

Electro-Fishing Workshop

Practitioner's Presentation
Landowner Caucus
January 30th, 2015



Why do landowners conduct stream classification surveys?

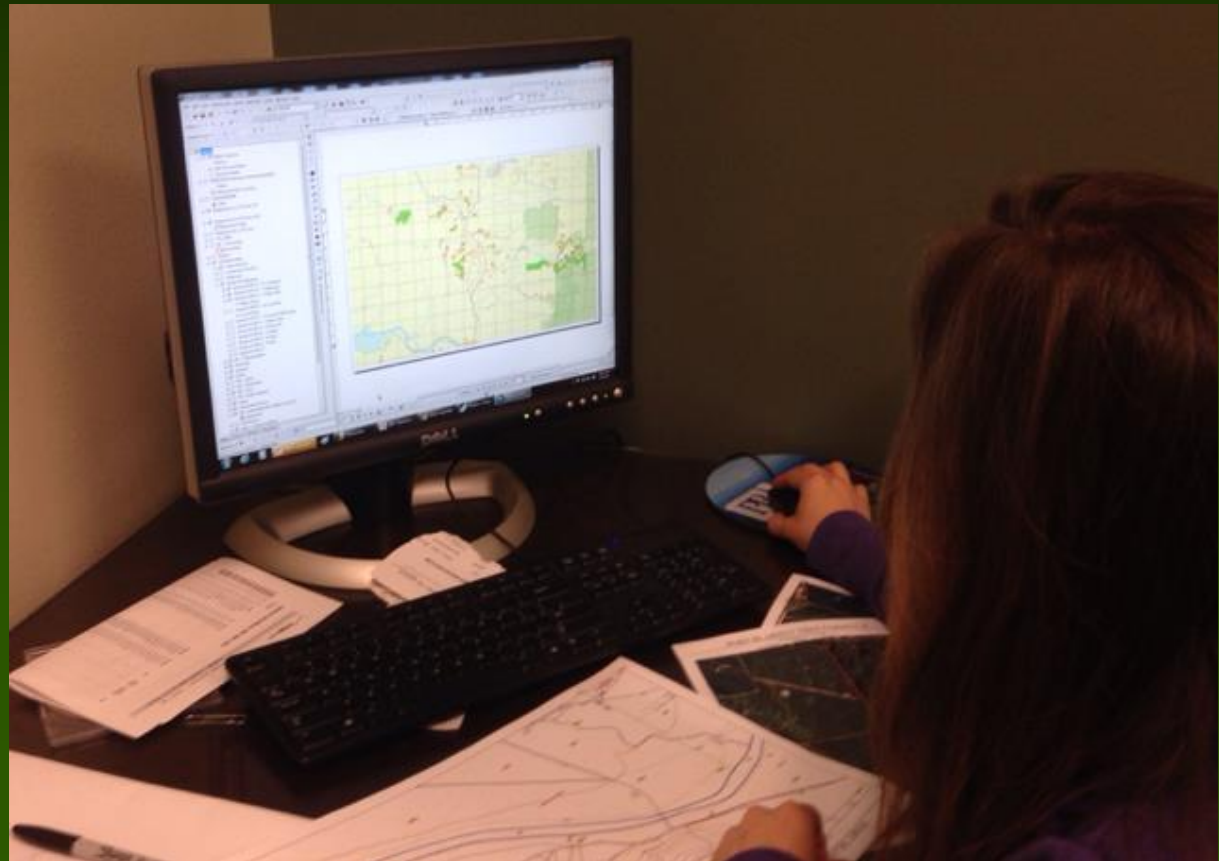
“Before submitting a Forest Practices Application/Notification (FPA/N), landowners are required to correctly identify and classify all streams, wetlands, lakes and ponds, and describe how the verification was implemented in the field for all waters within the proposed activity area and within 200 feet of the proposed activity.”

- Inaccurate mapping and unmapped streams
- E-fishing is accurate and reliable
- Burden is on the landowner to “get it right”

“Pre-Field” Planning

- Internal records and databases
- External sources (e.g., DNR Water Type Maps)
- Surveys conducted in upstream reaches
- Previous and adjacent landowners
- Consultation with WDFW and affected Tribes

Eliminates
redundant and
duplicative
surveys



Visual Techniques

- Walking stream bank to visually observe fish
- Feeding (e.g., using Powerbait to elicit a response)
- Hook and line, snorkeling (large water bodies)



"The absence of fish use must be supported by stream survey information collected using a backpack electroshocker to electrofish the stream segment in question." *Board Manual Section 13, Part 4.*

Strategic Implementation

- **Timing**
- **Flow regime**
- **Natural and man-made barriers**



This is not your grandfather's e-fisher!

- Technological advances in equipment
- AC versus DC
- Adjustable setting depending on water conditions
 - voltage, pulse width, pulse rate
- Trained biologists





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northwest Region
7600 Sand Point Way NE
Seattle, Washington 98115

October 25, 2011 F/NWR3

Permitting

Mr. N. Phil Peterson
West Fork Environmental, Inc.
530-B Ronlee Lane NW
P.O. Box 4455
Olympia, WA 98501

Re: Permit 15486

Dear Mr. Peterson:

Enclosed is Scientific Research Permit 15486 issued to the W the authority of Section 10(a)(1)(A) of the Endangered Species Act annually take listed salmonids while conducting a study to determine the effects of select basins in Oregon and Washington.

The National Marine Fisheries Service (NMFS) requires that you review the permit before engaging in the permit activities then fax a copy of it (or mail a photocopy) to our office if the number is (503) 230-5441. Please note that you are not authorized until our office receives a signed copy of the signature.

Your attention is directed to Section B(19) which describes the requirements. Permit 15486 is subject to annual authorization compliance with the authorization requirements. Annual report 15486 expires on December 31, 2015.

If you have any questions concerning the permit, please contact

Sincerely,


William W. Ferguson
Regional Administrator

Enclosure

cc: File copy - [15486], F/EN6 - NMFS Enforcement (Ra Science Center (Ferguson))



United States Department of the Interior

FISH AND WILDLIFE SERVICE

911 NE 11th Avenue
Portland, Oregon 97232-4181

IN REPLY REFER TO:
AES/Recovery

Dear Permittee:

Enclosed is your U.S. Fish and Wildlife Service recovery permit issued under the authority of Section 10(a)(1)(A) of the Endangered Species Act (ESA), 16 U.S.C. 1531 et seq., and the regulations.

Please refer to the permit number in all correspondence and reports concerning the permit. Engagement in any activity pursuant to this permit constitutes understanding and acceptance of the Special Terms and Conditions attached to your permit.

By accepting this permit and conducting activities authorized by it, you agree to the attached terms and conditions. Failure to meet permit terms and conditions, or violation of ESA section 9 take violations, or suspension/revocation of this permit.

Please be aware that some species named in your recovery permit may be listed under various State Endangered Species Acts or otherwise be of special concern. Activities affecting those species may not be conducted without first obtaining a State permit. Federal permits do not supersede State authorizations.

If you have any questions regarding this matter, please contact Grant Ferguson at 503-231-6844. Thank you.

Sincerely,



Endangered Species Program

Enclosures



PERMIT # 13-032b
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WASHINGTON STATE SCIENTIFIC COLLECTION PERMIT

Washington Department of Fish and Wildlife, Attn: SCP
600 Capitol Way North
Olympia, WA 98501
(360) 902-2464

RCW 77-32-240, WAC 220-20-045.

Permit holder is authorized to collect fish, shellfish, wildlife, or the nests of birds, as provided herein and under the Permit Conditions:

Display/Education Research/Scientific Investigation Stream Assessment

Starting Date: **March 13, 2013**

Expiration Date: **March 13, 2014**

Permit Holder: N Phil Peterson Agency: West Fork Environmental, Inc. Address: PO Box 4455 Olympia, WA 98501	Telephone: 360-753-0485 Email: phil@westforkenv.com
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Sub-Permit Holder(s): Kyle Meier Neil Stifka	Ryan Simmons
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Species:	Number:	Location:	Method of Collection:
Coho	10	Clallam County	Electrofishing
	5	Clark County	
	5	Cowlitz County	
	10	Jefferson County	
	5	King County	
	5	Kitsap County	
	5	Lewis County	
	5	Mason County	
	10	Skagit County	
	10	Snohomish County	
	5	Thurston County	
	5	Wahkiakum County	
	Rainbow trout	5	
5		Cowlitz County	
150		King County	
5		Klickitat County	
50		Lewis County	
5		Okanogan County	
5		Pend Oreille County	
20		Skagit County	
5		Skamania County	
25		Snohomish County	
10		Spokane County	
5		Stevens County	
25		Thurston County	
10		Walla Walla County	
5		Whatcom County	
5		Yakima County	



Permitting

Freshwater Location

Research Area: Pacific Ocean State: WA Sub Basin (4th Field HUC): Cowlitz Stream Name: Coweeman River, Ostrander and Salmon Creeks

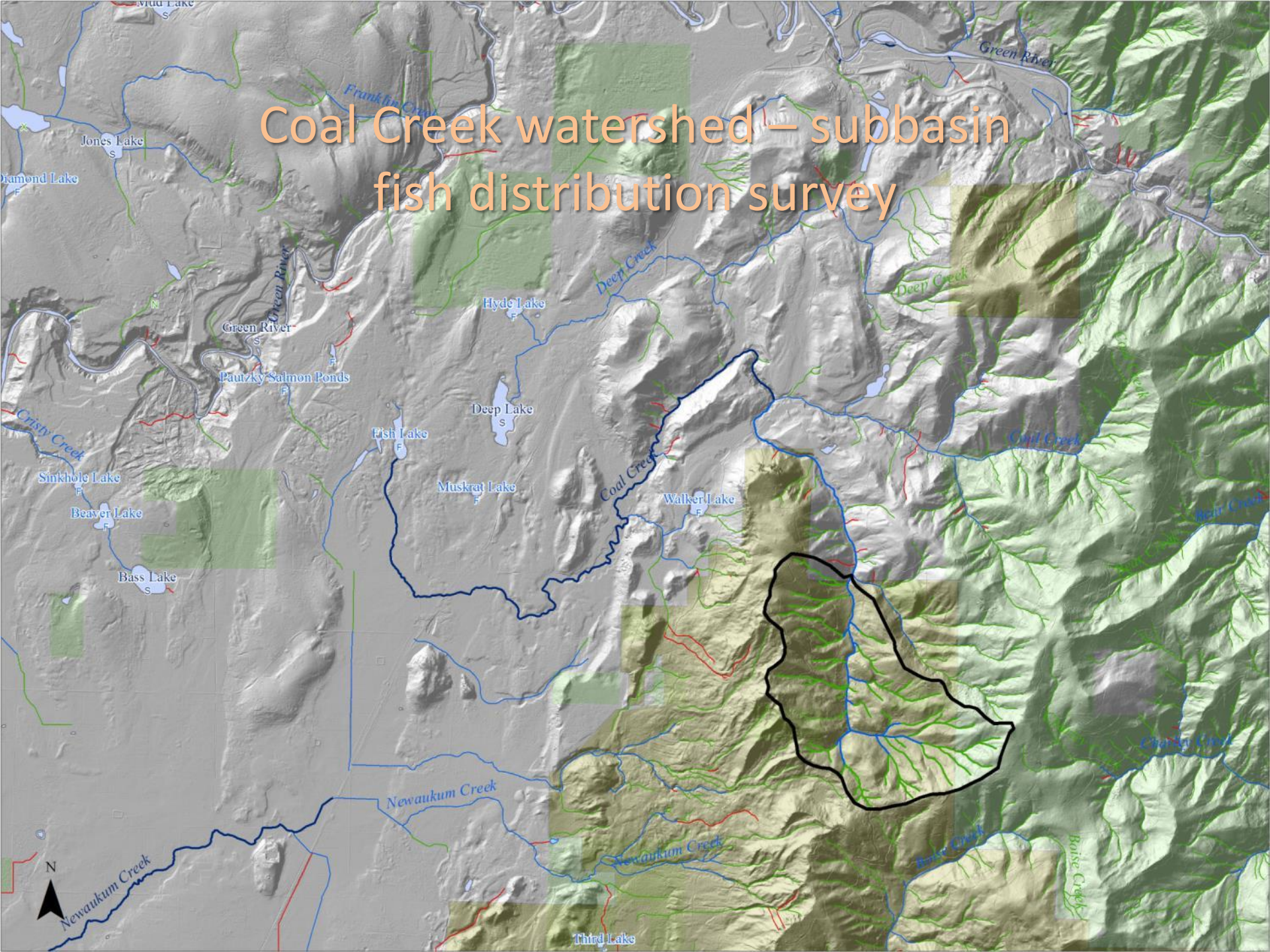
Sale in Oregon of species taken: None

Location Description: Coweeman River, Ostrander Creek, and Salmon Creek in the lower Cowlitz subbasin.

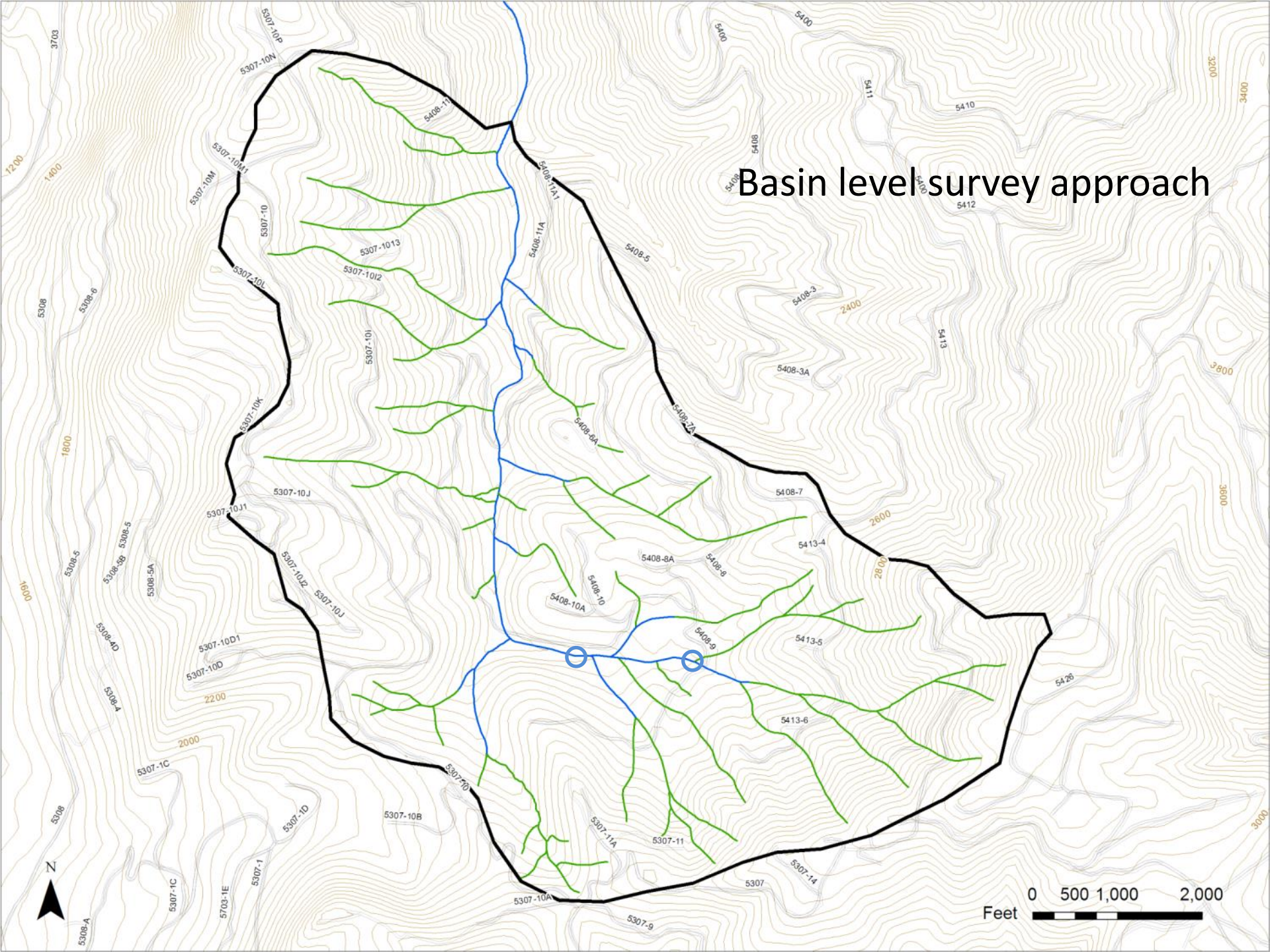
Take Information

Line	Ver	Species	Listing Unit/Stock	Production /Origin	Life Stage	Sex	Expected Take	Actual Take	Indirect Mort	Actual Mort	Take Action	Observe /Collect Method
1		Steelhead	Lower Columbia River (NMFS Threatened)	Natural	Juvenile	Male and Female	10	0	1	0	Capture/Handle/Release Fish	Electrofishing, Backpack
2		Salmon, Chinook	Lower Columbia River (NMFS Threatened)	Natural	Juvenile	Male and Female	10	0	1	0	Capture/Handle/Release Fish	Electrofishing, Backpack
3		Salmon, coho	Lower Columbia River (NMFS Threatened)	Natural	Juvenile	Male and Female	10	0	1	0	Capture/Handle/Release Fish	Electrofishing, Backpack

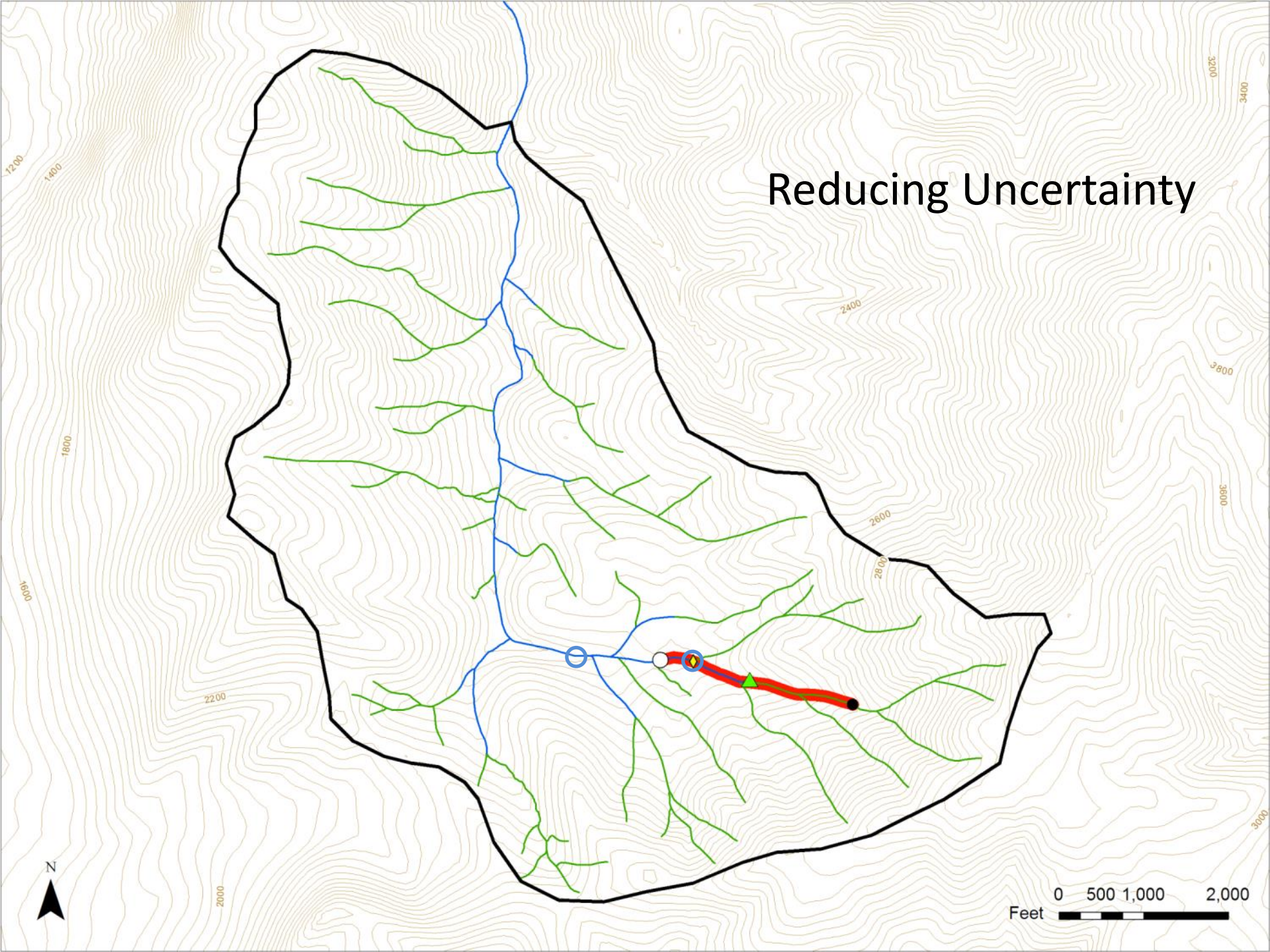
Coal Creek watershed – subbasin fish distribution survey



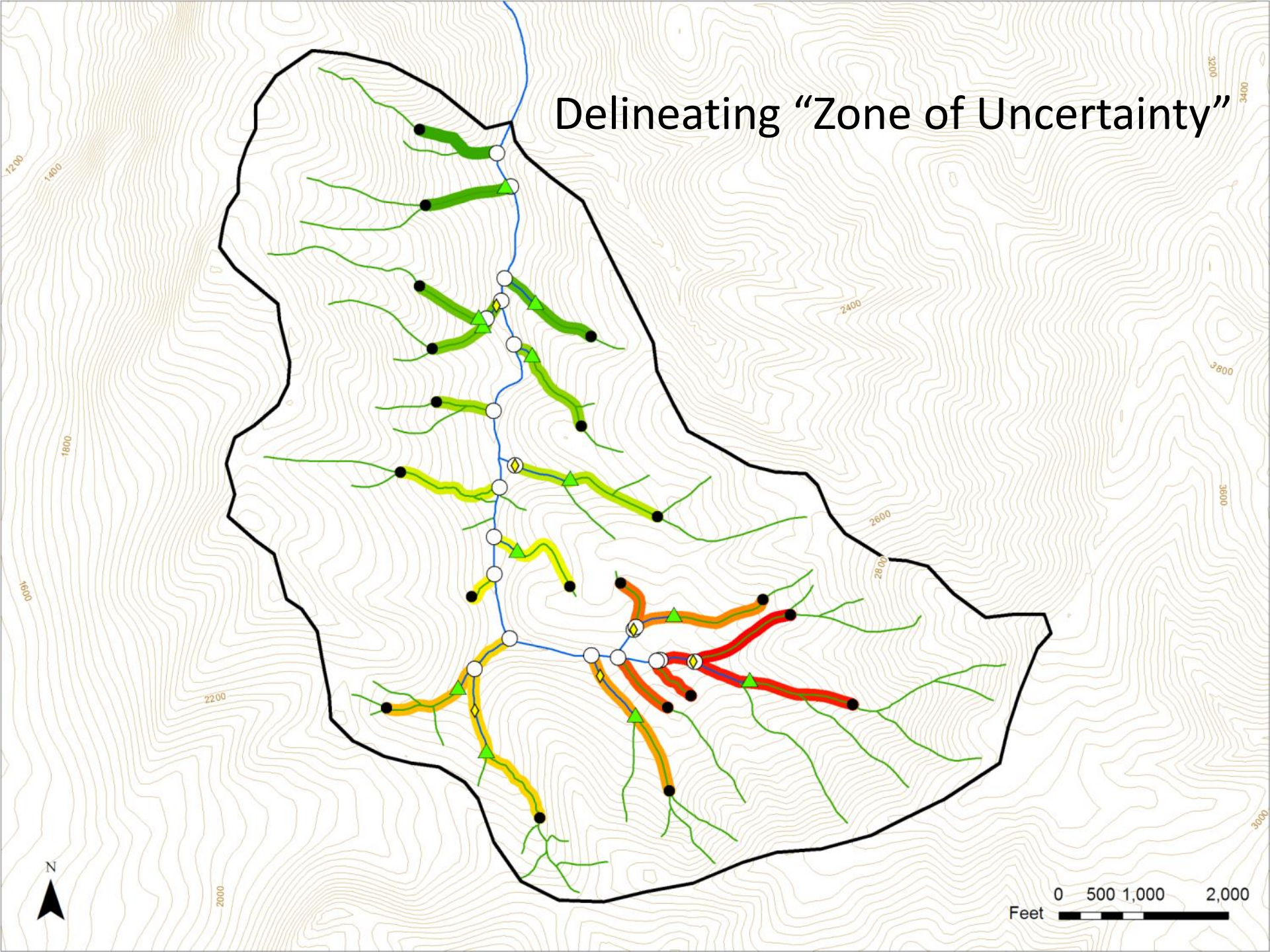
Basin level survey approach



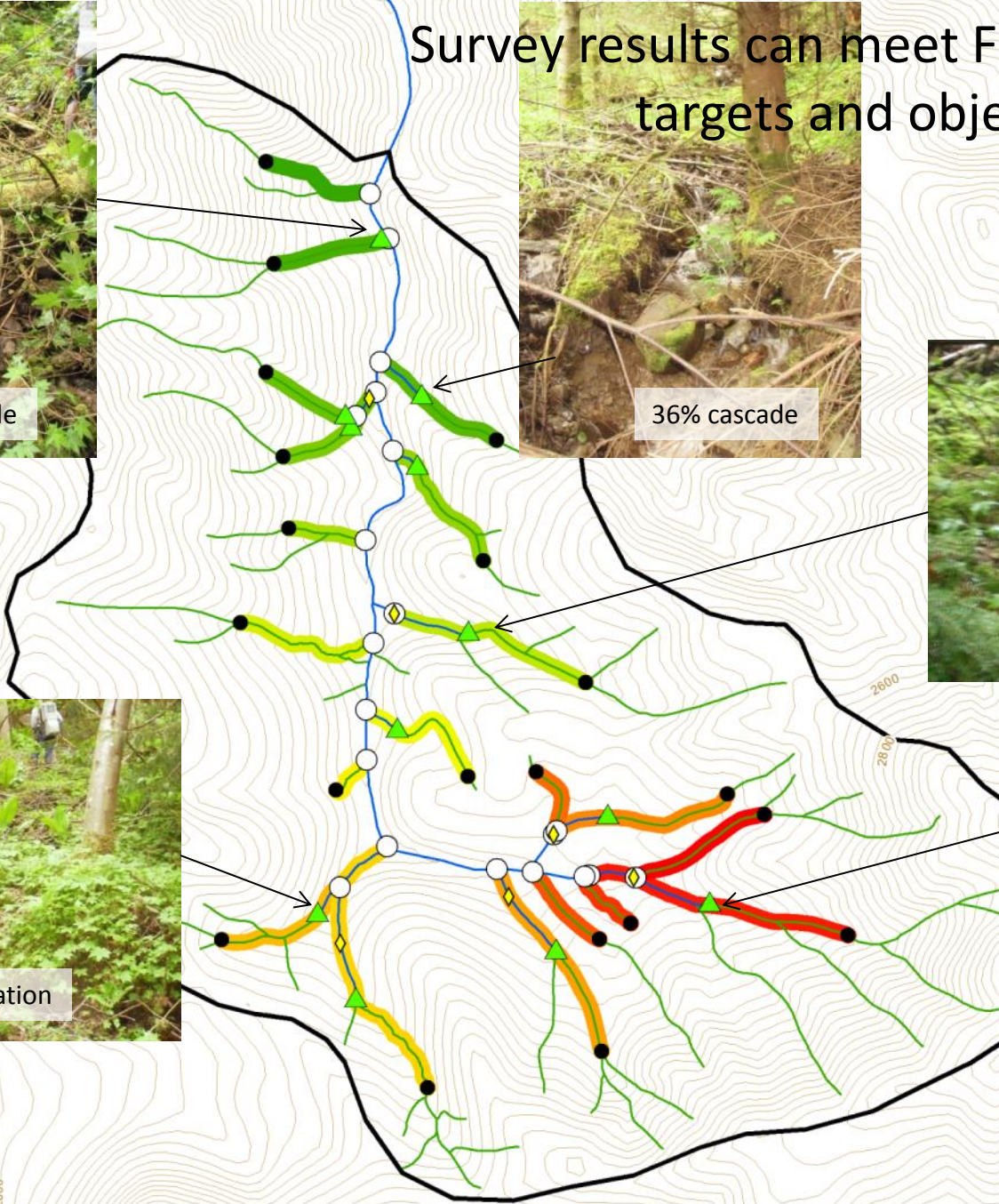
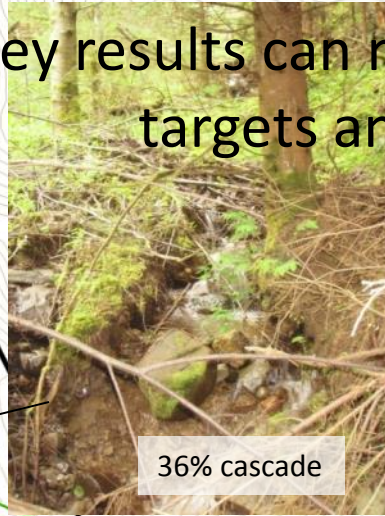
Reducing Uncertainty

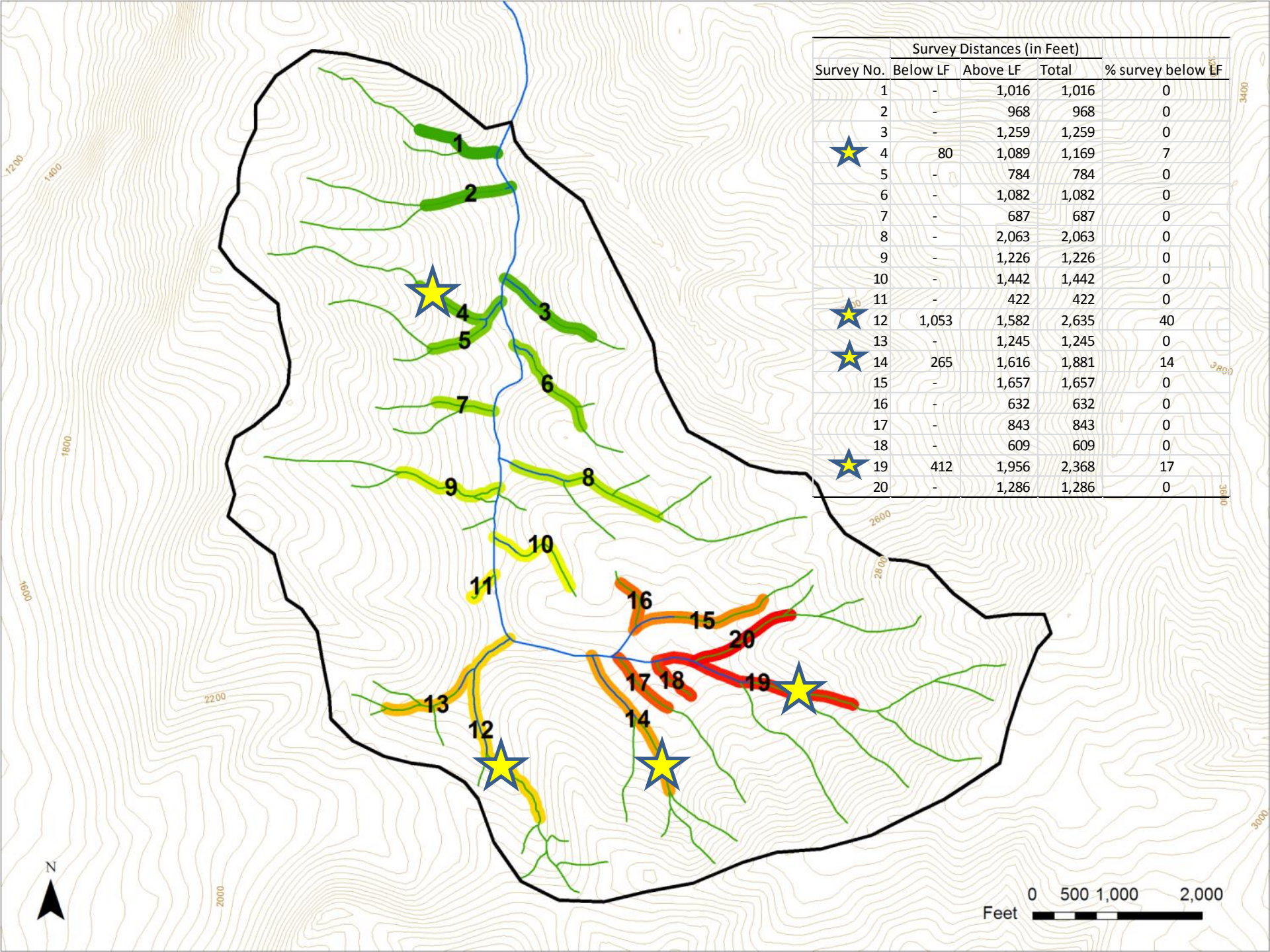


Delineating "Zone of Uncertainty"







Survey results can meet FFR performance targets and objectives





Survey No.	Survey Distances (in Feet)			% survey below LF
	Below LF	Above LF	Total	
1	-	1,016	1,016	0
2	-	968	968	0
3	-	1,259	1,259	0
★ 4	80	1,089	1,169	7
5	-	784	784	0
6	-	1,082	1,082	0
7	-	687	687	0
8	-	2,063	2,063	0
9	-	1,226	1,226	0
10	-	1,442	1,442	0
★ 11	-	422	422	0
★ 12	1,053	1,582	2,635	40
★ 13	-	1,245	1,245	0
★ 14	265	1,616	1,881	14
15	-	1,657	1,657	0
16	-	632	632	0
17	-	843	843	0
★ 18	-	609	609	0
★ 19	412	1,956	2,368	17
20	-	1,286	1,286	0

Efficacy using electrofishing

Survey No.	Survey Distances (in Feet)			% survey below LF
	Below LF	Above LF	Total	
1	-	1,016	1,016	0
2	-	968	968	0
3	-	1,259	1,259	0
 4	80	1,089	1,169	7
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7	-	687	687	0
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9	-	1,226	1,226	0
10	-	1,442	1,442	0
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17	-	843	843	0
18	-	609	609	0
 19	412	1,956	2,368	17
20	-	1,286	1,286	0
	1,810	23,464	25,274	7

LF = last detected fish

Key Questions:

1. Do protocol electro-fishing surveys affect fish populations?
2. Can protocol electro-fishing surveys as currently applied in the field achieve FFR performance targets and objectives?

Do protocol electro-fishing surveys affect fish populations?

While there are some electro-fishing impacts to individual fish, we work hard to minimize those, and effects have not been demonstrated to be significant at the population level .

Kocovsky et al

- No observed population effects after repeated annual sampling.

Elle & Schill (Idaho Fish and Game)

- Less than 1% population effect compared to 50% natural background mortality.

Terminal Site Example (+/- 20% of F/N Breaks)

Total Cutthroat Present = 564

Fish Sampled = 5 out of 564

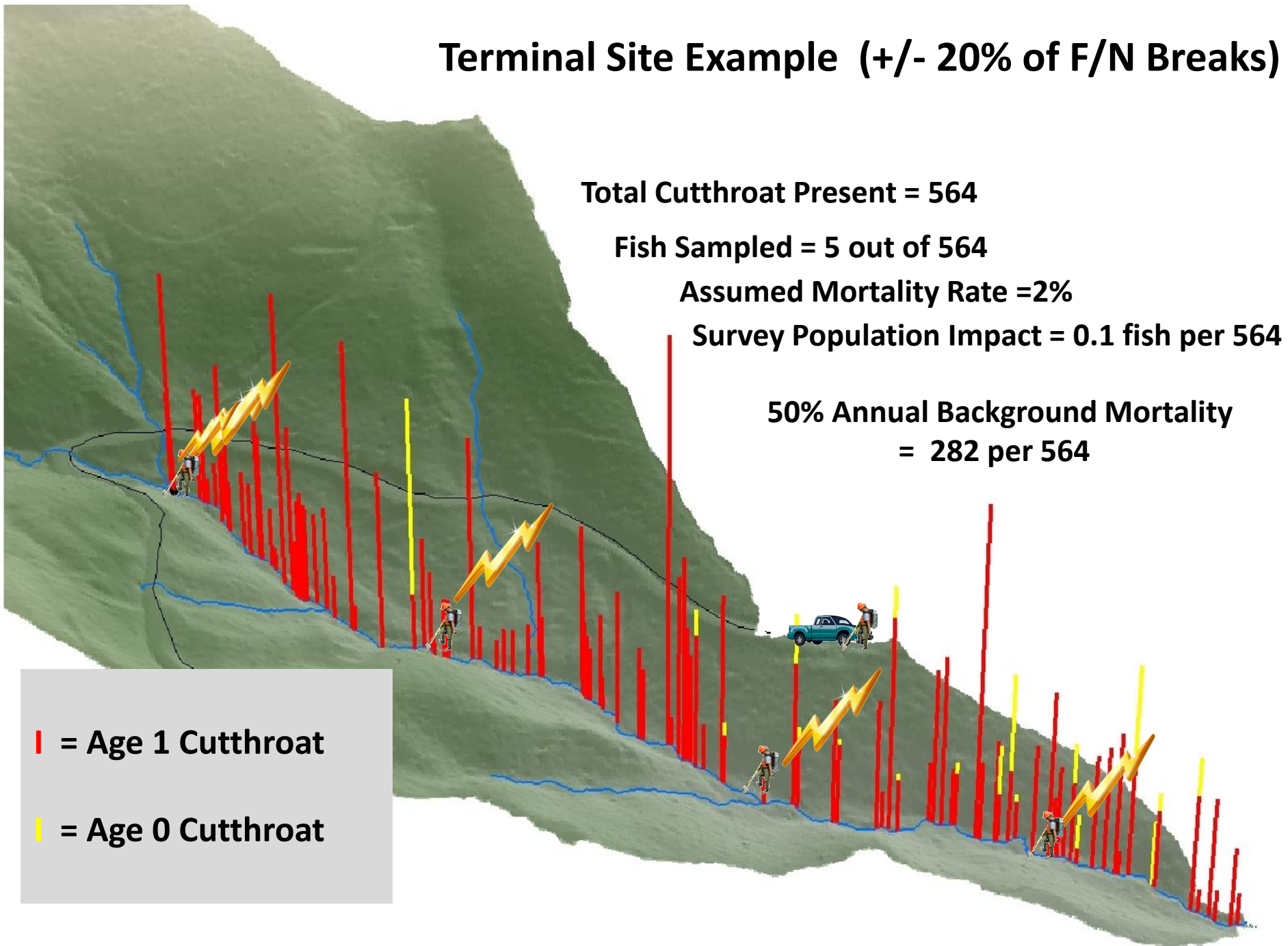
Assumed Mortality Rate = 2%

Survey Population Impact = 0.1 fish per 564

50% Annual Background Mortality
= 282 per 564

| = Age 1 Cutthroat

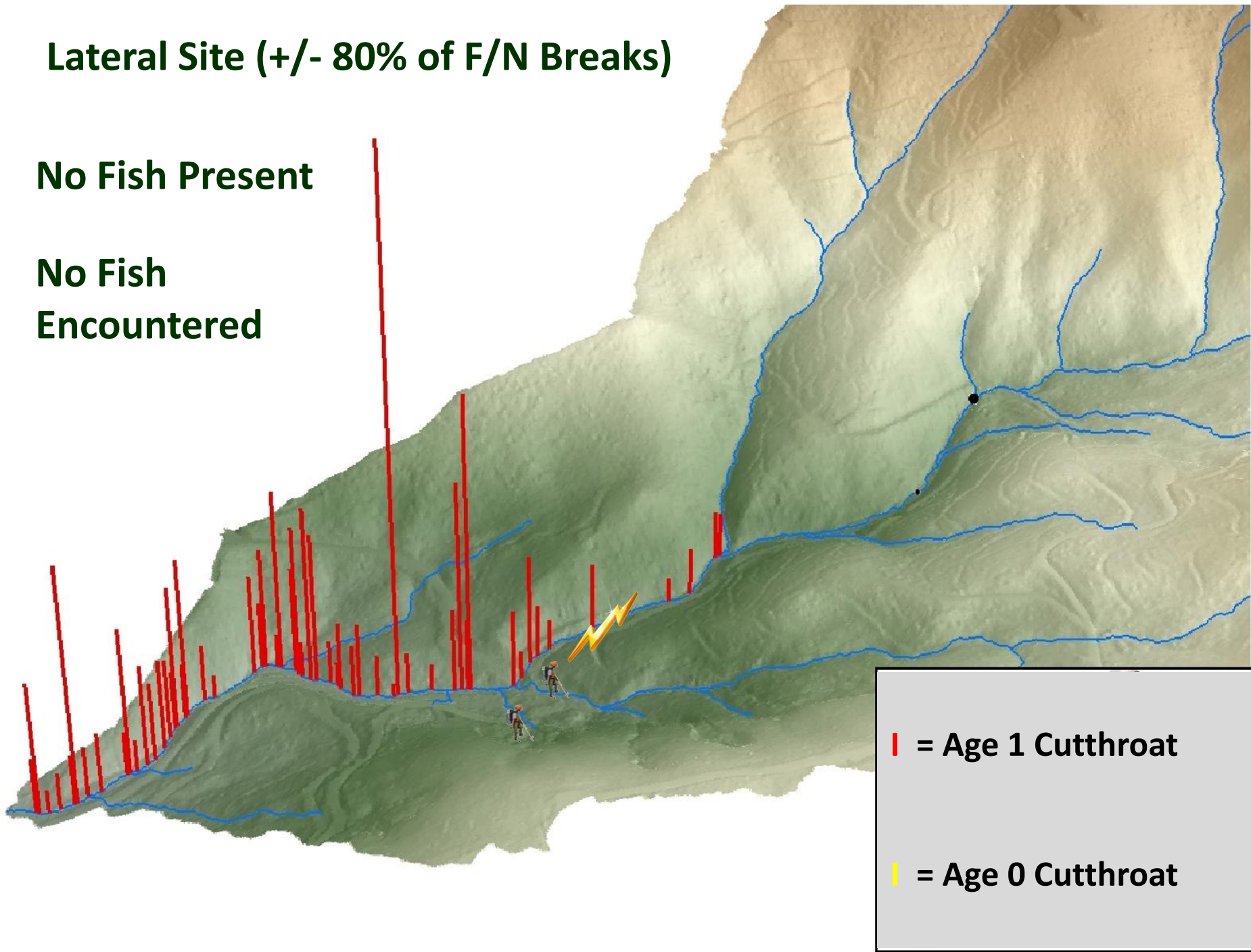
| = Age 0 Cutthroat



Lateral Site (+/- 80% of F/N Breaks)

No Fish Present

No Fish Encountered



Can protocol electro-fishing surveys meet FFR water typing performance targets and objectives?

Translating FFR's landscape-scale targets into site scale surveys:

- Habitat likely to be used by fish...
- 95% precision
- Equitable Allocation of risk
- Map-based system
- Reduce/Eliminate Electro-fishing

Research initiated by ISAG to bridge the gap between “last fish” and “last habitat”.

Problems/Issues:

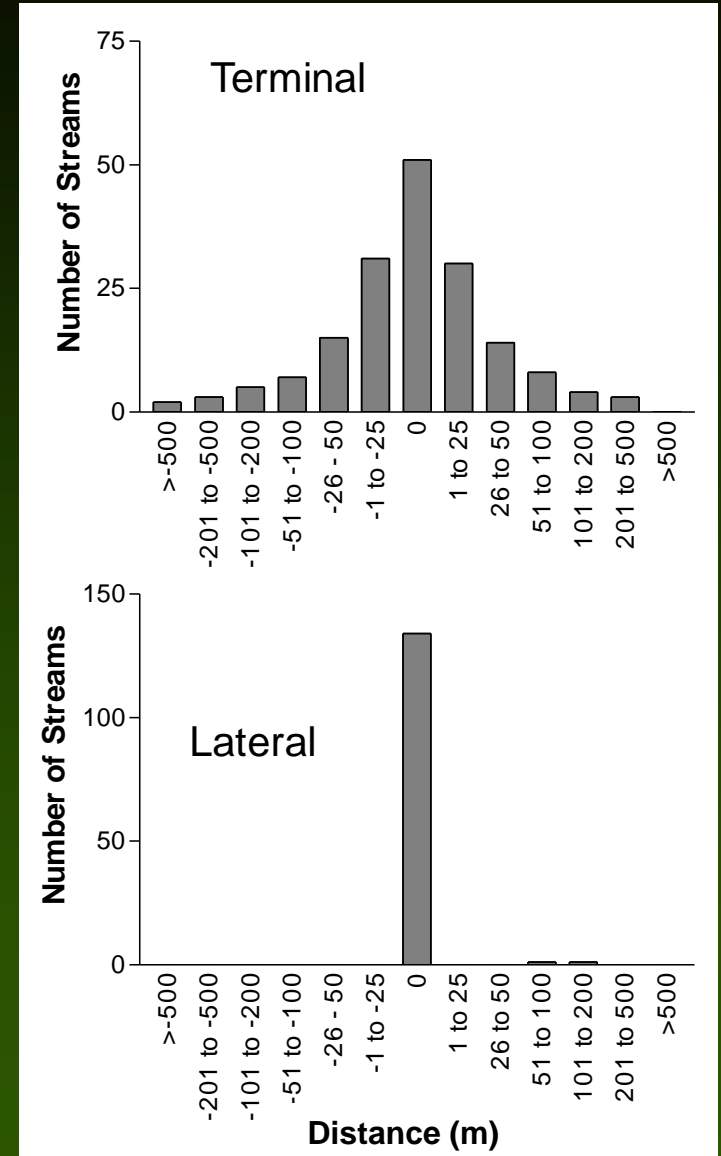
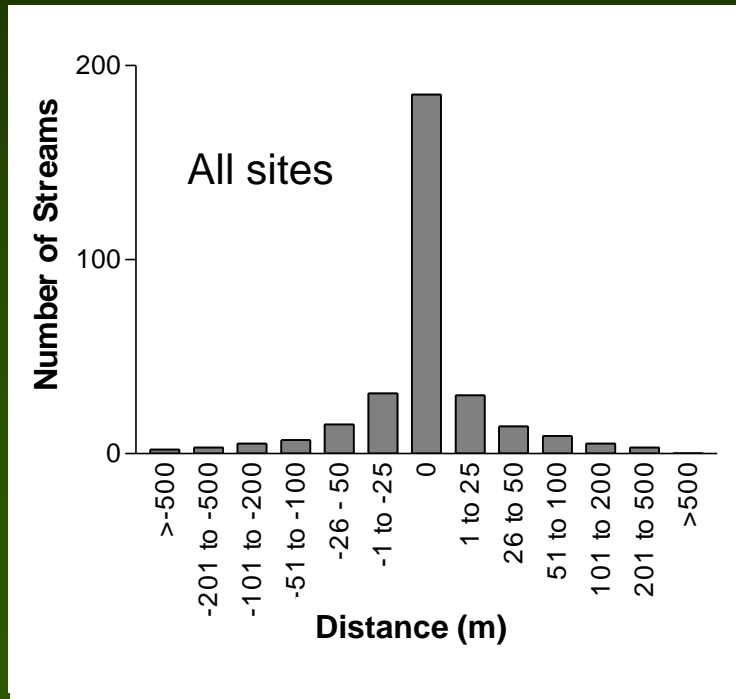
Validating the model or typing streams using “last fish” information alone left questions about achieving the FFR “Likely to be used” fish habitat objective.

- What is reliability of a single visit survey of fish use
- How does seasonal variability affect classification
- How does annual variability affect classification
- Is fish distribution different in un-managed areas compared to managed (i.e., historic vs. current fish distribution)?

CMER Research Findings

Consistent patterns emerged:

- Seasonal and annual variability occurred within a consistent range of stream length, centered around zero.
- No trends across years, seasons, or forest management intensity were identified.
- Surveys reliably identified uppermost fish.



Do surveys as currently applied address FFR fish habitat objectives?

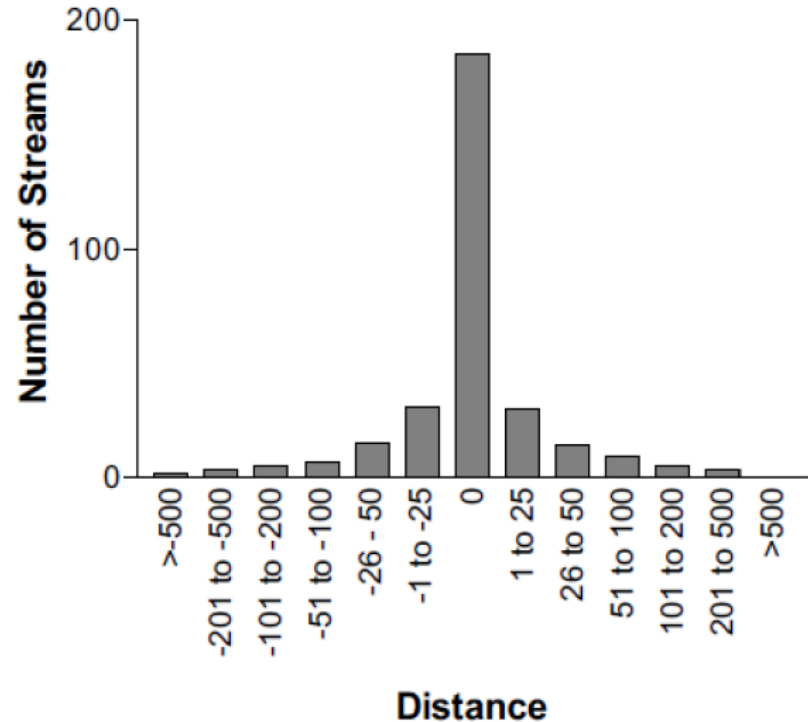
Fish Survey Comparison

How well do single visit protocol surveys identify streams likely to be used by fish?

Several CMER studies provide useful information.

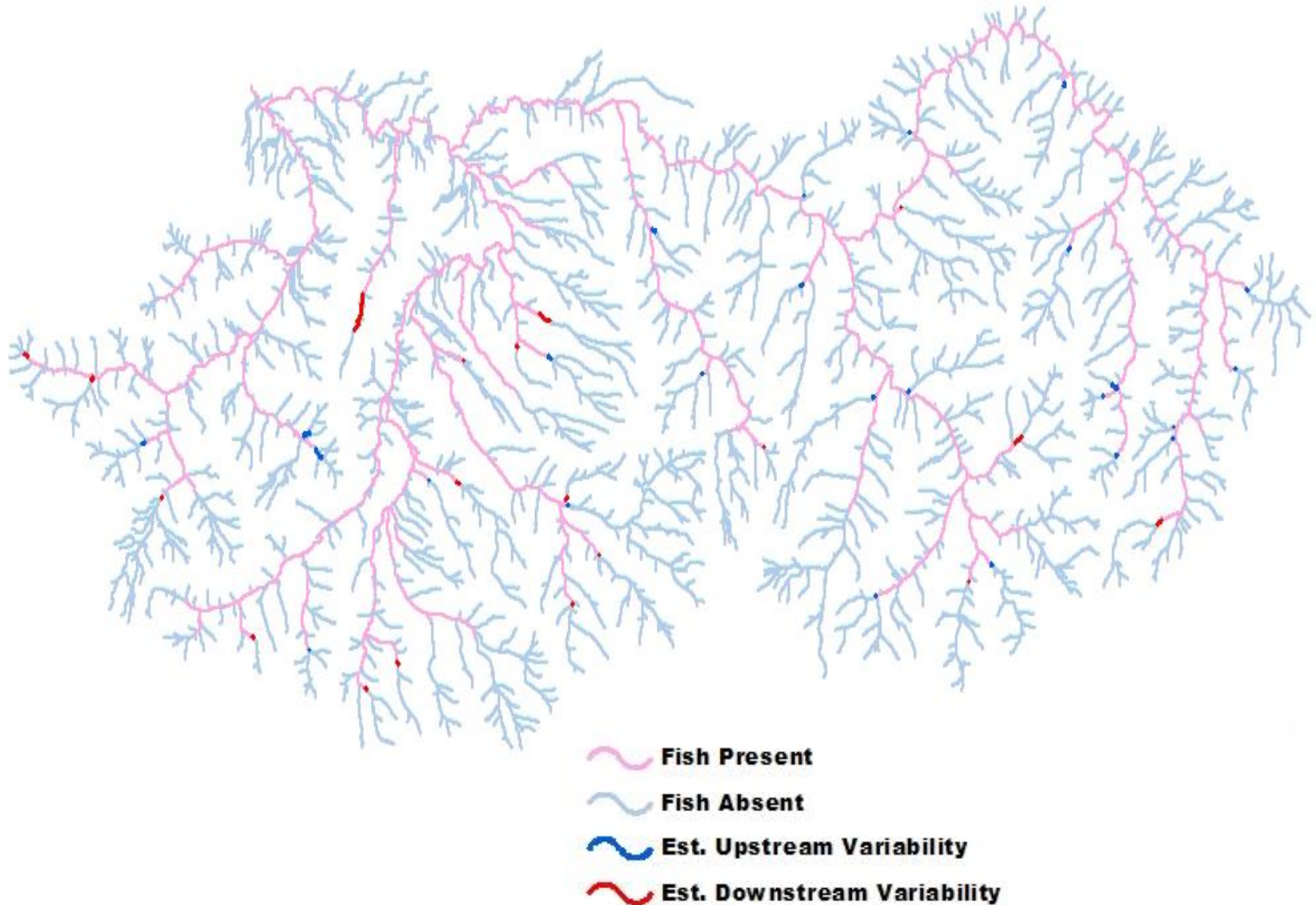
- All CMER variability studies showed equal likelihood of downstream and upstream movement.
- Most streams = no change.
- No trend by season or across years.
- Distance of movement relatively small, Average = 25.5 m, 95% within +/- 100 m.

So, how much of the stream network are we talking about here, anyway?

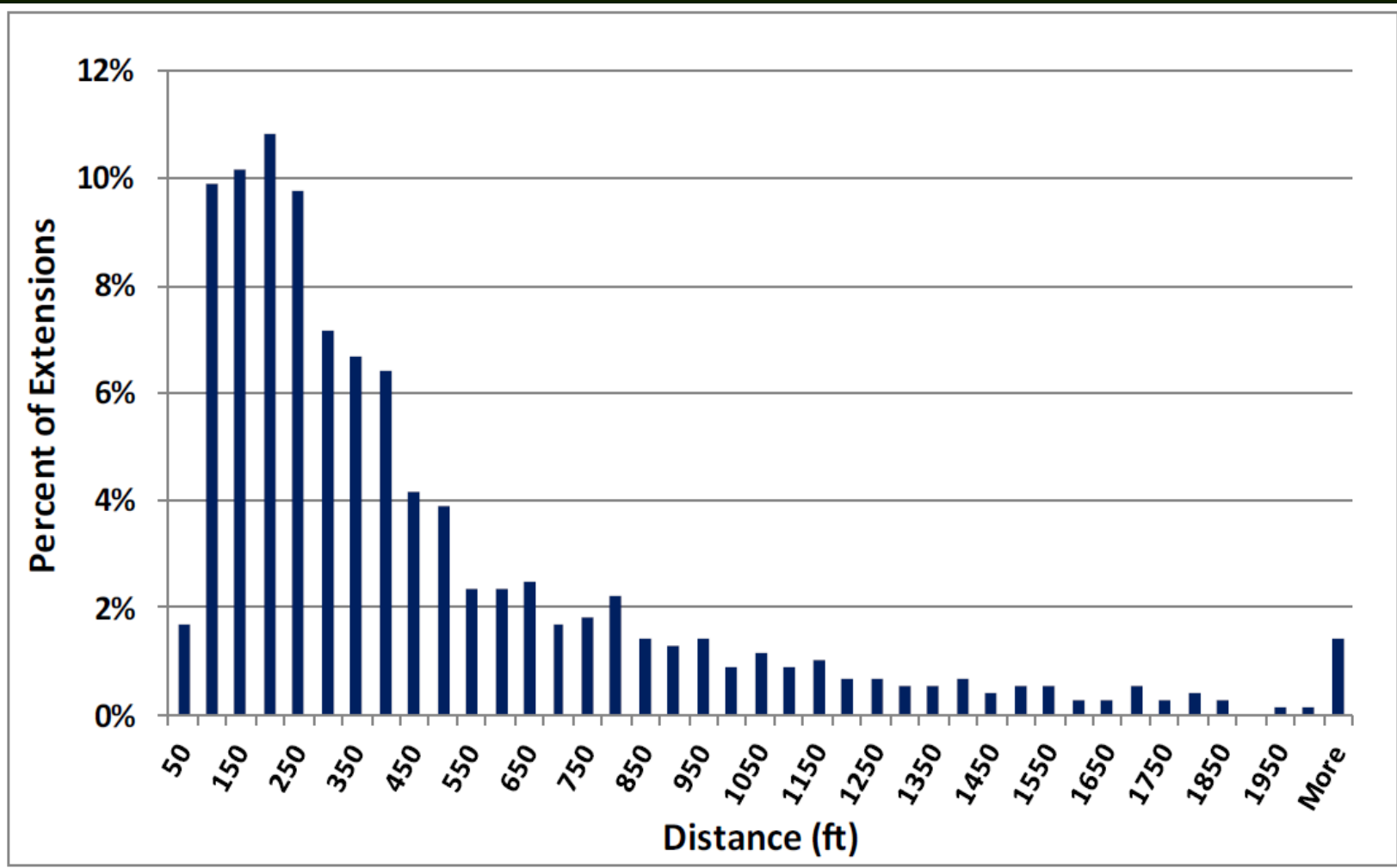


From CMER Annual Variability Study
Cole and Lemke 2003

Estimated variability at a basin-scale

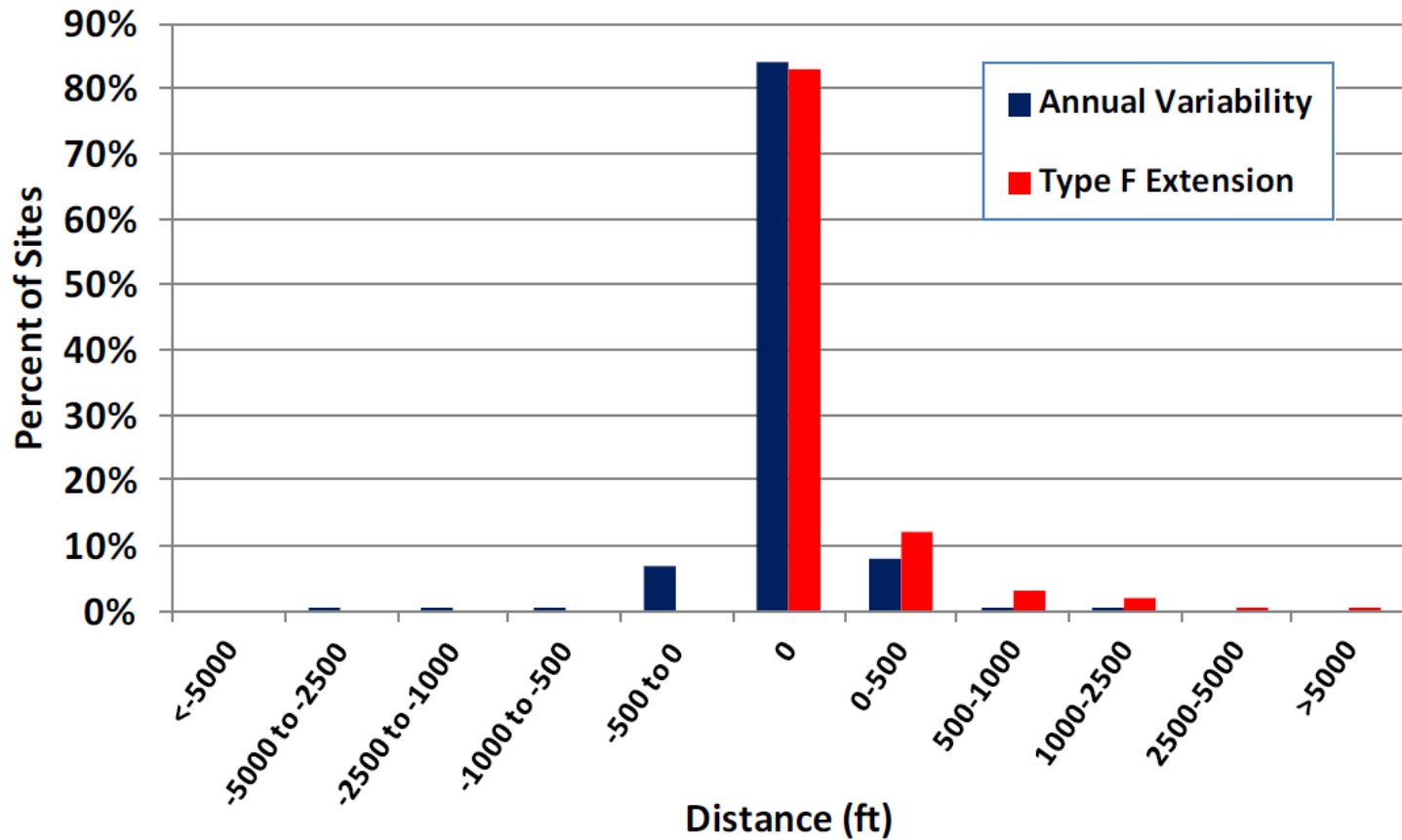


Factor in the routine extension of Type F Waters beyond Last Fish



More than 70 miles so far...

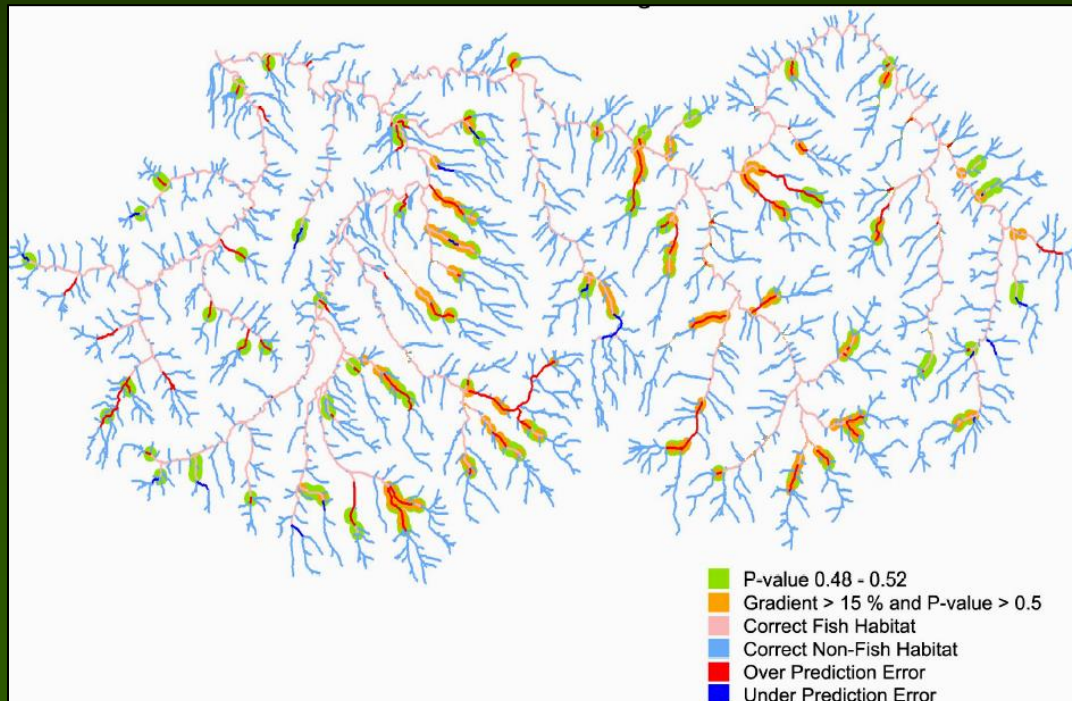
Variability in fish use appears to be encompassed within the proposed Type F/N breaks.



n=4352. Weyerhaeuser Stream Typing Database

ISAG identified options to reduce electro-fishing by concentrating survey effort where model map error is most likely.

- 2005 FPB direction to develop hybrid option.
- Survey “Terminals”, accept “Laterals”
 - 90+% of model map error occurs in “Terminal” F/N breaks.
 - “Terminal” F/N breaks represent 20% of the total F/N breaks.
- GIS screening tools identify areas with highest likelihood of map error:



Questions?

