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
Permitting

Mr. N. Phil Peterson
West Fork Environmental, Inc.
530-B Roselle 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 Spec
annually take listed salmonids while conducting a study to de
in streams of select basins in Oregon and Washington.

The National Marine Fisheries Service (NMFS) requires that
Permit 15486 review the permit before engaging in the permit
page then fax a copy of it (or mail a photocopy) to our office
number is (503) 730-5441. Please note that you are not auth
15486 until our office receives a signed copy of the signature

Your attention is directed to Section B(9) which describes its
requirements. Permit 15486 is subject to annual authorization
compliance with the authorization requirements. Annual repe
15486 expires on December 31, 2015.

If you have any questions concerning the permit, please conta

Sincerely,

William W. Regional Ad

Enclosure

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

Enclosures
### 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

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<th>Life Stage</th>
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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.
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<th>Survey No.</th>
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<th>Above LF</th>
<th>Total</th>
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## Efficacy using electrofishing

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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

I = Age 1 Cutthroat
I = 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)?
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.

Figures from Cole et al 2006
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?
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?