Northwest Power and Conservation Council

January 10, 2006

MEMORANDUM

TO: Council

FROM: Steve Waste, Manager Program Analysis and Evaluation

SUBJECT: Results of 2005 Monitoring Protocol Comparison Test

This briefing is informational and does not require a Council decision. This will be the first in a proposed series of briefings on different monitoring activities underway in the region. They are intended to portray our experience to date, illustrate on-going work, and provide structure to the conceptual discussion of a "regional approach" to monitoring. Future briefings are proposed to address coastal Coho monitoring in Oregon and other monitoring activity in Montana and Idaho.

This particular briefing will inform the Council about the outcomes of a project conducted last summer that evaluated the comparability of different field data collection protocols. The Pacific Northwest Aquatic Monitoring Partnership watershed workgroup coordinated a side-by-side protocol comparison test for in-channel physical attributes. This project was led by Brett Roper and Steve Lanigan of the USDA Forest Service, who will present the results. Brett Roper is the National Aquatic Ecologist for the Forest Service and is based at Utah State University. Steve Lanigan is the Module Leader for the Aquatic and Riparian Effectiveness Monitoring Program in the Pacific NW Region, and is based in Portland.

The protocol test, held during summer 2005 in the John Day basin (eastern-central Oregon), had the following objectives:

· Identify and recommend a core set of indicators (attributes) and their associated protocols that state, federal, and tribal monitoring programs use for assessing status and trends in watershed condition.
· Conduct a peer-reviewed experiment to determine which of the existing field protocols for each attribute distinguish the most different streams.
· Incorporate additional information into the recommendation of protocols, e.g., cost, precision, accuracy, sensitivity to trend, repeatability, that has undergone statistical review.
· In parallel with developing a unified set of protocols, develop calibrations for older protocols (crosswalks) in order to preserve the value of legacy data where possible.
· Recommend which physical, chemical, and biological in-channel attributes and robust protocols should be used.

851 S.W. Sixth Avenue, Suite 1100
Portland, Oregon 97204-1348
www.nwcouncil.org

Steve Crow
Executive Director

503-222-5161
800-452-5161
Fax: 503-820-2370

Overview: 2005 Protocol Comparison Test

Brett Roper
National Aquatic Ecologist, USDA Forest Service
broper@fs.fed.us
(435) 755-3566

Background

Understanding the effects of management actions on aquatic systems is based on understanding measures of one or more of 3 components;

- The Organism (Fish): Advantage – what the public is most interested in, Disadvantage – usually integrates more than the actions we are interested in.

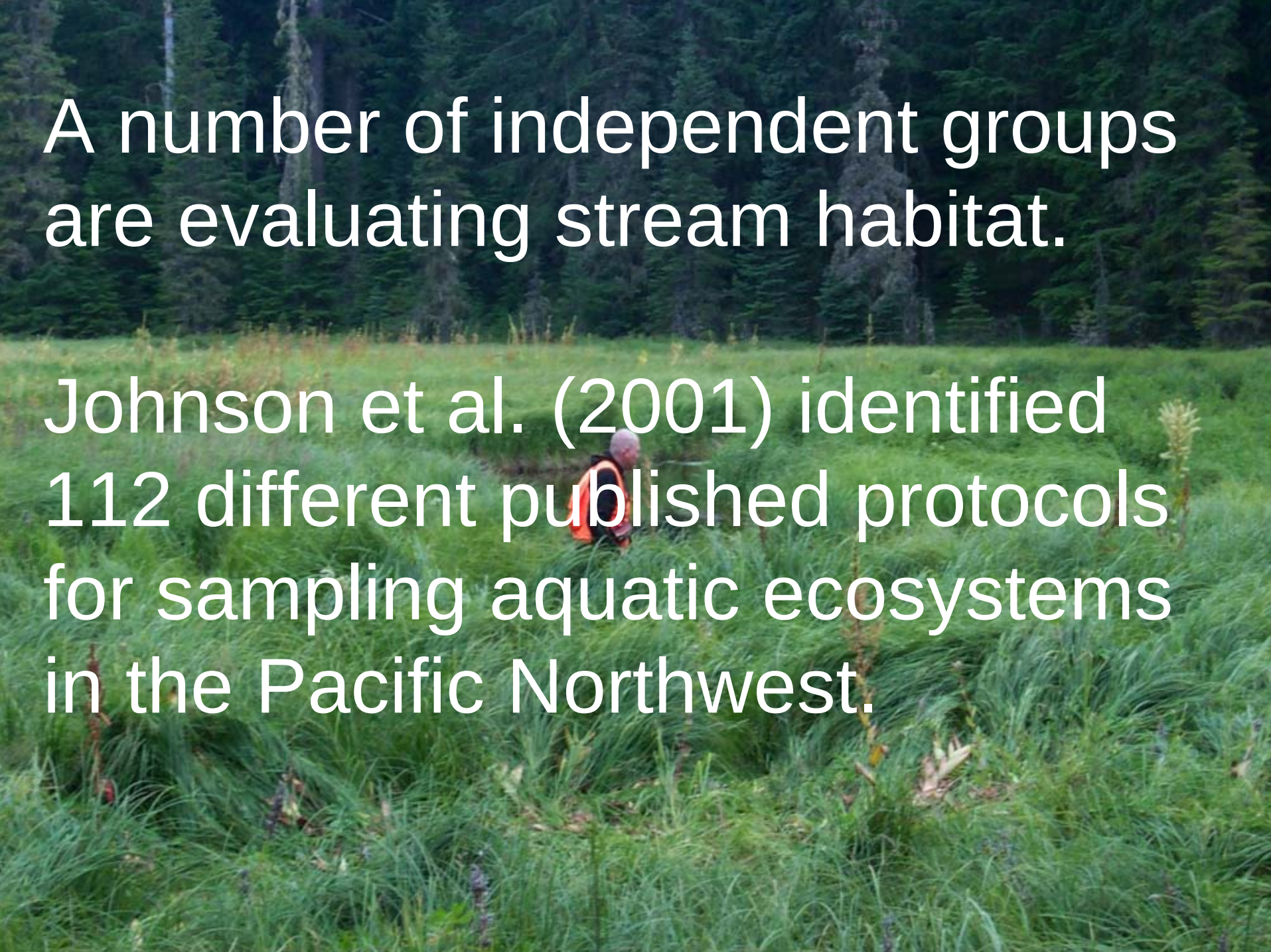
- Aquatic Habitat: Advantage – integrates a specific area (watershed) with specific impacts, Disadvantage – can be difficult to correlate with organisms at a site level.

- Terrestrial: Advantage – relatively easy to measure, Disadvantage – can be tautological (measuring disturbance rather than the effects of disturbance).

Aquatic Habitat Monitoring Goals

1. Describe the condition of the aquatic system (status).
2. Determine how the aquatic condition changes through time (trend).
3. Share data with and use data of other aquatic monitoring groups (comparability).
4. Reduce total cost associated with aquatic monitoring (precision).

Agreement in principle often conceals differences in details (Larsen et al. In Press).



A number of independent groups are evaluating stream habitat.

Johnson et al. (2001) identified 112 different published protocols for sampling aquatic ecosystems in the Pacific Northwest.

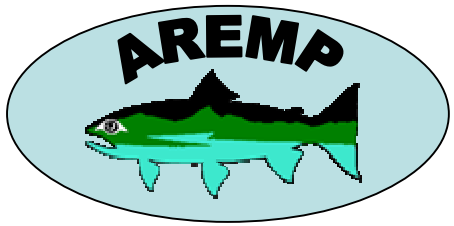
Pacific Northwest Aquatic Monitoring Partnership Protocol Comparison

Monitoring Group

Attribute	AREMP/ PIBO	OR DEQ	WA DOE	EPA	Colum. River RM&E	USFS stream survey
Pools						
Bankfull Width						
Large Wood						
Substrate						
Aquatic Insects						
Vegetation						

Same protocol	Different protocol	Not collected

This Protocol Test was a group effort (PNAMP)



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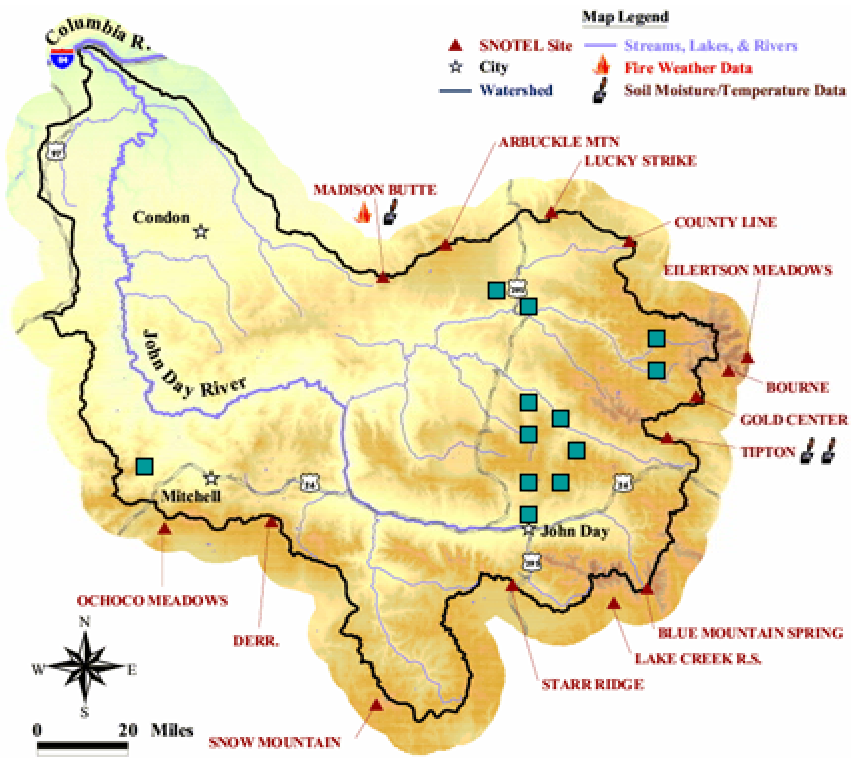
John Day Basin

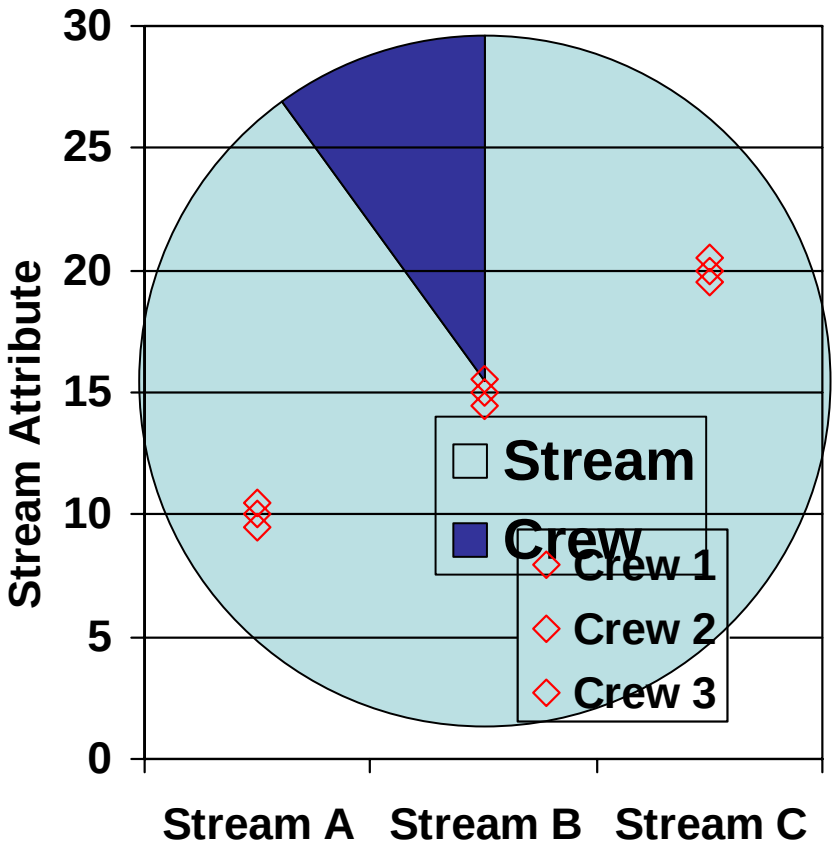
July-Aug, 2005

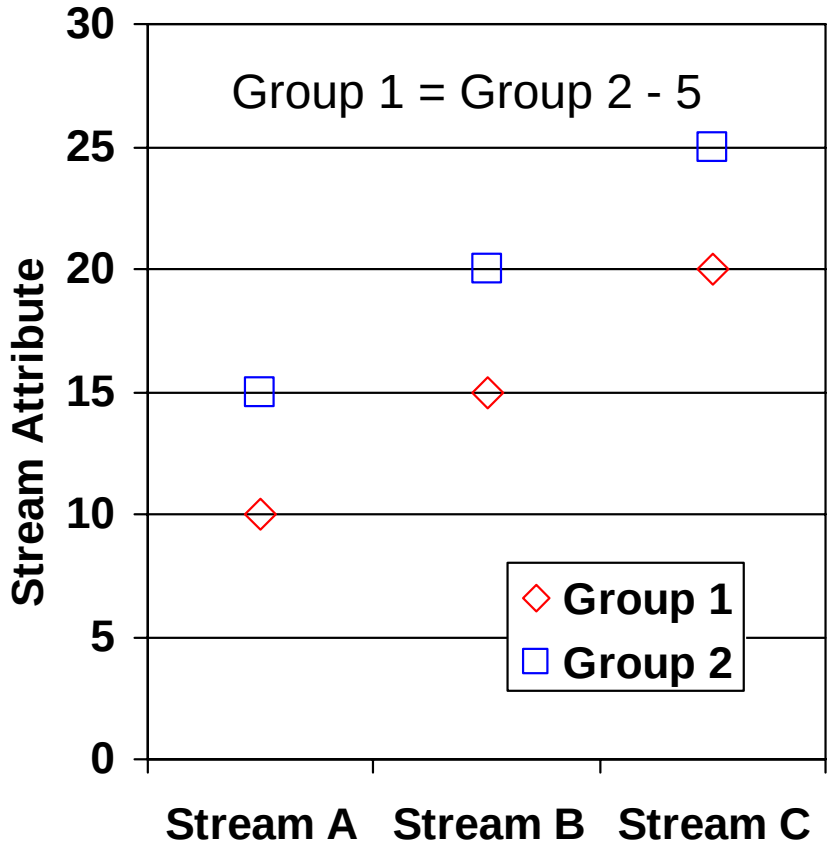
- 12 streams were sampled by nine agency and tribal monitoring groups (multiple crews).
- One day sampling per stream (similar costs)
- Stream width of 1 to 15 meters
- Stream slope of 0-10%
- Meadow to wooded
- *A chance to work together and understand what the other groups were doing.*



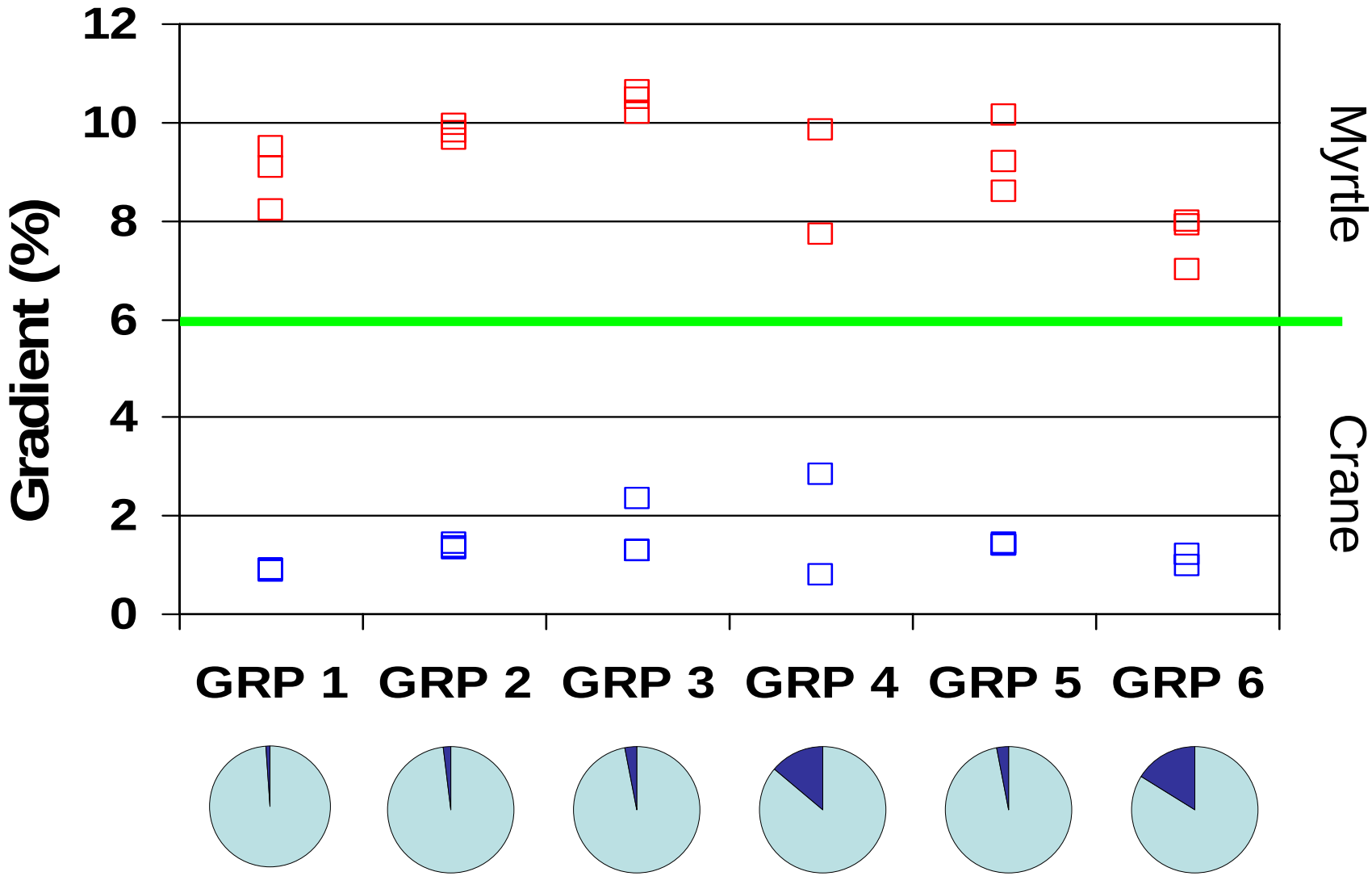
Sample Sites

To meet the 4 stated goals (status, trend, comparable, precise) what should the results of an aquatic habitat protocol comparison look like?

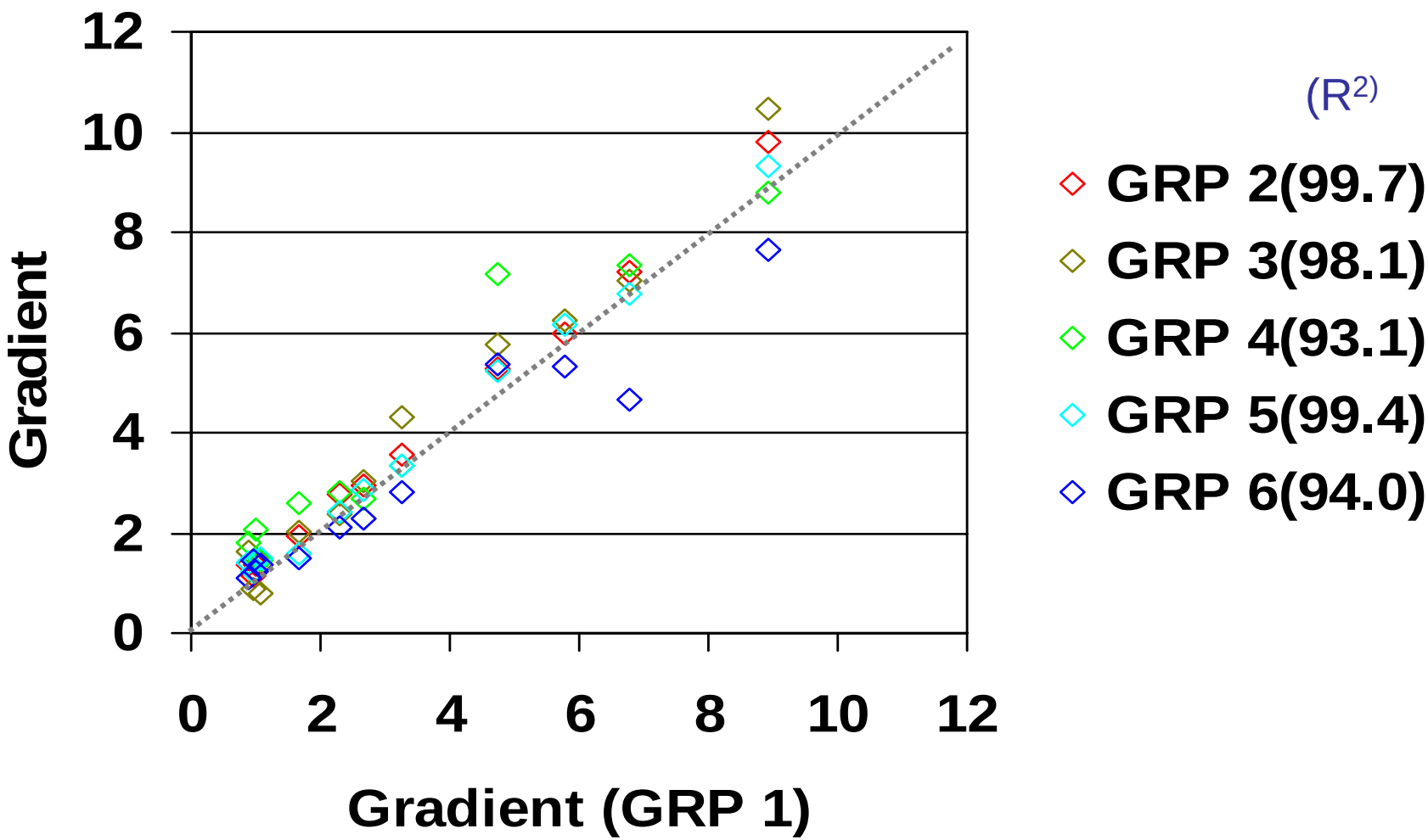




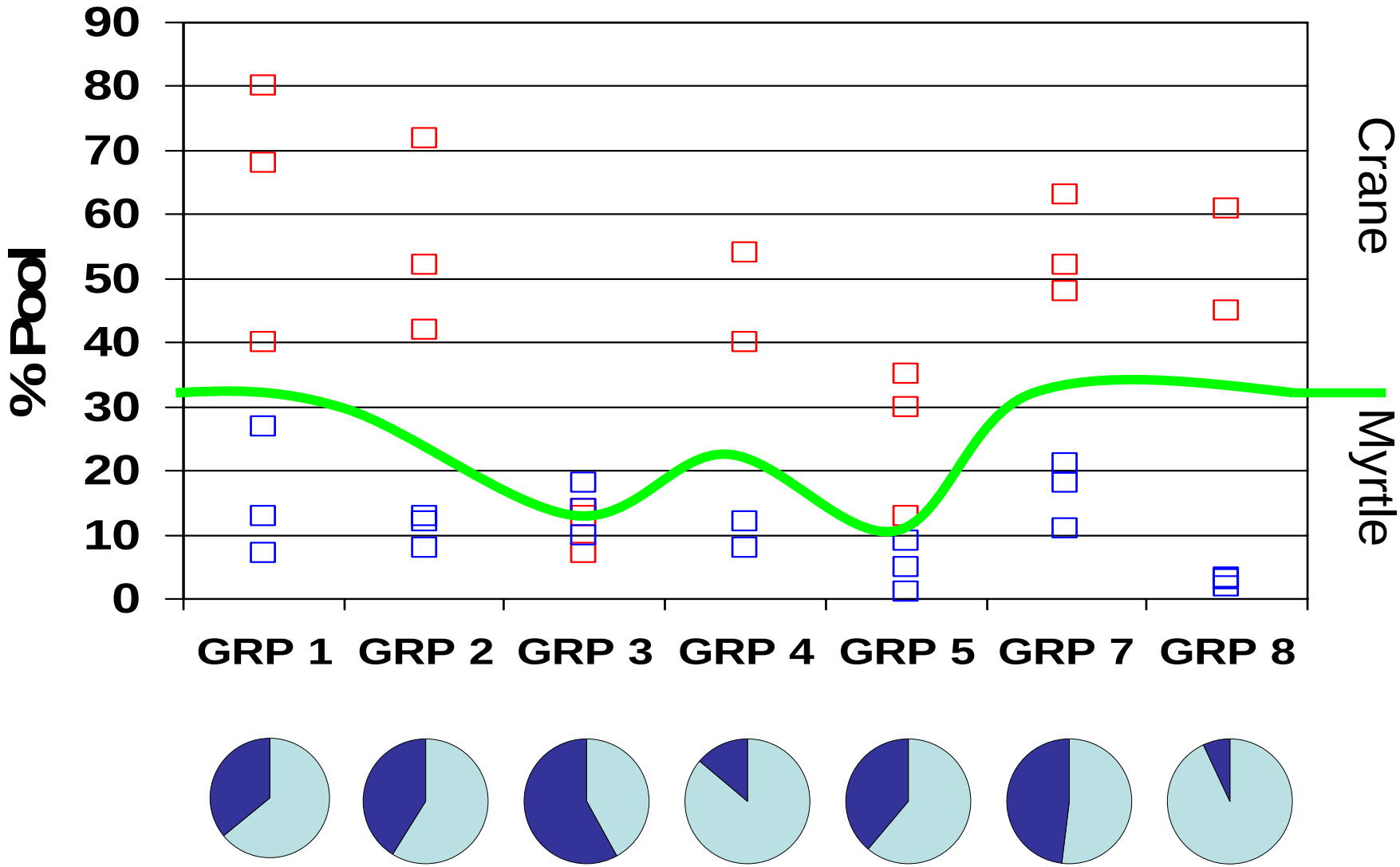
So how does real data look? (best case)



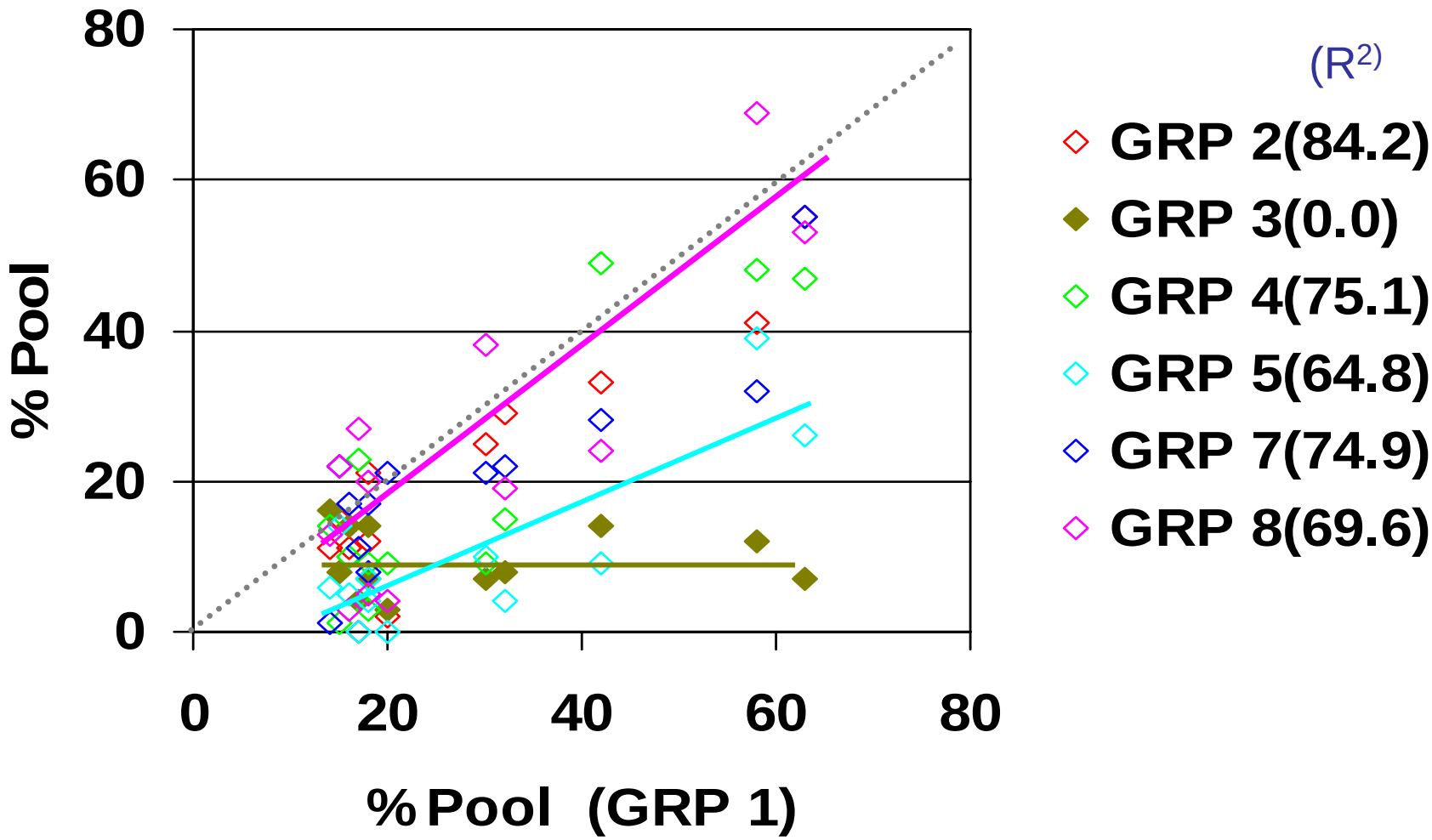
Can the results be shared? (best case)



A less perfect example.

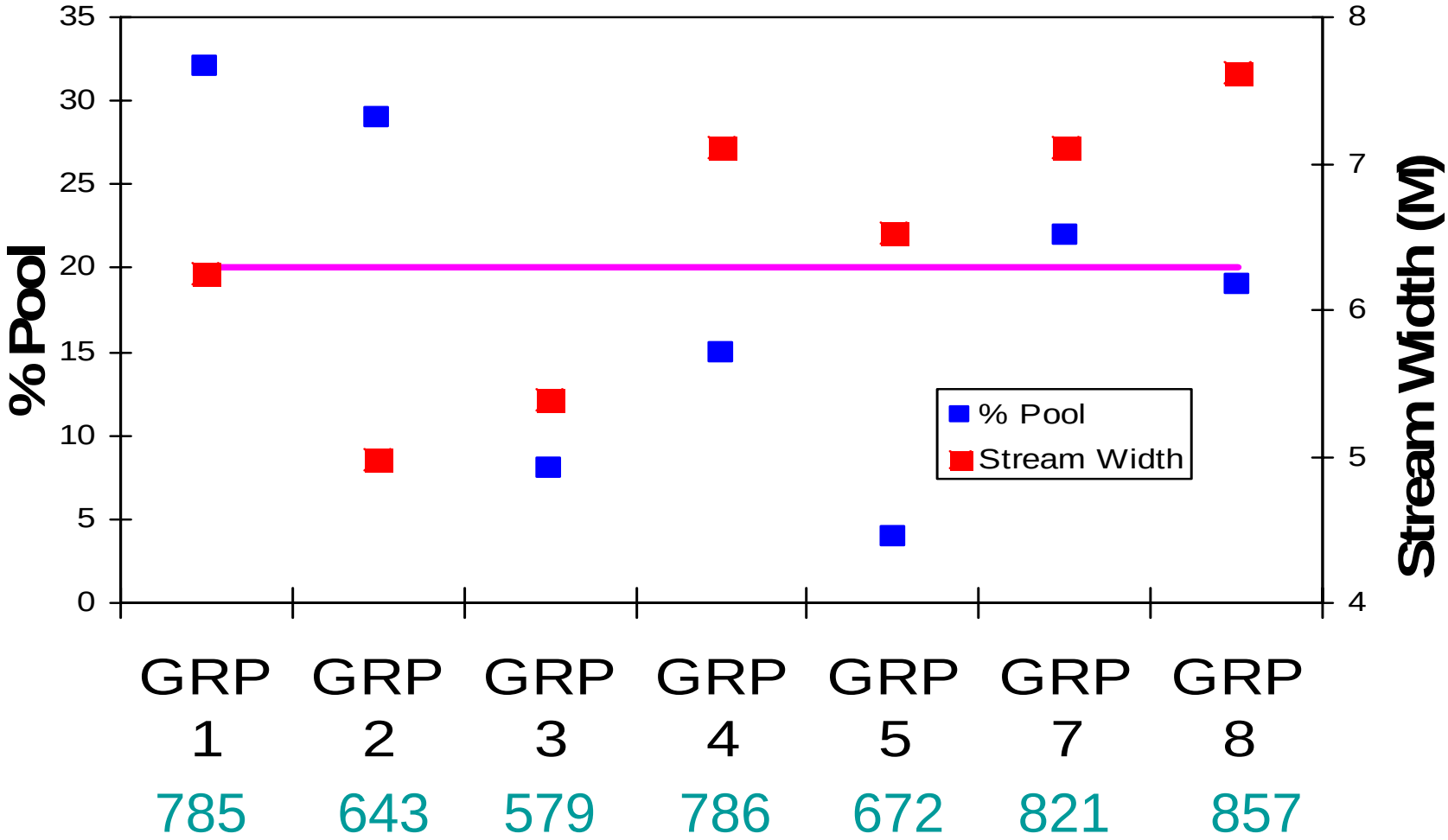


Can data be shared? (less perfect)



Why does it matter?

(Results from a single stream)



Fish/km = .01(area)+500(%Pool)

Preliminary Findings - The good news!

- There is wide-spread interest in:
  - Improving the quality of stream habitat data.
  - Sharing data among state, tribal, and federal monitoring programs.
  - Making protocols comparable through standardization and/or developing statistical relationships among different programs.
- There are a number of stream attributes that can be used to indicate the status and trend of a aquatic system in a cost efficient manner.
- Working together can permit us to better detect changes in aquatic system due to changes in management actions.

Preliminary Findings → where more work can help.

- Quality control - Some attributes are not consistently measured by a monitoring group.
- Some group's protocols for attributes (though definition and/or training) are better than others: Should there be minimum standards for protocols?, How should they be set?
- Because protocols definitions do differ among groups, more effort is needed to insure these data can be shared.
- Need to understand the relationship between a monitoring groups answer for an attribute and the "truth".

What's next?

- Monitoring groups are interested in continuing efforts to standardize protocols.
- A proposal was submitted for BPA funding to resolve protocol differences.
  - Data quality control recommendations will be made.
  - Continue efforts to develop crosswalks.
  - Seek consensus on the best protocol(s) to use.
  - Determine which attributes provide useful data.
- Publication of the John Day basin protocol test results.


Questions?