

ANNUAL REPORT
OF THE
UNIVERSITY OF IDAHO WILDERNESS RESEARCH CENTER
AND ITS
TAYLOR RANCH WILDERNESS FIELD STATION

FISCAL YEAR 1995
July 1, 1994 -- June 30, 1995

BY

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SUMMARY

Overview/Summary

July 1, 1994 John Hendee left the CFWR Dean's position to become full-time Director of the UI Wilderness Research Center (WRC) and Professor of Resource Recreation and Tourism. The WRC is housed in three new offices located adjacent to the Resource Recreation and Tourism Department. Maureen Smith became WRC Administrative Secretary, leaving her position in the President's Office to join Ed Krumpe (Principal Scientist for Wilderness Management) and Jeff Yeo, Scientist/Manager for Taylor Ranch, on the WRC staff. This expansion of the WRC was marked with a "wilderness awareness week" of guest speakers, a wilderness film festival, photo and poetry contests, and a keynote event to celebrate the 30th anniversary of the signing of the Wilderness Act, and the 25th anniversary and rededication of the WRC by UI President Elisabeth Zinser. The highlight of that special evening was the musical arrangement, "Celebrate," by UI composer Dan Bukvich, to honor wilderness.

Major groundwork was laid toward institutionalizing the expanded WRC with meetings of a newly diversified campus advisory committee and the drafting of a new strategic plan. A five year proposal and plan for research on the "use of wilderness for personal growth" attracted commitments of approximately \$350,000 in external funding from several sources. Department of Labor funded a two year pilot program and study of Wilderness Discovery, the seven-day wilderness experience program developed and being tested by WRC for youth-at-risk in the Federal Job Corps. A WRC proposed "Wilderness Ecosystem Research and Monitoring System" for the Frank Church--River of No Return Wilderness was the focus of workshop at UI and will be the focus of a field trip to Taylor Ranch during the coming year by the proposed lead cooperators.

Six academic courses were taught by WRC personnel last year: Wilderness Management (in Moscow by Krumpe and in Boise by Hendee); Monitoring Human Impacts in Wilderness, by Ed Krumpe; Wilderness Research Seminar (new by Hendee); Use of Wilderness for Personal Growth (new by Hendee); and Field Methods in Wilderness Ecology (at Taylor Ranch vicinity by Jeff Yeo). Two distinguished wilderness lectures were presented respectively by Dr. Mike Dombeck, Acting Director of the Bureau of Land Management and Dr. Jon Roush, President of The Wilderness Society.

WRC Director John Hendee was selected as Managing Editor, and WRC will host the editorial offices, for a new "International Journal of Wilderness," sponsored by eighteen wilderness related organizations.

Over 100 people either conducted research or visited Taylor Ranch during 1994, including University Idaho President Elisabeth Zinser, The Wilderness Society President Jon Roush, Assistant Secretary of Commerce Mary Good, WILD Foundation President Vance Martin, and UI Vice Provost for Research Jean'ne Shreeve.

Unique Findings:

After several years of searching, populations of tailed frogs were discovered in Big Creek drainage by David Duncan, Taylor Ranch wilderness intern. Dave and a team of students in Jeff Yeo's Wilderness Field Ecology course WLF/ResRc 305, then described habitat characteristics of tailed frog larvae habitat.

RESEARCH

Under the Wilderness Research Center Strategic Plan, two major topics of research are identified and will be the focus of research planning.

1. Wilderness ecosystem research and monitoring consisting primarily of studies staged from the Taylor Ranch Field Station;

A proposal to establish a Wilderness Ecosystem Research and Monitoring system in the Frank Church--River of No Return Wilderness (FC-RNRW) was presented to the Forest Service and several other logical partners for a consortium to implement and fund the effort. In FY-96 the WRC will host a trip into the FC-RNRW near Taylor Ranch to discuss the proposal on the ground with key executive leaders from the Forest Service and Aldo Leopold Wilderness Research Institute.

Several on-going studies by WRC in this topic area continued and led to several publications, reports, and presentations.

2. Use of wilderness for recreation, personal growth, therapy, and education.

A five year plan for research was written and implemented under this topic. Three graduate students began studies related to wilderness experience programs and one doctoral student finished. The two year pilot program and study of Wilderness Discovery, the seven-day wilderness backpacking program for youth-at-risk in the Federal Job Corps, entered its second year with 23 trips planned at four Federal Job Corps Centers in Oregon, Washington, Montana and Georgia. Several publications, presentations and three study plans were developed around data from the Wilderness Discovery program.

Active Studies -- Topic 1: Wilderness Ecosystem Research and Monitoring

- 1. Monitoring bio-integrators of terrestrial community condition.**
Principal Investigator: Jeff Yeo (Wilderness Research Center, University of Idaho).
Purpose: Quantify natural variation of selected indicators of terrestrial community composition, structure, and function.
Location: Big Creek and tributary drainages.
- 2. Natural regulation of bighorn sheep populations.**
Principal Investigators: Jim Peek (Dept. of Fish & Wildlife, University of Idaho).
Purpose: Determine habitat and forage factors that regulate bighorn sheep in near natural conditions.
Location: Big Creek, Marble Creek, and tributary drainages.
- 3. Maternal lineages, habitat selection, and ecological fitness of forest grouse.**
Principal Investigator: Kerry Reese (Dept. of Fish and Wildlife, University of Idaho).
Purpose: Determine brood survival and reproductive success of known hen lineages in relation to habitat selection.
Location: Taylor Ranch Wilderness Field Station and vicinity.
- 4. Amphibian inventory of Big Creek.**
Principal Investigator: Chuck Peterson (Dept. of Biological Science, Idaho State University).
Purpose: Determine species occurrence and distribution of amphibian populations in Big Creek drainage.
Location: Big Creek and tributaries.
- 5. Amphibian population monitoring.**
Principal Investigator: Chuck Peterson (Dept. of Biological Science, Idaho State University).
Purpose: Annual monitoring of permanently marked amphibian breeding sites for species composition and relative abundance.
Location: Big Creek drainage.

- 6. Impacts of exotic fish on amphibian populations.**
Principal Investigator: Chuck Peterson (Dept. of Biological Sciences, Idaho State University).
Purpose: Metapopulation analysis of amphibian populations in lakes stocked with sport fish.
Location: Bighorn Crags.
- 7. Monitoring health of wilderness streams.**
Principal Investigator: Wayne Minshall (Dept. of Biological Sciences, Idaho State University).
Purpose: Develop methods and sampling protocols for assessing the status of natural and human-impacted wilderness stream ecosystems.
Location: Middle Fork of Salmon, Big Creek, Chamberlain Basin.
- 8. Juvenile Chinook salmon downstream migration.**
Principal Investigator: Steve Achord (National Marine Fisheries Service).
Purpose: Determine survival of juvenile Chinook salmon out-migration through the Columbia River system and survival rates of specific runs.
Location: Big Creek and Rush Creek.
- 9. Annual big game monitoring surveys.**
Principal Investigator: Mike Schlegel (Idaho Dept. of Fish and Game).
Purpose: Annual census of elk and bighorn sheep populations.
Location: Big Creek drainage, Chamberlain Basin, lower Middle Fork of the Salmon River.
- 10. Plant community succession and annual productivity.**
Principal Investigator: Jim Peek (Dept. of Fish and Wildlife, University of Idaho).
Purpose: Monitor changes of community composition and annual productivity in the principal vegetation communities at low to medium elevations.
Location: Big Creek drainage.
- 11. Comparing short-term impacts of llamas and horses on wilderness and back-country areas.**
Principal Investigator: Ed Krumpe (Resource Recreation and Tourism, University of Idaho)

Purpose: Determine forage preference and compare trampling impacts of horses and llamas in mountain meadows using field experiment methods.

Location: Salmon River Mountains adjacent to Frank Church--River of No Return Wilderness.

12. Big Creek campsite inventory and monitoring.

Principal Investigator: Ed Krumpe (Dept. of Resource Recreation and Tourism, University of Idaho).

Purpose: Monitor changes in number and impacts of campsites.

Location: Big Creek trail from wilderness boundary to Middle Fork of Salmon River.

Additionally, Jim Garrett, DeVlieg Endowment recipient and Ph.D. student in the Department of Fish and Wildlife Resources, attempted to assess egg survival and hatching rate for cutthroat trout in Rush Creek and Big Creek. Unfortunately, unexpected stream flows and water temperatures precluded sampling during the time window available to Jim.

Active Studies -- Topic 2: Use of Wilderness for Recreation, Personal Growth, Therapy and Education.

1. Wilderness Discovery Feasibility Study.

Principal Investigator: John Hendee (with Randy Pitstick).

Purpose: Develop a wilderness experience program designed for youth-at-risk.

Location: Curlew (Washington) Job Corps Center, Colville National Forest and nearby wilderness, 1993.

Progress: Study completed with completion of Pitstick's dissertation based on six Wilderness Discovery trips in 1993. Poster presentation November 1994 at National Wilderness Conference.

2. Wilderness Discovery -- Two Year Pilot Program and Study.

Principal Investigator: John Hendee (with several graduate students).

Purpose: Two year pilot program and study of effects of Wilderness Discovery on Federal Job Corps enrollees.

Location: Curlew (Washington) Job Corps Center (JCC) on Colville NF; Timberlake (Oregon) JCC on Mt. Hood NF; Trapper Creek (Montana) JCC

on Bitterroot NF; and Atlanta (Georgia) JCC operated by Management Training Inc. with wilderness trips on Cherokee and Nantahala NFs in Tennessee and North Carolina.

Progress: Successful operation of fifteen WD trips at the first three centers with 23 WD trips planned for Summer '95.

3. Scientific Literature on Use of Wilderness for Personal Growth.

Principal Investigator: John Hendee with Randy Pitstick and Greg Friese

Purpose: To identify, catalog, and evaluate the research base on personal growth in wilderness.

Location: Moscow, Idaho and regional libraries.

Progress: Approximately 200 entries completed and draft publication prepared.

4. Federal Land Management Policies and Manager Perceptions on Use of Wilderness for Personal Growth.

Principal Investigator: John Hendee with Dan Gager, MS student.

Purpose: National survey of federal wilderness managers to identify policies, issues, concerns, and perceptions regarding use of wilderness for personal growth under their jurisdiction.

Location: Moscow, Idaho with nationwide survey.

Progress: Sample from solicitation of all wilderness managing units of federal agencies; pre-questionnaire interviews with field managers being collected summer 1995.

5. A Typology and Survey of Wilderness Experience Programs Nationwide.

Principal Investigator: John Hendee with Greg Friese.

Purpose: To develop a classification of wilderness experience programs nationwide, based on type of activities, clients, targeted outcomes, etc.

Location: Moscow, Idaho with nationwide survey.

Progress: A classification scheme was developed and will be tested with promotional materials solicited from 750 wilderness experience programs nationwide. Analysis of these data and a questionnaire survey will be completed in '95-96 academic year.

6. Estimates of Social-Economic Benefits Attributable to Wilderness Discovery as an Adjunct to Federal Job Corps Academic and Vocational Curriculum.

Principal Investigator: John Hendee with Keith Russell.
Purpose: To identify potential social-economic benefits of Wilderness Discovery as an adjunct to Job Corps program using Job Corps staff expert opinion and an econometric model developed specifically for Job Corps by the Consulting firm, Mathematica, Inc.
Location: Moscow, Idaho using data from four Job Corps Centers where Wilderness Discovery is being operated.
Progress: Study plan completed and approved. Procedure for data collection will be implemented summer 1995.

7. Importance of a Wilderness Experience to Social and Economically Disadvantaged Youth.

Principal Investigator: John Hendee and Kristin Anderson.
Purpose: Wilderness visitation is largely an upper middle class phenomena. The potential for social and economically disadvantaged youth to enjoy and gain from wilderness experience, and reasons why they are under represented in visitation are being explored using data from the Wilderness Discovery program.
Location: Moscow, Idaho using field data from Wilderness Discovery Programs conducted in four states, and potential data from questionnaire survey of wilderness experience programs (See #5).
Progress: Hypotheses were developed from 1994 Wilderness Discovery data and will be tested using specially designed exit interview questions with Wilderness Discovery participants in 1995.

EDUCATION

WRC staff (Hendee, Krumpe and Yeo) are members of academic departments and contribute toward their department curricula by teaching classes and mentoring graduate students. Five academic courses were taught in Moscow by WRC staff, one in Boise, one staged from Taylor Ranch, plus several special

study credits and internships. Several guest lectures were also delivered to other classes by Yeo, Krumpe and Hendee.

On-Campus Courses:

- Res.Rec. 502-03 Wilderness Research Seminar, 2 credits, Fall 94, (Hendee).
Orientation to graduate research in wilderness studies.
- Res.Rec. 499-502 Use of Wilderness for Personal Growth, 2 credits, Spring 95,
(Hendee). Introduction to the diversity of wilderness
experience programs among the 750 operating in the US,
the theories guiding their methods and approaches and
hands-on training in Wilderness Discovery, the program
designed by WRC especially for social-economically
disadvantaged youth in the Federal Job Corps.
- Res.Rec.490 Wilderness Management, 3 credits, Spring 95, (Krumpe).
Basic principals, methods and practices employed in
Wilderness Management.
- Res.Rec. 499-03 Monitoring Human Impacts in Wilderness,1-3 credits, Spring
95, (Krumpe).
Direct and indirect impacts derived from wilderness use and
management and methods and approaches for addressing
them.

Graduate education and training in research was provided to five graduate research assistants funded by the WRC with research grants. One student, Randy Pitstick completed his doctorate, successfully defending a dissertation focusing on the development and testing of the Wilderness Discovery program during 1993 at the Curlew Job Corps Center.

Boise Classes:

- Res.Rec. 490 Wilderness Management, 2 credits, (Hendee). Basic
concepts of wilderness management.

Taylor Ranch Wilderness Field Station

WLF/ResRc. 305 -- Field Research in Wilderness Ecology (3 credits):
Offered cooperatively with San Francisco State University's Wildland Studies Program to 12 students with students enrolled through the University of Idaho. Participants came from universities in five states plus two high school teachers.

Student teams assisted scientists with terrestrial community monitoring (Yeo), forest grouse (Reese), and amphibian monitoring (Peterson). One student research team described habitat conditions for a newly discovered population of tailed frogs.

WLF/ResRc. 396 -- Wilderness Research Internship (3 credits): Not funded this year.

Wilderness Internships: Tamara Van Koughnet, Resource Recreation and Tourism major, and David Duncan, Wildlife Resources major. Besides endless chores to operate the field station, Tamara assisted with small mammal trapping as part of the terrestrial community monitoring effort. David conducted two extensive amphibian inventories: one of the Big Creek drainage, the other of the Bighorn Crags. David will be the lead author on two reports submitted to the three federal agencies funding the amphibian research. In addition, David was offered a graduate assistantship at Idaho State University as a result of his summer 1994 research efforts at Taylor Ranch.

FACILITIES

In late summer, WRC staff moved into three new offices adjacent to the Resource Recreation and Tourism Department with space allocated to the Director, Administrative Secretary, and doctoral student, with rotating space available to other WRC graduate students.

Maintenance is continual at Taylor Ranch. Several buildings (duplex, Arlo cabin, shop, Conyer cabin, cookhouse, and bunkhouse) were treated with wood preservative (linseed oil) to protect against rot. The Conyer cabin is 85 years old, yet still in good condition. Two old Maytag gas-powered clothes washing machines were replaced with hand-powered James washers. Battery boxes were built for both solar photovoltaic systems. These allow placement of the 12-volt storage batteries, which emit hazardous and corrosive hydrogen sulfide gas, in outside buildings.

Dr. Wayne Minshall, Director of the Stream Ecology Center at Idaho State University and a long-time researcher in FC-RNRW and Taylor Ranch, brought his three Shropshire draft horses with him this year. He mowed the strip, hauled several cords of firewood, and moved all horse drawn equipment to the protection of the hay barn. All this while his team of graduate students monitored stream community health near the field station.

The huge, dead Douglas fir tree near the hay barn, an ancient landmark at the field station, was felled this summer by Guy Wagner, Ph.D. student in Wildlife

Resources. We found it to be about 300 years old and impregnated with old bullets and other metal objects which made for difficult and rough cutting by our cross cut saws.

Caretakers

Gary MacFarlane, recently of the Utah Wilderness Association, was the 1994-1995 winter caretaker. Guy Wagner, Ph.D. student in Wildlife Resources, and his wife Terry, spelled Gary over the Christmas holiday. Guy is conducting research on bighorn sheep inhabiting the Big Creek drainage.

Field Station Visitors

Peter Landres, research ecologist with the Aldo Leopold Wilderness Research Institute, met with **Wayne Minshall**, Director of the Stream Ecology Center at Idaho State University, **Chuck Petersen**, Curator of Herpetology at Idaho State University, and Jeff Yeo to develop cooperative research efforts staged from Taylor Ranch. The discussions led to support by the Leopold Institute for a graduate research project on the effects of fish populations on amphibians in the lakes of the Bighorn Crags. David Duncan, 1994 Taylor Ranch wilderness intern, conducted an initial inventory of amphibians in thirty lakes in the Crags. A Ph.D. student has been recruited and the project will employ a past intern, Jason Karl, as field technician during summer 1995. Wayne Minshall's stream community research at Taylor Ranch also is funded by the Leopold Institute.

Dr. Irene Mueller, Director of International Relations at the University of Austria, spent a week at the field station assisting Guy Wagner on bighorn sheep research.

President Elisabeth Zinser (University of Idaho), **Jon Roush** (President of The Wilderness Society) and his wife **Joyce Chinn**, **Vance Martin** (President of the WILD Foundation), **Jean'ne Shreeve** (Vice Provost for Research at the University of Idaho), **Mary Good** (Assistant Secretary of Commerce), John Hendee, and Jim Peek toured the field station and vicinity in August. A cooperative agreement was signed between the University and the WILD Foundation.

Peter and Sally Preston volunteered at the field station during the summer. Peter assisted Ed Krumpe inventorying and monitoring campsites along the Big Creek trail. The compiled data now spans a decade.

Kirk Lohman, Assistant Professor of Range Science and Wildlife Resources, visited Taylor Ranch to assess potential research projects. Subsequently, Kirk developed two proposals for research staged from the field station.

Terry Holubetz, Idaho Department of Fish and Game (IDFG), **Clem Pope**, Krassel Ranger District, and Jeff Yeo met at Taylor Ranch to finalize plans for a fish weir, operated by IDFG, to be constructed near the mouth of Rush Creek on the field station. The weir will be used for the next 15 years to monitor anadromous fish use of Rush Creek.

OTHER ACTIVITIES

Two unusual events occurred, a plane crash and burglary, at Taylor Ranch spring 94. The plane was bringing Dave Hunter, IDFG veterinarian, to direct the capture of bighorn sheep. The plane was unable to stop after landing and ran off the runway into Pioneer Creek. There was no damage to Pioneer Creek, but landing struts, the propeller, and one wing were extensively damaged. Subsequently, the plane was dismantled and flown out in pieces by plane and helicopter.

Three individuals broke into the Taylor Ranch Cabin and burglarized the field station for food and minor items. IDFG Conservation Officers and Valley County Sheriff's Department had been monitoring these individuals prior to the burglary and arrested the three on lower Big Creek within a few days following the break-in.

Jeff Yeo attended the Organization of Biological Field Stations annual meeting fall 94 at the University of Montana's Flathead Lake Biological Station. Taylor Ranch Field Station is a member of this organization which advertises field station internships and courses nationwide. Jeff gave a slide presentation highlighting Taylor Ranch and its program to directors of over 50 field stations. They agreed that Taylor Ranch probably is the most remote field station in the US

PROPOSED ACTIVITIES AND DIRECTION FOR 1995

Research

- We will develop a cooperative proposal with the Bureau of Land Management's Intermountain Wilderness Area Ecological Site (IWAES) program, the interagency Aldo Leopold Wilderness Research Institute (ALWRI), the Forest Service (FS), and the Idaho National Engineering Lab (INEL) for long-term wilderness ecosystem research and monitoring near Taylor Ranch, and for another drainage, such as Waterfall Creek.
- Ongoing research will continue.
- A new graduate student research project will begin in the Bighorn Crags on amphibians.

- Other new research will include: expanded amphibian inventories of Big Creek, possible studies of riparian bird communities and lake limnology depending on funding.

Education

- WLF/ResRc 305 - Field Research in Wilderness Ecology: This course will be offered solely through UI for the first time. As of this writing, the course is filling fast.
- Wilderness Interns: two interns at Taylor Ranch will be supported by the Clara Bleak Endowment.
- We will rewrite and resubmit our proposal to National Science Foundation's Research Experience for Undergraduates Program.

Facilities

- We will seek funding to develop a sprinkler irrigation system for the Taylor Ranch airstrip.
- We will seek funding to purchase a fire pump with foaming capability to reduce the threat from wildfires to facilities.

PUBLICATIONS BY CENTER STAFF

Articles:

- Hendee, John C. 1994. The "Circle of Stewards"
Converges on Nebraska City. National Woodlands.
- Karl, J.W. 1994. Nest site characteristics of sharp-shinned hawks in Idaho's Frank Church-River of No Return Wilderness. Idaho For., Wildl. and Range Expt. Sta. Contribution No. 727. 11pp.
- Pitstick, Randall and John C. Hendee. 1994. The Wilderness Discovery Program for Poverty Youth -- Idaho Takes the Lead. FOCUS: Report of the Idaho Forest, Wildlife and Range Experiment Station.
- Yeo, J.J., J.W. Karl, and S. Han. 1994. Avian research in wilderness. Focus on Renewable Nat. Res., 19:12.
- Yeo, J.J. Winter 1993-94. High tech provides low impact tools. Page 9 in *Frankly Speaking*, Newsletter of the Frank Church--River of No Return Wilderness, USDA For. Serv., Salmon, ID.

Hendee, John C. 1995. Universities Must Play a Larger Role in Wilderness Research. *Trends in Parks and Recreation*, 32(1) 22-27.

Kale, M. 1995. Wilderness and the Human Spirit. *American Forests*, February 1995.

Unpublished Reports:

Duncan et al. Big Creek unpublished report on file in the University of Idaho Wilderness Research Center.

Duncan et al. Bighorn Crags unpublished report on file in the University of Idaho Wilderness Research Center.

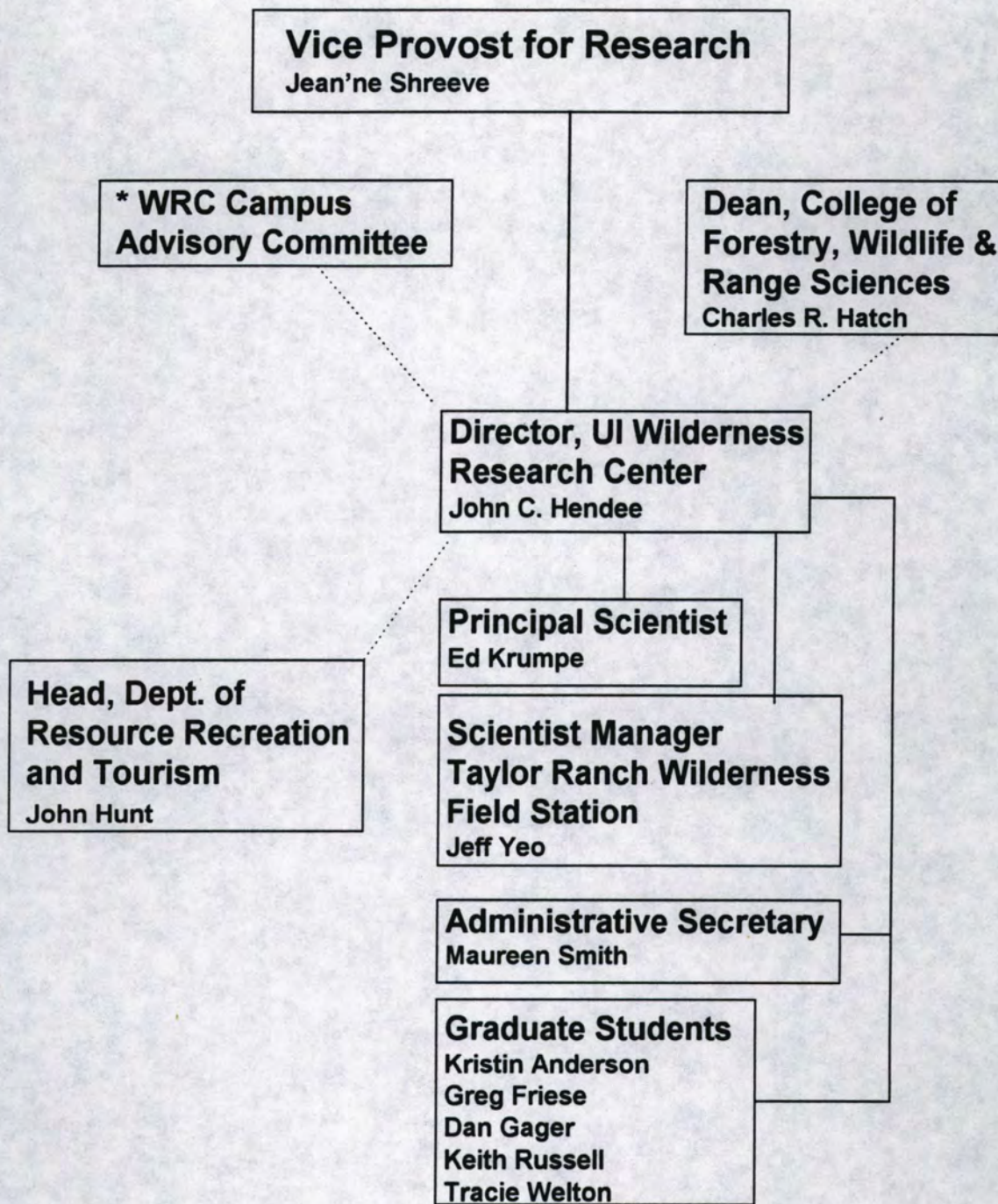
Friese, Gregory T., J. Taylor Pittman and John C. Hendee. Studies of the Use of Wilderness for Personal Growth, Therapy, Education, and Leadership Development: An Annotation and Evaluation.

Theses and Dissertations:

Pitstick, Randall. 1995. Doctoral Dissertation: *Wilderness Discovery: The Meaning and Effects of a Seven Day Wilderness Experience Program for Youth At Risk in the Federal Job Corps Program.*

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