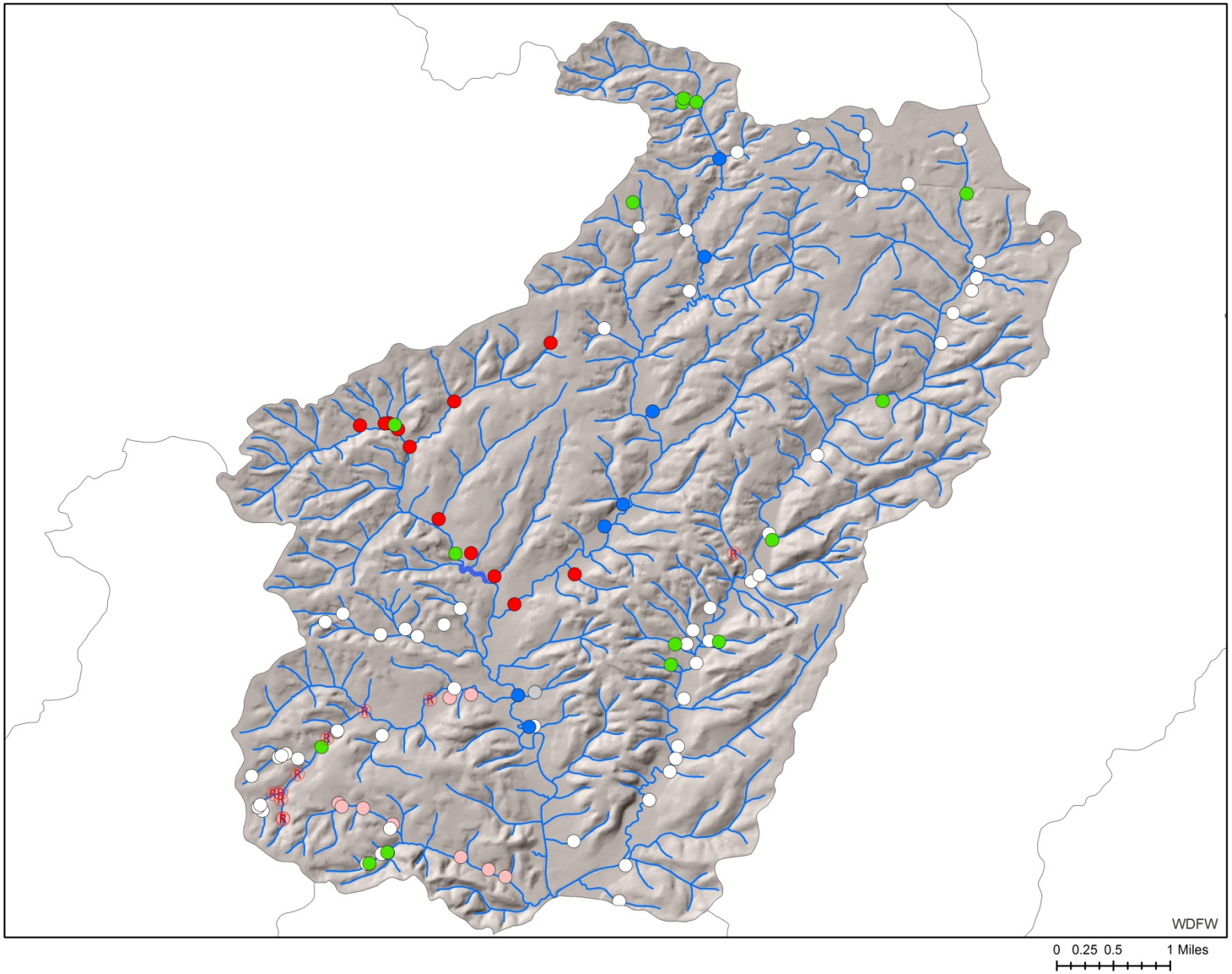
Wildcat Creek



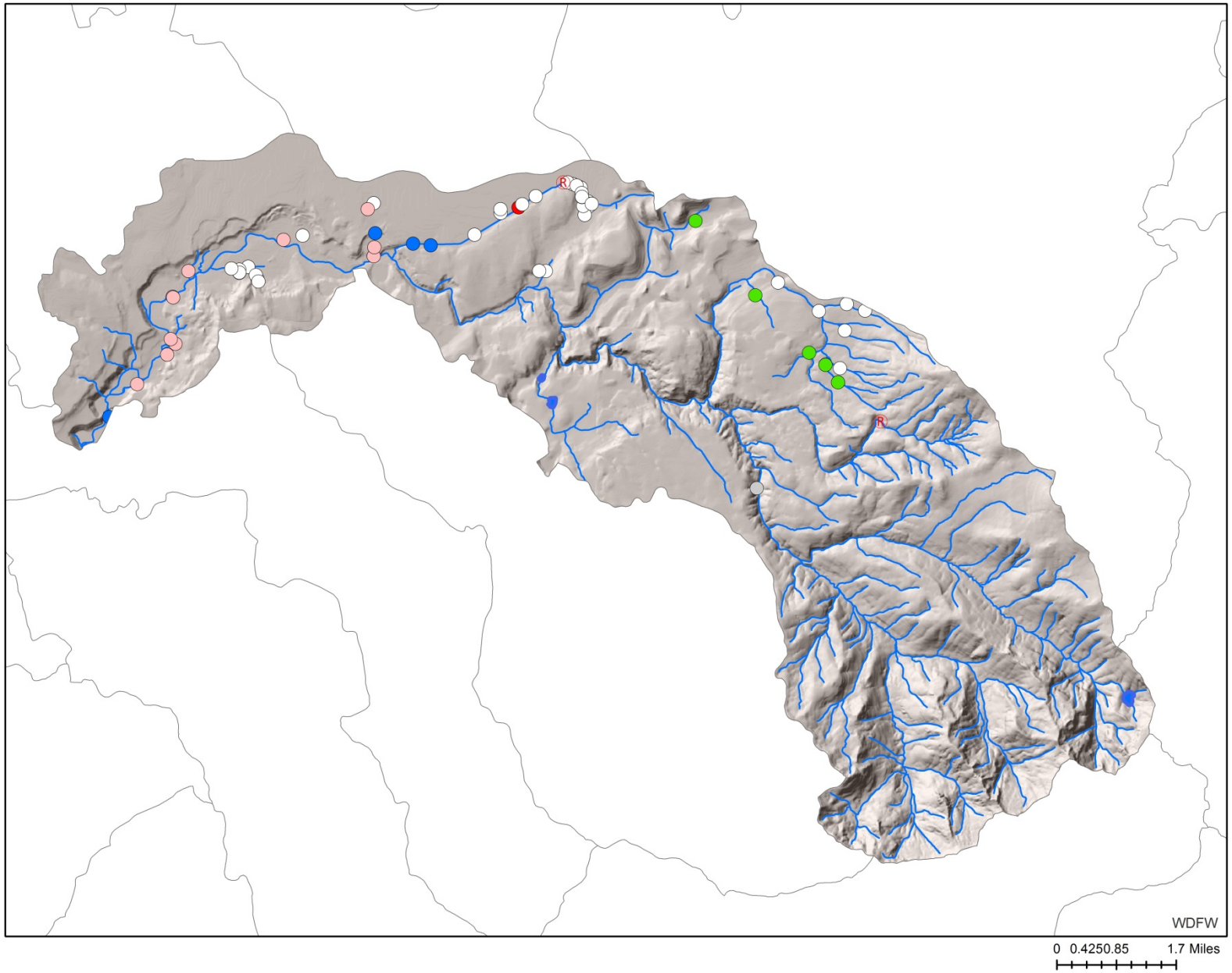
Studebaker Creek



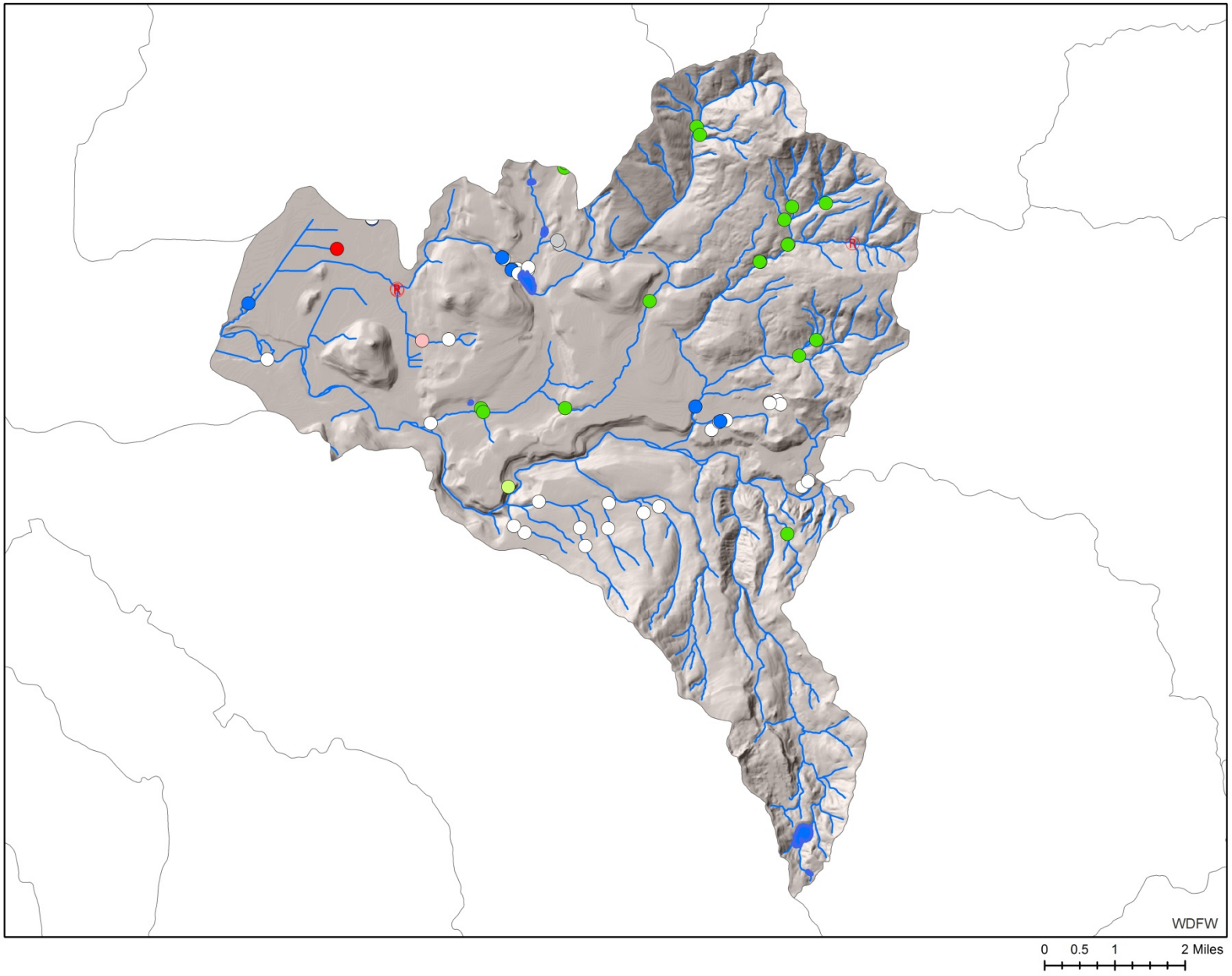
West Fork Hoquiam River



South Prairie Creek



Boise Creek



Washington Department of Fish and Wildlife Presentation

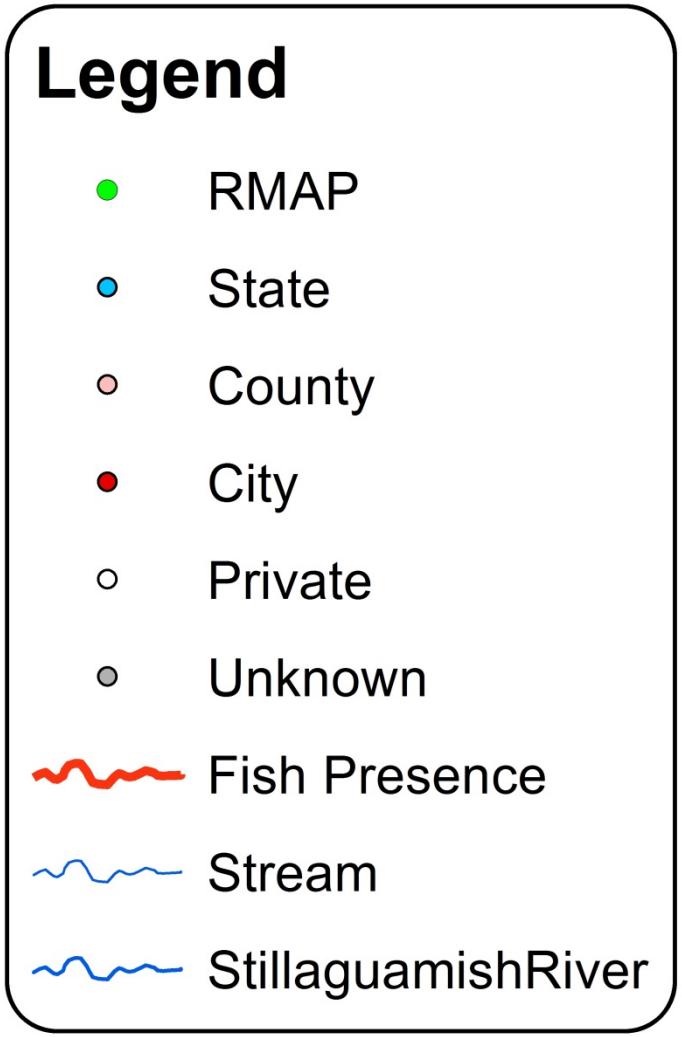
Example: Barriers by WRIA and HUC12 in Salmon Recovery Regions

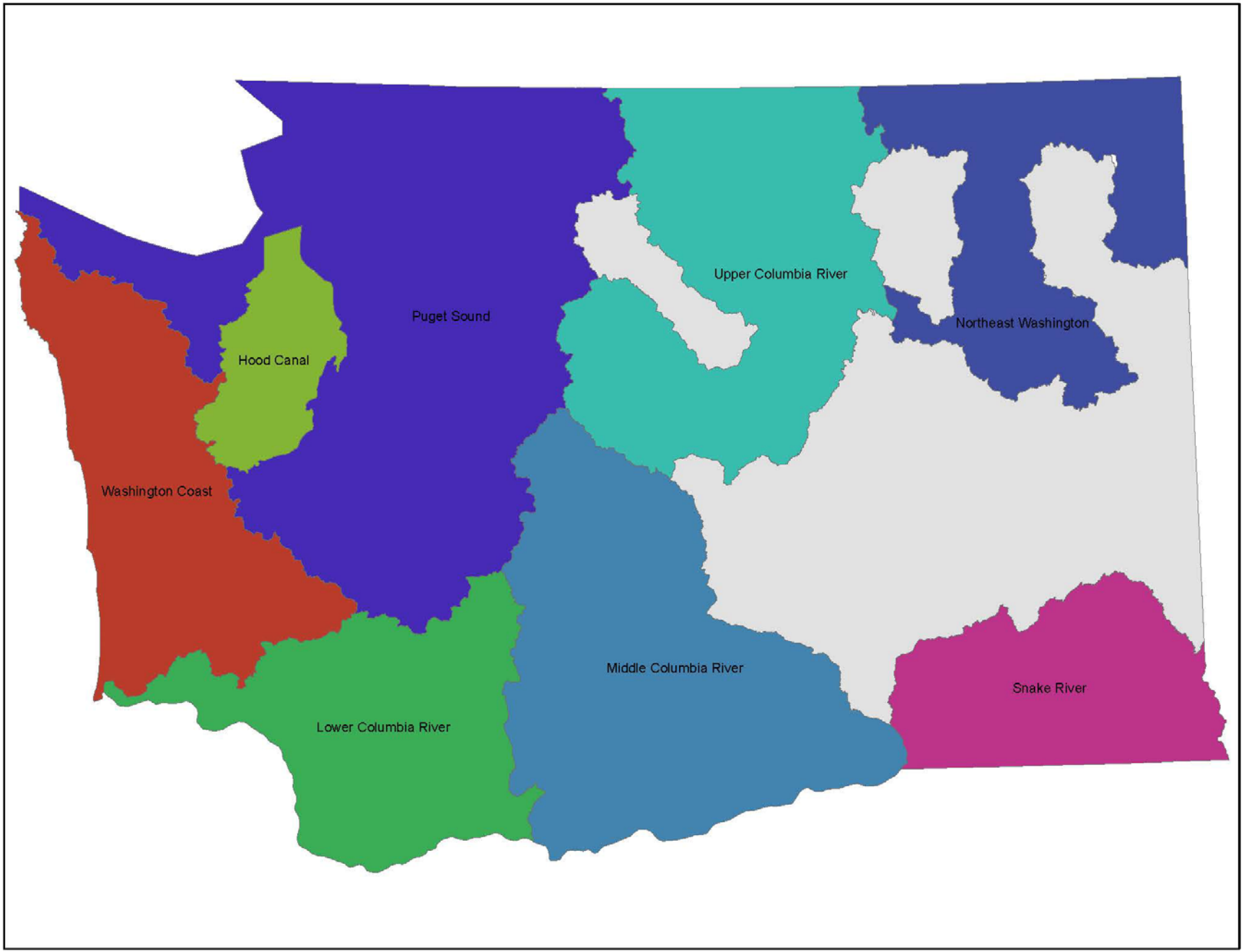
For FBRB Members

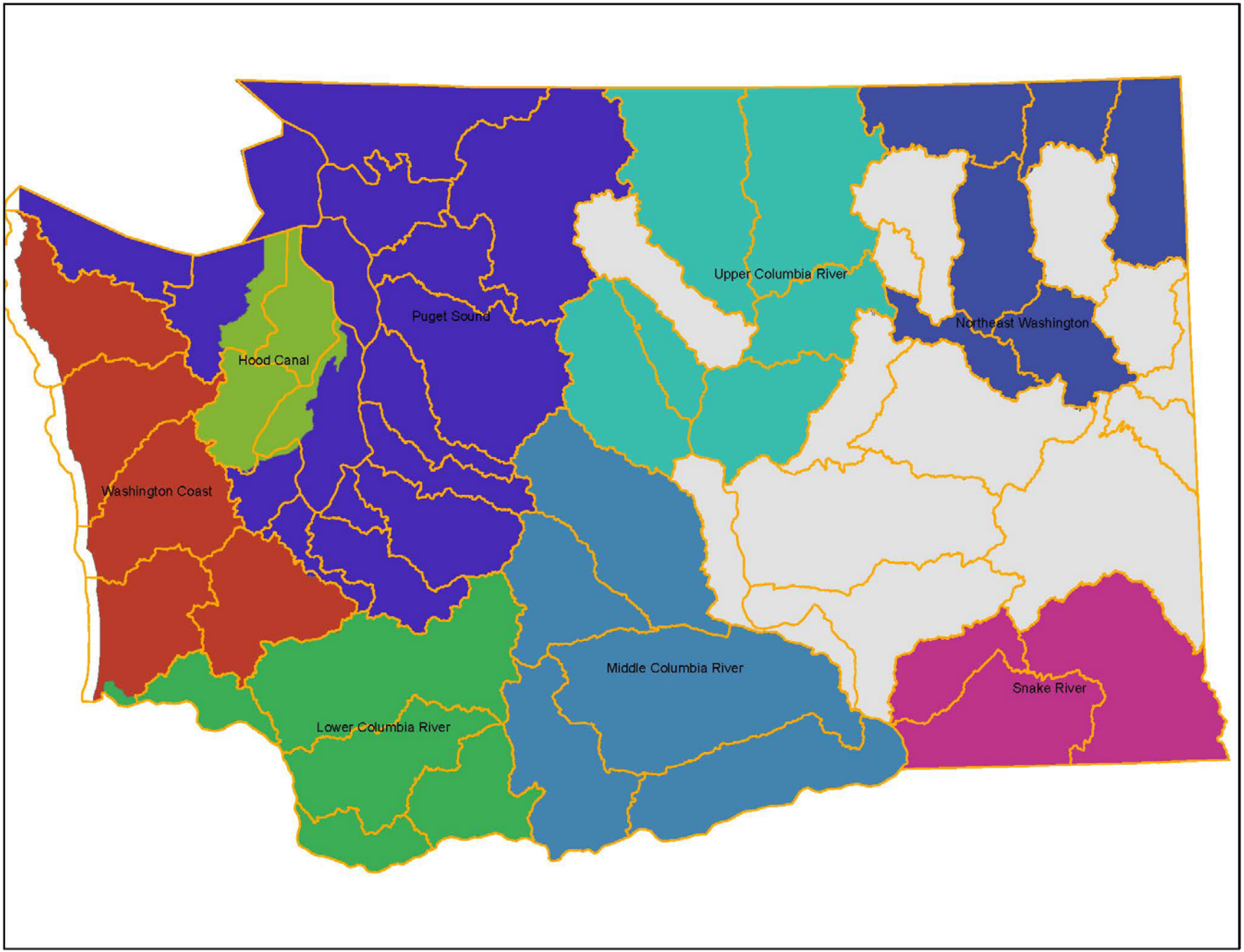
SEPTEMBER 16, 2014

Washington Department of FISH and WILDLIFE

Recovery Region	# of WRIA's	# of HUC12	# of Known Barriers
Washington Coast	5	183	4,162
Hood Canal	4	48	1,427
Puget Sound	17	363	16,339
Lower Columbia River	5	184	2,492
Middle Columbia River	5	234	347
Northeast Washington	6	148	542
Snake River	3	132	87
Upper Columbia River	6	232	732
No Region	13	396	464


Legend
RMAP
State
County
City
Private
Unknown
Fish Presence
Stream
StillaguamishRiver


Puget Sound
Hood Canal
Washington Coast
Upper Columbia River
Northeast Washington
Middle Columbia River
Lower Columbia River
Snake River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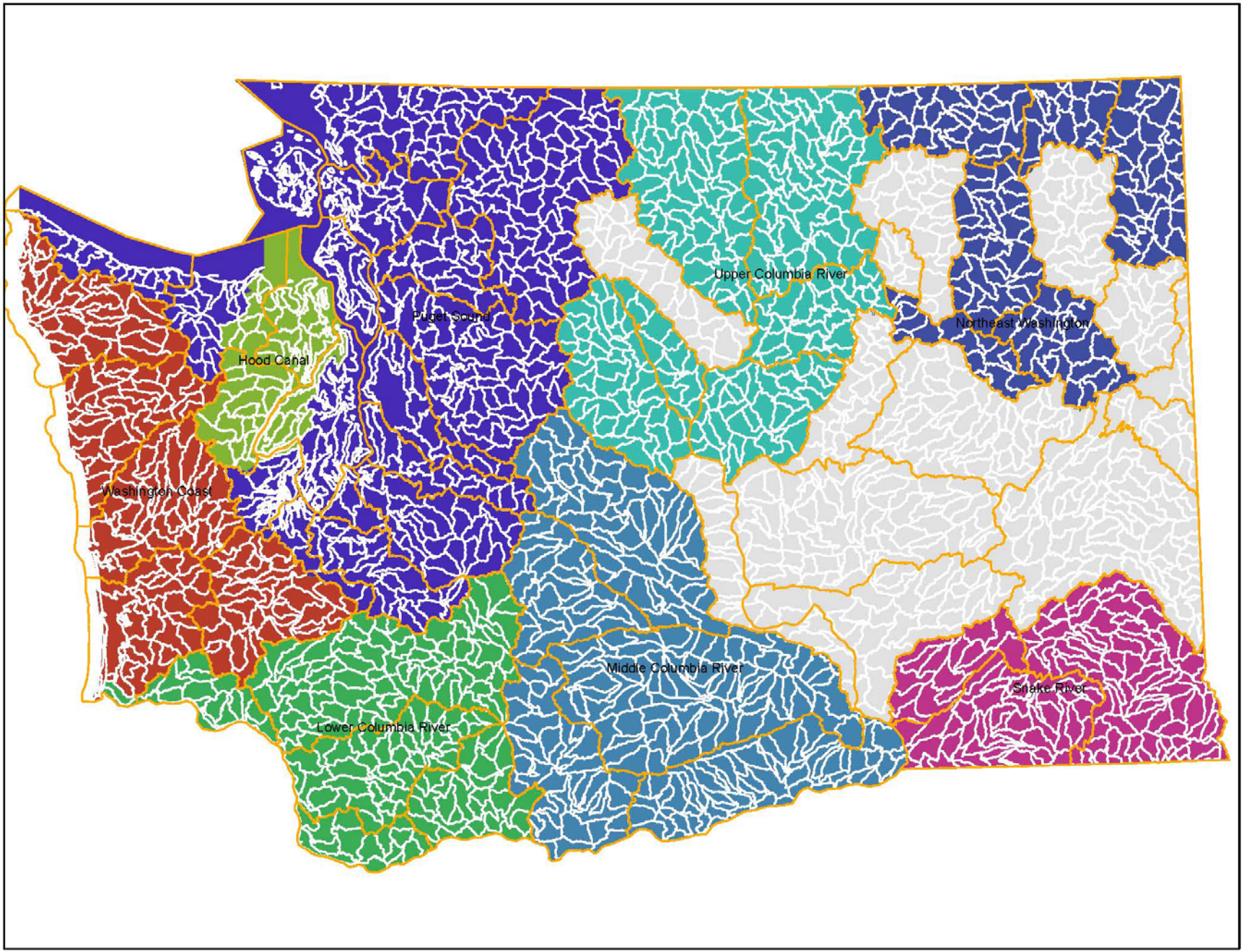
Middle Columbia River
Snake River
Lower Columbia River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Puget Sound
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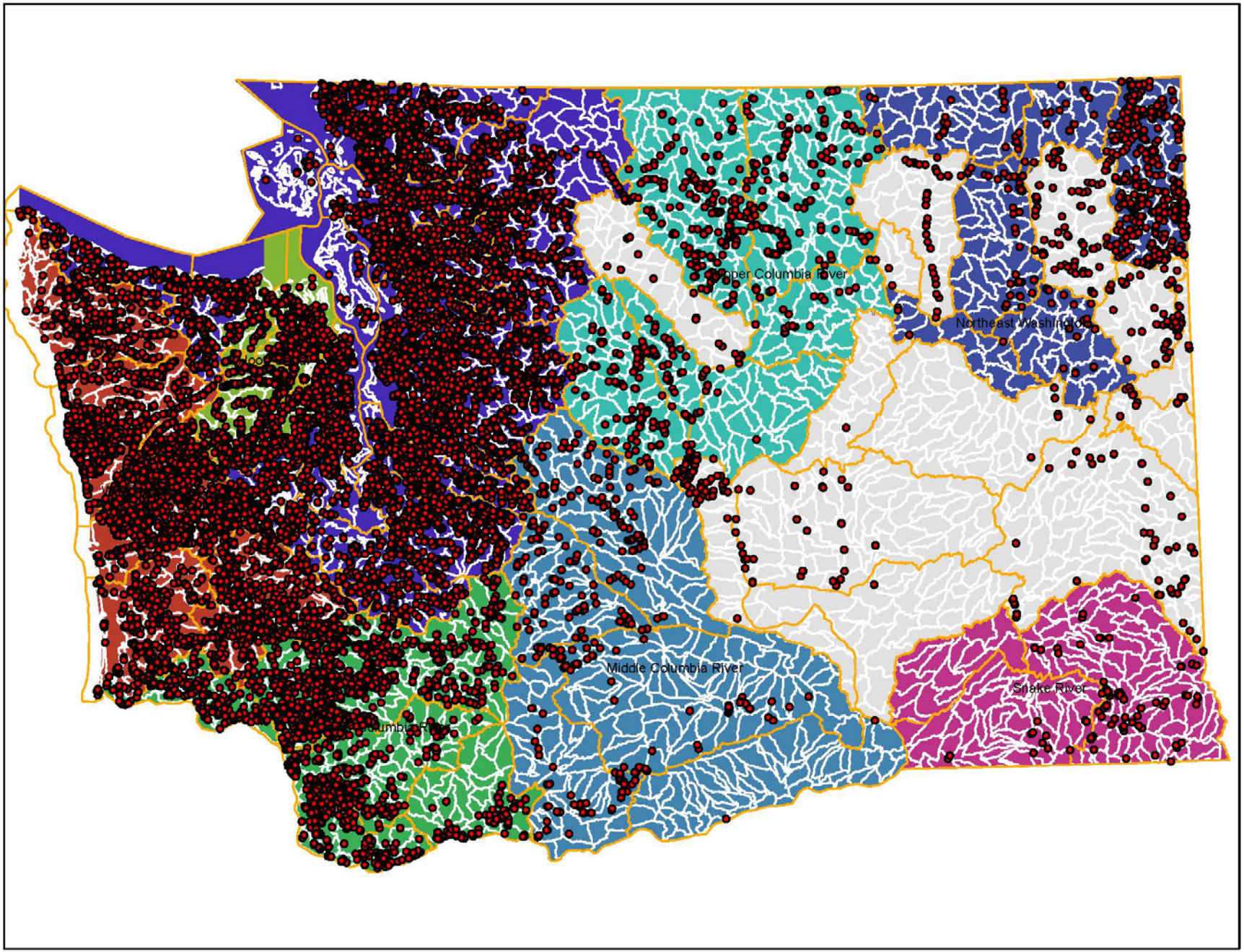
Washington Coast
Middle Columbia River
Snake River
Lower Columbia River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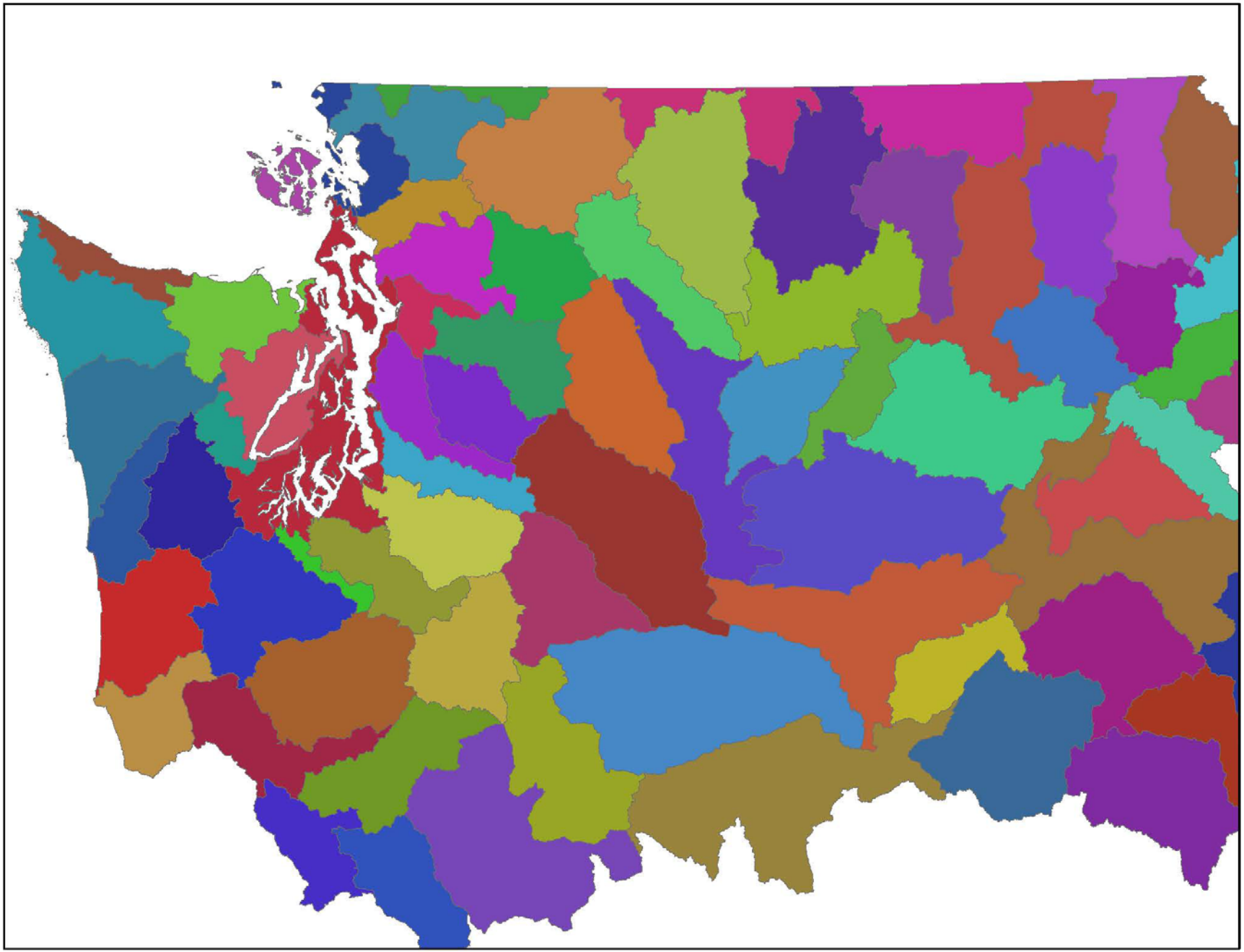
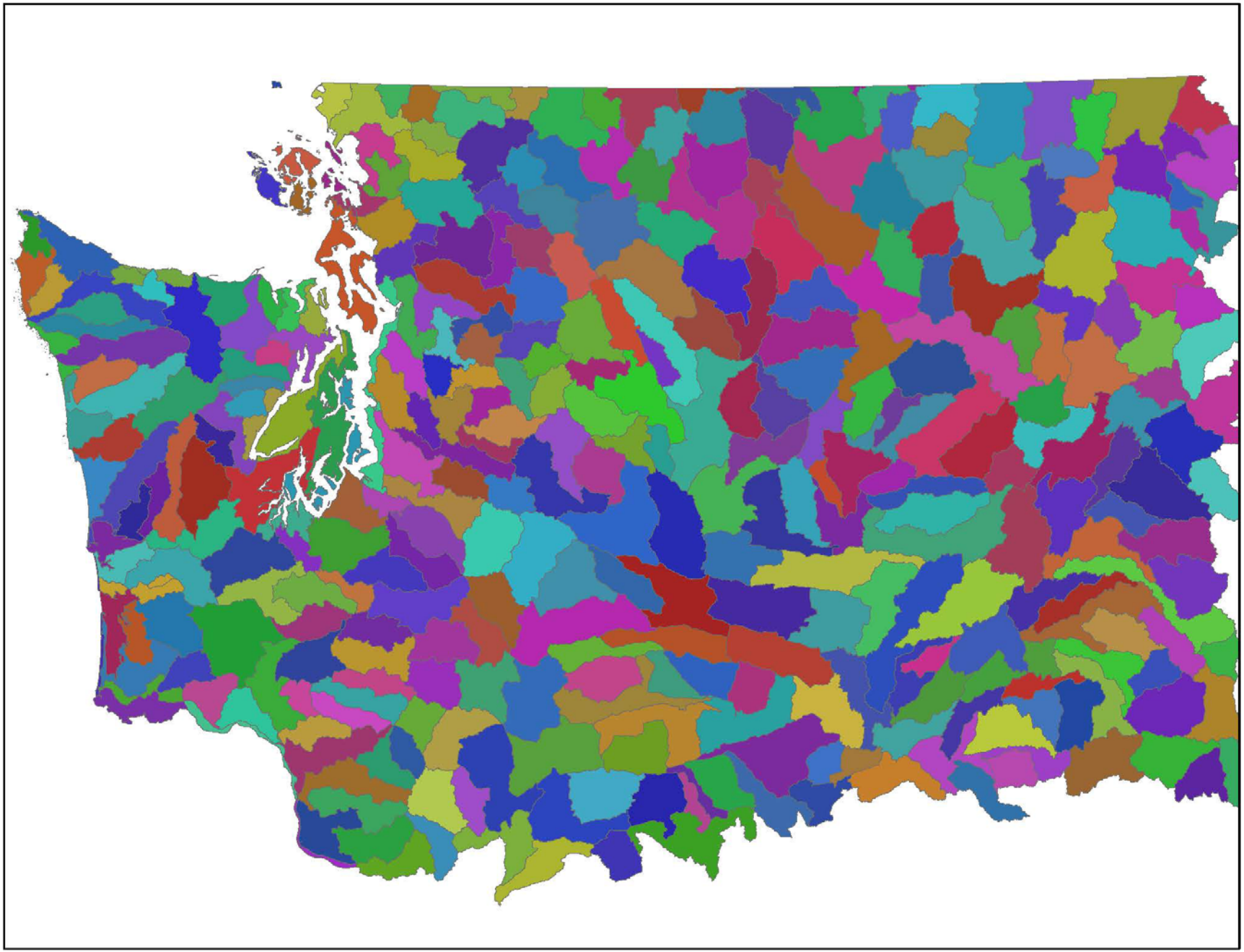
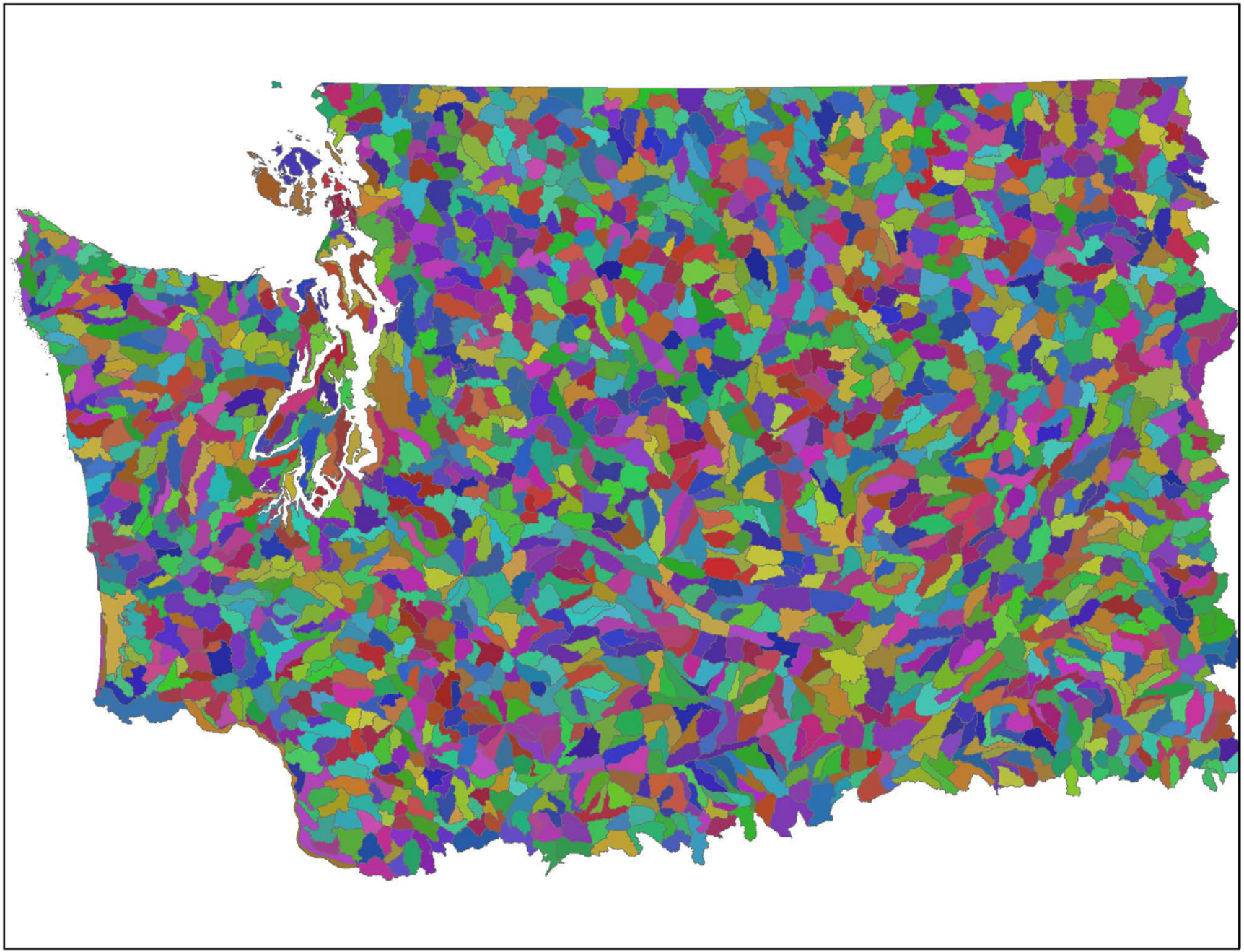
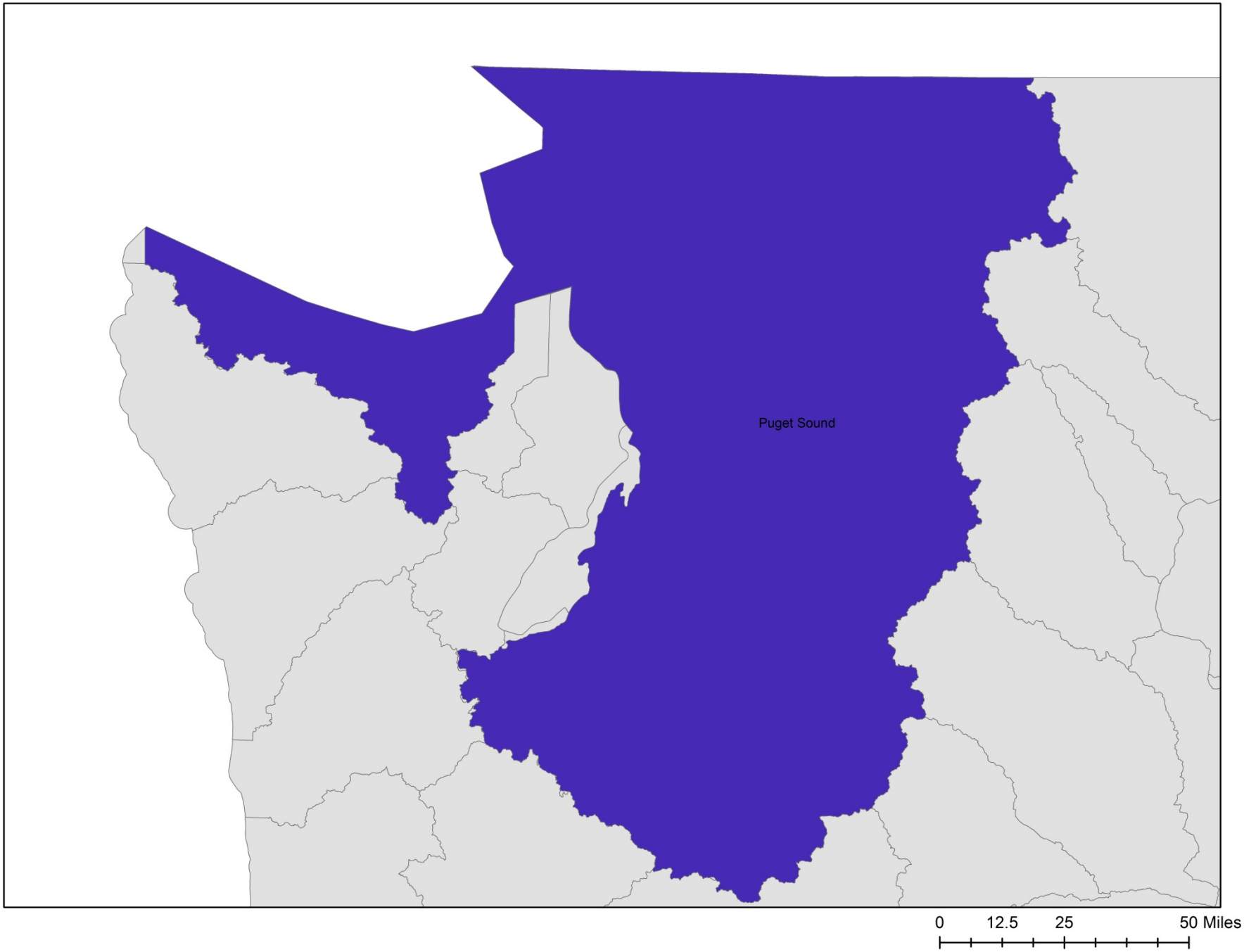
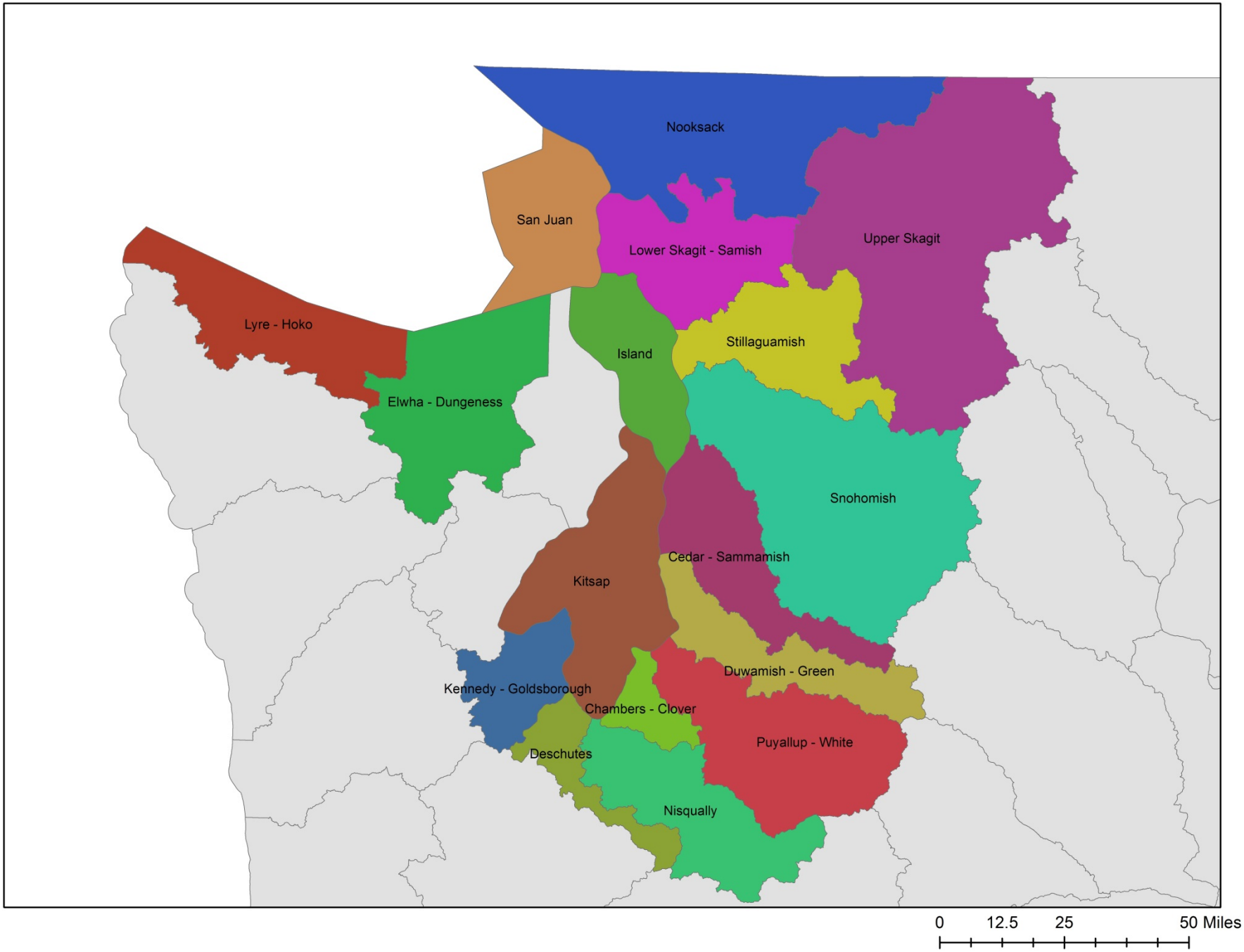
Northeast Washington
Middle Columbia River
Snake River








Puget Sound
0
12.5
25
50 Miles


Nooksack
San Juan
Lower Skagit - Samish
Upper Skagit
Lyre - Hoko
Island
Stillaguamish
Elwha - Dungeness
Snohomish
Cedar - Sammamish
Kitsap
Duwamish - Green
Kennedy - Goldsborough
Chambers - Clover
Puyallup - White
Deschutes
Nisqually
0
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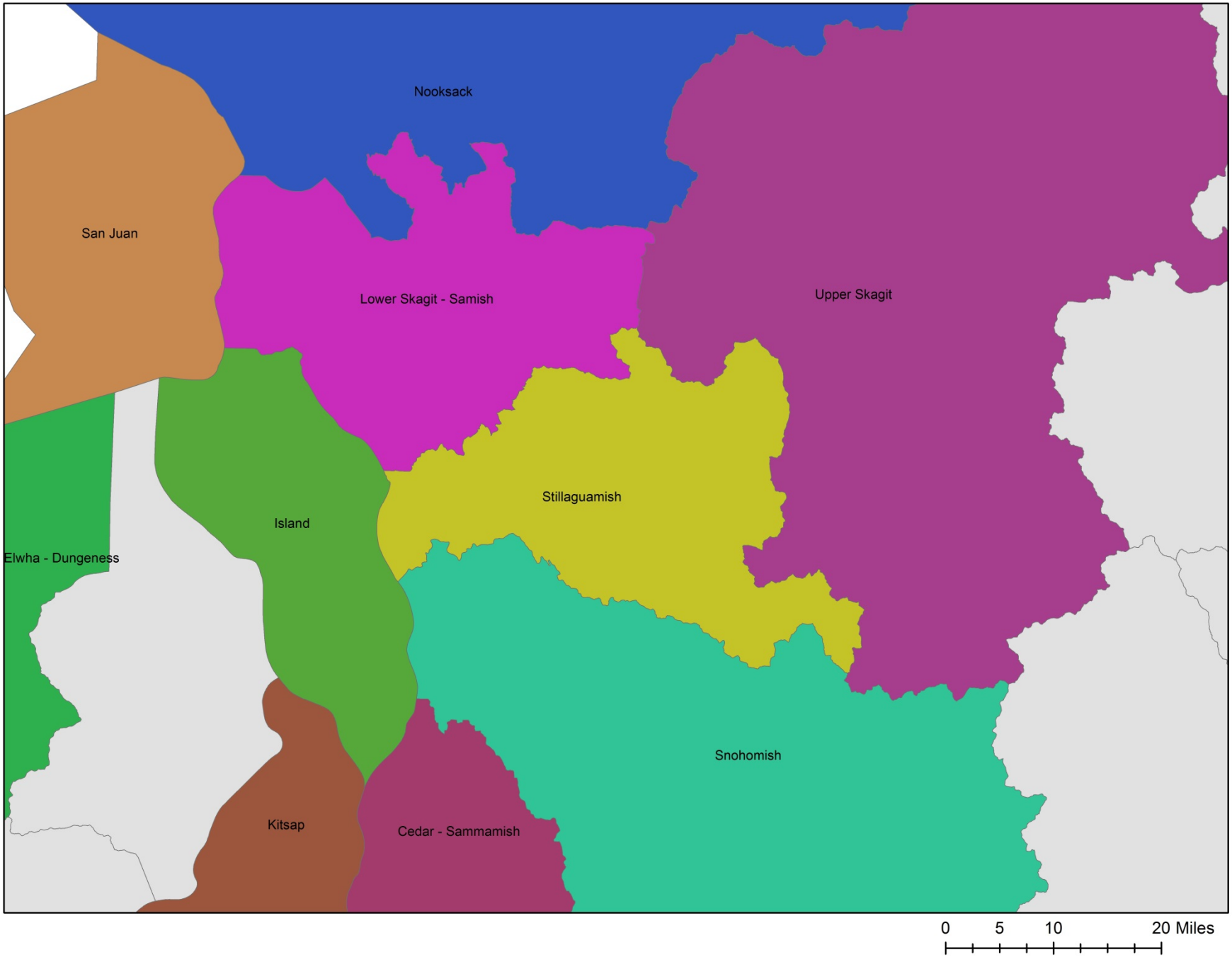
25
50 Miles


Nooksack
San Juan
Lower Skagit - Samish
Upper Skagit
Stillaguamish
Island
Elwha - Dungeness
Snohomish
Kitsap
Cedar - Sammamish
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5
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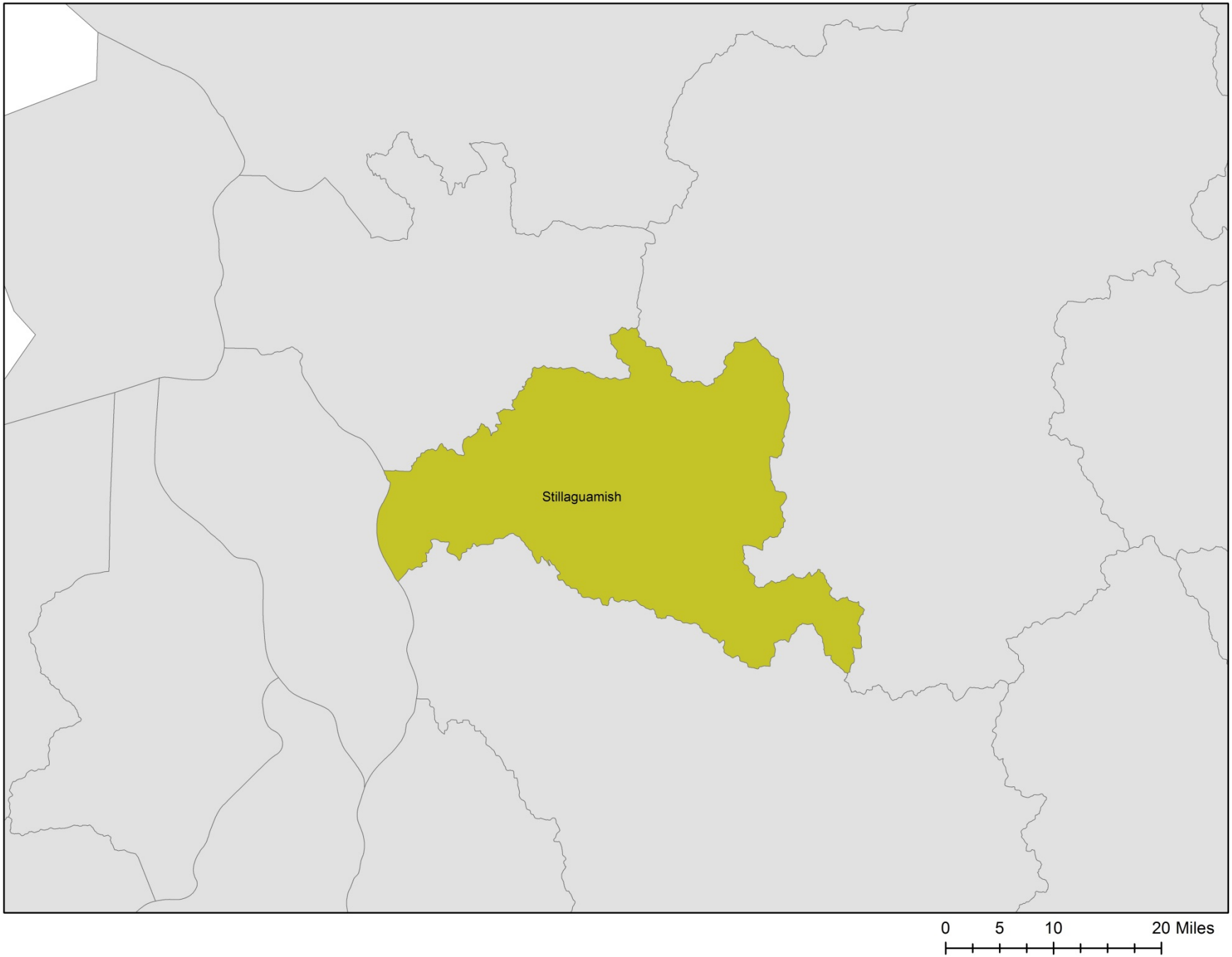
20 Miles


Stillaguamish
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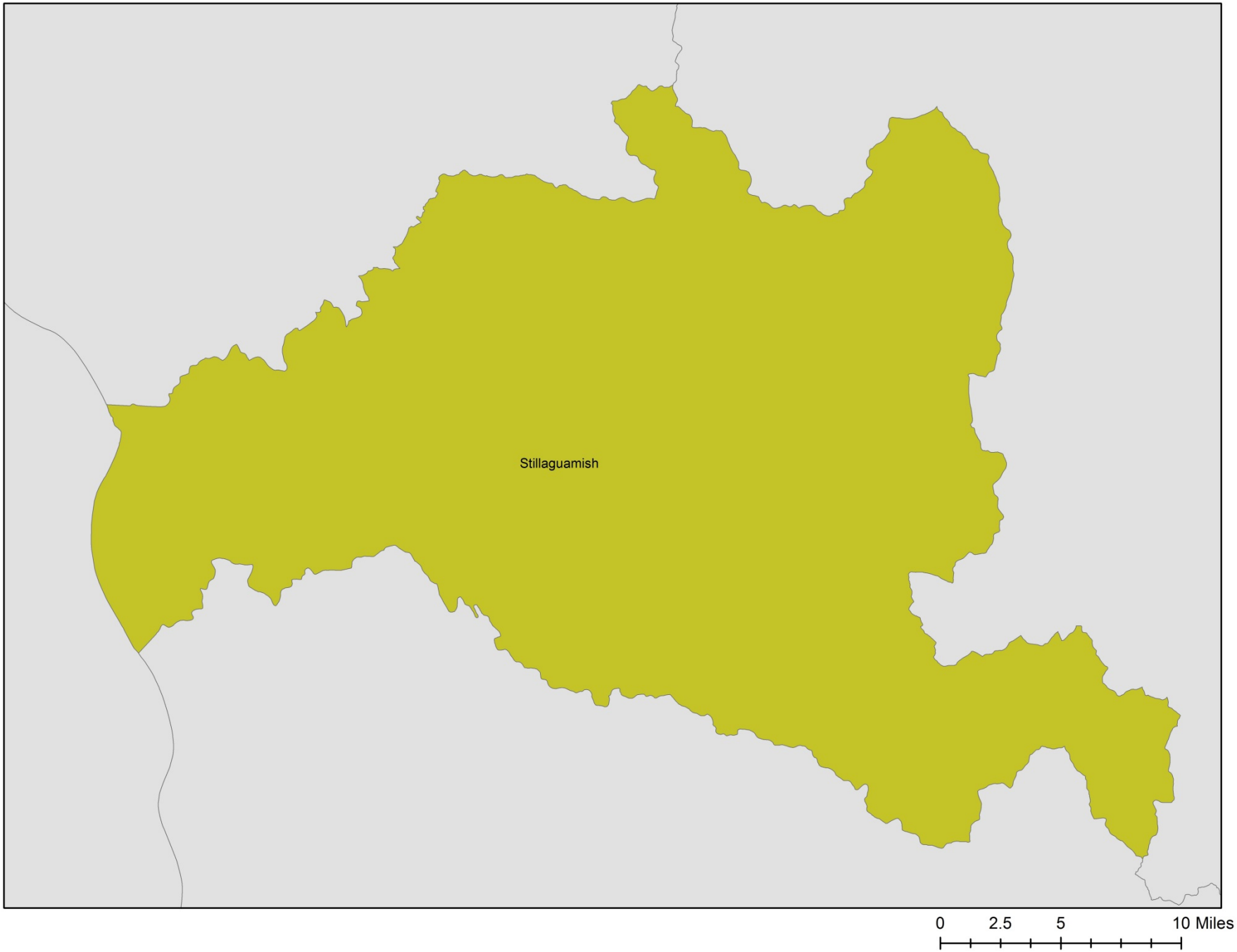
Stillaguamish
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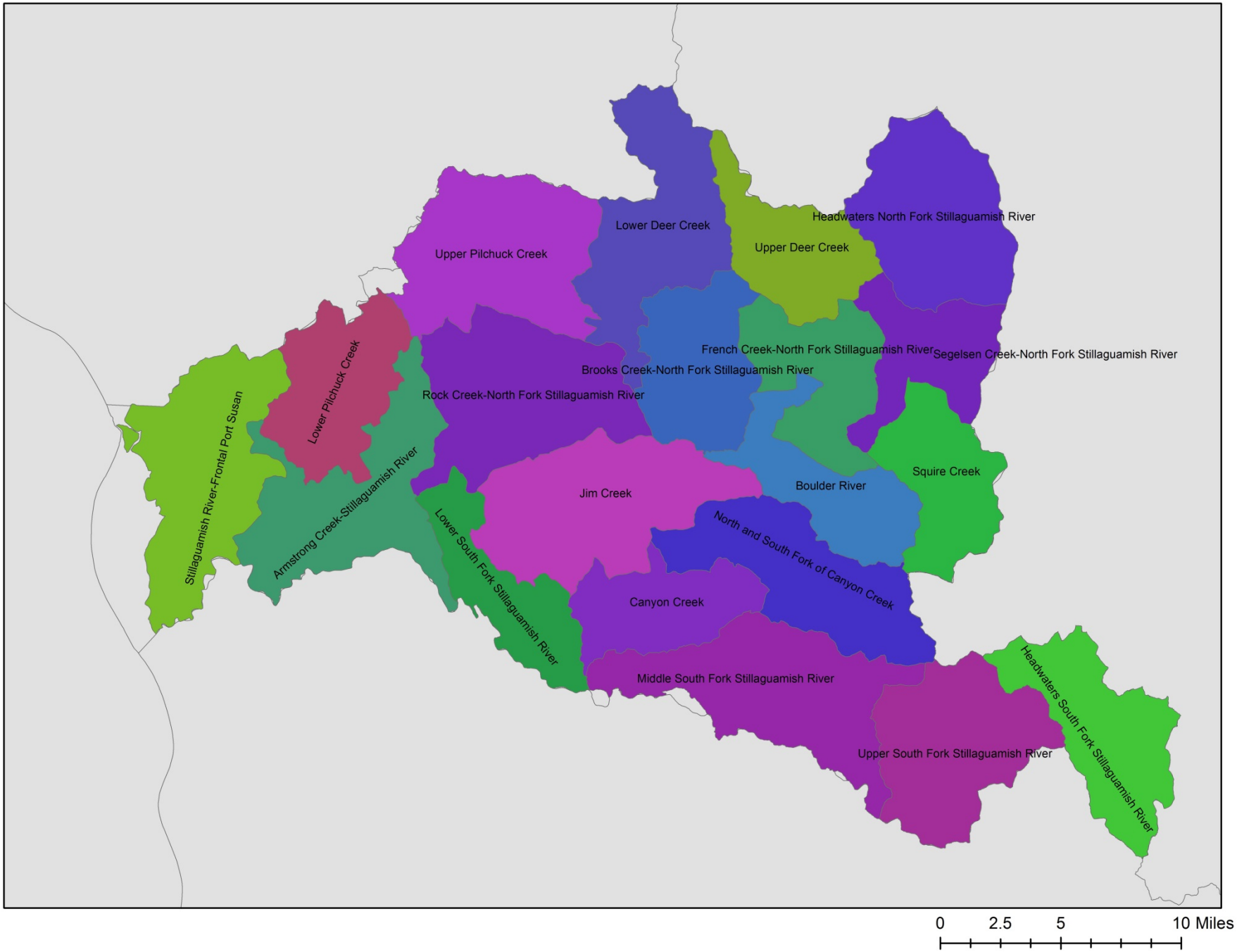
Lower Deer Creek
Upper Pilchuck Creek
Headwaters North Fork Stillaguamish River
Upper Deer Creek
French Creek-North Fork Stillaguamish River
Segelsen Creek-North Fork Stillaguamish River
Brooks Creek-North Fork Stillaguamish River
Rock Creek-North Fork Stillaguamish River
Lower Pilchuck Creek
Stillaguamish River-Frontal Port Susan
Armstrong Creek-Stillaguamish River
Jim Creek
Boulder River
Squire Creek
Lower South Fork Stillaguamish River
North and South Fork of Canyon Creek
Canyon Creek
Middle South Fork Stillaguamish River
Headwaters South Fork Stillaguamish River
Upper South Fork Stillaguamish River
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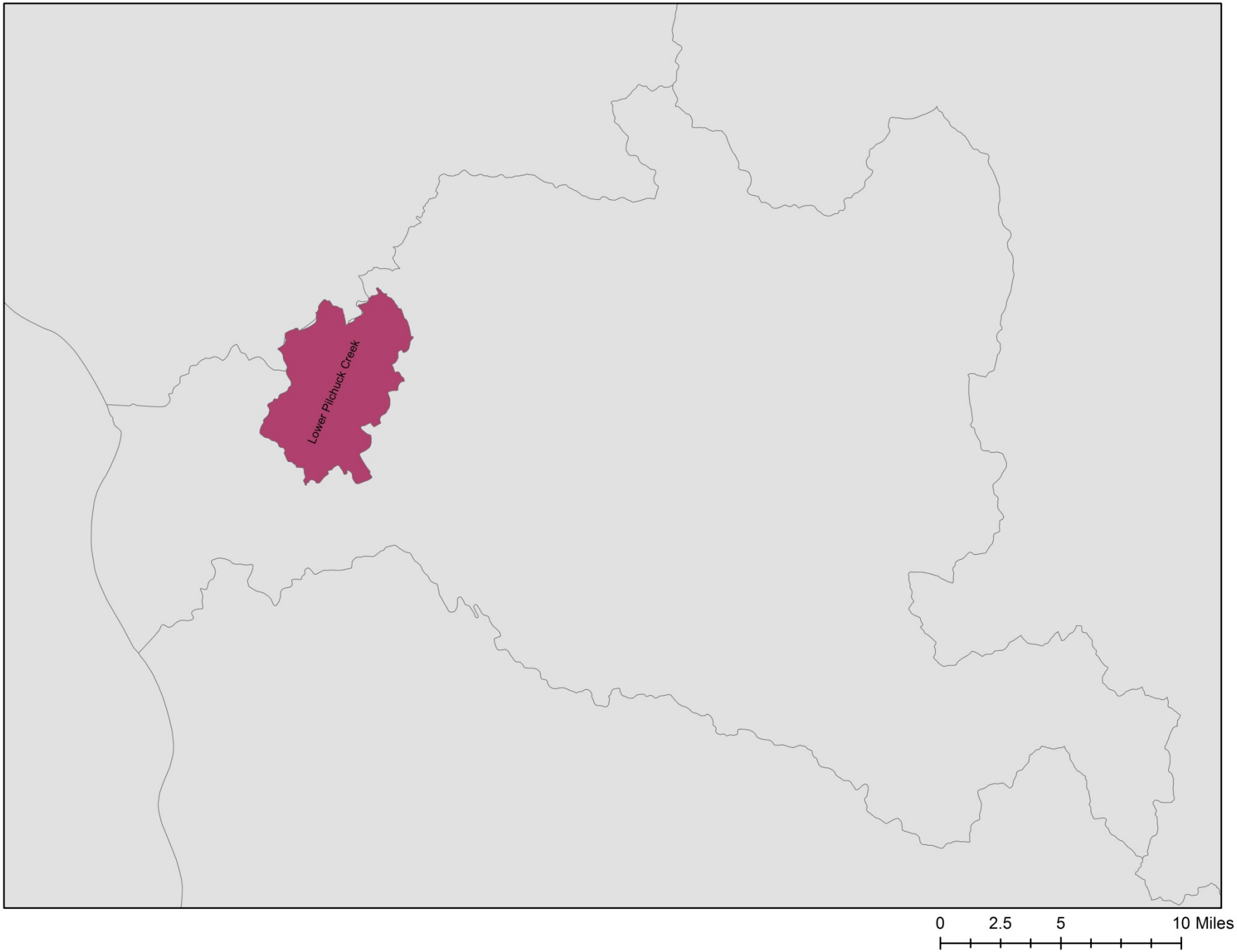
Lower Pilchuck Creek
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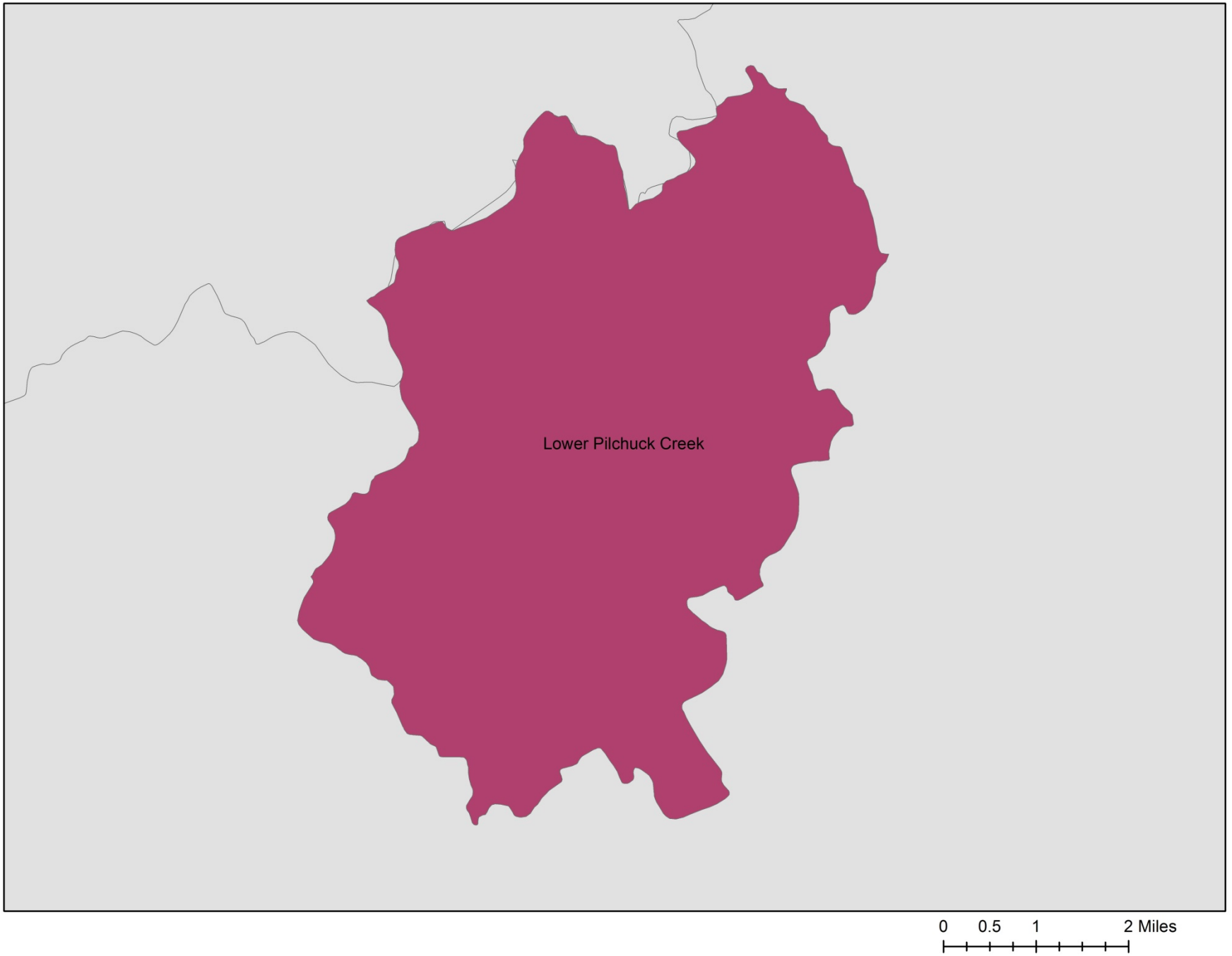
Lower Pilchuck Creek
0
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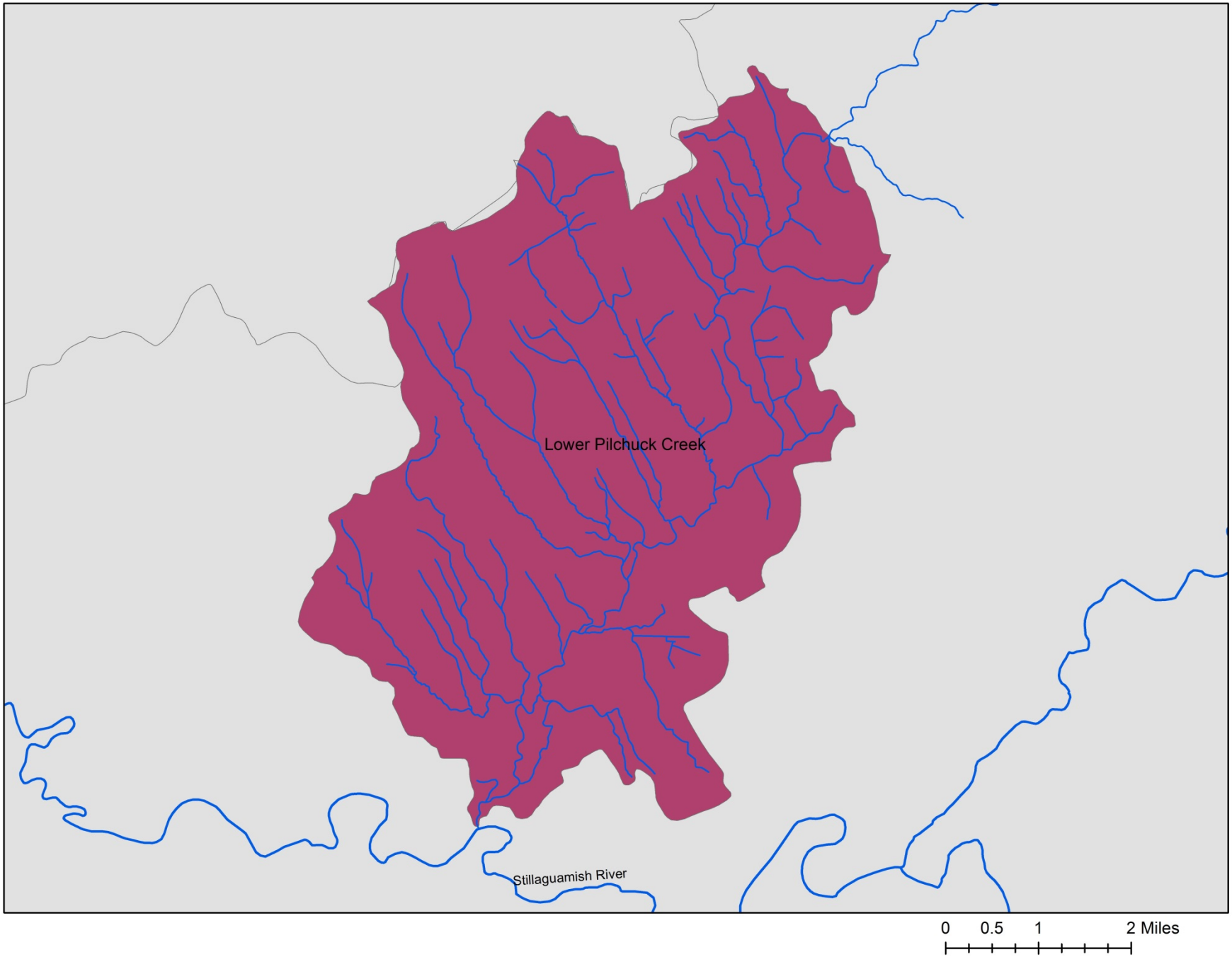
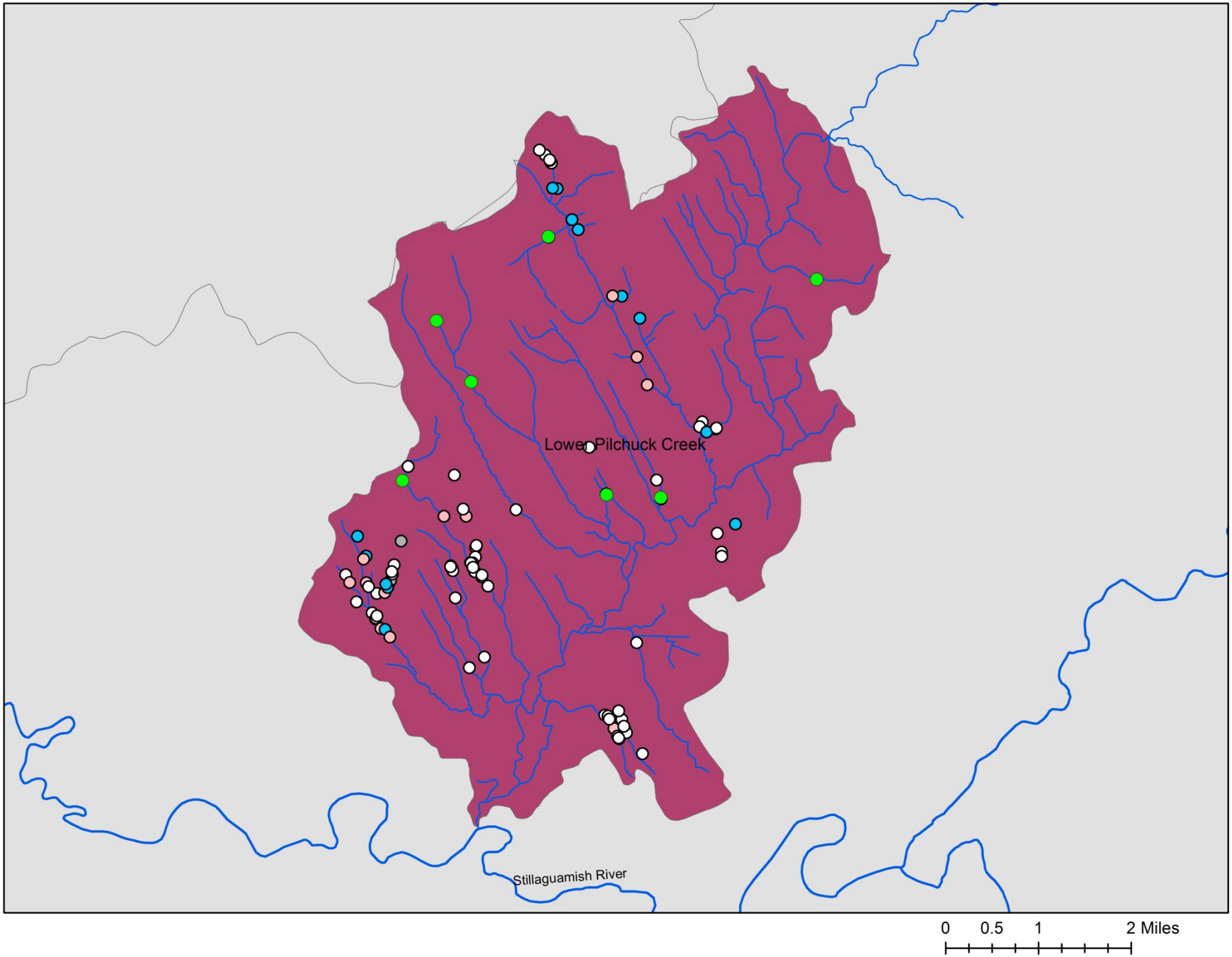
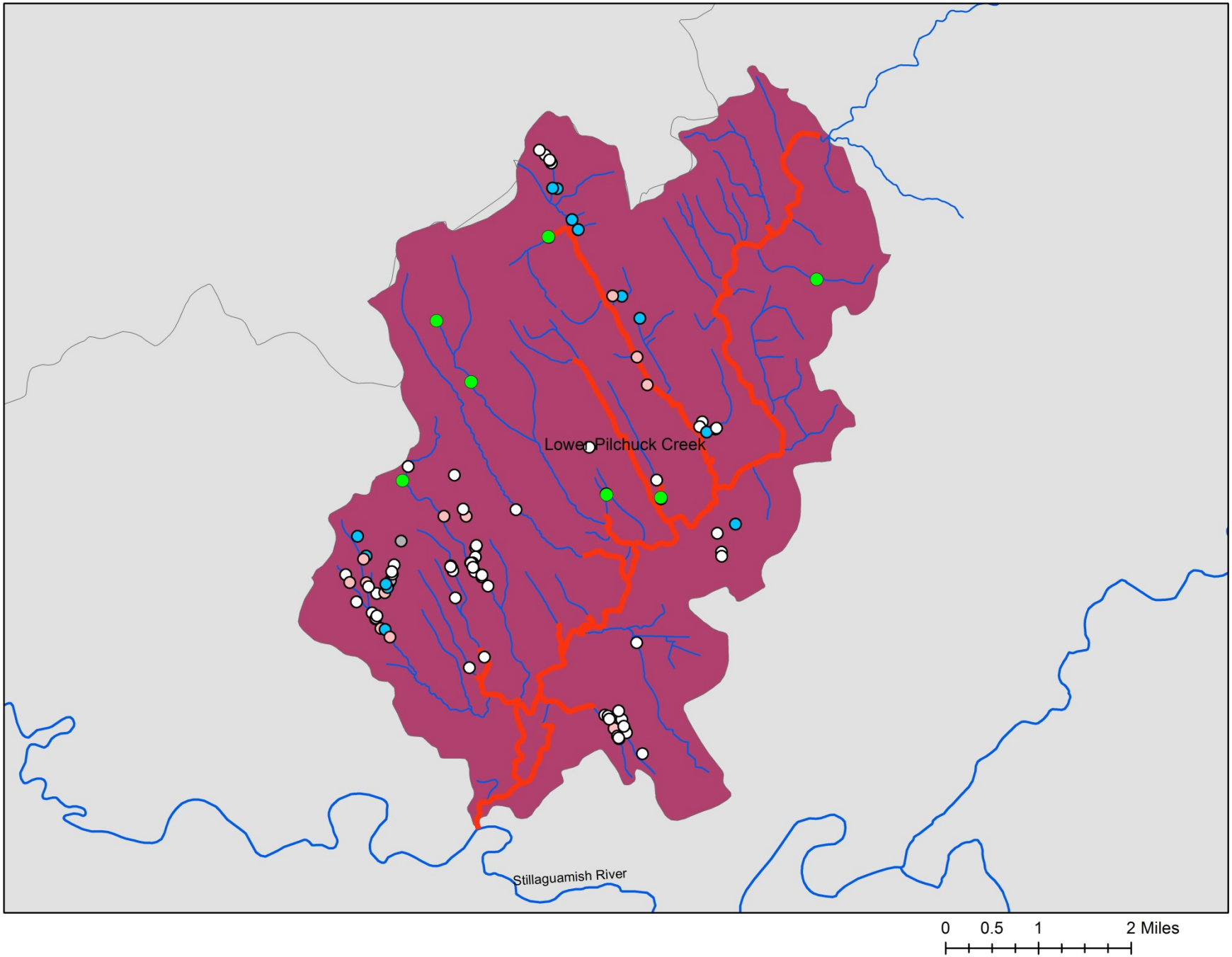
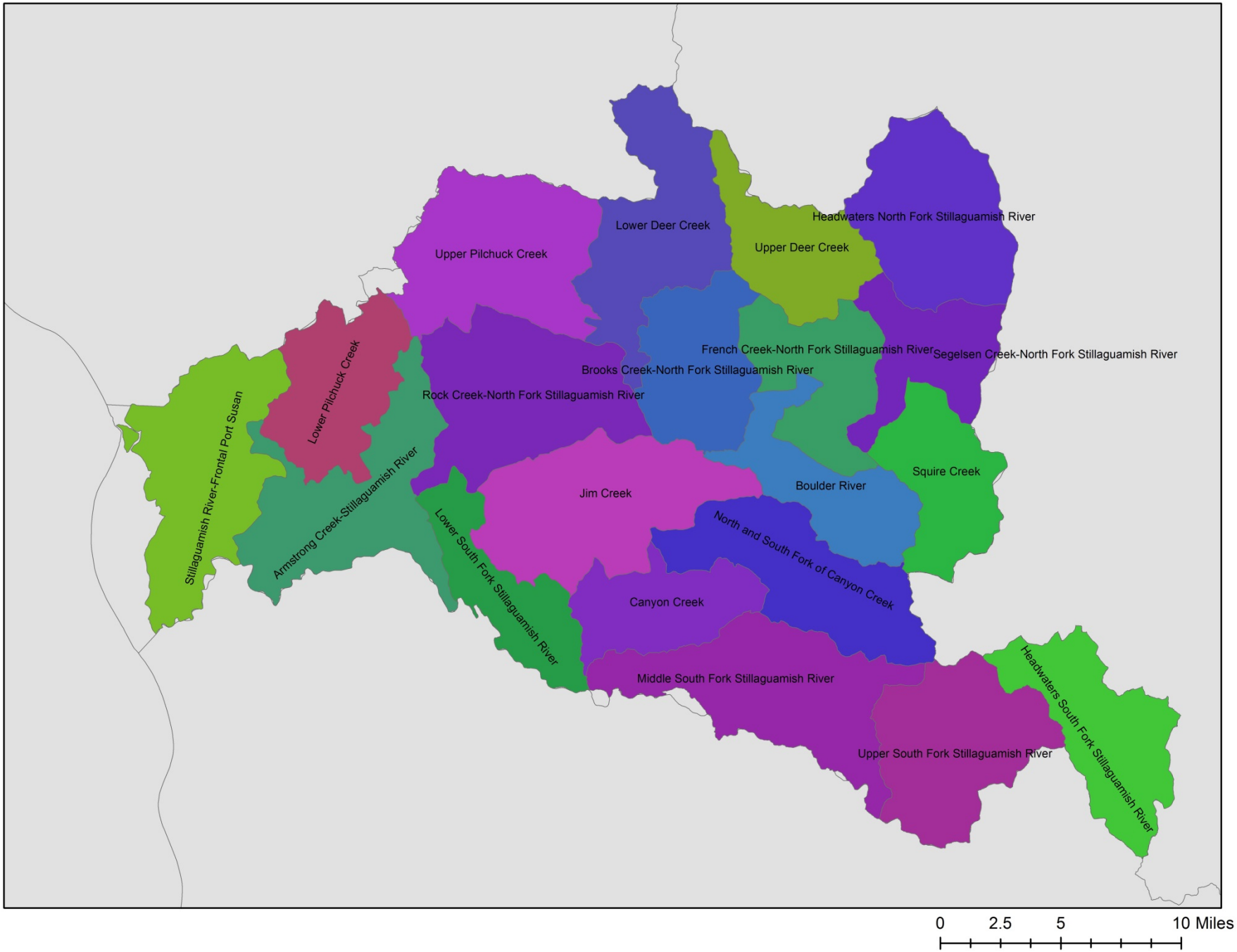
1
2 Miles


Lower Pilchuck Creek
Stillaguamish River
0 0.5 1 2 Miles


Lower Pilchuck Creek
Stillaguamish River
0
0.5
1
2 Miles


Lower Pilchuck Creek
Stillaguamish River
0 0.5 1 2 Miles


Lower Deer Creek
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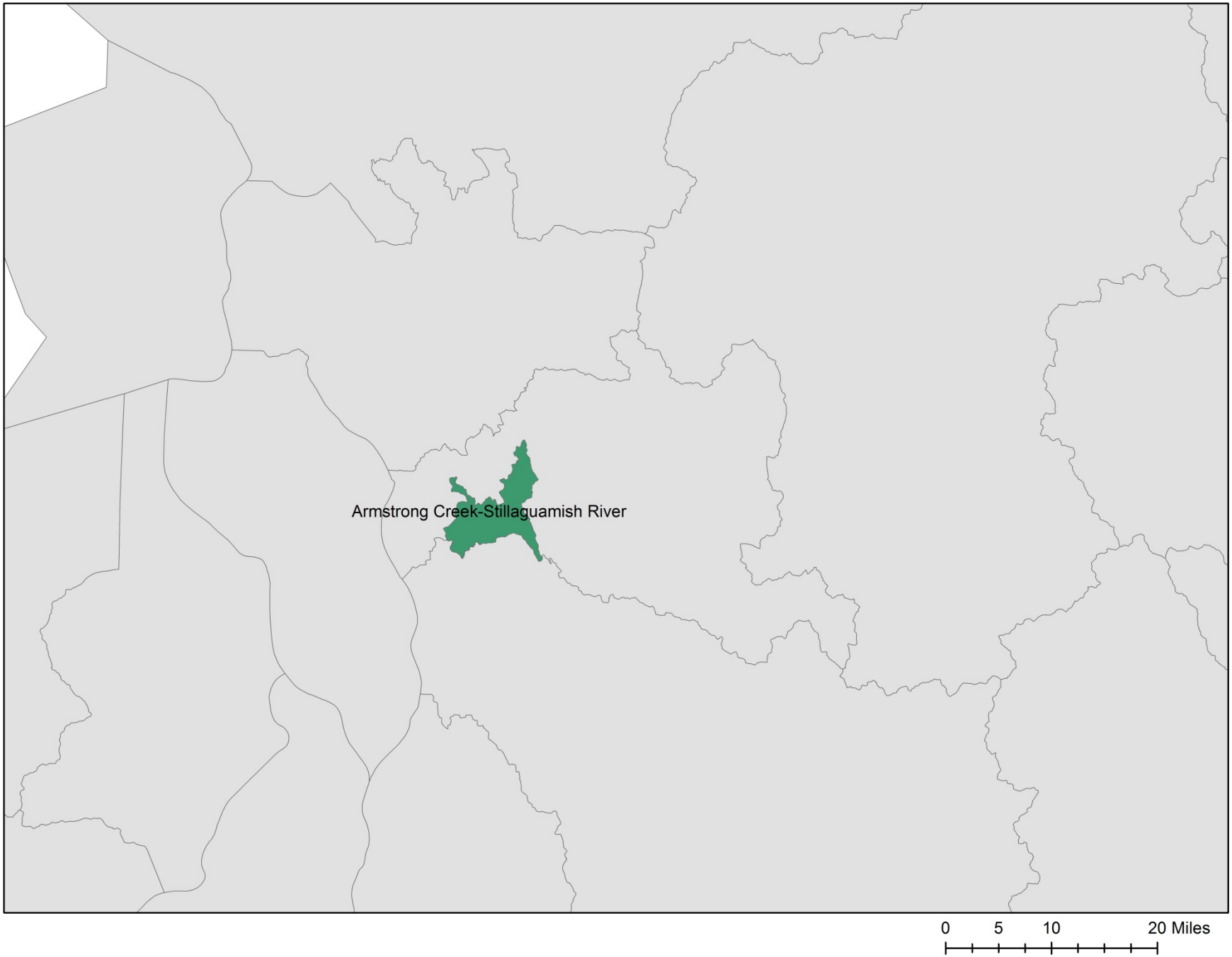
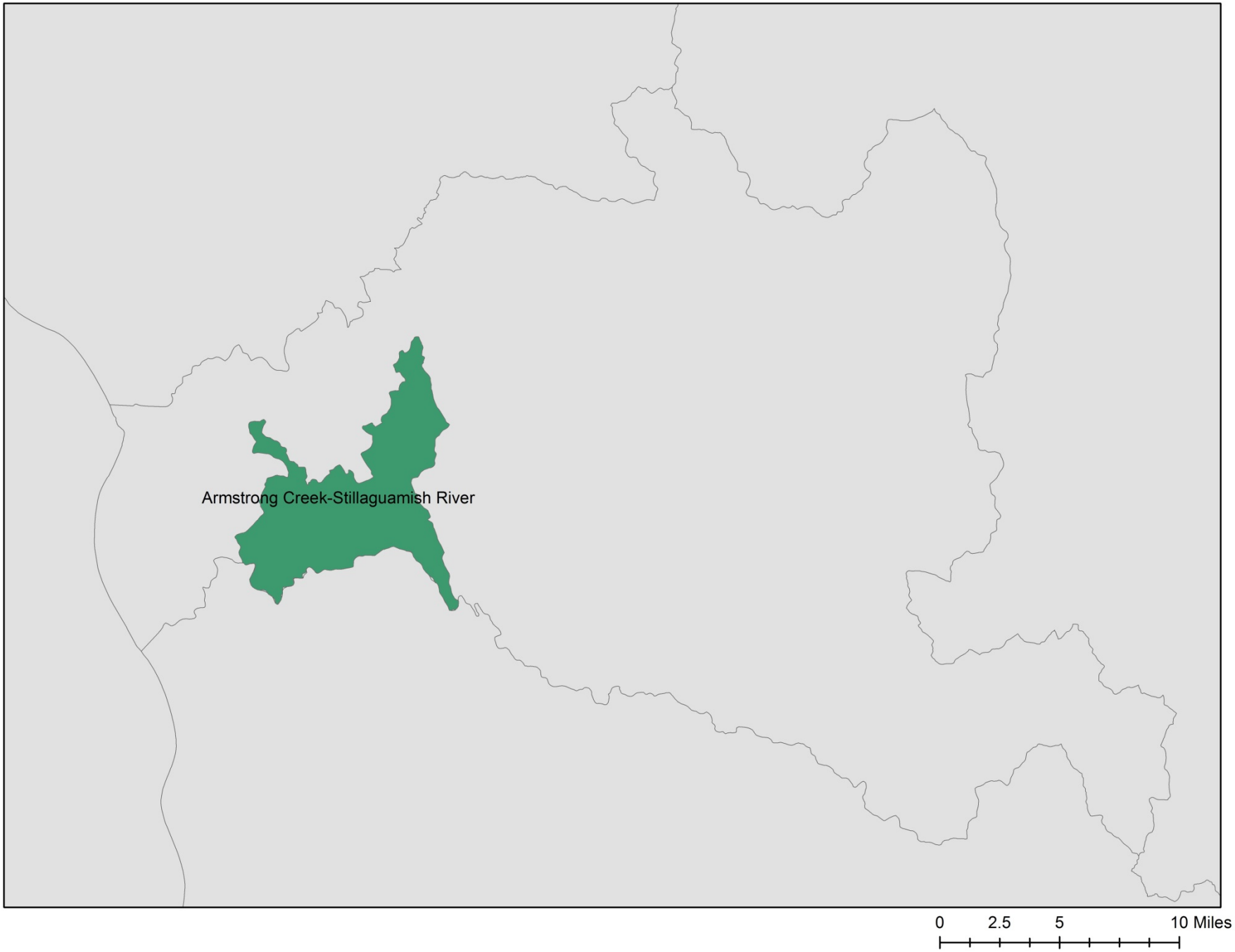
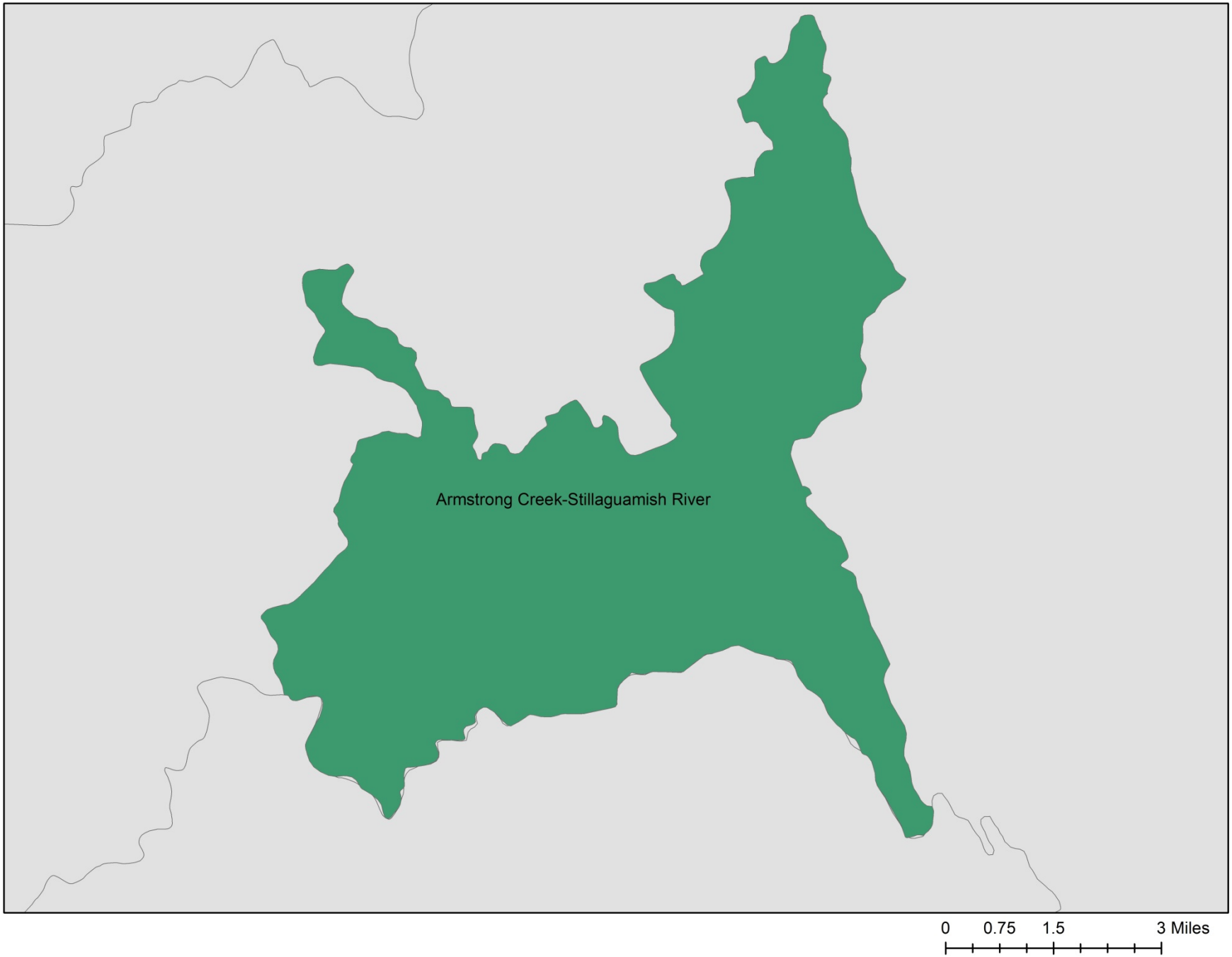
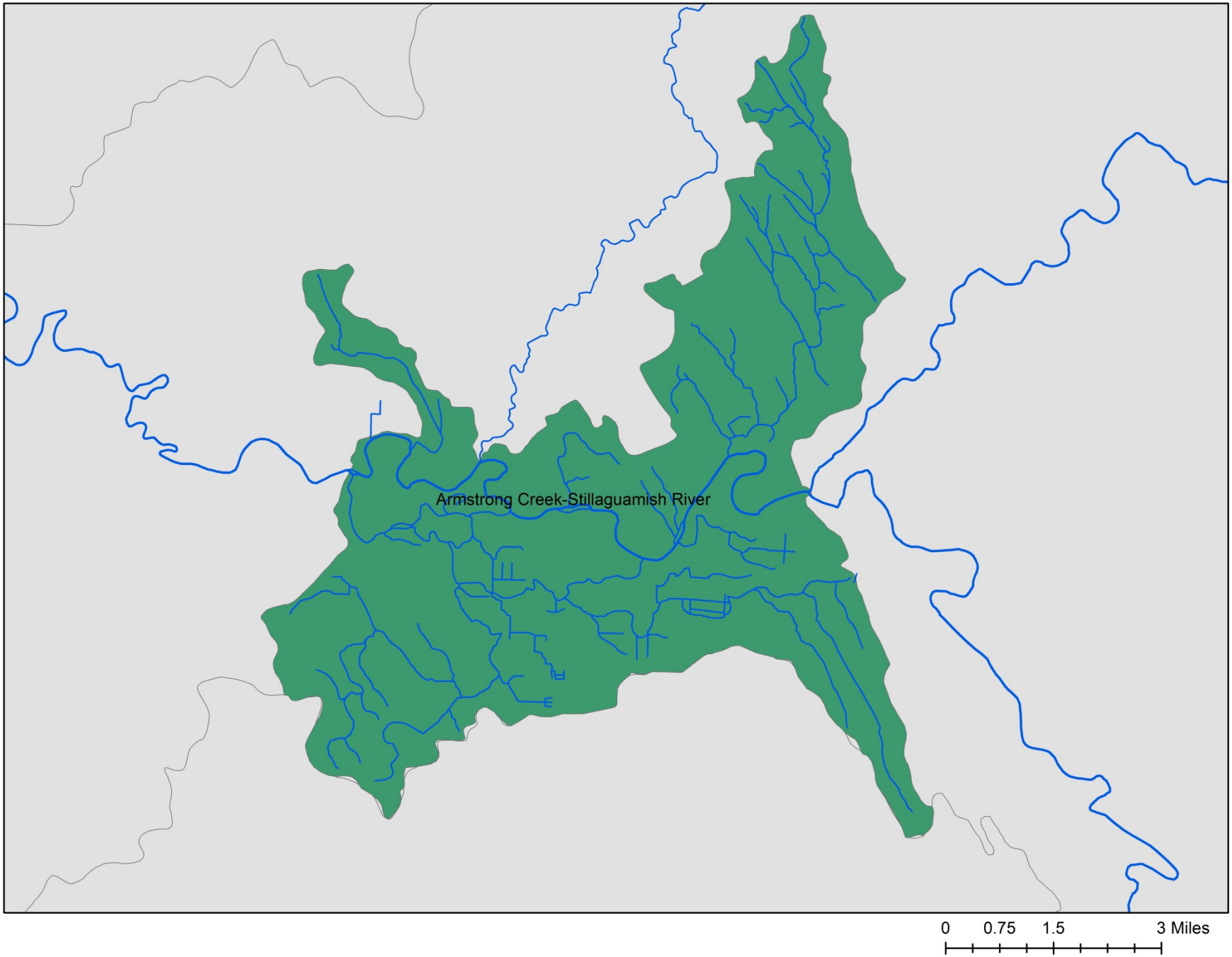
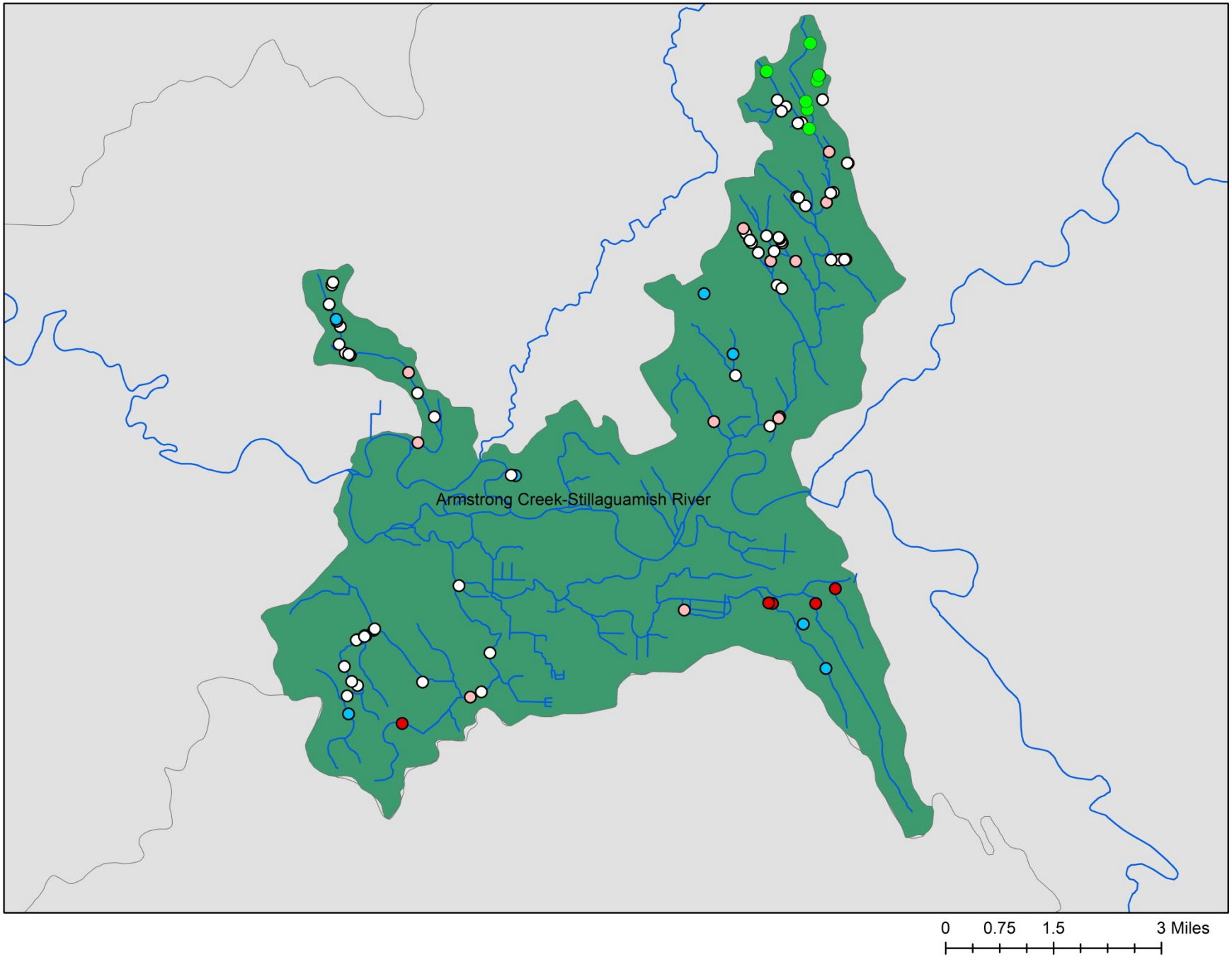
Jim Creek
Boulder River
Squire Creek
Lower South Fork Stillaguamish River
North and South Fork of Canyon Creek
Canyon Creek
Middle South Fork Stillaguamish River
Headwaters South Fork Stillaguamish River
Upper South Fork Stillaguamish River
0
2.5
5
10 Miles

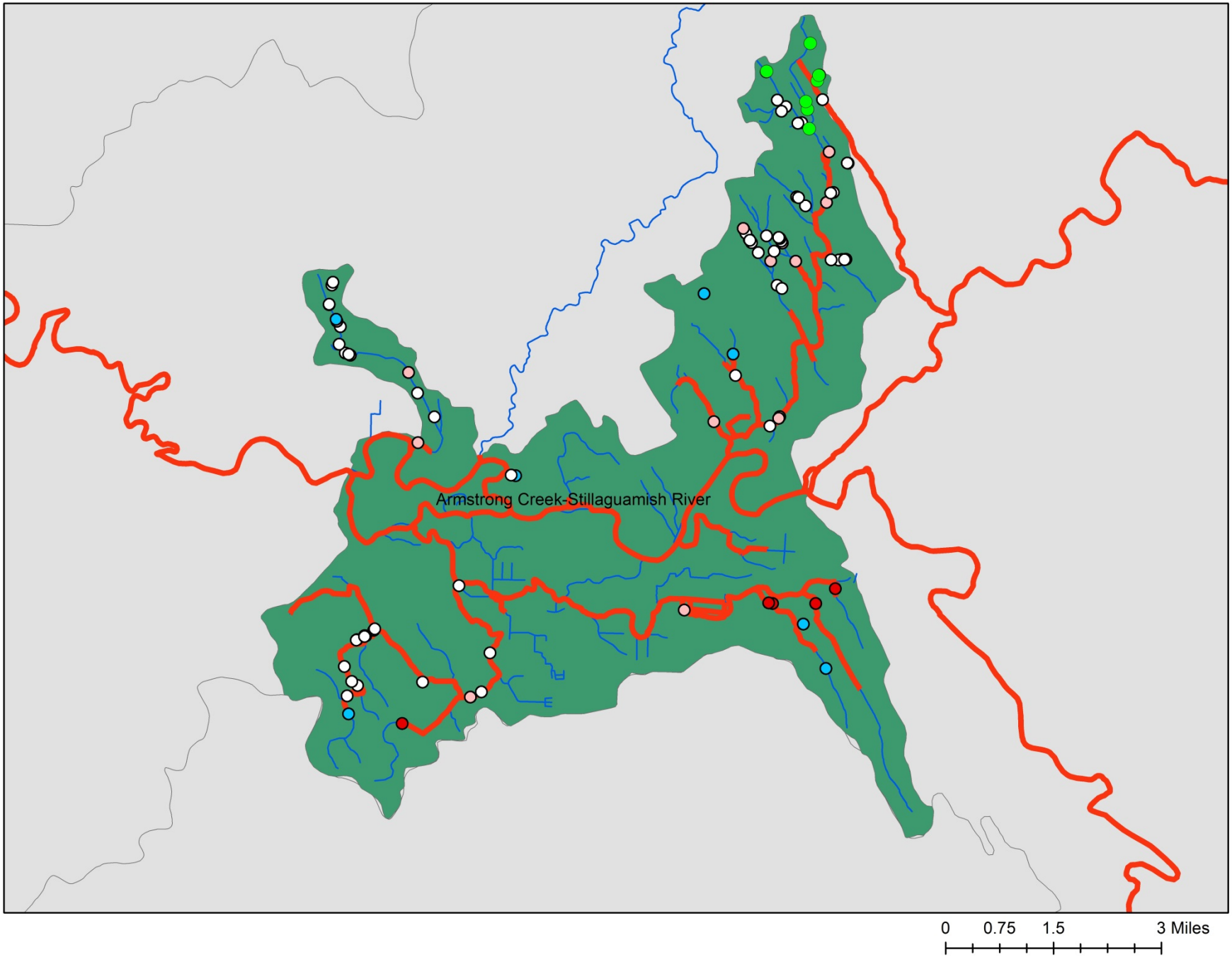

Armstrong Creek-Stillaguamish River
0
5
10
20 Miles


Armstrong Creek-Stillaguamish River
0
2.5
5
10 Miles


Armstrong Creek-Stillaguamish River
0
0.75
1.5
3 Miles


Armstrong Creek-Stillaguamish River
0
0.75
1.5
3 Miles


Armstrong Creek-Stillaguamish River
0
0.75
1.5
3 Miles


Armstrong Creek-Stillaguamish River
0
0.75
1.5
3 Miles

The Confederated Tribes of the Colville Reservation Presentation

ESU and Population Viability: Interior Columbia River Example

For FBRB Members

SEPTEMBER 16, 2014

Washington Department of FISH and WILDLIFE

ESU and Population Viability:

Interior Columbia R. example and linkage to FBRB

presented to: Fish Passage Barrier Removal Board

16 Sept 2014

Casey Baldwin, Sr. Research Scientist (CCT)

FBRB task

When developing a prioritization methodology (Sec 4 e), the board must consider:

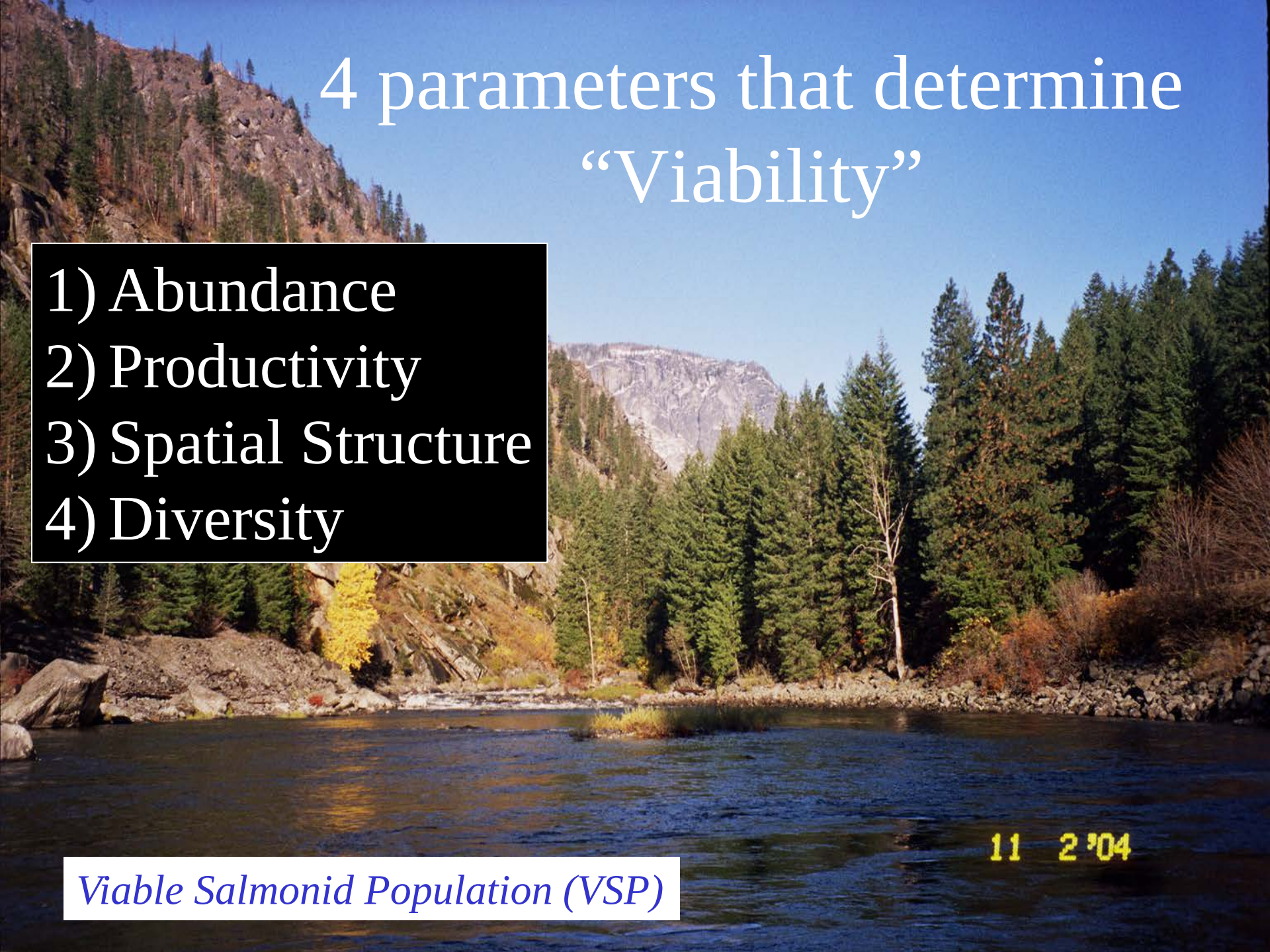
- **Projects benefiting threatened and endangered stocks**
- Projects providing access to available and high quality habitat
- Correcting the lowest barriers within a stream first
- Whether an existing culvert is a full or partial barrier
- Projects that are coordinated with other adjacent barrier removal projects
- Projects that address replacement of infrastructure associated with flooding, erosion, or other environmental damage.

Viable Salmonid Population (VSP)

McElhaney et al. 2000

Technical Recovery Teams (TRT) for each Recovery Domain

- Independent of other populations
  (distance, genetics, stray rates, size)
- At least 500 fish (more in big watersheds).
- Negligible risk of extinction
  (less than 5% over 100 yr timeframe)
- 4 attributes to viability….

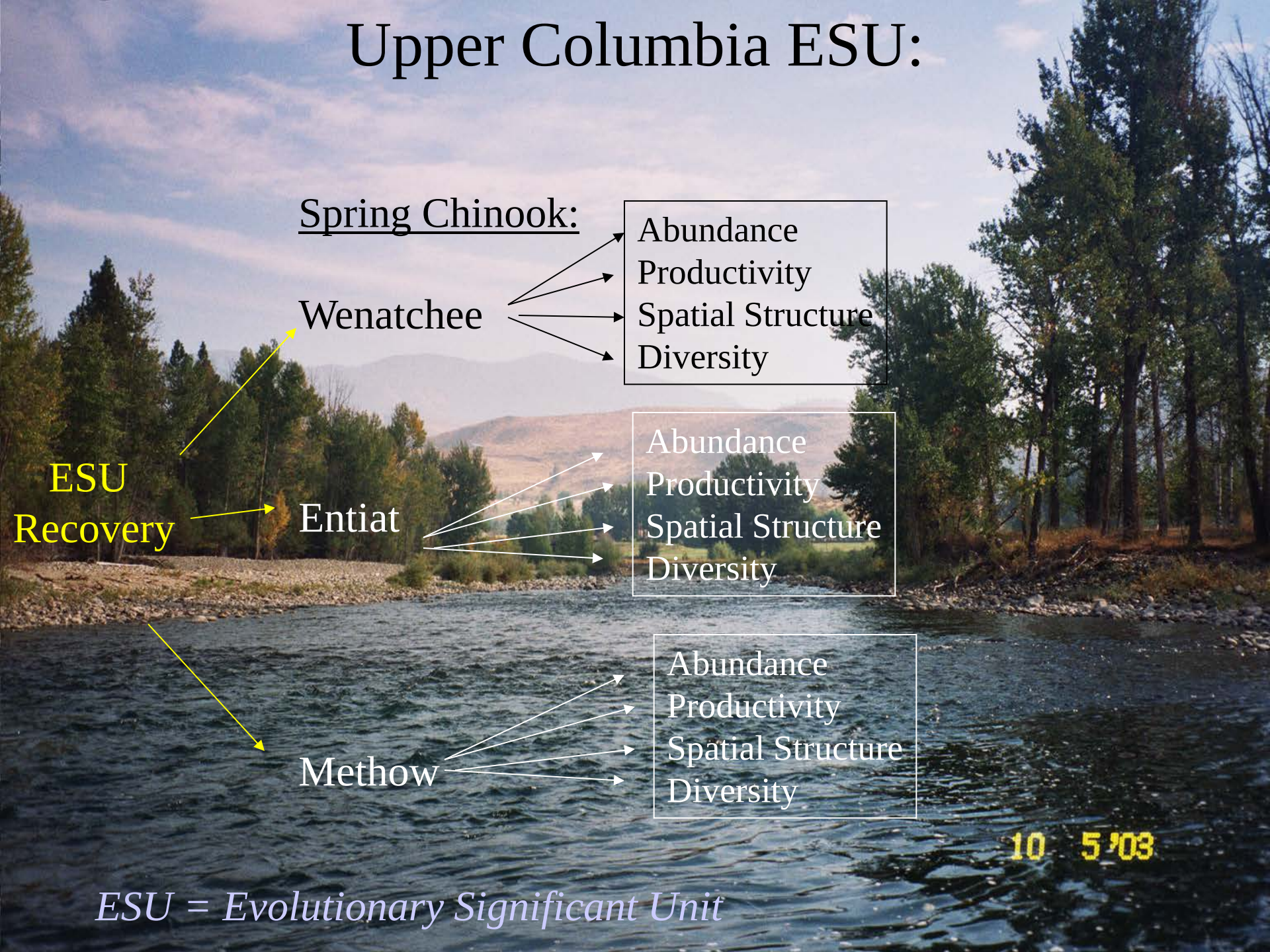


4 parameters that determine "Viability"

1) Abundance
2) Productivity
3) Spatial Structure
4) Diversity

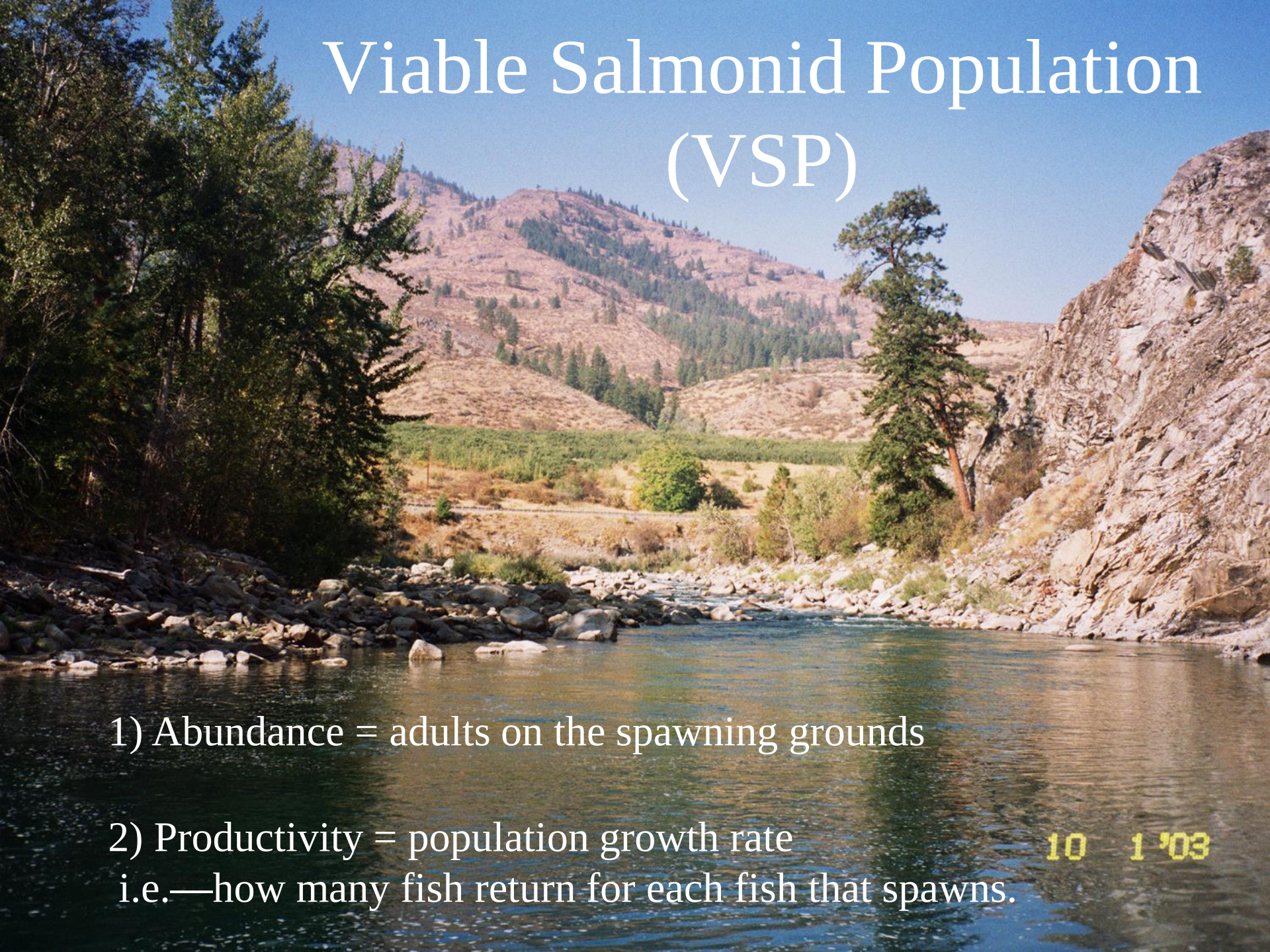
Viable Salmonid Population (VSP)

Upper Columbia ESU:



ESU = Evolutionary Significant Unit

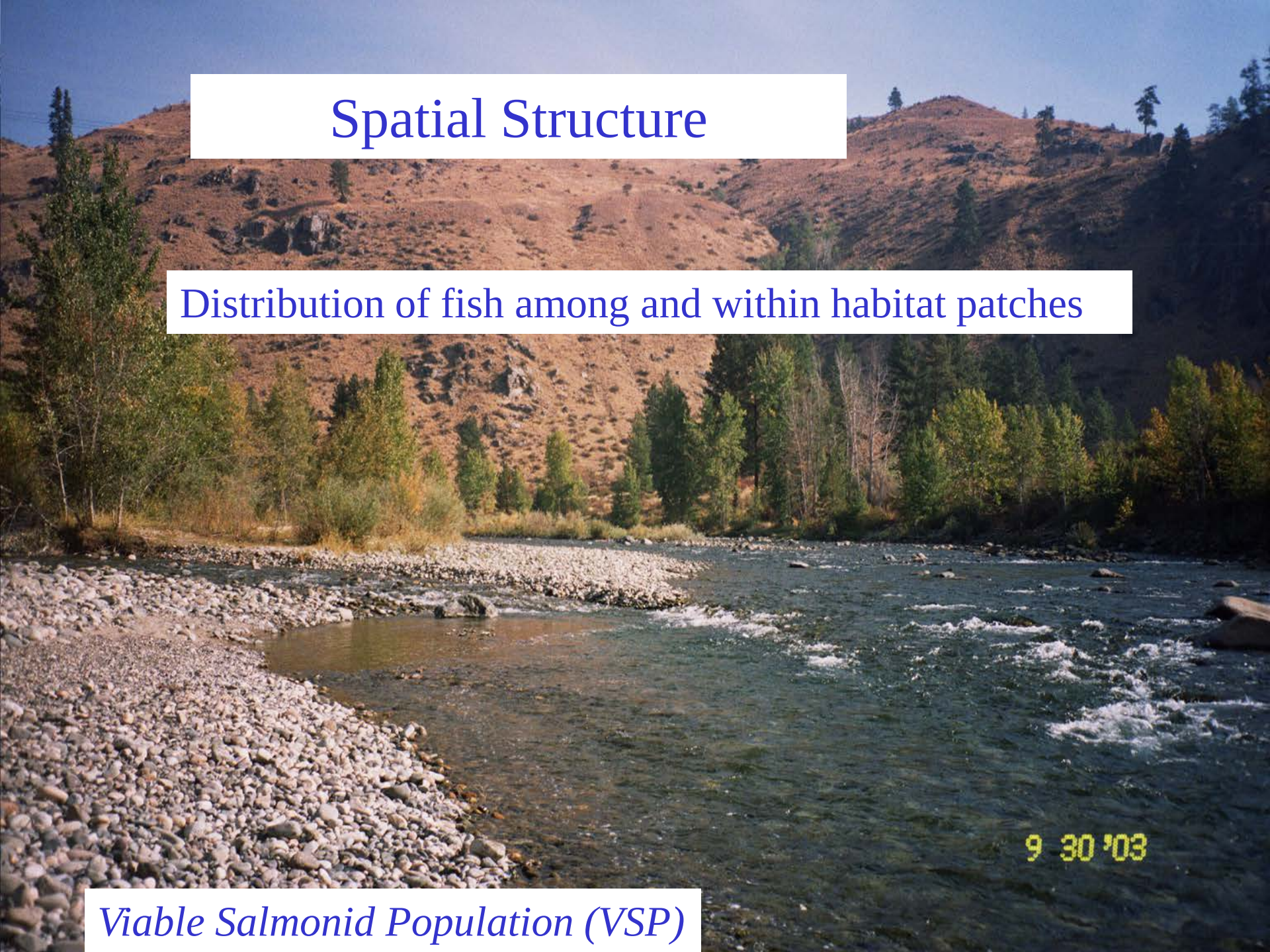
Viable Salmonid Population (VSP)



1) Abundance = adults on the spawning grounds

2) Productivity = population growth rate
i.e.—how many fish return for each fish that spawns.

10 1 '03

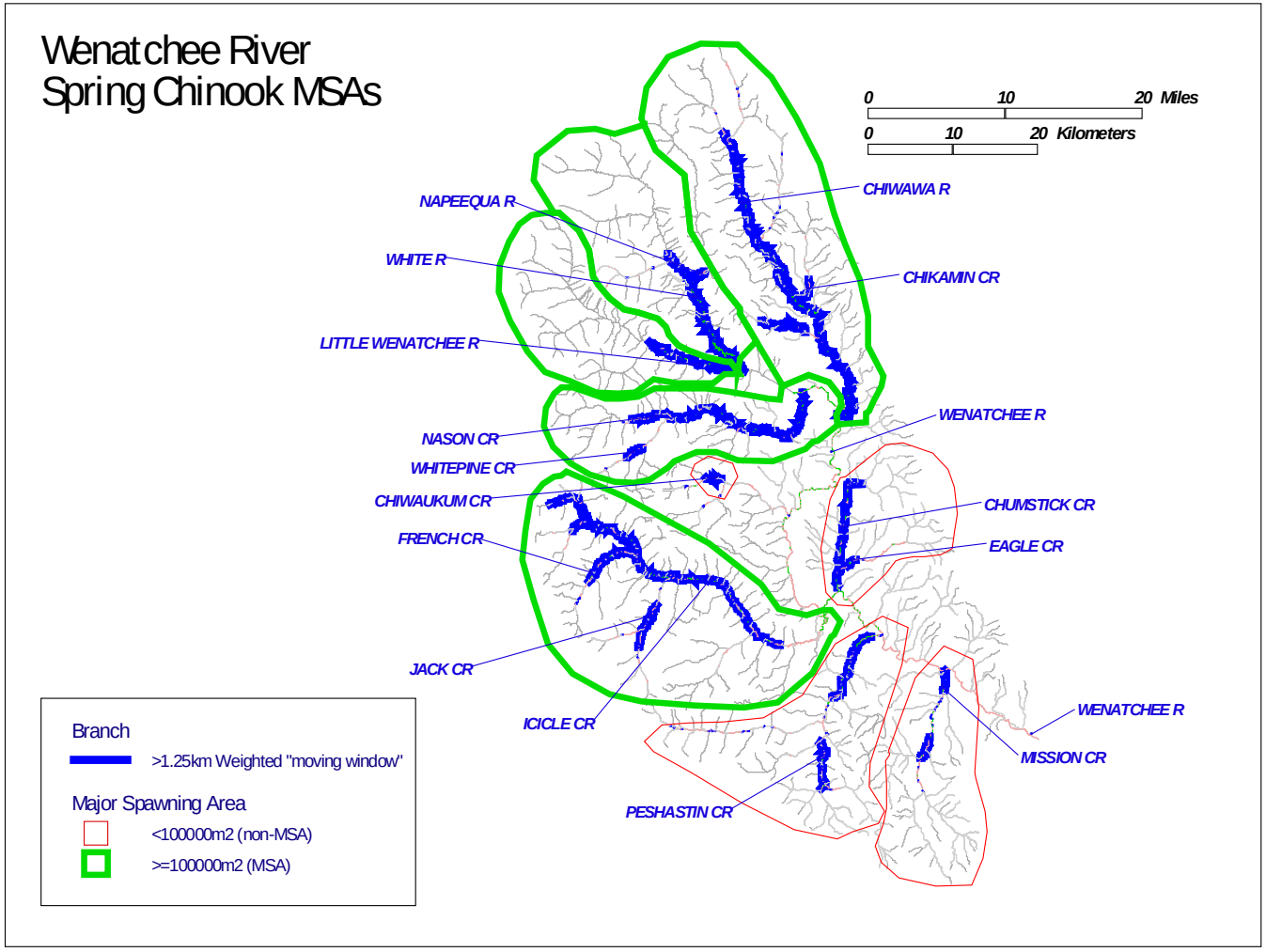


Spatial Structure

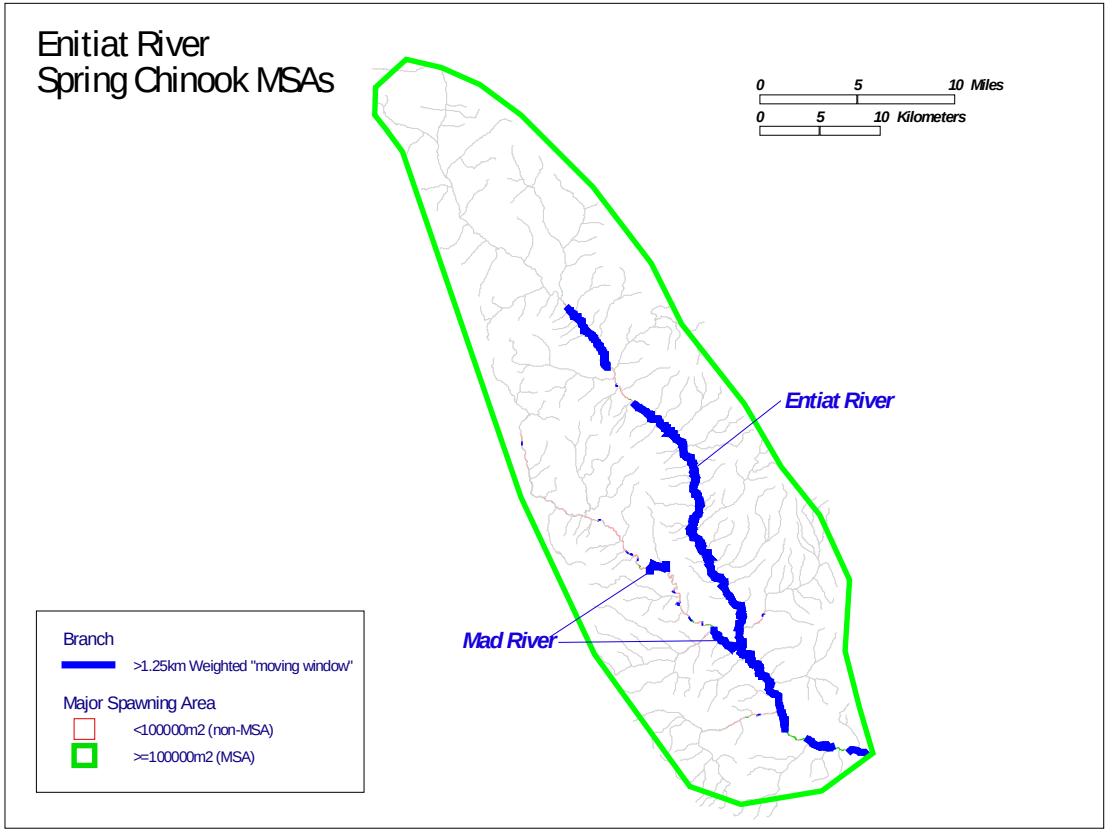
Distribution of fish among and within habitat patches

Viable Salmonid Population (VSP)

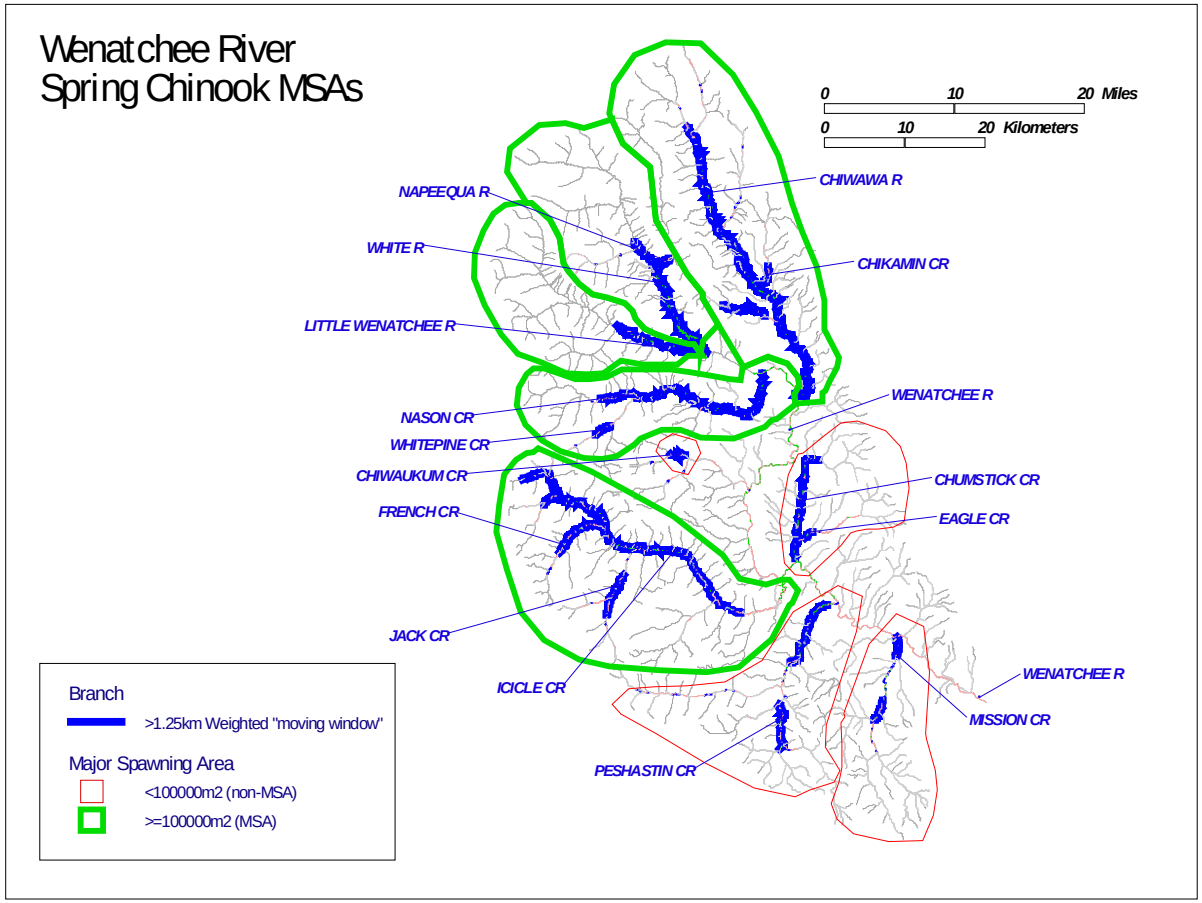
Spatial Structure



Spatial Structure



Developing FBRB Criteria for Spatial Structure



Population specific SS requirements:

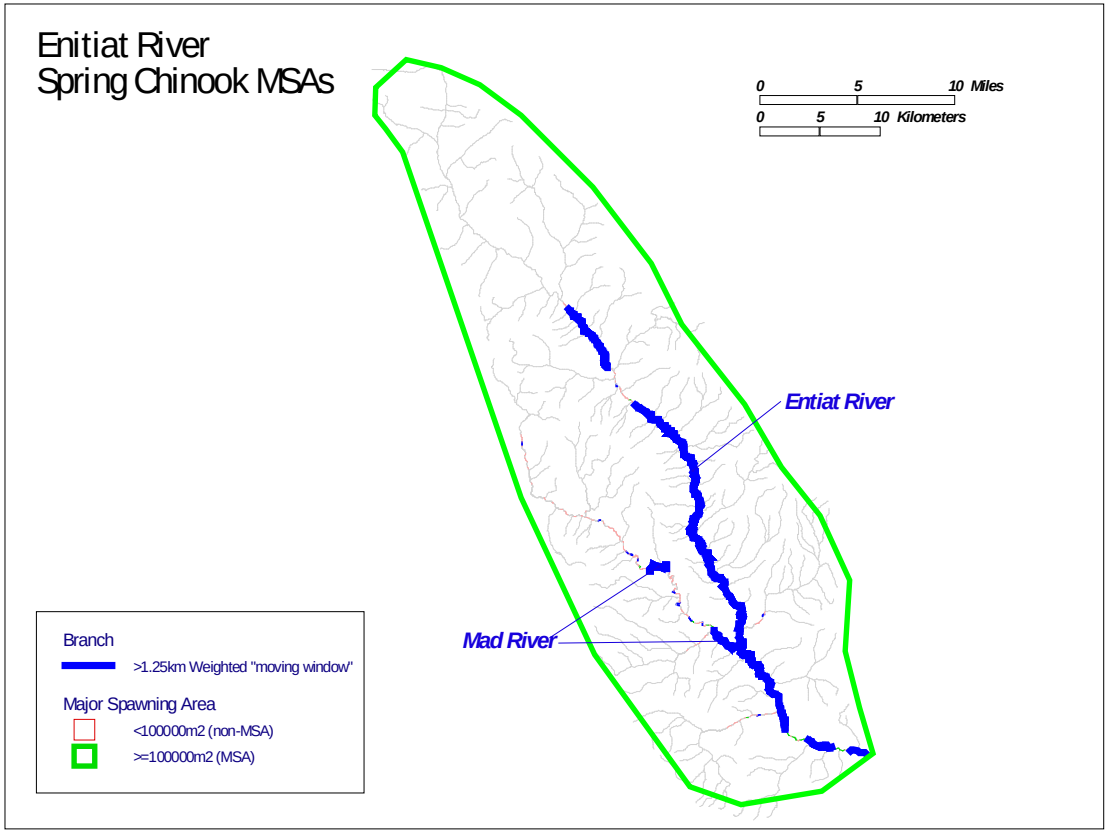
x# of major
y# of minor

Or

x% of distribution

Developing FBRB Criteria for Abundance

If Entiat goal is 500 spawners and current abundance is 250 then projects that add capacity could be important.



Population specific abundance <u>requirements:</u>

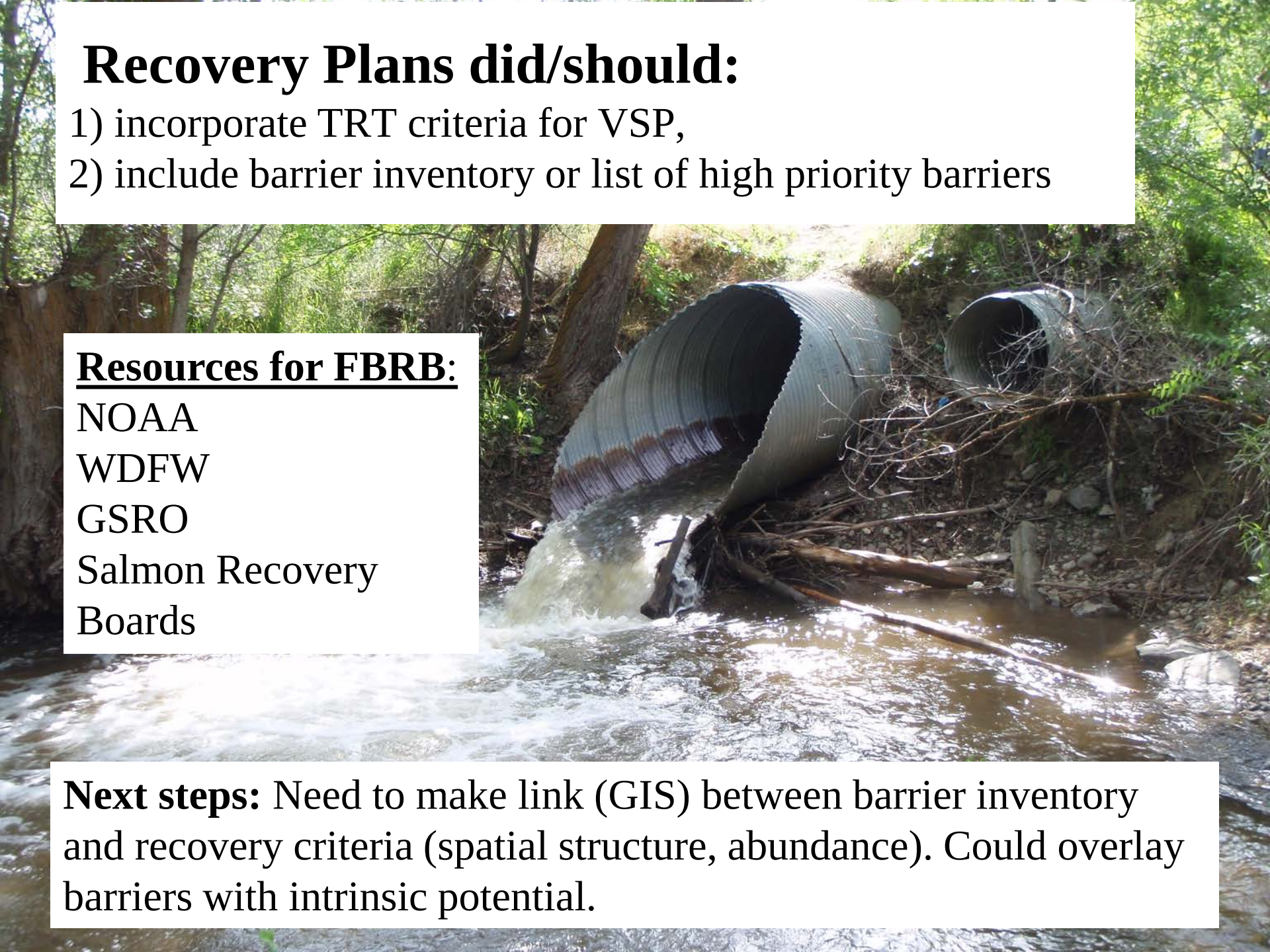
x% of distribution

Or

x% of intrinsic potential

Recovery Plans did/should:

1) incorporate TRT criteria for VSP,
2) include barrier inventory or list of high priority barriers



Resources for FBRB:

NOAA
WDFW
GSRO
Salmon Recovery Boards

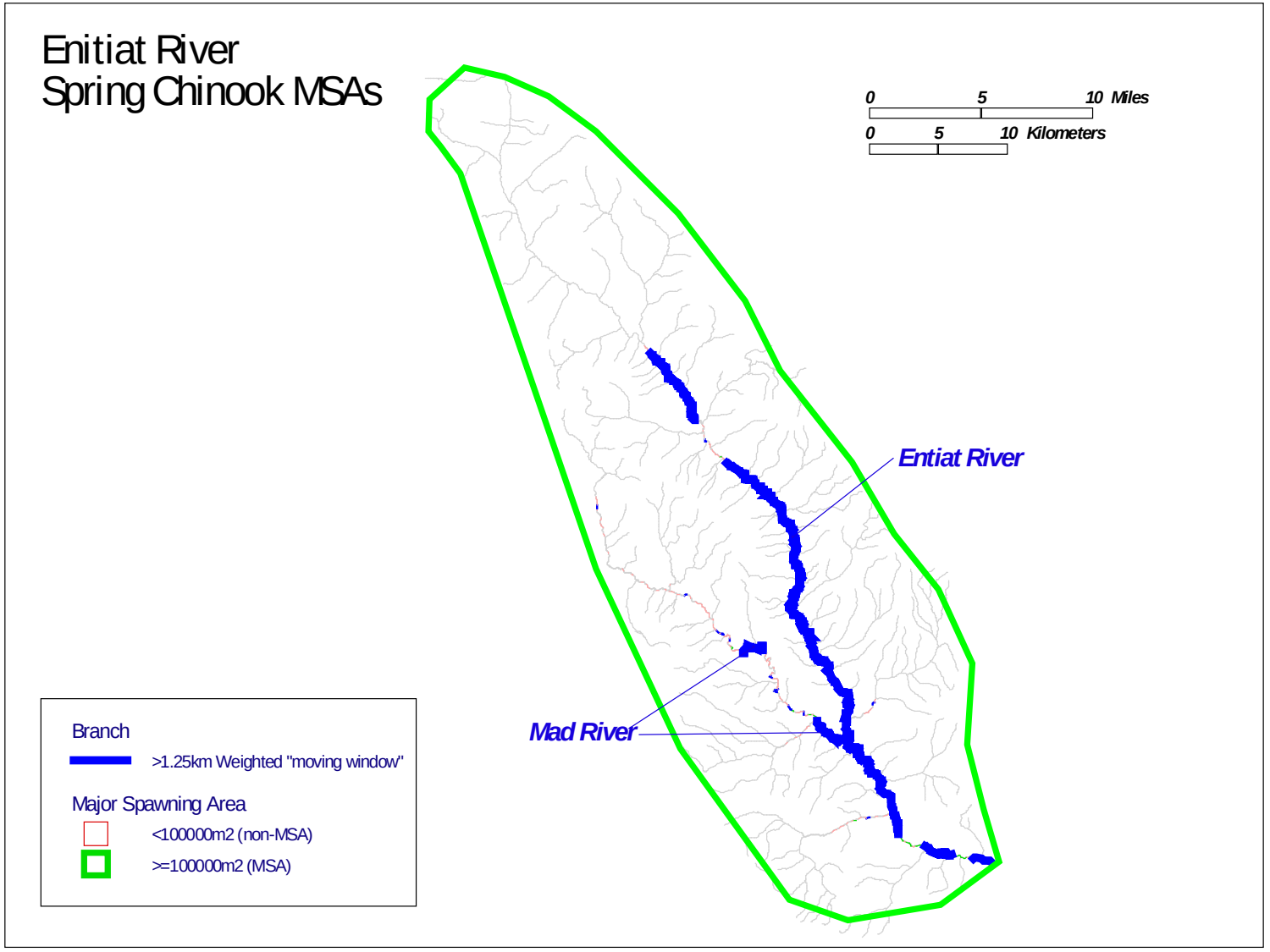
Next steps: Need to make link (GIS) between barrier inventory and recovery criteria (spatial structure, abundance). Could overlay barriers with intrinsic potential.

Intrinsic Potential

Model estimate of how good an area might be for spawning and rearing salmon/steelhead.

- Usually based on course scale info, relatively unaffected by human influence (Gradient, stream width, valley width, temperature)
- Stream area (LxW) segments get discounted based on other features (i.e., steep gradient)

Intrinsic Potential




The End

Diversity

Some key concepts…

- Genetics (DNA)
- Physical traits
  - (size, age, run timing, migration patterns)
- Occupied ecoregions
- Hatchery influences (domestication, straying)