# University of Idaho's Taylor Wilderness Research Station

Wilderness Research Workshop 2008

# Tukudika – Sheepeater Indians

# “Cougar Dave” Lewis

Forest Homestead Act 1906
Idaho National Forest 1919

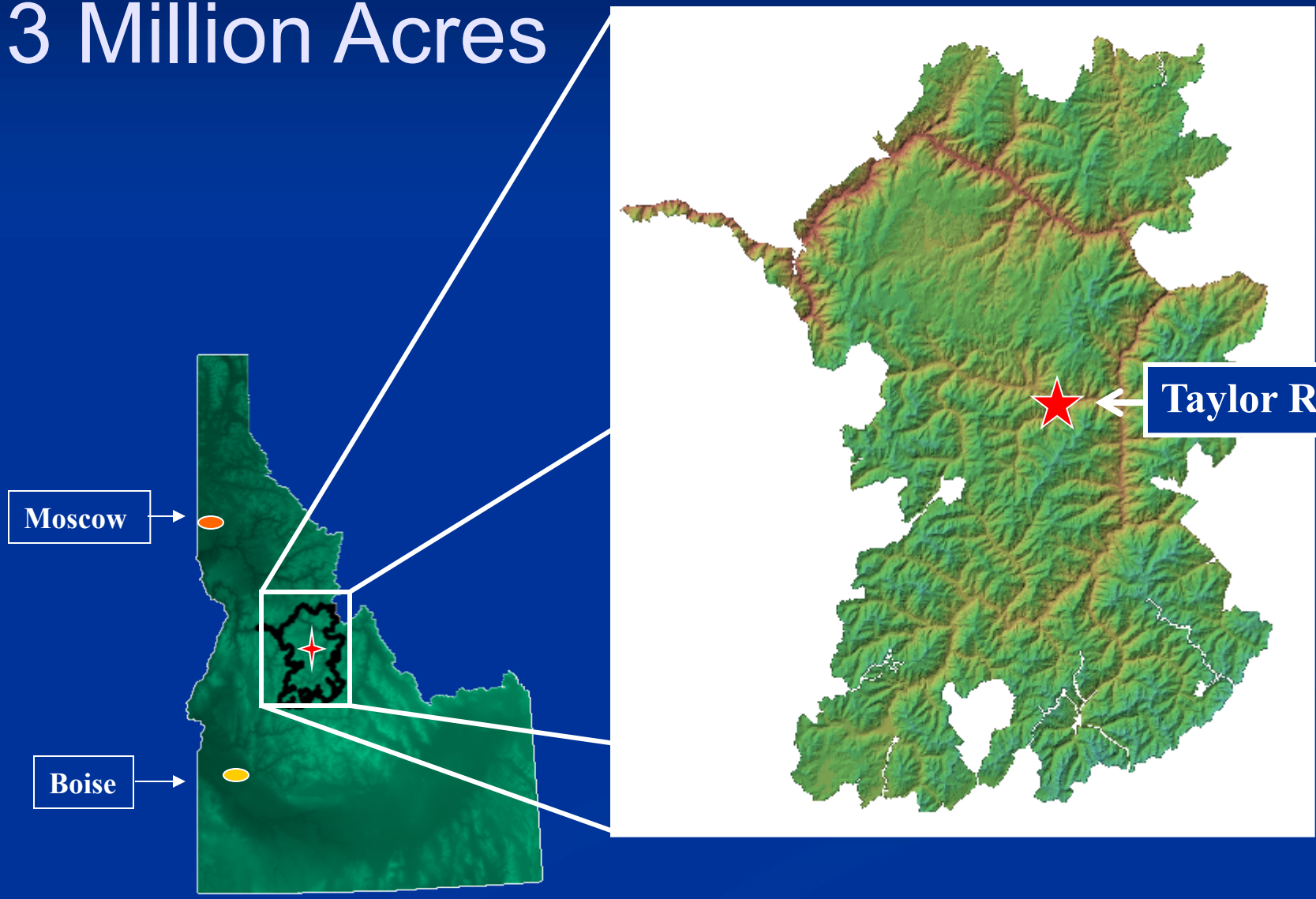
# Idaho Primitive Area 1931

# Dr. Maurice Hornocker

Envisioned a Wilderness Research Station for University of Idaho

In 1970 UI purchased Taylor Ranch from Jess Taylor for Wilderness Research

# Frank Church River of No Return Wilderness, 2.3 Million Acres



# Taylor Wilderness Research Station

Scientific Research on Natural Systems done in a Wilderness Sensitive Manner

# “America’s Wildest Classroom”

Biology

Archaeology

# Taylor Research Themes

- Carnivore & Ungulate Dynamics
- Aquatic Relationships
- Fire Effects
- Human history in the central Idaho Wilderness
- Monitoring conditions & change - the wild edge of the wild-to-urban gradient of sites

# Four Decades of Cougar Population Trends

Hornocker/ Seidensticker ↔

- Cougar population stable
- Prey base increasing
- Cougar season closed

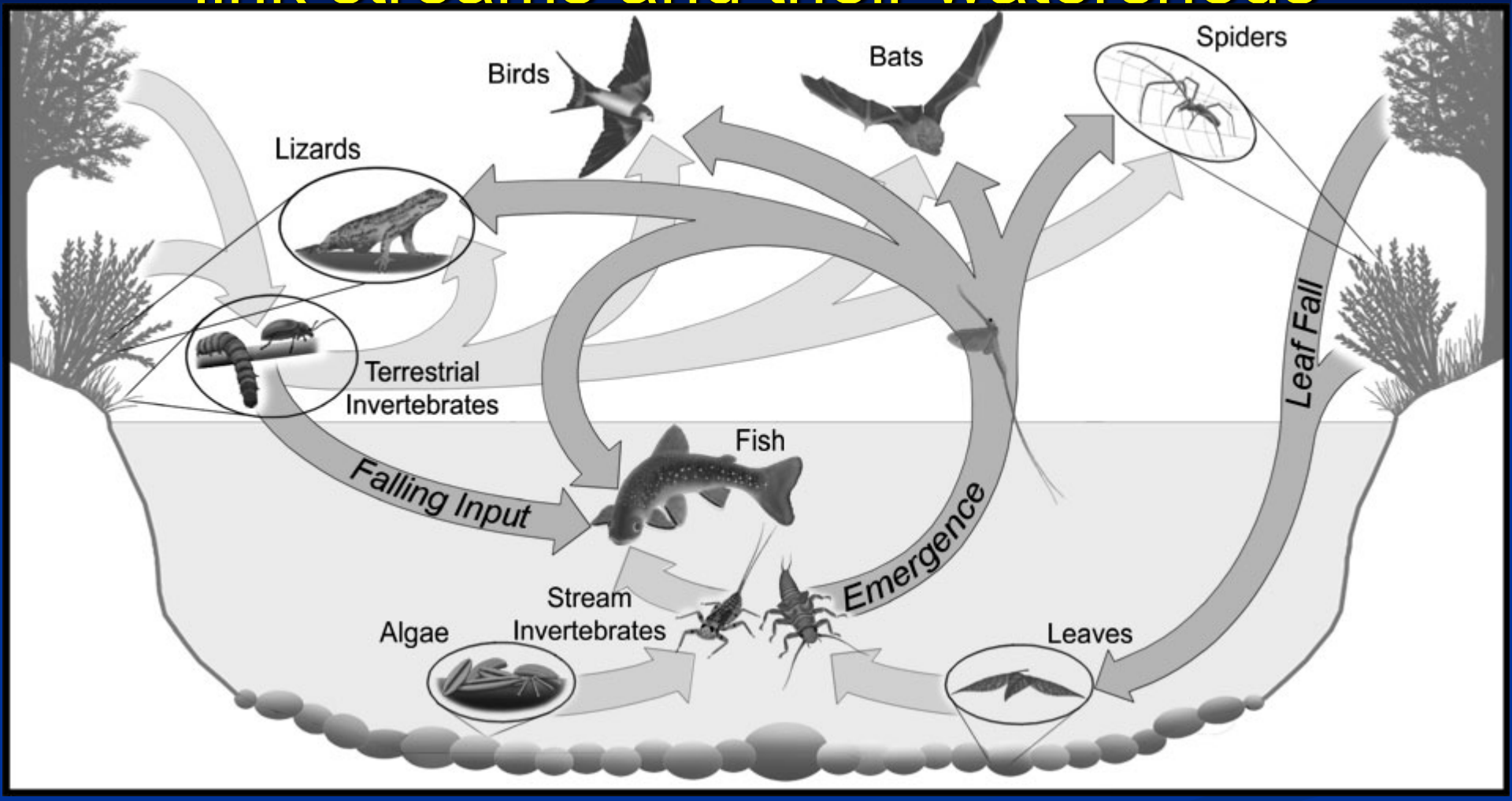
Quigley/ Koehler ↑

- Cougar population up
- Prey base increasing
- Cougar hunting light

Akenson/ Akenson ↓

- Cougar population declining
- Prey base declining
- Cougar hunting increasing
- Major environmental change: wildfire and wolves

# Reciprocal flows of materials and organisms link streams and their watersheds




Baxter et al. 2005. *Freshwater Biology*

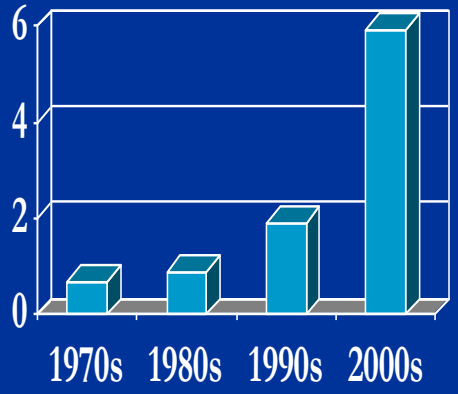
# Fire Related Research

- Stream Ecology & Aquatic Invertebrates
- Carnivores & Ungulates
- Rangeland Vegetation Productivity
- Stream Flows & Sedimentation
- Lewis' Woodpeckers
- Amphibians
- Seedling Regeneration

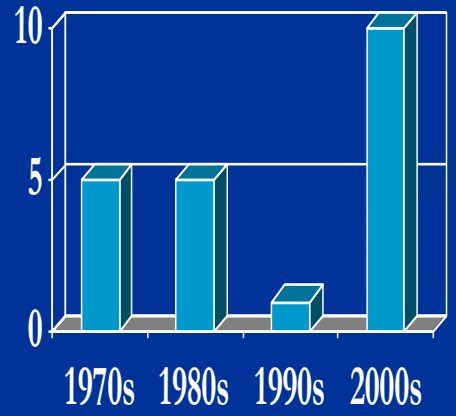
# Human Settlement & Subsistence Patterns in the Wilderness

# Long Term Field Station Use
## 1970s, 1980s, 1990s, 2000s

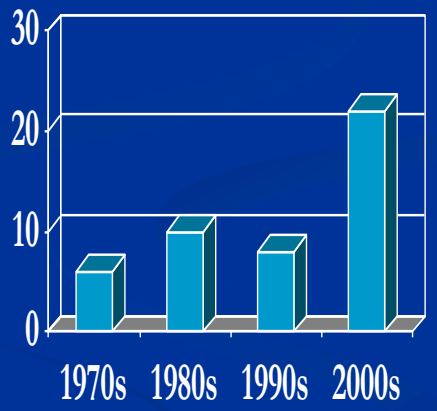
Undergrad Positions




Graduate Students




Major Research Projects



# 10 Years of Strategic Growth

## Original Goals

- Create research opportunities for undergraduates
- ↑ graduate student opportunities
- Bring new faculty & scientists to Taylor
- Obtain & leverage external funding to initiate programs

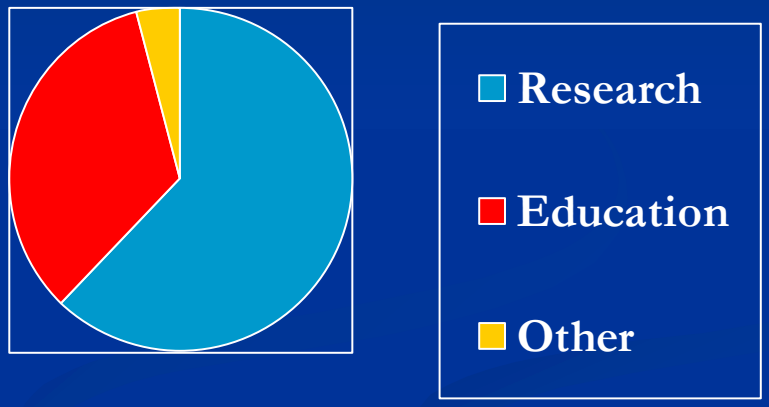
## Current Goals

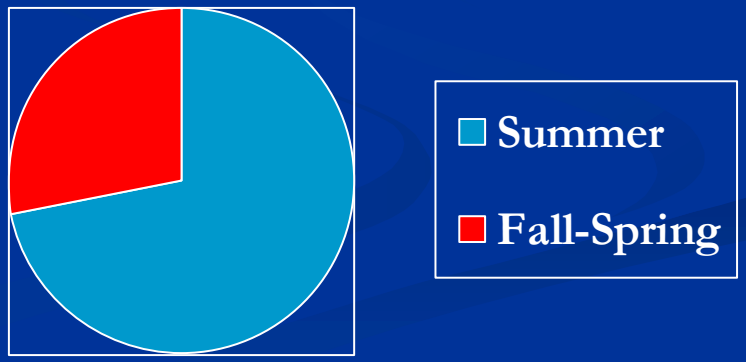
- ↑ non summer use
- Develop a multi-disciplinary research & education program
  - Winter Riverine Environment: a collaborative winter semester field course, with an education focus within a research initiative, designed to examine relationships of physical & biological processes and organisms in winter.

# Facility Use 2006

- 140 Visitors
- 1156 User Days
- University students accounted for 74% of station use
- $202,000 Private foundation funding for programs, facilities, endowment

User Days



# Taylor Facilities

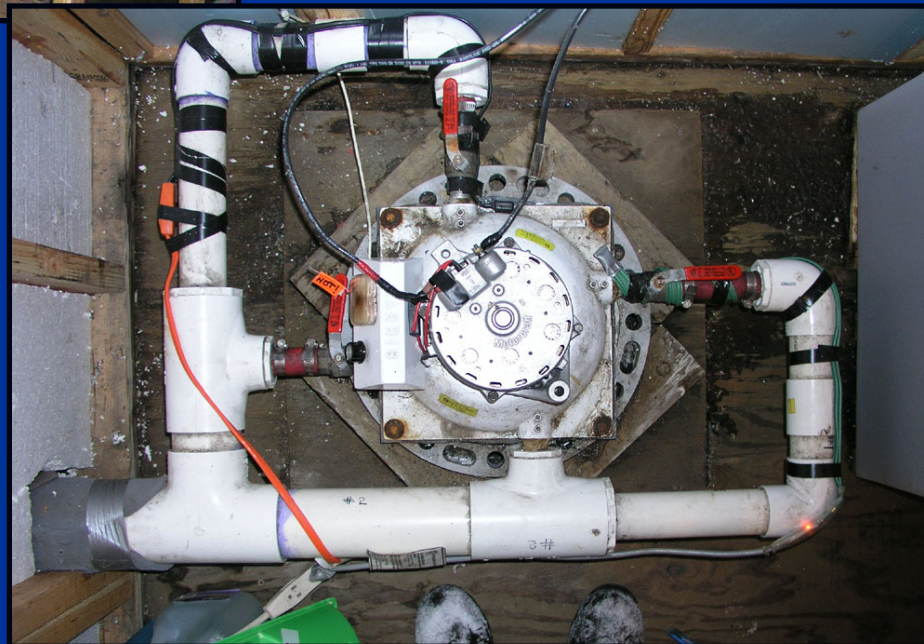
- Airstrip access – 3-5 passengers or 1,000 pounds
- Log cabins – 22 bed capacity
- Kitchens provided for cooking

Wireless Internet Connections

Hydroelectric Power

## Constraints to Growth

- Lack of building sites
- Limited Electricity
- Sewage issues
- Social crowding



# Funding

- University of Idaho
- Private Foundations
- Endowments
- Agencies:  USFS, IDFG, NSF, start-up funds
- Collaborations
  - Carnivore research: Hornocker Institute, IDFG, Nez Perce Tribe, DeVlieg Foundation, Wildlife Conservation Society, National Geographic, UI

# Collaborations at Taylor Ranch

- Multidisciplinary
- Multi agency
  - NOAA Fisheries
  - UI Fisheries
  - IDFG
  - ISU Geosciences
  - ISU Stream Ecology
  - Rocky Mountain Research Station
  - Bonneville Power Admin.
- Networks

<u>With Forest Service</u>

- Wilderness Skills Courses
- Heritage Program JPA
- Noxious Weed Monitoring
- Stream Ecology long term monitoring JPA
- Amphibian monitoring – Aldo Leopold Institute

# Research Resources

- Fish PIT tag monitoring antenna array
- Fish screw trap
- Water quality monitor
- Stream gauge
- ArcView/ArcInfo GIS layers
- Hyperspectral & LIDAR airborne photography
- NWS Weather station
- Herbarium
- Bibliography & metadata archive
- Wireless Internet

# Long Term Research

Large Carnivore Ecology – 40 years

NWS Weather Station – 30 years

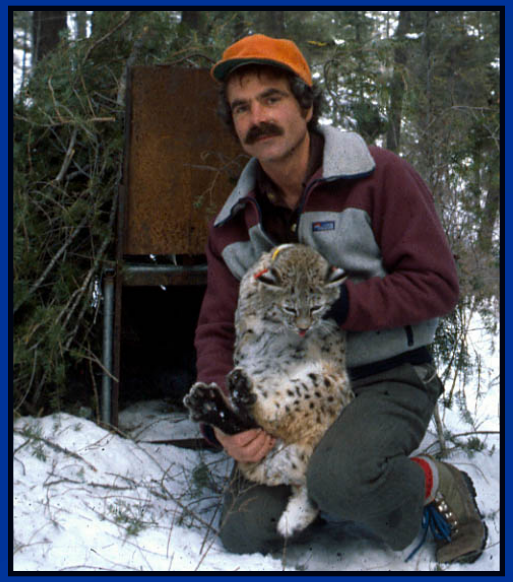
Vegetation Monitoring – 20 years

Stream Ecology – 20 years

Salmon Migration – 14 years

# Maurice Hornocker, John Seidensticker, Gary Koehler, Howard Quigley, Jim Akenson, Holly Akenson U of I Carnivore Ecologists

Four decades of cougar research: ecology, predator – prey relations, wolf competition



Dr. Jim Peek
U of I
Wildlife & Range
Ecologist


20 years monitoring Big Creek rangeland vegetation production, climate, and fire effects

Dr. Wayne Minshall
ISU
Stream Ecologist

20 years monitoring
Big Creek tributaries &
fire effects on streams

Steve Achord
NOAA Fisheries
Fish Ecologist

14 years monitoring migrations & survival of wild Snake River Chinook salmon smolts

# Recent Research Projects

Hydrology

Rattlesnakes

Salmon

Riparian – Aquatic Linkages

Whitebark Pine

Carnivores & Ungulates

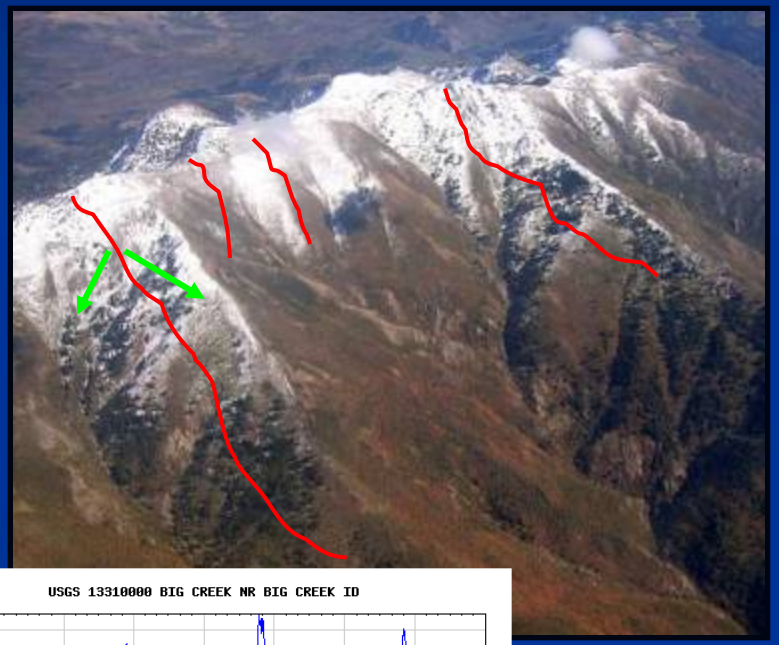
Geomorphology

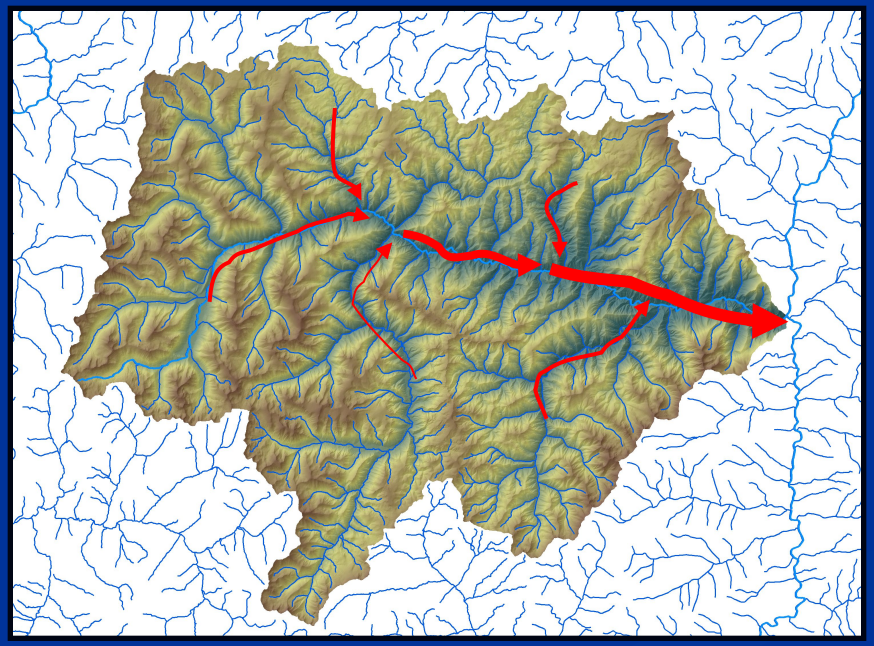
Geological Mapping

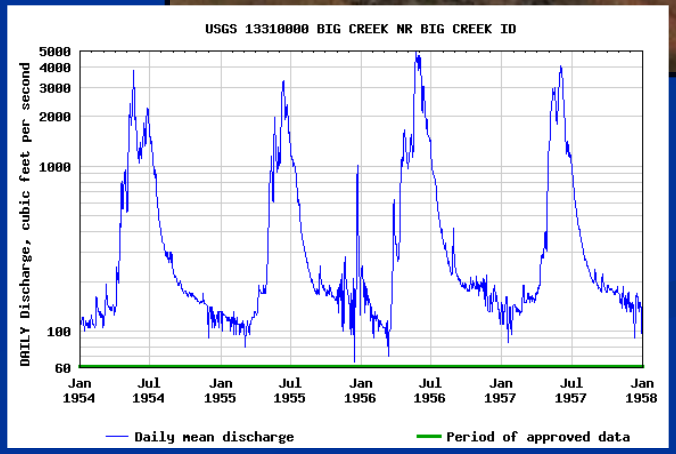
Archaeology

River Mapping

# Dr. Benjamin Crosby, ISU Geosciences
# Water, Water, Everywhere, But Not a Drop Measured: Establishing Reliable Basin Hydrology for the Big Creek Watershed.







# Dr. Brian Kennedy, UI: 1) Bioenergetics model of food & habitat impacts on Chinook salmon, 2) Life history & migration decisions

# Kim Apperson, IDFG
# MOU with TWRS. Idaho steelhead monitoring and evaluation studies

Fish Screw Trap
at Taylor Ranch

# Dr. Colden Baxter, ISU: Terrestrial connectivity in a wilderness watershed: Do emerging stream insects fuel riparian food webs following fire?

Aquatic Insect Emergence Traps

Dr. Jeff Braatne, UI: Riparia: Influence of fire on streamside vegetation and riparian – stream food webs in a wilderness setting.

Leaf Litter Traps – Terrestrial Inputs to Streams

# Steve Achord, NOAA & U of I TWRS MOU

PIT-tag detection system & water quality monitor installed at Taylor Ranch to document salmon & steelhead movements and survival in Big Creek.

Dr. Lauren Fins, UI
Forest Genetics

Monitoring wilderness whitebark pine, blister rust, & fuels.

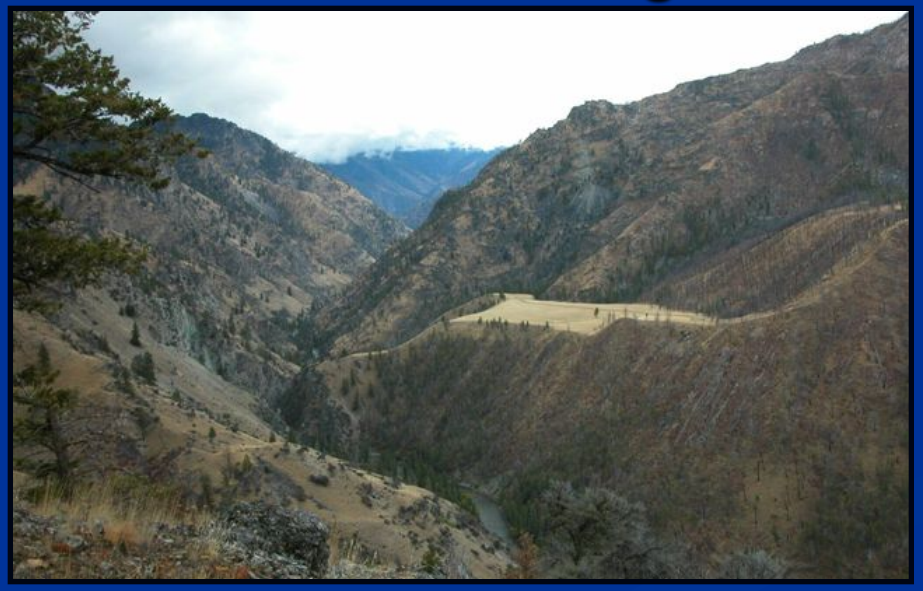
# Geomorphology

Dr. Paul Link, ISU

1) Bedrock controls on Big Creek valley morphometry.
2) Goat Creek landslide dam of Big Creek and residual terraces.

Dr. Nancy Glenn, ISU

Hyperspectral imagery remote sensing of channel morphology in Big Cr.



Larry Kingsbury
Payette National Forest
Cultural Resources
Specialist

U of Idaho - Payette NF
Participating Agreement
for Heritage Program
& Passport in Time
education programs

Holly Akenson
& Jim Akenson
UI TWRS

1) Winter predation and interactions of wolves and cougars in the Idaho wilderness
2) 4 decades of cougar – ungulate relationships

# The Big Onion River Mapping Project

Dr. Colden Baxter, ISU.
Multilayered interdisciplinary mapping of a wilderness watershed, Big Creek.

# Dr. Chuck Peterson, ISU.

## Rattlesnake movements & habitat selection in steep wilderness landscapes.

# Undergraduate Programs

- Train students in ecological research methods
- Collect data and knowledge on wilderness species and processes
- Life altering experience living and working in wilderness

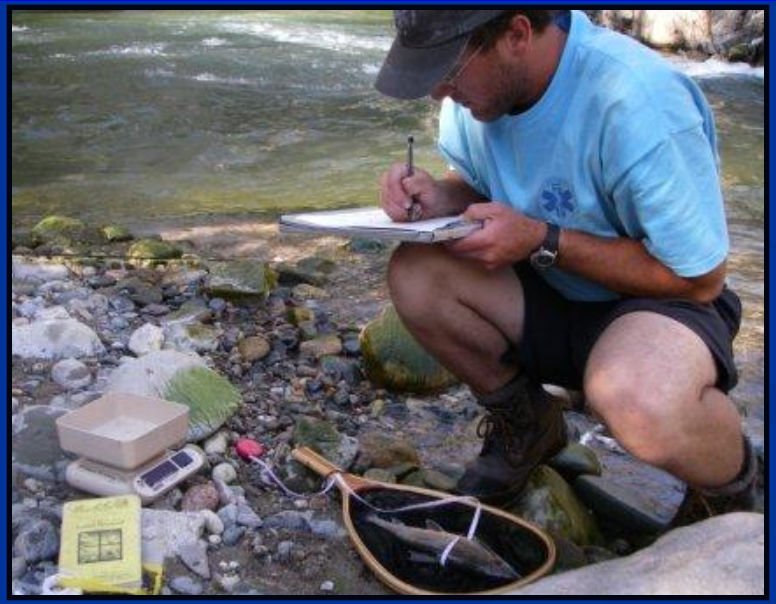
# Wilderness Education

- Participatory learning process of “How to DO science”
- Integrate academic principles with hands-on research and management techniques in the wilderness
- Connection between knowledge and application creates a transformational turning point
- Students move from academic learning to applying knowledge for career-long intellectual growth and professional accomplishments.

# Bleak Wilderness Internship



# DeVlieg Undergrad Research Scholars


# Lasting Relationships

With peers, mentors, and nature

# Education

- Undergrad Research Scholars & Internships
- University Field Trips
- Wilderness Ecology Enrichment Class
- McCall High School Environmental Science
- Specialty Courses – Bat workshop, Mule packing, Wilderness skills, Wilderness first aid

# University Field Trips

- Fish Ecology
- Stream Ecology
- Herpetology
- Wildland Ecology

Bat Workshop
for state and federal
Wildlife Biologists

Wilderness Mule
Packing Clinics for
Idaho Fish & Game
and US Forest Service

# McCall High School Environmental Science Class Field Trip

Hands-On Learning

# Optimizing Use – TWRS, a Small Station with Outstanding Programs

How do we create a world class research and education program at University of Idaho's Taylor Wilderness Research Station – with transformational learning experiences & cutting edge science?

# TWRS Constraints

- Small sized facility with limited additional summer capacity
- Remoteness & logistics – costs, access, travel
- Wilderness constraints on research designs

# TWRS Opportunities

- Large scale ecological processes – minimal human footprint
- Field station proximity within the central Idaho wilderness – provides access, remote infrastructure including Internet & research equipment, research support & resources
- Collaboration opportunities connected to an established research foundation
- Immersion in the wilderness research environment leads to conceptual learning and transformational experiences