Status of Regional Environmental Monitoring and Assessment Program (REMAP) Western Pilot Study within Idaho

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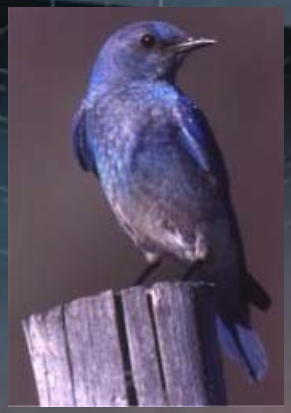
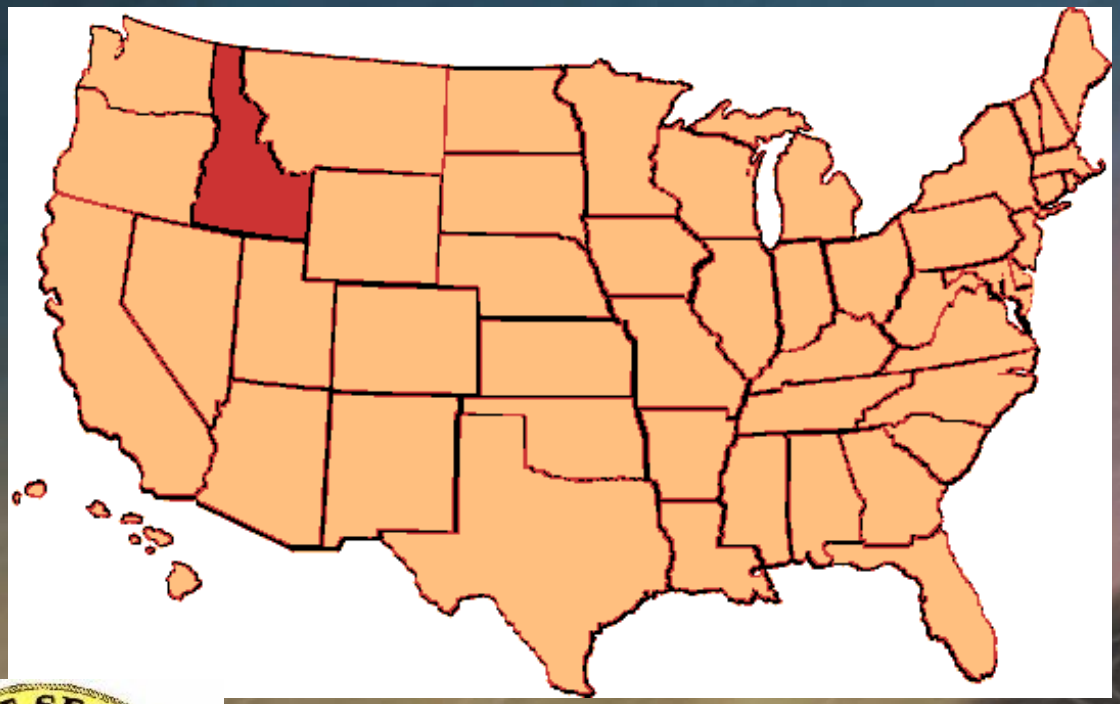
This is who we are

- Idaho Department of Environmental Quality
- Field Crews
- Region X EPA
- Corvallis ORD EPA

Idaho

IDAHO
1A 154 850
FAMOUS POTATOES





IDAHO

Red Slash

GREAT SEAL OF
ESTO PERPETUA
THE STATE OF IDAHO

Idaho
BRITISH COLUMBIA
CANADA
©GeoSystems Global Corporation
North Cascades National Park
Olympic National Park
Bonners Ferry
Glacier National Park
Sandpoint
Lake Pend Oreille
Coeur d'Alene
Kellogg
St. Maries
WASHINGTON
Mt. Rainier National Park
Moscow
Orofino
Lewiston
MONTANA
PACIFIC OCEAN
Columbia R.
Grangeville
Salmon
Salmon River Mts.
New Meadows
Cascade
Challis
Borah Peak
Weiser
OREGON
Stanley
Caldwell
Sun Valley
Rexburg
St. Anthony
Yellowstone National Park
Grand Teton National Park
Nampa
Boise
Arco
Idaho Falls
100 Miles
160 Kilometers
Fairfield
Mountain Home
American Falls
Pocatello
Shoshone
Soda Springs
WYOMING
Twin Falls
Burley
Oakley
Montpelier
124° W
CALIFORNIA
120° W
NEVADA
116° W
UTAH
112° W
46° N
42° N

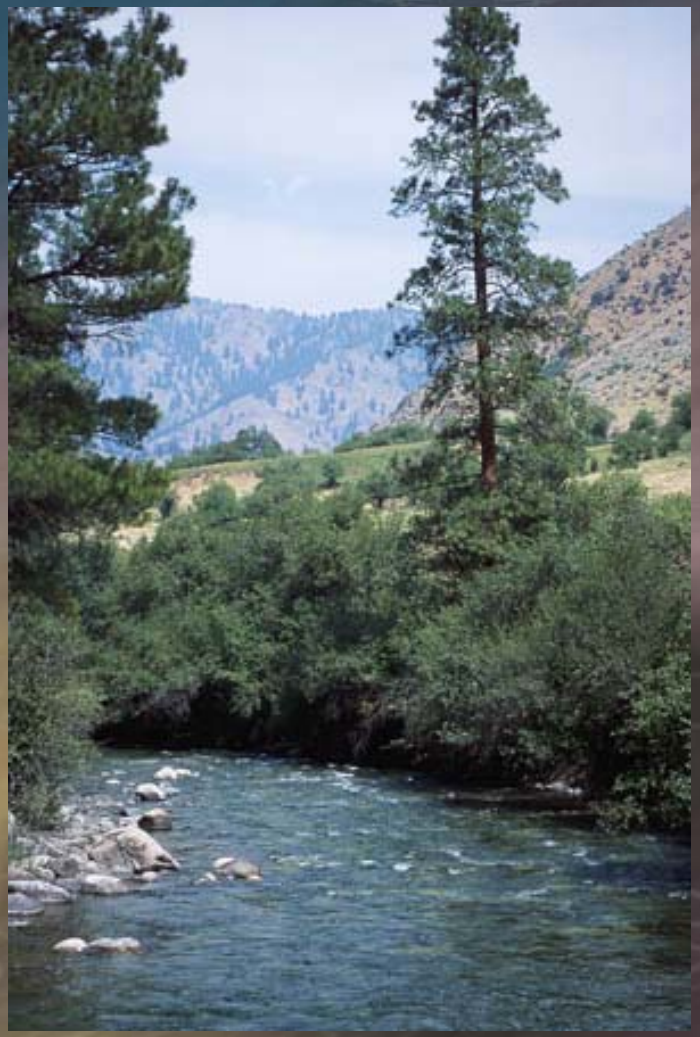
REMAP

- REMAP was initiated to test the applicability of the EMAP approach to answer questions about ecological conditions at regional and local scales. Using EMAP Statistical Design and indicator concepts, REMAP conducts projects at smaller geographic scales and in shorter time frames than the national EMAP program.

Silver Creek

The objectives of REMAP

- Evaluate and improve EMAP concepts for state and local use.
- Assess the applicability of EMAP indicators at differing spatial scales.
- Demonstrate the utility of EMAP for resolving issues of importance to EPA Regions and states

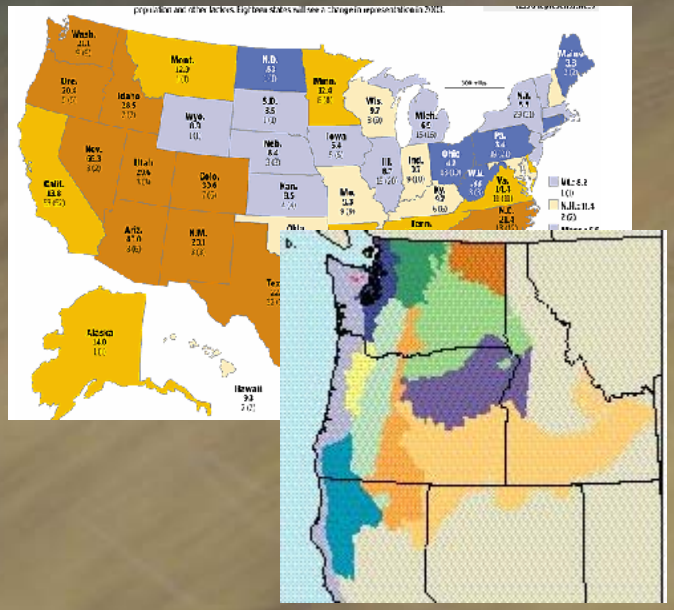


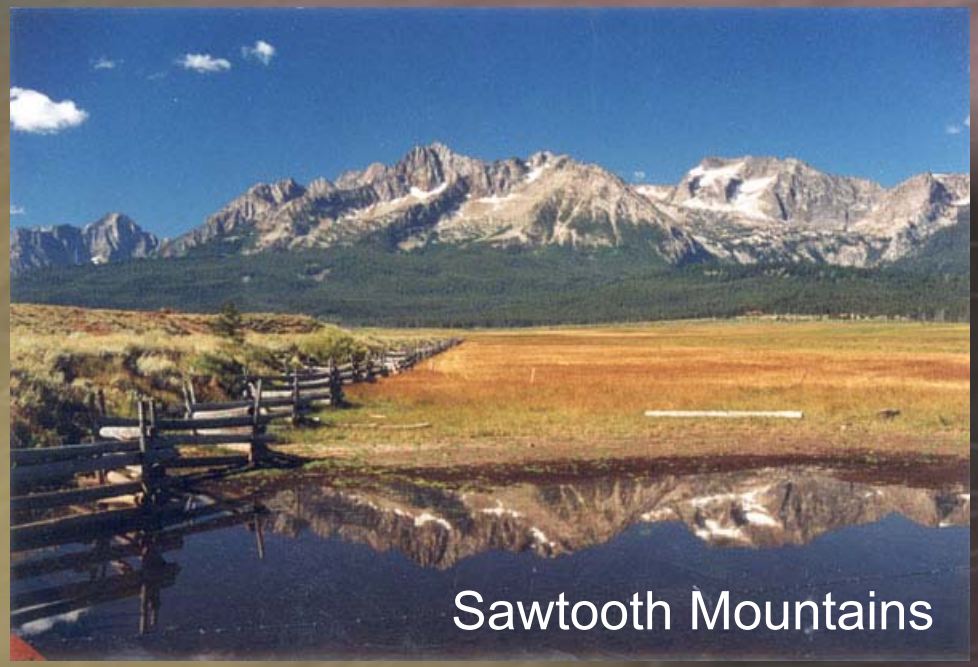
Middle Fork Salmon

Idaho Landscape

The REMAP Western Pilot Study (Idaho) is being implemented to:

- refine monitoring tools that produce unbiased estimates of the ecological condition of waters across a large geographic area
- and to demonstrate those tools in large-scale assessment





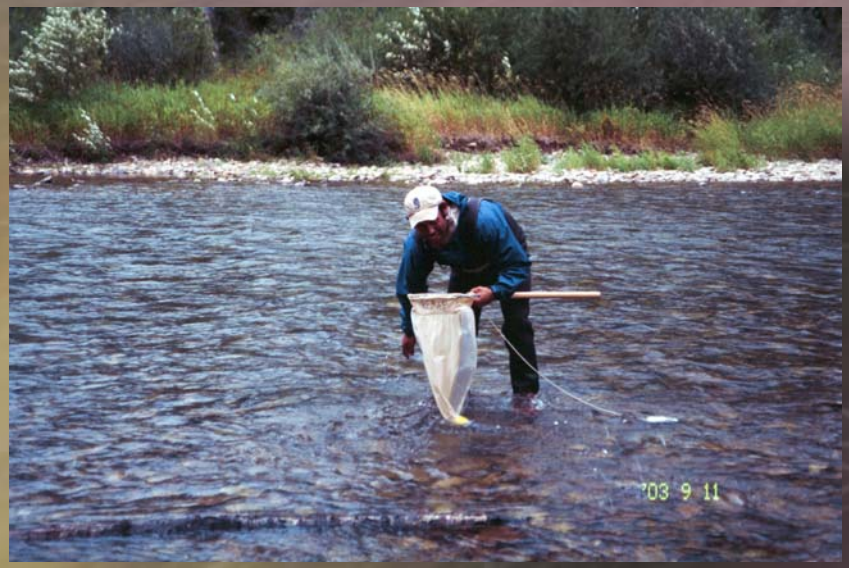
Physical habitat characterization

- Channel dimensions
- Channel gradient
- Channel substrate
- Habitat complexity
- Riparian vegetation
- Anthropogenic alterations
- Channel-riparian interaction
- Alien invasive plant inventory

Selway River

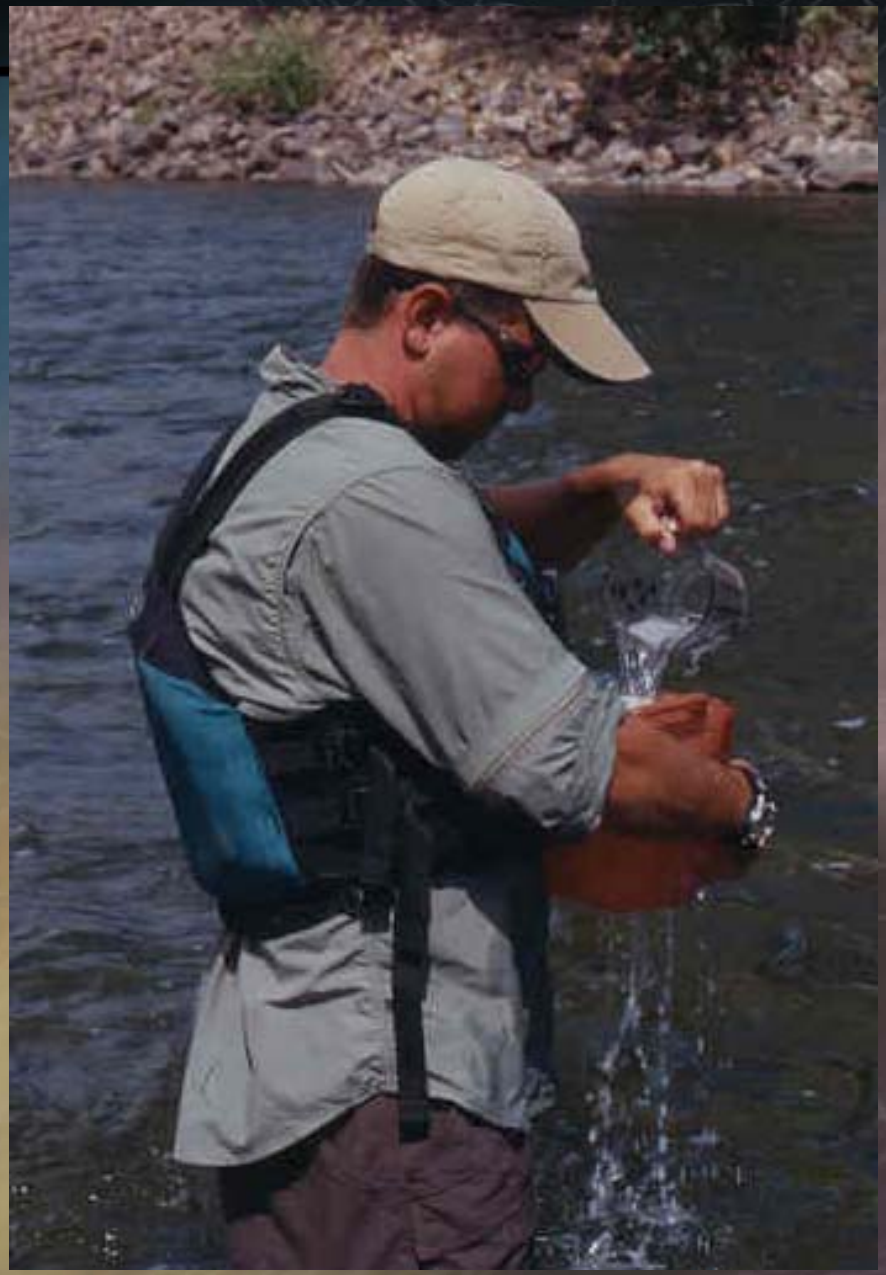
Biologic characterization

- Periphyton Assemblage
- Benthic Macroinvertebrate Assemblage
- Aquatic Vertebrate Assemblages
- Fish Tissue Contaminants



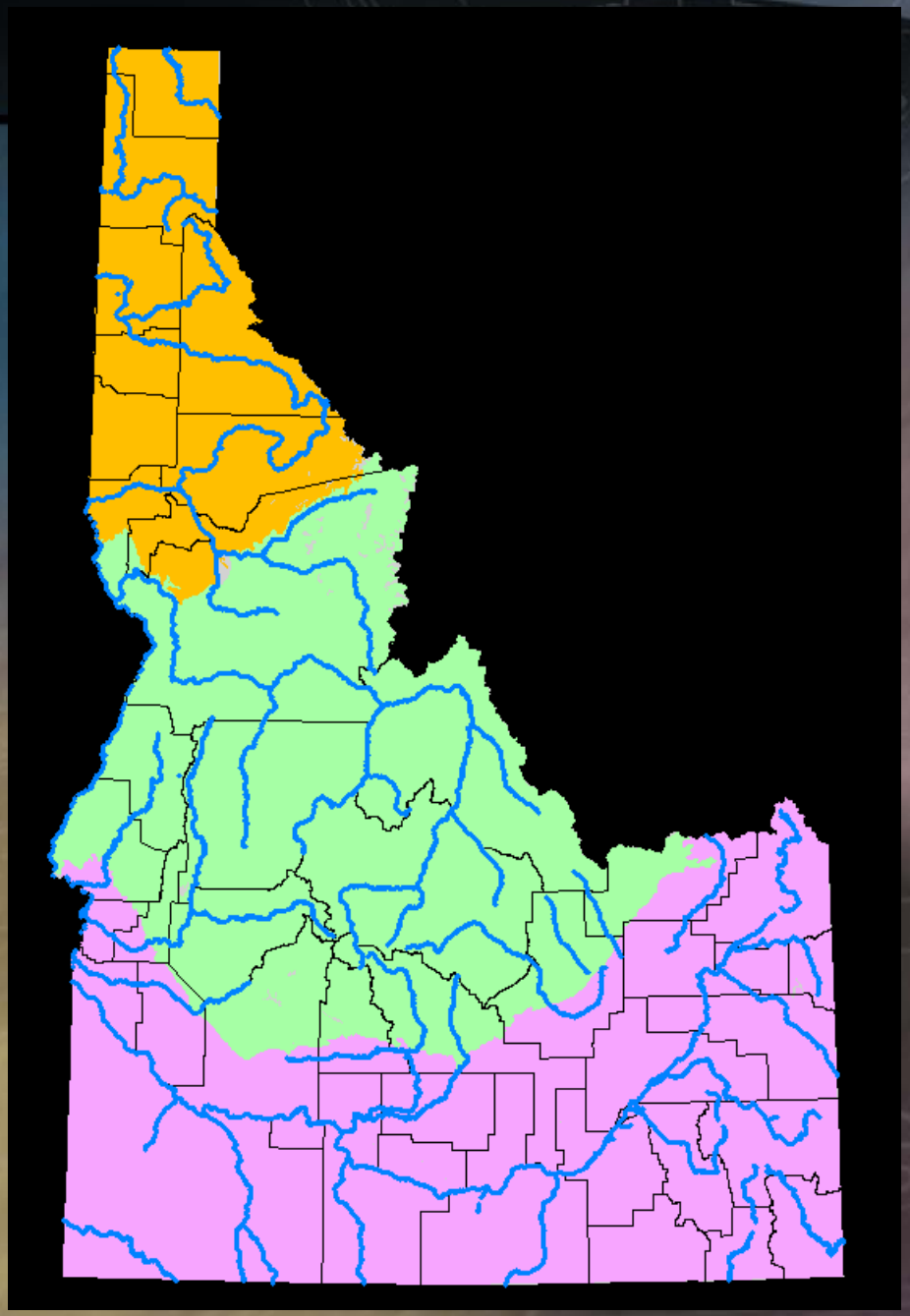
Water chemistry

- Lab Analysis
  - Acid-base status
  - Trophic conditions (nutrient enrichment)
  - Chemical Stressors
  - Classification of water chemistry type
- Field Analysis
  - Dissolved Oxygen
  - Conductivity
  - Temperature



Bioregions

- Panhandle Basin
- Salmon Basin
- Snake River Basin



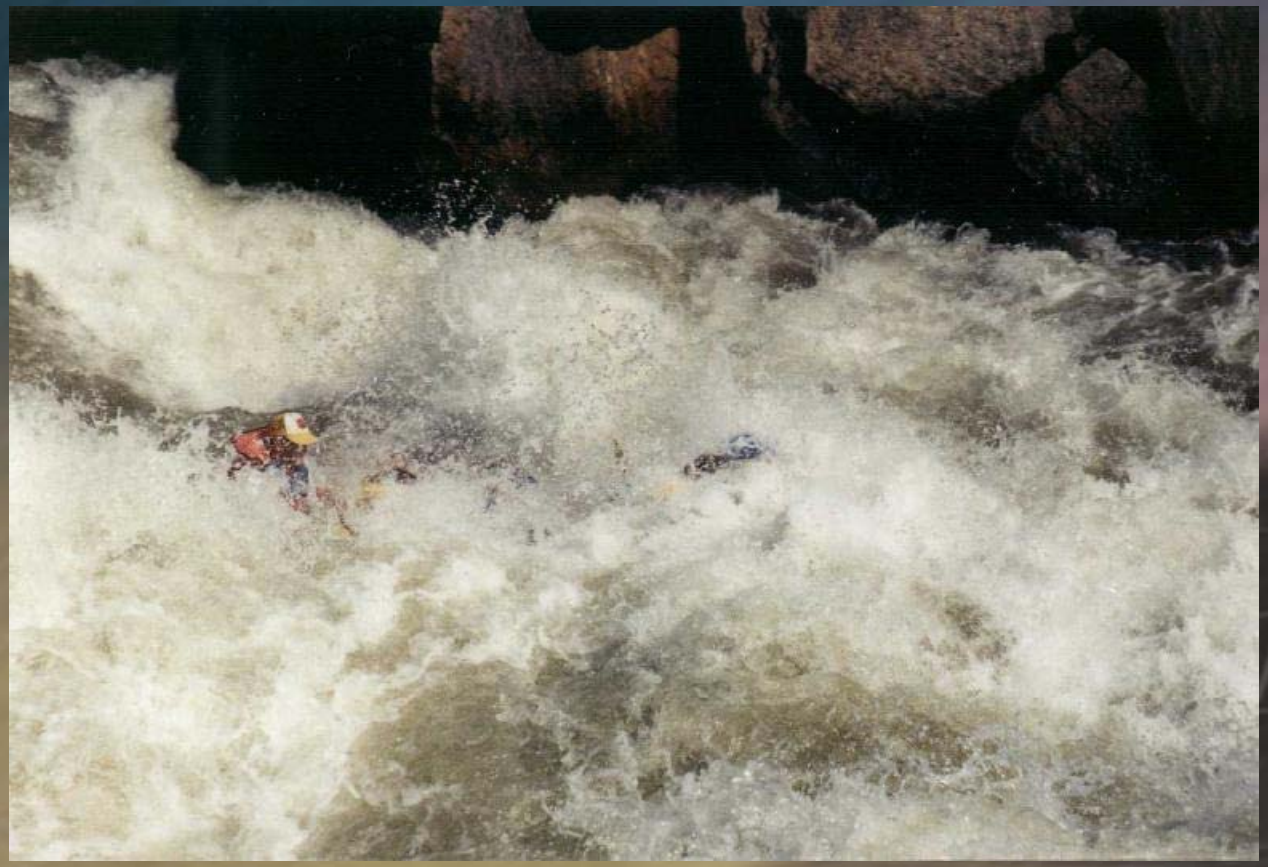
The three-year project was developed and funded by Region X EPA and implemented by Idaho Department of Environmental Quality.

2002
Snake River Bioregion

2003
Panhandle Bioregion

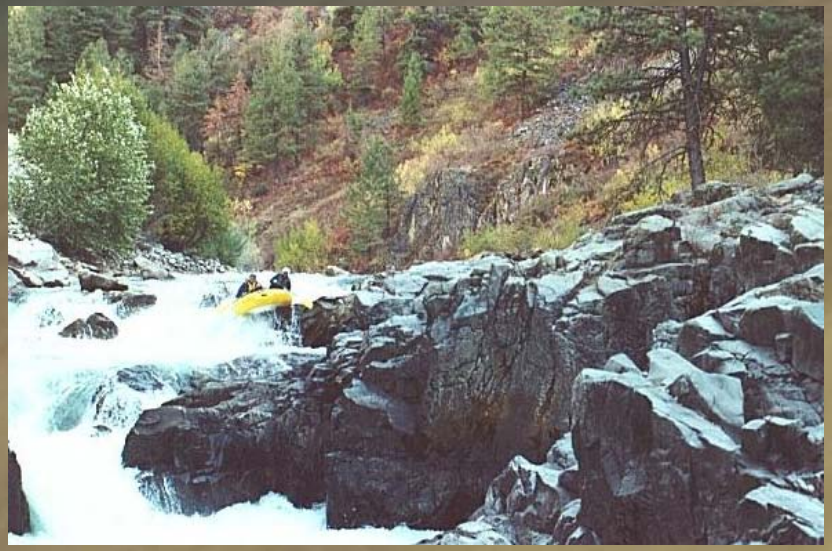
2004
Salmon Bioregion

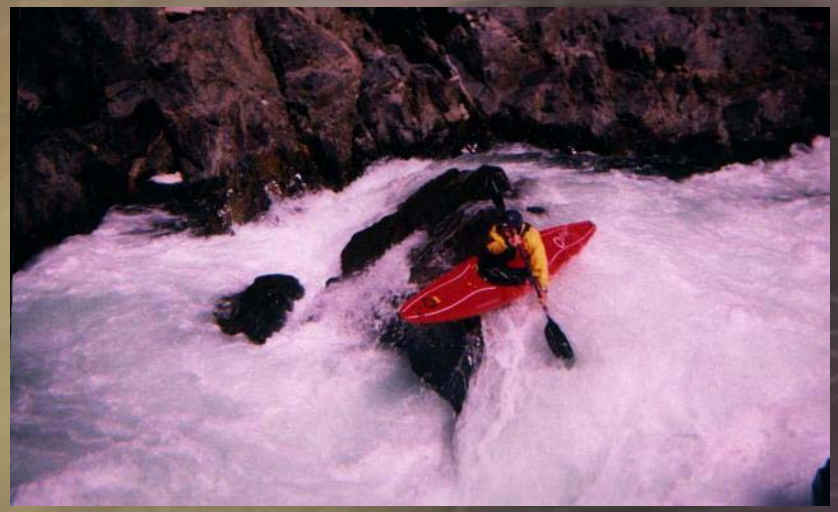
The project incorporates seasonally hired individuals as well as DEQ senior staff. Monitoring conducted from whitewater rafts



- Can you find the 9 people in this image?

Idaho the Whitewater State

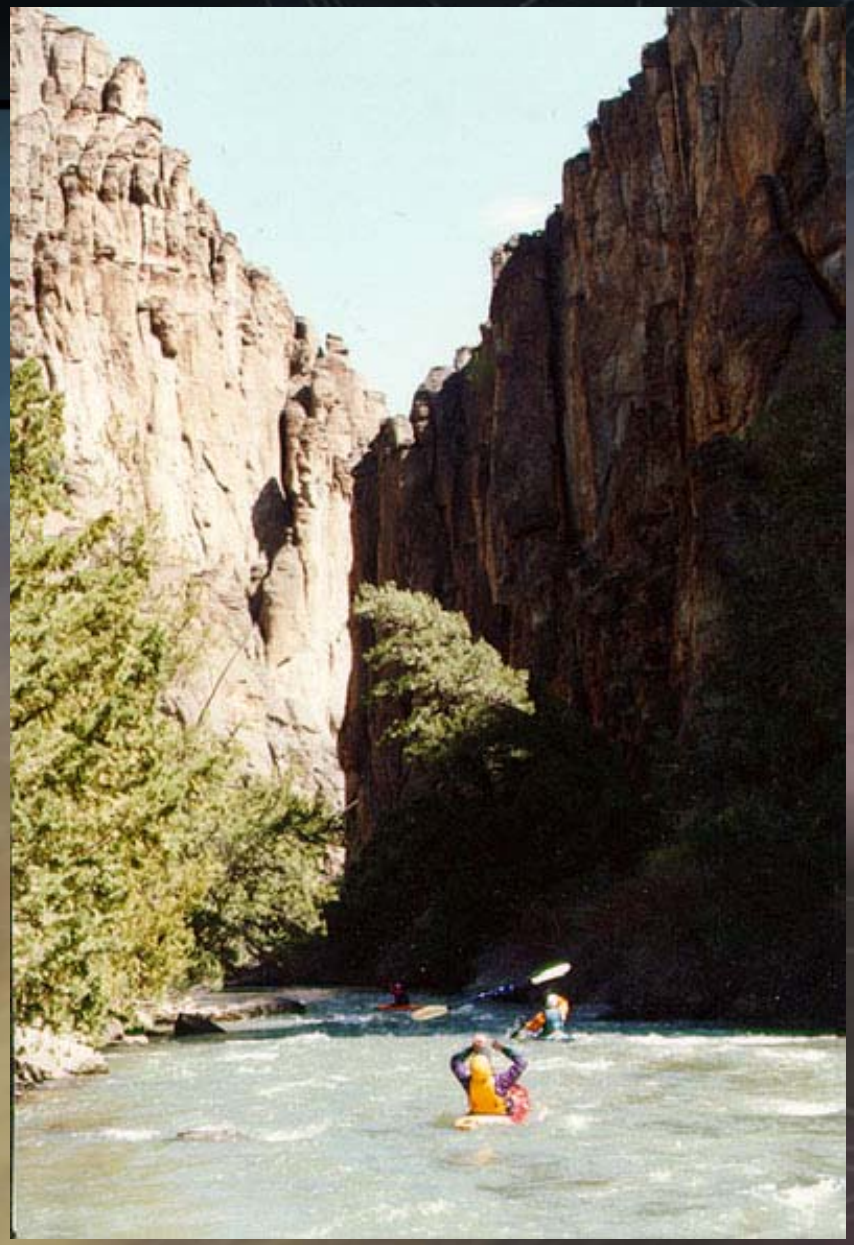




Idaho Wolman Pebble Count

Crew training

- DEQ orientation
- CPR/first aid
- Anti harassment
- Off-road driving skills
- Western Pilot methods
- Whitewater rescue and recovery skills

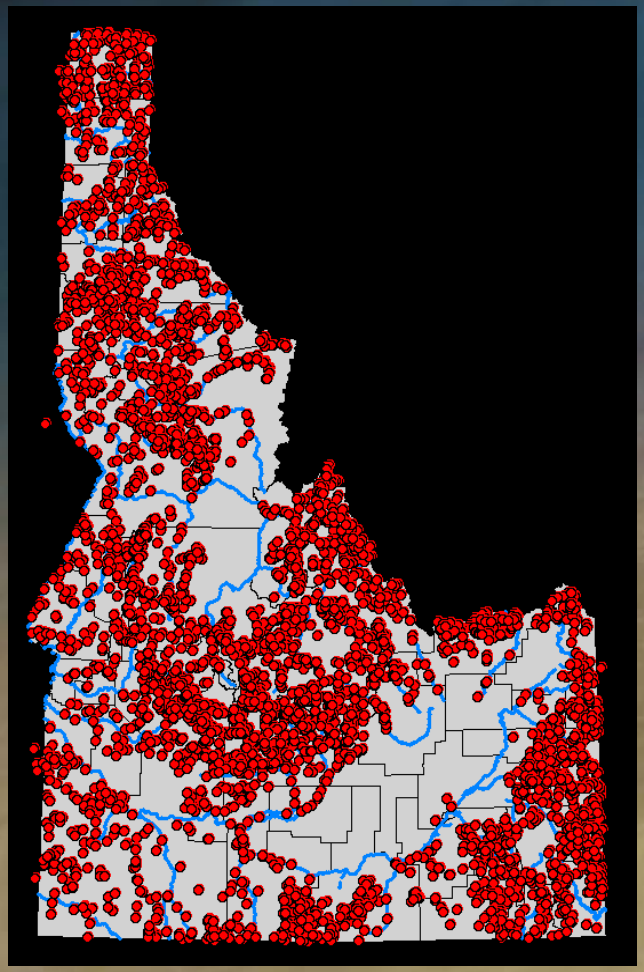


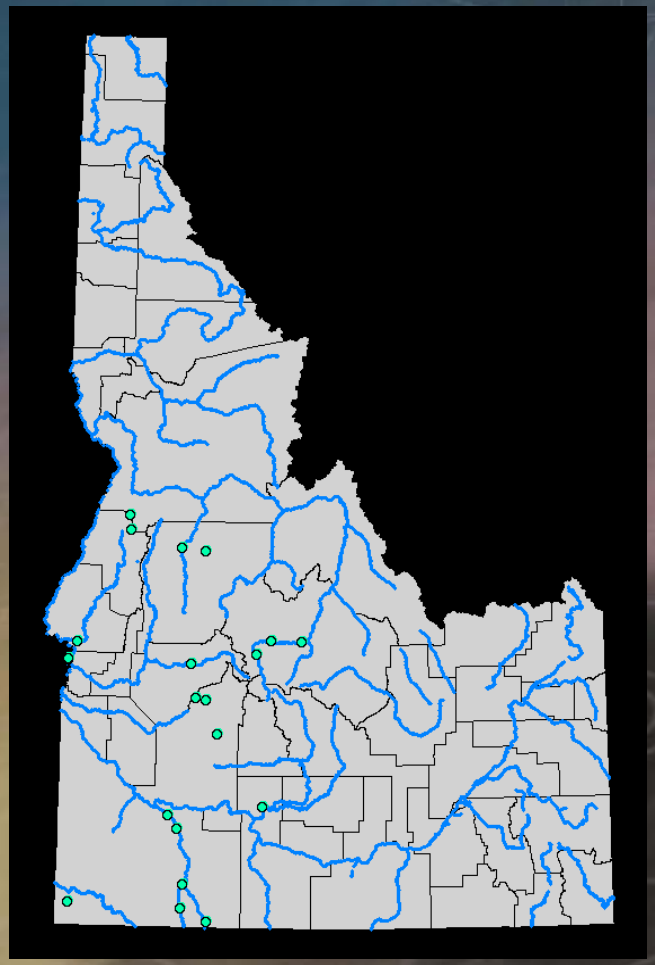
Jarbidge River

Off road driving and navigation skills

Whitewater skills

Idaho's frequently and never before monitored rivers.

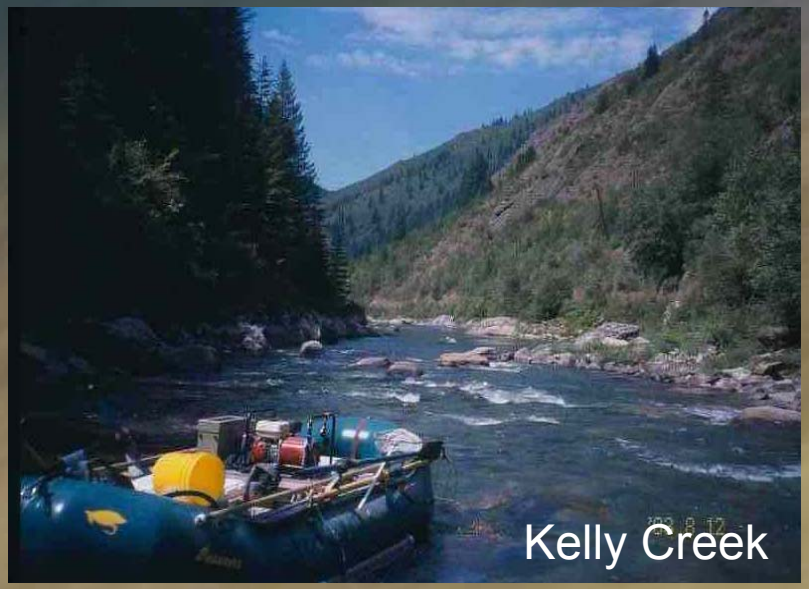




- Idaho’s <u>ambient</u> monitoring stations wadeable vs. nonwadeable

EPA randomly selected fourth order (RF3) or greater streams within three Idaho bioregions.

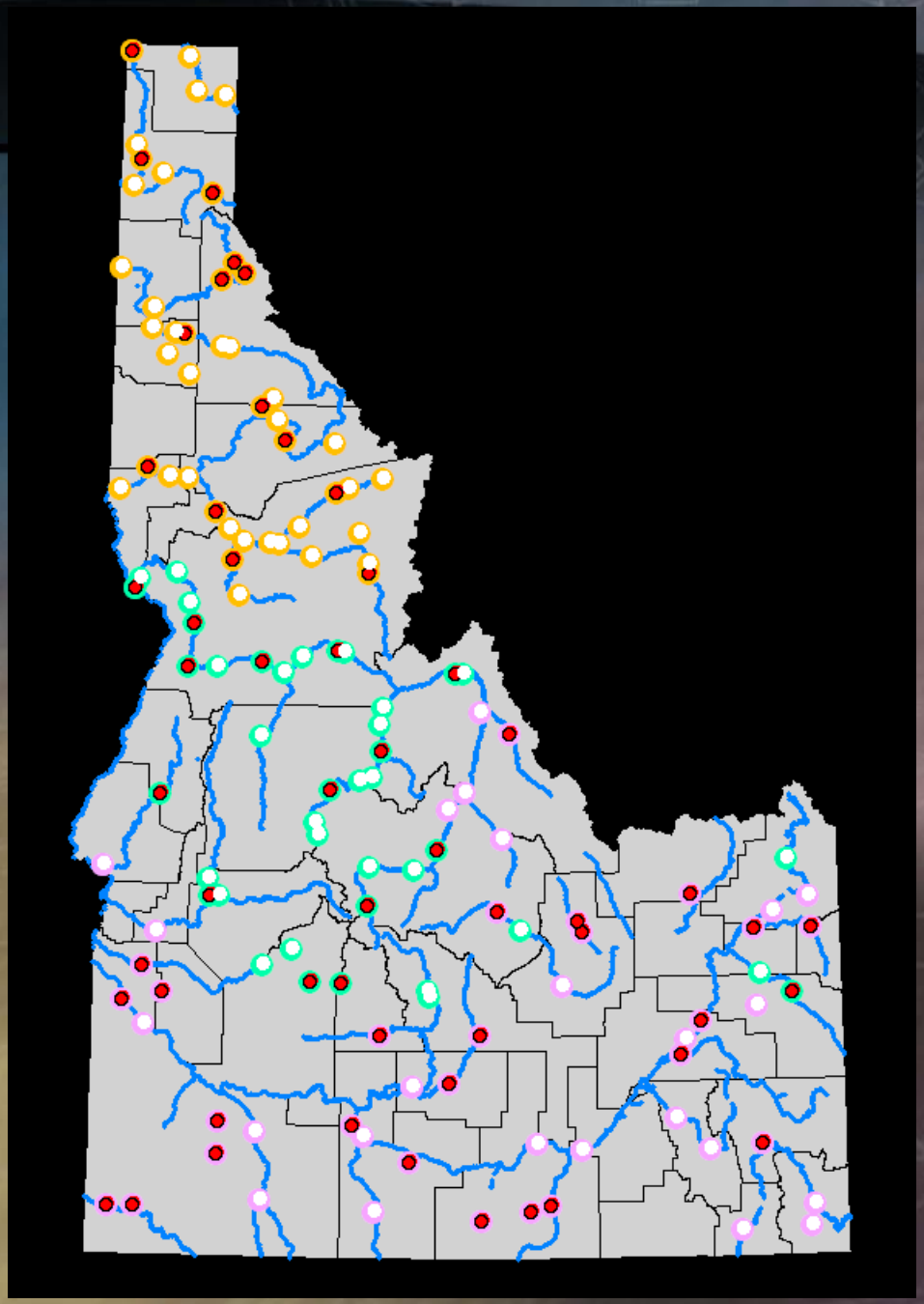
DEQ then used its waterbody size criteria (fifth order (1:100k) or larger, 15+ meters in wetted width, and/or must be a minimum of 0.4 meters in depth) to select streams appropriately sized for the study.



Above criteria corresponds to river sizes needed for inflatable raft use

17 sites were monitored during 2002, 15 in 2003 and 19 are planned for 2004.

- Bioregion based
- Target vs. alternate sites



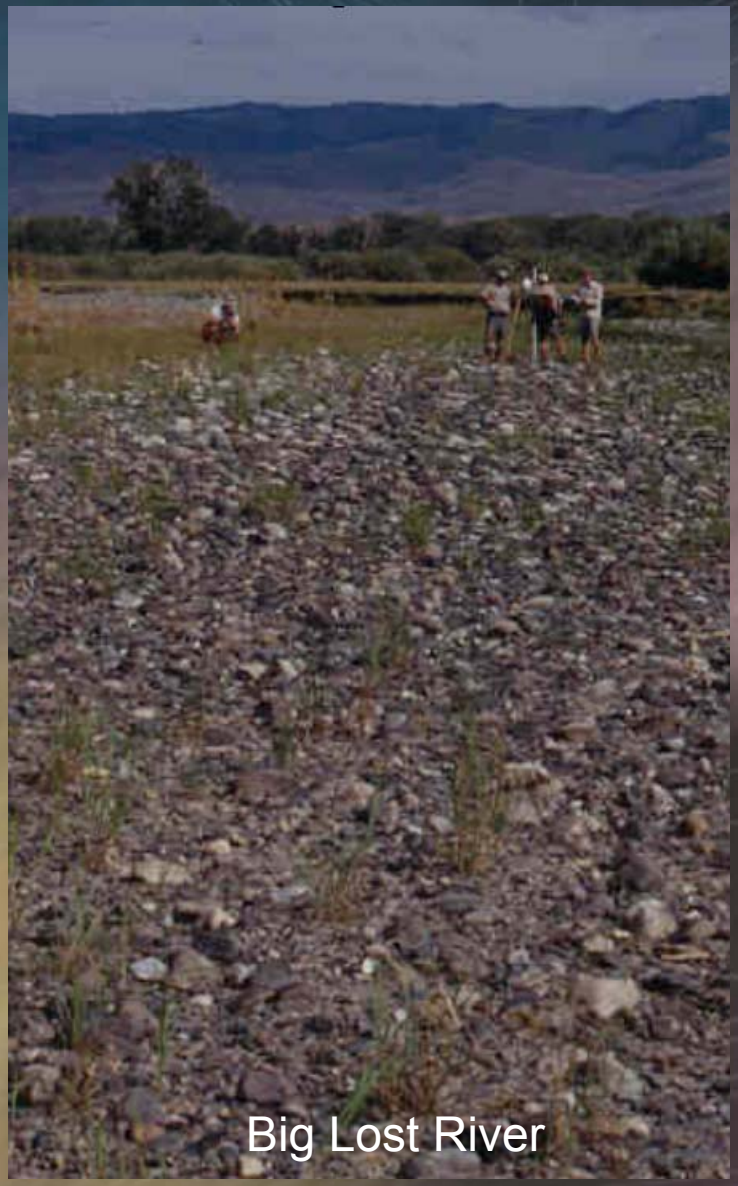
Permitting

- Idaho Fish and Game Scientific Collection Permit
- U.S. Fish and Wildlife, Threatened and Endangered Species Take Permit (Section 10)
- Trespass Permits
  - Wild and Scenic Rivers/Wilderness
  - Tribal Property
  - Private Property

Owyhee River

Elements that need attention (2003)

- Idaho specific alien plant list and codes
- Cross bank evaluation speculative
- Reduction of equipment required
- Modification of season, drying streams
- Economy of overtime



Will Idaho adopt this monitoring approach?

- Pros
  - reduces Idaho's research efforts
  - promotes better data sharing
  - eases data management efforts
  - solid methods
  - implicit EPA approval
- Cons
  - conflicts somewhat with existing monitoring program
  - site selection may not be appropriate scale
  - cost of collecting every parameter under the sun

still undecided!

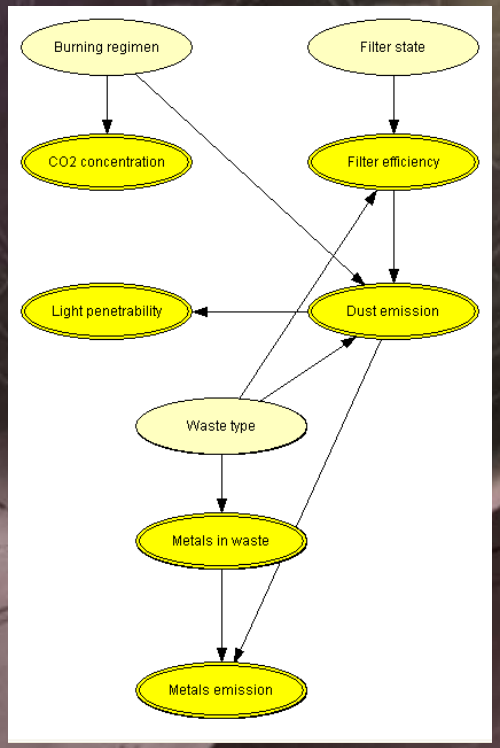
What about including

- Caffeine Monitoring
- Pharmaceuticals
  - Hormones
  - Antibiotics
  - Metabolic/endocrine drugs

Acknowledgements

- Authors and Editors of Western Pilot Manual
  - David Peck, U.S. EPA
  - Daniel K. Averill, Dynamac, Inc.
  - James M. Lazorchak, U.S. EPA
  - Donald J. Klemm, U.S. EPA
  - Alan T. Herlihy, Oregon State University
  - Brian H. Hill, U.S. EPA
  - Frank H. McCormick, U.S. EPA
  - Philip A. Monaco, Dynamac, Inc.
  - Marlys R. Cappaert, OAO Corp.
  - C. W. Hendricks, U.S. EPA
  - Philip R. Kaufmann, U.S. EPA
  - Robert M. Hughes, Dynamac, Inc.
  - Philip A. Lewis, U.S. EPA
  - Spencer A. Peterson, U.S. EPA

We thank the EPA for funding this program



$$P(t|o) = \frac{P(o|t)P(t)}{P(o)}$$

Using Bayesian Decision Networks to Estimate SFI (Fish Index) with Non-Compliant Data

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