Random things in w/ Ecological Monitoring stuff. Belongs ..... (?)

Brief Project Description

PROBLEM

There are several important reasons for systematically establishing protocols for methods and techniques for monitoring current AQRV conditions and tracking future condition changes. These reasons include the following:

- to provide clarity internally in Forest Service wilderness management, planning, operations and decisions and externally to states and prospective sources about what the Forest Service considers necessary in monitoring baseline AQRV conditions and potential air pollution caused changes in those baseline conditions;

- to reduce the period of time needed to conduct complete AQRV impact analyses during the air quality permit review process;

- to provide a standardized approach to AQRV impact analysis so that different parties' analyses and findings can be compared and so that analyses in different permitting cases can be compared with one another;

- to provide a framework for due process with respect to both the Forest Service's AQRV impact analyses and findings and its broader wilderness protection mandate, thus enhancing the defensibility of such analyses and findings in regula tory and judicial proceedings; and

- to the extent feasible, to reduce to a minimum the conflict and controversy over technical issues surrounding AQRV sampling, monitoring and measurement, thus limiting disagreement where possible to value judgments about whether a projected AQRV effect is considered an "adverse impact."

Protocols of several types are needed. First, however, it must be established what should be measured to gauge man's impacts on high elevation ecosystems. Techniques and sampling and analytic procedures then must be determined that are appropriate to the physical and regulatory constraints of wilderness areas. These constraints include rugged, remote, high altitude settings subject to weather extremes which physically may prevent access for many months of each year; heavy snows which complicate sampling and measurement even when and where access is possible; Wilderness Act statutory and related regulatory prohibitions on any form of motorized access; prohibitions against bringing in outside power lines and against significantly altering or manipulating a site, even temporarily for study purposes; and Clean Air Act requirements that FLMs perform AQRV impact assessments in perhaps as little as 60 days. Another constraint affecting the techniques, and sampling and analytic procedures employed is the Forest Service's budget limitations.

Sampling frequency and locations are key variables that must be determined given the degree of natural variability and physical limits on practical measurements. Not only in-depth knowledge of the natural systems but also statistical design considerations bear on this issue. Technical approaches must be developed for the most practical and representative ways to make the required measurements in wilderness areas. Protocols are needed for both on-site and laboratory analysis so that sources of error can be minimized. A major challenge will be designing sampling schemes that can adequately represent the diverse physical, chemical and biological variables.

Protocols also are needed for data reduction, analysis and archiving. These post-measurement treatments of data and samples are an important consideration for developing results that will still be useful in the distant future. A quality assurance plan should be developed along with the other protocols to ensure reliable and meaningful results. Quality assurance/ quality control is essential to characterize adequately the sources of error and the inherent uncertainties in the data collected.

A major concern is how to address the inevitable tradeoffs between what measurements ideally are desirable scientifically and what is actually possible under the physical and legal constraints imposed by high elevation wilderness sites and limited resources for accomplishing the task. It could be argued that not enough is known to even determine what to measure, when or how. This approach is not a luxury that FLM's can indulge. The task at hand is the art of the possible. We must determine the best possible approach, fully document it and then proceed knowing it is not ideal.

The high degree of scientific uncertainties about how atmospheric chemicals influence alpine ecosystems means on many issues no single widely accepted view exists. Consensus building must be part of the entire process so that scientific credibility can be achieved. The research community must be educated during the process on what FLM's needs are, why they cannot wait for ideal approaches to be developed, and what the legal and management constraints are. The best current scientific judgment must be made, discussed and agreed on.

OBJECTIVES

The objective of this work is to develop procedures to measure the existing conditions (baseline) of, and hence to measure any changes from the baseline of, the air-quality-related values of wilderness. To accomplish this, it is necessary to 1) identify specific AQRVs; 2) define tools and techniques which can measure the AQRVs; 3) select among these the best tools and techniques; and 4) develop specific protocols for these measurements. A by-product of this work will be identification of the accuracy and precision with which each specific

AQRV can be measured, thus providing the manager with needed information for his/her decisionmaking.

As administrator of much of the nation's wilderness lands and as a Federal Land Manager under the Clean Air Act, the Forest Service is responsible for identifying, assessing and protecting the AQRVs of national wilderness areas under its jurisdiction which have been designated as "class I." However, there is little data available on the existing conditions of the resources in high elevation national wilderness areas in the western United States. Thus, the Forest Service specifically has a critical need to:

- identify a workable set of quantitative parameters to characterize the baselines of these natural ecosystems with respect to air pollution;
- develop uniform measurement procedures for these parameters;
- develop and subject to thorough review and criticism within the scientific community protocols for these measurement procedures and associated data analyses;
- foster a broad scientific consensus on the scientific protocols; and
- prepare and document the final protocols in accordance with the scientific consensus.

METHODS

To address the U.S. Forest Service's needs, this work will:

- establish scientifically credible protocols;
- ensure the protocols are practical and relevant to FLMs needs;
- attempt to develop consensus on the protocols within the scientific community; and
- implement a dynamic process for revising and updating the protocols.

The use of a carefully planned and executed consensus approach to developing the necessary monitoring protocols is the essential component of this work. In order to get consensus among the diverse groups, across many disciplines and for such applied purposes, a team approach is being used.

The major elements of the planned approach to protocol development and consensus building include the following:

- bringing the users and producers of the protocols together early, and reminding them throughout the project, to assure that Clean Air Act, Wilderness Act and other regulatory and management constraints are adequately considered in drafting the protocols;

- o developing the draft protocols with expert teams and circulating them for peer review by the relevant technical community;

- o encouraging broad participation in reviewing and commenting on the draft protocols including involvement by all concerned federal, state and private sector stakeholders;

- o working directly with the various USFS personnel at every stage to ensure the evolving protocols are relevant to their mission requirements;

- o educating the scientific community on the needs of FLMs and the constraints imposed by wilderness conditions and regulatory and management constraints; and

Six coordinated Work Groups of experts will develop the protocols with several cycles of internal and external review. Each group will focus on the technical issues presented by the different areas. The leaders of these groups will be responsible for coordinating and presenting the material developed by the group. A listing of these Work Groups is attached.

<u>Task Approach Details</u>

<u>Task 1</u> - Study Plan

The study plan was completed and submitted to the USFS.

<u>Task 2</u> - List of Proposed Measures & Regulatory and Management Constraints Document

Under the direction of the Work Group leader, each of the five Work Groups developed a "strawman" list for its area. Concurrently with development of the lists of measurements, Work Group Six developed a briefing document to identify and briefly describe the regulatory, management and physical constraints on sampling, measurement and analysis in class I wilderness areas. The Project Team Meeting brought together the six Work Group Leaders, and selected EPA, state air quality permitting personnel and USFS managers. The meeting focused on revising the lists and integrating them into a compatible ensemble of appropriate measurements performable in remote conditions. The meeting also focused on the critical regulatory, management, budgetary and physical constraints upon sampling, measurement, and analysis of wilderness resources. The meeting ensured that the scientists are fully cognizant of the many constraints. The revised Measures Report and Constraints Paper were submitted to the USFS.

Task 3 - Draft Protocols

The Work Groups have prepared the first draft protocols which will be distributed to all groups and participants for internal review. The internal review will be followed by a wider review of the draft at the Protocol Refinement Workshop. The purpose of this workshop is 1) to provide an opportunity for the entire project team to meet to refine the draft protocols before public review; 2) to subject the draft protocols to further intensive discussion and refinement by some key external users and scientists; 3) to aid in a smooth transition to the larger consensus development meeting; and 4) to widen the sphere of participation in reviewing and refining the early draft material. This meeting will form a core of involved opinion leaders to contribute during the next consensus building phase. Specific areas of agreement will be established and problems addressed.

This workshop would allow significant improvement in the draft protocols as well as enhance the degree of consensus obtainable. Given that the overall project spans 18 months, such an interim meeting with the project team is critically needed. By involving key stakeholders prior to the public review meeting and by allowing productive technical interaction, both science and consensus building will be well served.

Task 4 - Public Review Draft of Protocols

The Project Manager will confer with the USFS to identify any problems areas. The Project Manager will work with the Work Group Leaders to prepare and integrate the draft sections, and address all the concerns identified previously. The Project Manager and staff and the USFS will review and edit the complete draft report. This report will be suitable for review by the broad community of scientists and regulators involved. The Project Manager will submit the report to the USFS review and approval.

Task 5 - Public Review Meeting

The draft protocol will undergo a comprehensive review. Materials will be developed and widely circulated for review prior to the Public Review Meeting. The meeting sessions will be carefully designed to focus on key issues and move the group toward consensus. The draft protocol report and the Constraints Paper will be distributed to participants prior to the meeting. Participants will be educated on FLMs' needs and the regulatory and management constraints. Everyone will have ample chance to express their views. The PM will prepare a Review Meeting Report to be sent out to all concerned parties. Areas of strong consensus that have emerged and remaining controversies will be highlighted.

PROJECT SCHEDULE - See attachment.

DETAILED SCHEDULE OF TASKS

ACTIVITY	PERFORMERS	TARGET DATE
Task 3 - Procedures and Protocols		
A. Distribute briefing document and measures report to all team members	BH/CB	2/17-3/21
B. Prepare and circulate instructions and guidance on developing protocols to team members	CB/BH	2/24-28
- decide on workshop option	USFS	
C. Develop 1st draft protocols	WORK GROUPS	3/3-4/24
- Contact and work with group members	LEADERS	
- Submit draft to SPA	LEADERS	4/24
- Integrate group protocols into complete 1st draft and distribute	BH/CB	4/24-5/9
D. Internal review of 1st draft protocols; submit comments	ALL	5/9-23
E. Revise draft protocols	LEADERS	5/26-6/6
- develop list of reviewers	CB/DF/BH	
F. Circulate revised protocols for wider review	BH/CB	6/9
Option - Protocol Refinement Workshop		
G. Prepare for workshop	CB/BH/DF	4/21-6/13
- make meeting arrangements - define participants - develop agenda		
H. Conduct workshop w/full protocol drafting team and selected participants	CB/BH/DF	6/18-19
I. Prepare meeting results in the form of guidance for developing final draft protocols.	BH/CB/DF	6/20-30
Task 4 - Draft Procedures and Protocol Document		
A. Confer with COTR and USFS to coordinate draft development	CB/DF/BH	6/25

ACTIVITY	PERFORMERS	TARGET DATE
Task 4 continued		
B. Develop detailed outline of public review draft	BH/CB	6/23
C. Prepare review draft - groups draft sections - project manager and COTR integrate sections	BH/CB/DF Work Groups	6/23-7/21
D. Internal review and editing	DF/CB/BH	7/22-31
E. Submit Public Review Draft to COTR - COTR review - SPA revision - USFS approval	CB/BH	8/1-31
Task 5 - Public Review		
A. Prepare for Public Review - meeting arrangements - design working sessions - select moderators/participants - define invitees	CB/BH/DF	8/1-9/1
B. Announce Public Review - widely publicize goals and objectives	CB/BH/DF	9/1-5
C. Circulate review and draft protocol report and briefing document to public prior to meeting	BH/CB	11/1-12/1
D. Conduct Public Review Meeting	ALL	12/10-11
E. Prepare Review Meeting Revision	BH/CB	12/6-1/9/87
F. Distribute Revised Draft Report	BH/CB	1/12

*Performers: CB - Chris Bernabo, SPA; BH - Betsy Hood, SPA; DF - Doug Fox, USFS; SC - Steve Connolly, JSCF

U.S. FOREST SERVICE PROJECT

PROTOCOLS FOR ESTABLISHING PHYSICAL, CHEMICAL, AND BIOLOGICAL BASELINES FOR HIGH-ELEVATION NATURAL ECOSYSTEMS

SPA MEMBERS

Chris Bernabo - Project Manager
Betsy Hood - Project Staff

USFS

Doug Fox - Contract Officer's Technical Representative

WORK GROUP 1 - Atmospheric

Volker Mohnen - leader
James Galloway
James Gibson
Thomas Hoffer
William Reiners
Steve Connolly
Richard Fisher (USFS)
Doug Fox (USFS)
Charlotte Hopper (USGS)
G. Bruce Wiersma (EG&G)

WORK GROUP 2 - Soils and Geology

William McFee - leader
James Galloway
Arthur Johnson
Steve Norton
William Reiners
William (Toby) Hanes (USFS)
Charles Troendle (USFS)
Ray Herrmann (NPS)

WORK GROUP 3 - Aquatics

James Galloway - leader
James Gibson
William McFee
Frank Sanders
Steve Norton
Alan Galbraith (USFS)
Fred Mangum (USFS)
Richard Sommerfeld (USFS)

WORK GROUP 4 - Flora

Patrick Webber - leader
William Reiners
Arthur Johnson
William McFee
Barry Johnston (USFS)
Paul Miller (USFS)
Anna Schoettle (USFS)

WORK GROUP 5 - Regulatory

Steve Connolly - leader
Chris Bernabo
Volker Mohnen
William McFee
James Galloway
Frank Sanders
Patrick Webber
Paul Barker (USFS)
Doug Fox (USFS) .
Dennis Haddow(USFS)

WORK GROUP 6 - Applications

Doug Fox (USFS)
Larry Svoboda (EPA) - co-chair
James Byrne (USFS)
John Clouse (CO) - co-chair
Dennis Haddow (USFS)
Lee Lockie (AZ)
Al Riebau (BLM)
Hal Robbins (MT)
Chris Shaver (NPS)
Kent Schreiber (FWS)
Randy Wood (WY)

Appendix I

Field Protocols

A. Lake Chemistry Sampling: a) Fixed Depth

Materials: battery powered peristaltic pump with weighted 1/4 inch tygon hose
12 volt dry cell battery
clean, empty, 250 ml sample bottles
clean, empty, 2 liter bottle
2 liter bottle filled with deionized water for field blank
white lab label tape and permanent marker pen

- Collect samples from deepest point on lake marked with bouy. Stabilize boat by anchor at one end and tie to bouy at other end.
- When ready to sample, attach battery to peristaltic pump, remove parafilm from ends of hose, drop hose to desired depth and turn on pump.
- While hose is at desired depth, let water run out at least 30 seconds to rinse hose.
- Using white lab tape and permanent marker, label sample bottle with sample location, depth, date, and time of day.
- The sample bottle must be rinsed 3 times before it is filled with the actual sample. To rinse, fill bottle half full, cap, shake vigorously, remove cap, empty bottle. Avoid touching bottle rim or cap with fingers.
- After each rinse, be sure to shake out all of the excess water from the bottle. After last rinse, fill sample bottle to top and cap tightly. Leave no air space in bottle.

- Samples for each specific depth are taken as above. Collect one sample from the 2 liter bottle of deionized water as a field blank, following the same procedure as above.

- After returning from the field, rinse hose with deionized water.

- Store samples at 4^{o} C. Split samples if required and ship to lab in picnic cooler with frozen ice packs via UPS overnight.

Lake Chemistry Sampling: b) Integrated Depth

After samples are collected from specific depths, an integrated sample is collected from the entire lake column depth. This sample is collected into a 2 liter bottle that has been rinsed with lake water, from an upper depth of the lake column. Rinse the 2 liter bottle 3 times with water from the sample zone. Remember to recap, shake well, and shake out excess water after each rinse.

- Now rinse the weighted hose before collecting the sample. Start this process by turning on the pump and lowering the weighted hose at a steady rate from the most shallow sampling depth to the deepest point, being careful not to touch the bottom of the lake. When the hose reaches the deepest depth, begin pulling the hose up until you are at the shallowest depth (your starting point). If the hose touches the lake bottom, pump mid-depth water through the hose for several minutes to clean the hose and begin this step over. Be sure to move hose at a steady rate a complete cycle through the sample zone.

- When you have rinsed the hose and reached your starting point at the top of the lake, start the process again, this time collecting the sample into the 2 liter sample bottle until a complete circuit is completely collected into the 2 liter sample bottle. If not enough sample is collected in the 2 l bottle to rinse and fill the small sample bottle, collect another complete circuit through the lake water column into the 2 liter bottle, still moving the hose at the same rate.

- When enough water is collected, and full circuits of the lake water column are completed, place the lid on the 2 liter bottle and shake to mix.
- After shaking, pour into a regular sample bottle. Again, remember to rinse the sample bottle 3 times with the integrated sample collected in the 2 liter bottle, shaking out excess water after each rinse.

Lake Chemistry Sampling: c) Winter

- Before leaving for field make sure hose is neatly coiled for easy layout. Heat antifreeze in microwave and put in coolers.
- After drilling 8 inch hole with power auger, scoop out ice and slush.
- Set ice chest over hole and insert hose through bottom hole into the water.
- Immediately turn on pump and stick outlet hose through side hole and replace cover. Use sample bottle to hold hose at proper depth.
- Leave pump running continuously and remove cover only when necessary.
- Keep all instruments warm and covered as much as possible while collecting data to avoid being affected by cold.

B. Stream Chemistry Sampling

Lake inlet streams are sampled just before entering the lake, or if flumed, just upstream from the flume. Lake outlets are sampled at the flume or at the lake outlet for unflumed outlets. Streams are sampled as close to the lakes as possible.

- Label bottle with location, date, time of day, and stage height (if gaged stream) in tenths of feet.

- Be sure to immerse bottle completely (if possible) with mouth of bottle pointing upstream, so no water flows over your hand into the bottle. Do not touch bottle mouth or inside of cap. Fill bottle at least half full, cover with cap and shake. Pour out rinse water downstream of sample point. Rinse bottle and cap three times.

- Fill bottle using same procedure as above. Squeeze the bottle as the cap is tightened so no air remains in bottle.

- Keep sample cool while transporting. Store at $4^{o}C$ and ship to lab in picnic cooler with icepacks via UPS overnight.

C. Splitting Chemistry Samples

Materials: Plastic gloves (worn from #3 on)

30 ml bottles for cation splits

60 ml bottles for anion splits

.45 micron filters in clean holders

30 ml syringe

large beaker filled with reagent DI water

waste water bucket

1. Label one 30 ml and one 60 ml bottle for each sample with location, data and + or - for each sample.

For example: EGO

8/29/90 + for a cation split

2. Arrange sample bottles with corresponding split bottles next to them on table.

3. Put on plastic gloves. Using surgical gloves, wash hands with gloves on in DI water to remove contaminating powder. Lay a piece of plastic wrap on table to provide a clean working surface.

4. Empty DI water from the 30 and 60 ml split bottles into the waste water bucket for the first sample. The bucket should be on the floor to avoid contaminations.

5. Completely fill syringe with DI from large beaker and empty into waste bucket 3 times to rinse syringe. Fill syringe with about 25 ml of DI and 5 ml of air and attach clean filter. Empty this into waste bucket. The air should push all DI from the filter. Shake off syringe with filter to remove any drops of water. Remove filter and place on split bottle to avoid contamination.

6. Fill syringe about half full of sample and attach filter. Filter about half of this into each split bottle using air bubble to remove all water from the filter and shake to remove any drops. Set syringe with attached filter on table. Screw lids on split bottles, shake well and empty into waste bucket. Remove filter and set on split bottle.

7. Fill syringe with sample and filter 30 ml into cation bottle and repeat to filter 60 ml into anion bottle. Cap all bottles and set aside to avoid confusion with unsplit samples. Put used filter in another beaker for dirty

filters. Repeat steps 4-7 for remaining samples. (For large number of samples or for hard-to-filter samples, a vacuum pump can be used to assist in filtration. The vacuum pump is used in conjunction with a Millipore aseptic Sterifil filtration system or similar filtration apparatus.)

8. To each cation split, add 40 ~~ml~~ µl ~~reagent~~ Ultrex grade nitric acid to stabilize sample.

9. Store samples in refrigerator at 4°C. until shipment to lab. Ship to lab via UPS overnight.

D. Phytoplankton and Zooplankton Sampling

Materials: large volume hand pump with large diameter weighted hose

20 liter carboy

sample bottles

squirt bottle

zooplankton filter

lab label tape and permanent marker

- Phytoplankton and zooplankton samples are collected from the deepest part of the lake. Using the hand pump and large hose, use the same technique as for integrated chemistry sampling to rinse hose with integrated sample, being areful to move the hose only during the draw strokes so sample is drawn from the complete water column. One person moves the hose through the water column, while the other person operates the hand pump at a steady rate. With practice, the hose can be moved at a rate so the carboy is filled with the desired volume with complete circuits of the hose through the sampling zone. Again, stop at the beginning point for a complete cycle through the sample zone.

- First, rinse the hose by lowering it to the sample zone, and pulling it through a complete circuit of the sample zone while pumping. Once rinsed, complete a full circuit through the sample zone while filling the 20 l carboy. Make enough complete circuits of the sampling zone to fill the carboy to approxiamately the desired volume. It is important to remember to pump complete sampling zone circuits of the sample zone into the carboy, and to move the hose only on the draw strokes of the pump. Once collected, put the lid on the carboy and shake to mix the sample.

Phytoplankton:

- Shake the carboy and rinse the sample bottle 3 times with the sample water.
- After the third rinse, fill the sample bottle about 95% full to allow room for the fixative.
- Label bottle with site, date, time, and depth.
- Add 2 ml/125 ml of M3 fixative to sample bottle.

Zooplankton:

- Measure the sample volume in the carboy and record it on the sample bottle.
- Record site, date, time, and sample depth on the label.
- Filter the entire carboy sample through funnel/filter apparatus and rinse the filtrate into the sample bottle. Water from the funnel/filter apparatus

can run back into the lake while filtering.

- With a squirt bottle of carboy water, open the filter screen and rinse zooplankton from the filter into the small sample bottle.
- Preserve immediately by adding to the sample bottle 2 ml formaldehyde /125 ml sample water.

Jan 18, 88

World Class Status .... Intl. Treaty

BIOSPHERE RESERVE STATUS FOR IDAHO'S WILDERNESS AREAS

A PROSPECTUS FOR A CENTENNIAL CELEBRATION

- Want in place by 1990
- FS probl. won't support, at least initially
- No new mgmt restraints.
- CFWR supported the concept today.

Idaho has the largest expanse of unroaded lands and the largest classified Wilderness Area in the lower 48 states. Three of the wilderness areas, the Frank Church-River of No return, Selway Bitterroot, and Gospel Hump, are contiguous and contain world-class representatives of North American plant communities and wildlife habitat ranging from the towering ponderosa pines along the Salmon River to the flower-strewn alpine meadows of the "Bighorn Crags." The size and remoteness of these areas ensures the isolation needed for monitoring long-term environmental and ecological changes. These values would be enhanced by designating the areas as Biosphere Reserves. At the same time this designation would not change or jeopardize current agency management programs or public uses of the areas.

(PHOTO)
(EL CAPITAN AND TWIN PEAKS PASS WINTER)

BIOSPHERE RESERVE PROGRAM

The United Nations Man and the Biosphere Program (MAB) was conceived as an international intergovernmental effort focusing on: the general study of the structure and function of the world's ecological regions; the systematic observation of changes brought about by man in those regions; the study of the effects of those changes on plant and animal life; and the need for public education and scientific information on these subjects.

The major objectives of the MAB Program are the conservation of natural areas and of the genetic material they contain, and the development of an international network of protected areas called Biosphere Reserves. The purpose of these reserves is threefold: (1) to provide areas for ecological research with an emphasis on baseline studies measuring the diversity and the integrity of the region's ecological communities; (2) to provide suitable areas for the longterm monitoring of the impacts and ecological effects of human activities on world ecosystems; and (3) to provide facilities for education and training.

Currently over 160 Biosphere Reserves have been established in the world, with 36 of them in the United States. Idaho's 3.8 million acres of wilderness in this proposal are worthy of this status.

SUITABILITY OF OUR WILDERNESS HIGHLANDS FOR BIOSPHERE RESERVE STATUS

Central Idaho's wilderness areas are uniquely suitable for Biosphere Reserve designation because they:

1. Represent the dominant natural features of the Rocky Mountain region;
2. Contain a high degree of ecological diversity;
3. Have experienced little or no modification by man;
4. Are highly effective as a single conservation unit; being large enough to be self regulating, protected by natural barriers and containing an adequate buffer zone.

Some of the most remote, mountainous country in the nation -- the **Frank Church - River of No Return Wilderness**, the **Selway Bitterroot Wilderness**, and the **Gospel Hump Wilderness** -- constitutes 3.8 million acres of practically uninterrupted wildlands in the heart of Idaho. These 6,000 square miles of designated Wilderness containing three mountain ranges are bisected by three wild and scenic rivers. Considered separately, each is renowned for its natural qualities; considered together, no other park or wilderness area offers so many pristine resources yet is so accessible to the public.

Few reserves in North America harbor such a diverse and complete biota as the Central Idaho Wilderness. Steep canyons rising to dark forest plateaus topped by alpine peaks place an incredible variety of habitats within a few miles of one another. As a result, the lowland rattlesnake and alpine rosy finch exist virtually side by side. The complex of predators includes three species of wildcat; the magnificent mountain lion, elusive lynx, and enigmatic bobcat. A menagerie of small carnivores abound, including river otter, pine marten, and nine species of forest owls. An occasional wolf or grizzly still explore these ancient forests while the list of hooved animals includes elk, mule deer, whitetail, moose, bighorn sheep and even the noble mountain goat. Salmon and steelhead continue to navigate the mighty rivers and spawn in the clear cool creeks of the high country. The true value of this wilderness landscape rests strongly on the complete communities of birds, mammals and fish which thrive in forests sheltered from man's heavy footprint.

Despite the size and remoteness of the combined area, a wide variety of public uses are enjoyed in this outstanding landscape. A well-established professional outfitter and guide service hosts thousands of people every year for river trips, big game hunting, fishing, backpacking, jetboating, mountain climbing, and outdoor recreation. Crossed by trails, dotted by mountain lakes and streams, and blessed with meadows and forests primeval, these wildland resources are a critical part of Idaho's appeal and image as a tourism destination and an important component of Idaho's economy.

All uses which the public presently enjoy would continue unaffected by the designation of the area as one of America's premiere Biosphere Reserves. Designation as a Biosphere Reserve would bring visibility and international acclaim to Idaho's central mountain wilderness. This would contribute to the Idaho image that is important to the state's growing tourism industry, help support management programs by the federal agencies, and attract researchers from around the world.

The agency administering each area nominated for Biosphere Reserve status must agree to or request Biosphere Reserve designation. In this case, the area is protected and managed in perpetuity as part of the National Wilderness Preservation System by the United States Forest Service. The title Biosphere Reserve is an honorary rather than legal designation and does not in any way affect the land uses or management activities which may take place on the area. Because of this, Biosphere Reserves encompass a great diversity of landscapes worldwide, ranging from national parks and true wilderness areas to those areas that are managed for agriculture, timber harvest, wild game, or for domestic grazers. However each area is unique and adds a further dimension to our understanding of the world's ecological systems.

SCIENTIFIC PURPOSE

The purpose in obtaining Biosphere Reserve designation for The Frank Church River of No Return, Selway Bitterroot and Gospel Hump wildernesses is to birng international recognition and visibility to these diverse and unique ecosystems of central Idaho. These areas provide the opportunity for unprecedented baseline ecological and environmental research. Biosphere reserve designation would attract researchers from throughout the world. It would enhance the already bright reputation of Idaho as an area of high quality natural resources with outstanding opportunities for education and research as well as first-class recreation.

(PHOTO)
(HORNOCKER WITH BIG CAT)

The designation of Idaho's three largest wilderness areas would be a fitting tribute during Idaho's celebration of her centennial. The concept has been endorsed by the Lasting Legacy Committee of the Idaho Centennial Commission. The endowment of pristine wildlands that we have inherited from our forefathers in this century has been perpetuated and bequeathed as wilderness to future generations who will celebrate our next centennial. Biosphere Reserve designation will help ensure that the rich scientific potential of these wilderness areas will be a part of this lasting legacy.

For additional information, please contact: