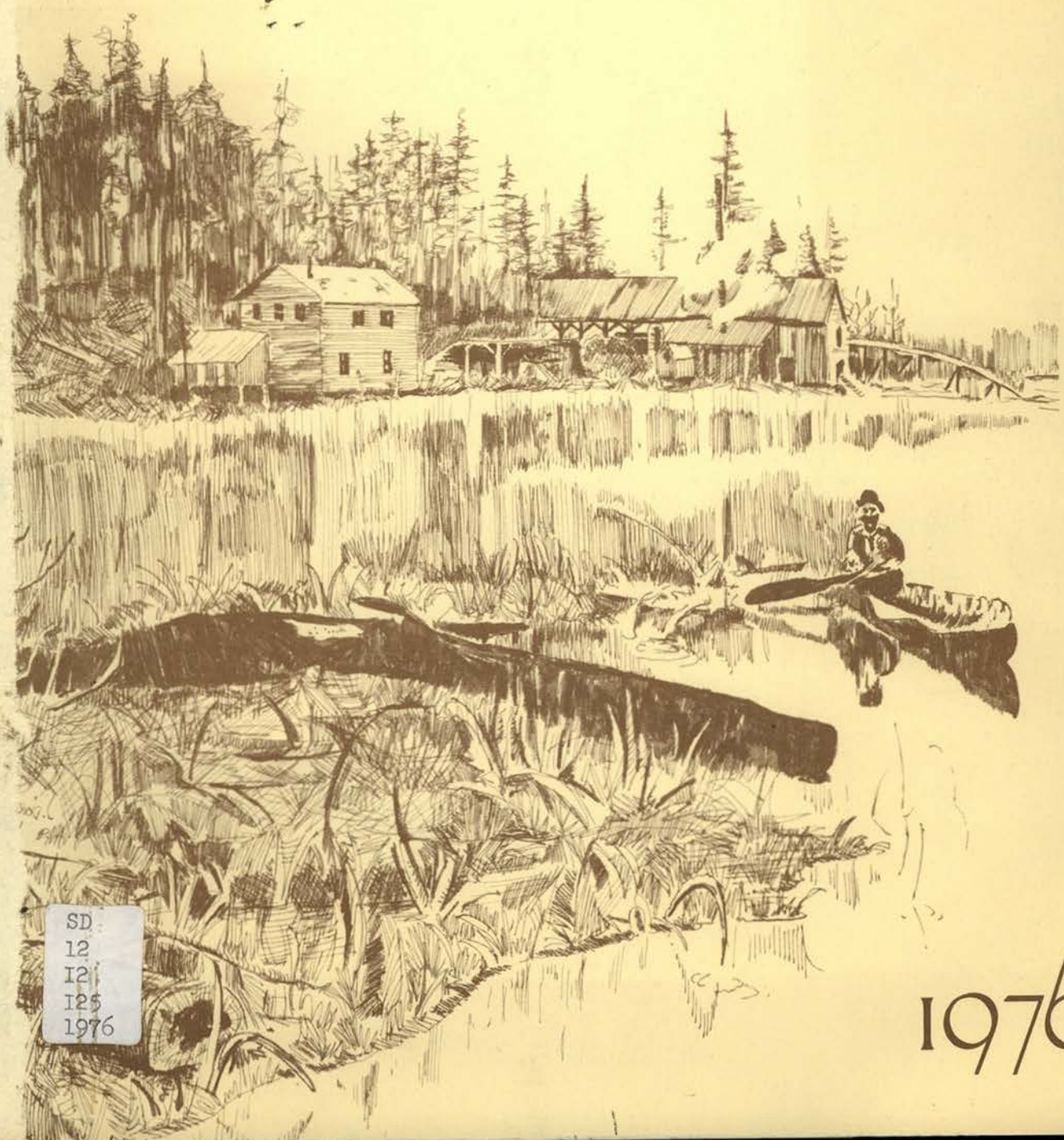


# IDAHO FORESTER



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# Potlatch

## What's a Potlatch?

Once Potlatch was an Indian word meaning "the giving of gifts." Today Potlatch is the name of a dynamic corporation of tree farmers and wood converters serving the growing paper and wood needs of America. We are many things.

*Potlatch is 1.3 million acres of prime forest lands in Idaho, Minnesota and Arkansas, containing some 2.36 billion cubic feet of timber.*

*Potlatch is lumber, plywood and specialty wood products; furniture parts; hardwood veneers and plank paneling;*

*flooring, decking and fencing.*

*Potlatch is paper.* Four mills produce bleached pulp and paperboard, coated printing and specialty papers, uncoated writing, printing and converter papers and form bond and thin papers.

*Potlatch is packaging.* Numerous plants produce cartons and containers for shipment, display and protection of a wide variety of products.

*Potlatch is consumer products.*

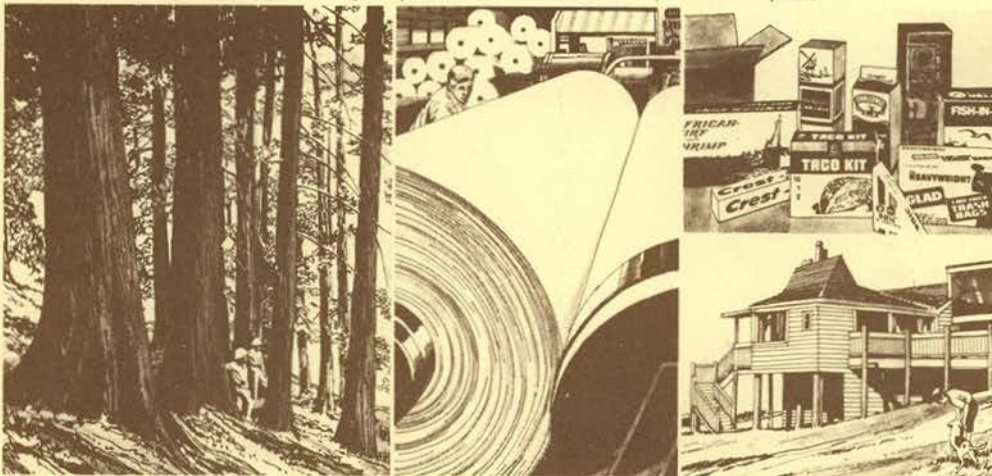
Three tissue mills and four converting plants produce facial and bathroom tissues,

paper toweling, paper plateware—all private label paper products for large chain stores.

*Potlatch is service.* Forty-seven marketing and sales offices coast to coast.

*Potlatch is people.* Over 10,000 of them. Talented. Dedicated. Potlatch is an equal opportunity employer committed to the challenge of profitable growth.

**Potlatch Corporation**  
Lewiston, Idaho



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Kate Sullivan, editor *photo by Michael Passarella*

## editorial

For what its worth we have now received, or are receiving, an education in the management of the natural resources. What *IS* it worth, anyway?

We have been trained to recognize the intricate workings of our environment and to work within the bounds set upon us by those biological systems. We have learned that economic concerns will be a key factor in the future management decisions that we will make and that we can successfully operate within a balance of the two. We have adapted to the daily workings of the system and managed to survive within its framework.

But will all of this insure that our management activities will indeed benefit the resources which we are so concerned with? Have we sensitized ourselves sufficiently to understand for *WHAT* and *WHOM* we have learned to manage these resources for?

We are learning as professionals to realize that our environment is a long-term investment. The dividends belong not only to us but future generations as well. Short-term decisions that are made without long-term considerations will only degrade the environment which we are required to live and ultimately survive in.

Man's habitat includes the areas which we as land managers will administer. Already we are involved in serious manipulation of the habitats of man and beast alike. In a finite world with a growing demand on its resources, this total utilization is essential.

Many decisions made in the past have been detrimental to the resource. This is partly a result of ignorance and can be partly attributed to the age-old philosophy that Earth resources are endless. Even today our activities are based on limited experience historically and are somewhat based on 19th century attitudes.

But things are changing. Research activities are compiling a better data base all the time; responsible agencies are bringing more and more expertise to the field.

As professionals with the responsibilities of supplying a large portion of the natural resource requirements of the nation and all the implications that has, we must learn to adapt to a new attitude. We must sharpen our sensitivities to recognize the limits of the environment, accept the restriction that imposes upon us, and work to best utilize the resource to supply our needs.

As individuals we can better achieve this management philosophy by realizing a personal sensitivity as well as obtaining a sound educational base. All too often we leave our land ethic behind when we enter the office. Its well known that hindsight is 20-20. Perhaps the key to avoiding mistakes lies somewhere between better information and a keener individual appreciation of the implications of management errors to the resource and to those who have trusted us with the responsibilities of that resource.

This is neither unprofessional or impractical — this is just common sense.

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# NEXUS

## FWR STUDENTS CHALLENGE

### MT. RAINIER IN JANUARY

*Bryan Fraser is a senior in forest resource management.*

by Bryan Fraser

The idea of the climb was conceived nearly a year before we reached the summit on January 16, 1976. A group of us met at the university, started climbing together, and began planning for an expedition to 19,850-foot Mt. Logan in the Yukon. The Washington Cascades were our training grounds, and we thought that winter on Mt. Rainier would offer the best experience for Logan. So the climb was a training exercise; at least that gave us a logical excuse for trying it.

We had been to Rainier twice during 1975, and knew that a winter climb would require planning on an expeditionary scale. We had nearly been blown off the mountain at 7,000 feet in March. May saw us reach 10,000-foot Camp Muir, but weather again prevented us from going any higher. We recognized that in order to be successful in winter, we would have to be ready for an extended stay.

We spent the entire fall semester recruiting climbers, getting in condition, collecting and adjusting equipment, and working on the logistics and other details of the climb. We were able to get equipment discounts and even some donations from various companies. A number of people at the university showed interest in the project, and we brought a party of eight to the mountain for a preliminary trip in November. Our objective was to leave a food cache at 9,400-foot Camp Schurman, to supplement our January supplies; we carried in forty man-days of food, but were only able to reach the base of the Inter Glacier, at about 7,000 feet. Disturbed at this dismal beginning to the climb, we headed back to school to complete preparations and take care of odds and ends — like finals week.

When the dust cleared on January 1, filled with hope and a pint of Southern Comfort, we headed west; all three of us. Pat Murphy of the Fisheries Department, architecture student, Blaine Peterson, and I were all that remained of the party that had flirted with six or seven members a few weeks earlier. We were hesitant about having such a small team — and it nearly killed us before we were through.



Bryan Fraser

Plowed roads are scarce in the park in January, so our trip started at the Carbon River Entrance. Jake Kruse of the Army ROTC, who had been a tremendous help to us in many ways already, drove us over and accompanied us for a few miles. When he turned back at a ford too tricky to cross alone, I sensed a bond of security forming between the three of us who would depend on each other in many ways. We had decided to do a traverse of the mountain: that is, we would climb one side and go down the other. This plan made logistics and weight critical factors. It is surprising to me, as I look back, that our itinerary was followed so closely.

#### Snowbound at Schurman

Six days and 7,800 feet later, our ski tracks led to Schurman. Our only noteworthy adventure so far had come at 5,000-foot Mystic Lake, where we had been caught in wind-driven sleet all night. Everything was soaked, so we began searching for a Park Service patrol cabin marked on the map. After three soggy hours of skiing in circles, we found it and kicked in the door, breaking the latch. We could have been in real trouble without the cabin, because the temperature dropped to 17° F. that evening. The Park Service was very understanding when we explained our situation later and seemed pleased that we even reported it. Several of their well-equipped cabins had been "cleaned out" in recent years.

Life at the Camp Schurman shelter was monotonous. We rose at 6:00 every morning to check the weather, and usually crawled right back into our bags. On January 9, however, eight hours of hard work recovered our cache, intact after five weeks under the snow. We had enough food to stay at Schurman for about twenty days at this point. We didn't stay quite that long. Daily activities included shoveling snow, reading, eating, shoveling snow, listening to our FM radio, practicing for the World's Fastest Dump Tournament, and shoveling snow.

We listened to winds that Blaine estimated at 80 mph with gusts to 100. One morning I awoke and found oxygen too low to light a candle. I pulled the door open — and faced a wall of wind-packed snow with only a 3-inch crack at the top: one night's accumulated snowfall.

#### Summit Dash

Much as we hated to leave our alpine retreat, the weather finally broke, and we left for the summit at 8:30 a.m. on January 16. As I cheerfully hoisted my seventy pound pack, I gazed toward the peak and reminded myself again of how distorted visual perception becomes in the high mountains. A ranger's entry in the Schurman log had claimed a 3½-hour summer ascent from the shelter. We were, according to the log, the first winter visitors ever at Schurman, so, with nothing else to go by, we forecast a 4 p.m. summit.

*"To those who have struggled with them, the mountains reveal beauties that they will not disclose to those who make no effort. That is the reward the mountains give to effort. And it is because they have so much and give it so lavishly to those who will wrestle with them that men love the mountains and go back to them again and again - the mountains reserve their choice gifts and those who stand upon their summits."*

*Sir Francis Younghusband*

At 4 we were eating peanuts at about 11,000 feet on the Emmons Glacier. We were tiring, but the weather was looking great, and a near-full moon would let us climb after dark. A small plane had made two passes over us earlier, so the Park Service must have been expecting us to make our move when we did.

After dusk, the climb changed from mere misery into torture. Blaine and Pat began spitting blood, a condition which, luckily, didn't develop into anything worse for either of them. At about 12,000 feet, we dug a

small platform and melted some badly needed water. The rest of the climb was agonizingly slow: kick a step in twice . . . test it . . . shift balance . . . rest . . . repeat.

We reached the crater rim at about 11 p.m., dizzy and rubber-legged from exhaustion, and walked across to the true summit in the moonlit stillness. As I reached the 14,410-foot summit of Mt. Rainier at 11:30, I experienced a thrill known only to those who have eaten cold pizza for breakfast on Sunday morning.

We immediately began our descent to

Camp Muir. I took a fall that was quickly arrested by the other two, but this showed us how tired we really were. At 3 a.m., we pitched the tents on a 12,500-foot saddle above Gibraltar Rock. We had hoped to reach Muir, but were too beat for the steep slopes ahead.

#### Direct Descent

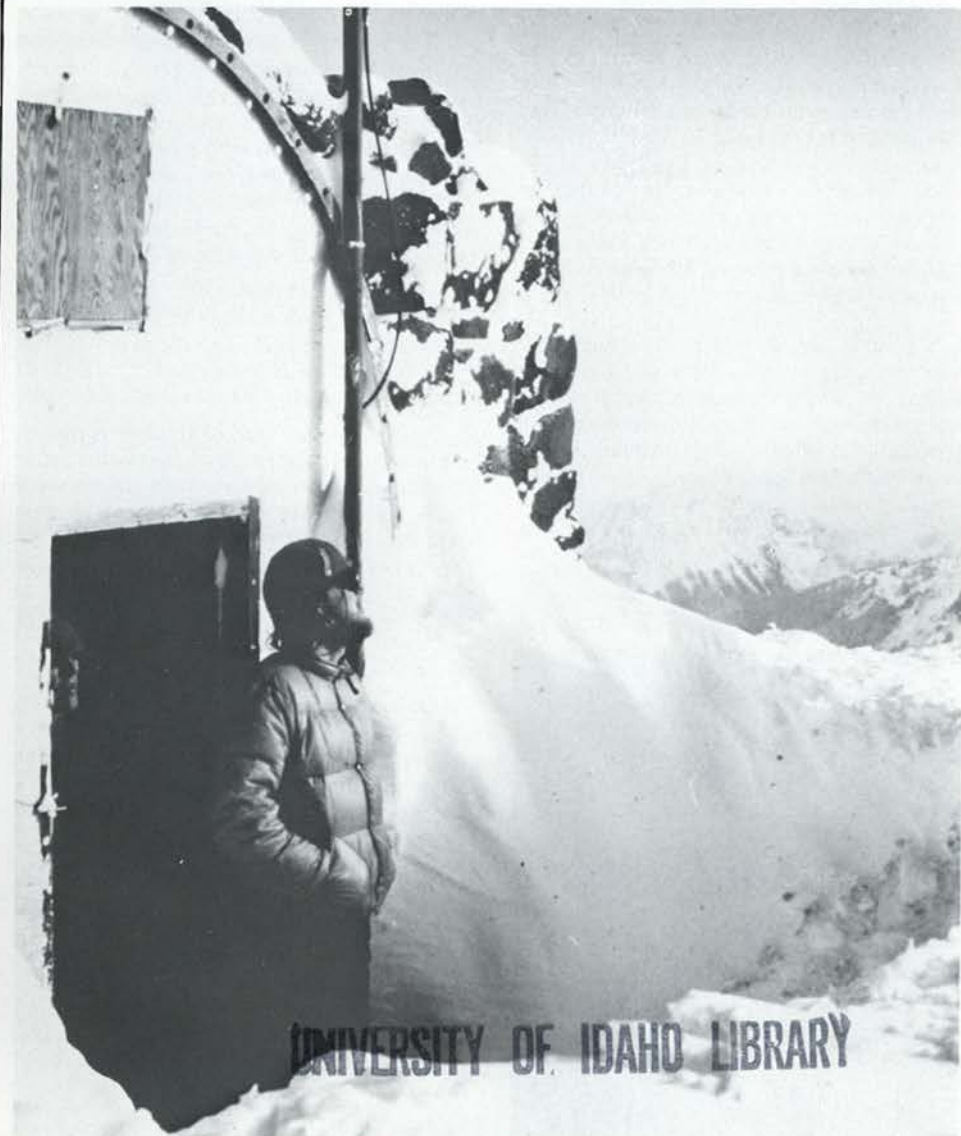
When I awoke at 7 a.m., winds of about 50 mph had come up. We were too tired to travel very safely, but fear of bad weather forced a decision to move. We broke camp somehow, and immediately came upon a steep slope that leveled out on the Ingraham Glacier about 600 feet below us. The snow was in terrible condition: a slabby crust over powder that offered poor footing. A short way down, Blaine, leading at the time, lost his footing and started to slide.

Pat and I fell on our axes, but there was no stopping the fall and I was jerked over backwards as the rope pulled taut. We slid about 500 feet down to the glacier in a bouncing, tumbling mess. I had been pulled with such force that I passed Pat and got tangled with Blaine for much of the fall. The two of us stopped in the midst of a crevasse field with Pat a halfrope length behind.

Equipment was spread all over our track, but no one was hurt. We collected ourselves and gathered up the gear. Pat had lost his sleeping bag and broken a ski; Blaine's dark glasses had shattered. Silently promising ourselves that we would never climb again, we moved on.

Our route to Muir crossed several crevasse fields and ripe avalanche slopes, but we had no more problems and reached the shelter late that afternoon. We unwound a little and spent the evening with some Seattle climbers who had walked up for the weekend. We finished up the trip with a hike down to Paradise Visitor Center the next morning.

We chatted with rangers for awhile, called our parents and Jake, and then sat around the viewing deck looking at the mountain. The eighteen days had been a long time. Everything planned had been accomplished, and Rainier had forgiven our many mistakes. As a training exercise, the climb had been a success; in any other sense, it had been an ordeal. I'm still not exactly sure why I went — and even more puzzled about why I'll return. □



Schurman Cabin

Bryan Fraser

*"To have fun is a desire often expressed by those who live in this age of anxiety. Most of us have actually 'had fun'. But recreation, pleasure, amusement, fun and all the rest are poor substitutes for Joy; and Joy, so I am at least convinced, has its roots in something from which civilization tends to cut us off."*

*Joseph Krutch and Eliot Porter*

## KIBBIE DOME CLEANUP PROVES DIRTY JOB

Anywhere from eight to fourteen people would arrive on the scene at 7:30 the morning after to begin the awesome task of cleaning the brand-new Dome. "It wouldn't have been too bad a job if there had been 25 or 30 people, but 8 people to sweep the entire dome meant an awful lot of work" said graduate wildlife student Nancy Clifton.

"This place just wasn't designed to be cleaned up," members of the Wildlife Society and the Society of American Foresters muttered as they swept the entire Kibbie Dome after football games this fall, in a fundraising campaign for their organizations.

The two societies contracted to clean the stadium after the four home games, a task which usually took from four to five hours to complete but sometimes could take as long as eight.

"I was disgusted at how dirty people are, especially those that go to football games," lamented Jeff Copeland, Wildlife Society. "It was a rare and beautiful treat to find a neatly wrapped bag of peanut shells."

Although a dirty job, it also was a profitable one. The cleanup netted more money than any other fund-raising activity to date. The organizations were paid a rate depending on the attendance of the game. Together they earned a total of \$600.

Not only did the cleanup fill the coffers of the Societies, but it proved a bonanza for the individuals participating. "We would find lots of half-full flasks, lost change and cans of beer — which of course we disposed of."



How many peanuts would it take to fill the Kibbie Dome?

*Glenn Cruickshank*

## PIPELINE FORESTER REPORTS FROM ALASKA

*(Ed. Note: The following is a letter from a 1975 graduate in forest resource management, University of Idaho.)*

I thought that I would drop the old College of FWR a line and let you know that I am still alive and not, as of yet, a permanently frozen part of the landscape.

I am living in a pipeline camp located near the town of Glenallen, right at the base of the Wrangels which are the most impressive mountains I've ever laid my eyes on. The rise from 2,000' to 16,000', with almost no foothills, is really a pretty sight. This area is also the coldest inhabited spot in N. America, even colder than Prudue Bay 700 miles to the North. Sixty below is common, and four years ago it hit -85° in a little town north of here (without wind chill). The temperature has gone up almost 80° in only four days. When I got off of the plane after Christmas break it was -50°, and today it was +30° which isn't too hard at all to take.

My job is one of "reforestation engineer" — or, what you hear more often, "weeds and seeds". What I mainly do is oversee revegetation and erosion control on the first section of the pipeline. This includes the 145 miles of country from Valdez to Sourdough, which is quite a diverse piece of landscape and probably the prettiest on the whole line.

### Instant Range

What we are mainly trying to do is get

something growing on the disturbed sites as soon as possible to prevent erosion. This is done mainly through the use of a hydroseeder and five different species of grasses found to be most suitable for growth in this area. For Lee Sharp and the rest of the Range crew, these include: boreal red fescue, Manchar brome, meadow foxtail, Durar fescue, nugget bluegrass and an annual rye. This species, they feel, will provide vegetative cover for erosion control but will allow natural vegetation to take over without too much competition.

The seedings I have observed, done last summer, were almost all successful; so much so, in fact, that the grass never did turn brown, and was still green in November when it was covered with snow. This might be due to the fact that fertilizer is applied at the rate of 500 lbs/acre on everything, plus a mulch of straw. We could probably grow grass on rocks if we watered it.

Suprisingly enough, not much of the revegetation is done on the line itself: the majority of the work is in the material sites (gravel pits) and disposal sites. We still don't know if the pipeline itself will be seeded yet.

Another major area of concern is that of drainage and culverts. We have to make sure the spring runoff doesn't wash out the work pad, watch out for siltation of salmon streams, and make sure the grayling can get up through the culverts we put in. The site of Dr. McPhee's project on grayling is just up the road from here. The day I visited it was -31°, and it probably looked a little different from when the study was done.

Quite a bunch of guys they have working here. Ninety percent of them are Texans or Okies, and the rest lower Arkansas. The food up here is real good: steak twice a week, lobster every once in a while and prime ribs on a weekly basis.

I've seen quite a bit of wildlife, 50 Dall sheep one day while flying in the Jetranger, quite a few moose around the rivers, and coyotes and fox everywhere. I've also seen two wolves so far — one I called in with a predator call to within 50 feet, but I didn't have my camera. I'm in the middle of planning a moose/caribou hunt for September on the Alaskan Peninsula.

One of the restoration engineers I am working with, Bill Sachek, is a 1952



Kathy McArthur

graduate of the College of Forestry at the University of Idaho — says he had classes under Dr. Seale.

The hours are the worst aspect of the job: 10 hours per day, 7 days per week. But 4 paid vacations a year more than make up for it. Tell any of the students to get on the roster if possible — the BLM is hiring like crazy up here.

*Jerry Longobardi  
MK-River  
P.O. Box 166  
Glenallen, Alaska 99588*

*"It is historically true that a nation whose people take out more than they put in will collapse and disappear."*

*John Steinbeck*

## FORESTRY CLUB KEEPS OLD SKILLS ALIVE

In recent months a group of students in the college, under the guise of the Forestry Club, has been actively pushing for a site on which to practice logging skills, which for the most part have long since disappeared from the woods. Crosscut sawing (known to some as the "misery whip"), log chopping, axe-throwing, and some novelty skills such as log birling and pole climbing, are some of the woods techniques which our generation will probably never see in practical use.

The ultimate goal of the club members is to host an intercollegiate logging skills competition in the fall here at the University of Idaho. The club will participate in competitions at Vancouver, B.C. and Spokane, Washington this spring.

Progress on the Idaho site is slow, although two stout climbing poles have been erected in the arboretum. This should prove to be an ideal site; the college now holds both spring and fall barbecues there.

Although logging sports have attracted the majority of our attention, the club is involved in other activities. We were able to view some of the work of Mr. Charles Scribner of St. Maries, one of the finest builders of log cabins in Idaho and perhaps

the entire Pacific Northwest. In a day of prefabrication and synthetic materials, it was a privilege to meet a man whose principles and workmanship have remained uncompromised and incomparable throughout the years.

The Forestry Club has also hosted speakers from the Idaho Forest Council, Bennett Lumber Products and Potlatch Corporation. Presently the club is searching for films from both the public and private sector to show at the weekly noon meetings.

Keep an eye peeled and an ear cocked (since usually we're three sheets to the wind.) Meeting times and places are posted in various spots around the building. Everyone is always welcome to drop in. □

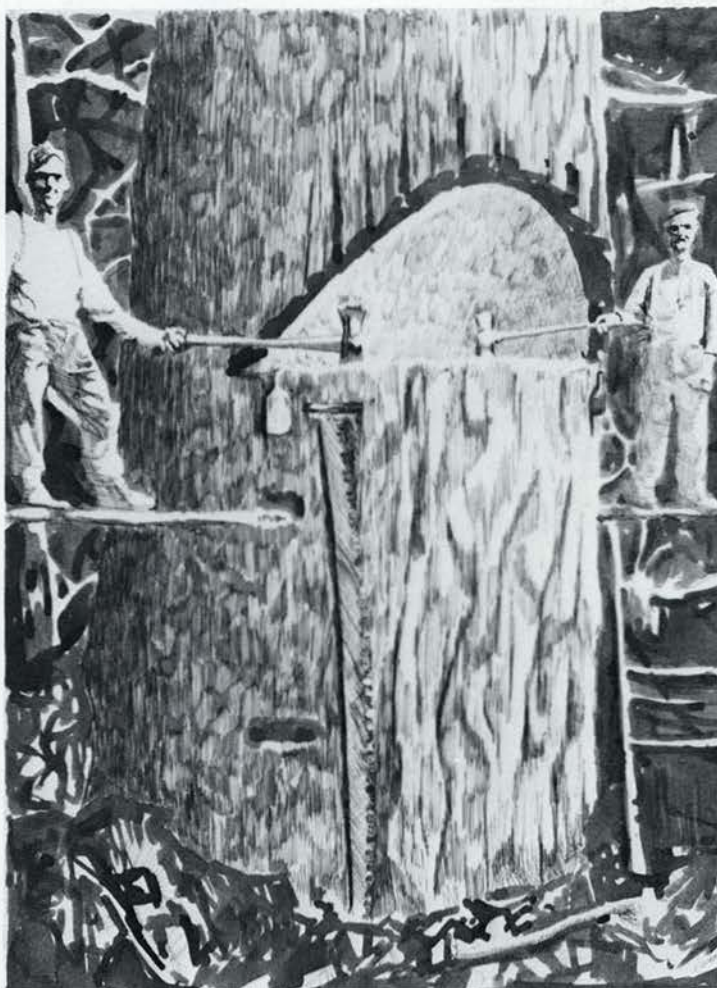
## REC CLUB OUT TO LUNCH

The U of I Wildland Recreation Association is a new student chapter of the Idaho Recreational Planners Society.

The Association, in its second semester, has sponsored several events so far. In the spring of 1975 a picnic at Robinson Lake on Moscow Mountain was the big event. The troupe settled down to refreshments, after a few hours of replacing poles and barbed wire.

In January the Association sponsored a speaker, Dr. Krantz from WSU, who talked on the subject of Sasquatch.

This year in April there is a student delegation going to Spokane for a four day convention being held by the NRPS. □



John Dorman

## BIRDS OF PREY NEED HELP

by Jack Whitman

●Dawn! Anxious waterfowlers squint to pierce the morning mist. Wigeons can be heard whistling their way overhead. Hunting will be good. The mist ebbs until a group of mallards is partially visible in the pond. A perfect sneak is engineered, and soon all gunners are in place. Seconds before the surprise attack, a lone peregrine plummets earthward and the mallards take to the air. A rumble of wingbeats, accompanied by distress quacks, ensues. Angry shouts can be heard from the thwarted hunters — and again it is calm. The unsuccessful falcon swings up from his stoop and lands nearby. A shot breaks the morning silence, and the peregrine lies dead.

●The ride in the back of Joe's pickup wasn't too much fun until Ernie brought out his pistol. The "chicken hawk" on the telephone pole only took Joe one shot to bring down. Fred had to take three shots to kill his.

●The fisherman didn't catch his limit today. Next time he'll remember to bring a saw — to cut down that osprey nest on the other side of the lake.

●The farmer lost two whole chickens yesterday. The great horned owl in the back woods won't see tomorrow.

In today's society, cases similar to those cited above are all too commonplace. Through ignorance or defiance of the game laws, valuable elements of nature are virtually doomed. Since history began, man has both honored and despised birds of prey. The uninformed often has unjustifiable prejudices toward these birds. "Chickenhawks" are persecuted throughout the United States under the guise of "habitat manipulation" or "predator control". The angry farmer and the frustrated hunter seem always ready to find some reason to rid the world of a few of its winged evils.

Birds of prey have generally been on the decrease in the United States for many decades. Public ignorance accounts for no small portion of this decline. The indiscriminate killing has got to be stopped. The public must be educated concerning the important role the hawks, eagles and owls play in our environment.

Where pole traps and rifles are now aimed at birds of prey, binoculars and cameras must take their place. Symbols of superstition, creatures of lonely nights and desolate places, the birds of prey need our help. □



Jack Whitman





Ned Hollenbach

## WILDLIFE SOCIETY - HUB OF ACTIVITY

Members of the Wildlife Society at the College are drawing up plans for publication of a game brochure for hunters and interested citizens of Idaho. The brochure will include some species identification techniques for big game, small game, upland birds and waterfowl.

The Society is also considering setting up an elementary school wildlife education project to further extend its community participation.

An environmental action committee of the Society is keeping track of developments on the Selkirk caribou issue in Northern Idaho and other issues throughout the state.

The school year 1975-76 has yielded a variety of speakers for the Wildlife Society meetings, including U. of I. faculty members, graduate students, Cooperative Wildlife Unit personnel and Idaho Fish & Game biologists. Programs have been given on caribou, killer whales, bear predation on elk, whooping crane management, wolverine research and undergraduate summer research. Meetings are not only informative and entertaining, they also provide a good chance to meet people in the field of Wildlife Management.

The Society has been active in sponsoring field trips for its members. This has provided an opportunity for people new to the state to become familiar with the wildlife and its habitats in Idaho. The trips also have given undergraduates the opportunity to break the ice and become more active in the Society and the College. □

## WILDLIFERS 2ND AT 1975 CONCLAVE

In a courageous battle of wits, the University of Idaho Chapter of the Wildlife Society took second place in the Western division of the 1974-75 Wildlife Society Conclave held in Logan, Utah. Humboldt State College placed first, beating the Idaho team on one question in a double elimination match.

The conclaves are held once a year for the western student chapters of the Wildlife Society. Along with the competition between the schools go demonstrations, fieldtrips and reports that pertain to professional wildlife management. Last year in Logan the participants witnessed cannon-netting demonstrations, a necropsy on a deer, tours of a fish hatchery, and an elk feeding ranch.

This year, interested Wildlife Society members will be traveling to Las Cruces, New Mexico for competition, informative talks, demonstrations, fieldtrips and some socializing with other wildlife majors from the western universities. □

## RANGE PLANT TEAM COMPETE IN OMAHA

"You called WHAT an *Atriplex*???" Comments like this could often be heard echoing through the halls of the College as interested students trained through the school year to compete in the National Range Plant Identification Contest. The contest was held in Omaha, Nebraska at the National Society for Range Management Convention in February.

The College's three-member team of John Johnson, Dianne Lewicki and Justin Naderman was whittled down from a large group of hopeful students representing all three departments — forestry, wildlife, and range. The team was coached by Ken Sanders.

A rigorous training regime required the learning of 200 species of plants. Students trying out for the team began early in the fall to hone their identification skills. The students faced daily practice identification tests while competing for the three places on the team. Highest-scoring students were selected to participate in Omaha.

As an incentive (and also perhaps a consolation prize for those not selected for the team), three Directed Study credits in Range were awarded to all students who gave it a try. □



The 1975 Bowl Team, from lt. to rt.: Mike Sullivan, Carol Sanner, Sherman Swanson, Arn Bergland, Justin Naderman, Lynn Burton, and Mark Kliever.

Mark Kliever

## STUDENTS ATTEND SAF CONVENTION IN D.C.

Three members of the UI student chapter of the Society of American Foresters attended the 75th Annual SAF Convention in Washington, D.C. in October.

Kathryn Hunter, Stephanie Martin, and Kate Sullivan flew back in September to participate in the national meetings and to witness the dedication of the new Gifford Pinchot National Headquarters in Maryland.

While in D.C. they also toured museums, checked out the city and met student foresters from other universities.

After the convention and a trip to Shenandoah National Park in Virginia, Sullivan arranged a journey to New England to see the beech-birch-maple forests in fall color.

Random reactions from the Idaho women foresters and SAF'ers encountered at the Convention:

"Are all the foresters out in Idaho women?"



Kathryn Hunter

"How can you identify a tree when the leaves are 100 feet up?"

"Why were all those fancy ladies standing in the shadows on 14th St.?"

"How could you tell who was a forester? Kate was the only one who wore White's and suspenders."

"Do all big city restaurants serve belly dancers with dinner?"

"I didn't climb the Washington Monument — but I ate Senate Bean Soup." □

## SAF MEMBERSHIP DOUBLES

An increasingly active SAF has more than doubled its membership this year: the membership roster of the student chapter of the Society of American Foresters stood at 20 names when the academic school year began in September, but mid-semester membership drives have boosted the figure into the fifties.

Robert Irwin, President of the Student Chapter, attributes the increase to "efforts by Society members to improve the general awareness of just what the Society offers to students in the College."

To help relieve the crunch of graduating students searching for jobs each spring, the society has put its emphasis on helping the befuddled and unemployed to find openings. "So many people just don't know how to fill out applications, or where to look — we're trying to bring in people who know about that sort of thing," Irwin says.

The chapter has also been active in drawing on talent within the College to broaden the educational background of its members. Jack King (watershed resources) and Dr. Joe Ulliman (remote sensing) were among those from the College who addressed Society meetings this year about research they are currently conducting. □



## A VIEWPOINT FROM DOWN ON THE FARM

Allow me to remind you why you are becoming a silviculturist. In 25 words or less

*"Your services are required to sustain resources which support BIG business. BIG business = BIG money. Lead, follow, or get the hell outta the way."*

How idealistic of us to imagine ourselves in successful opposition to the "system". You are being trained — conditioned, perhaps, and are getting a bit bruised by the mold fitted around you. I know the feeling well.

Howsoever, yonder stands the forest. Waiting for restful winter. Waiting for you to maybe pay a visit, seeking to share the peace there. I myself never studied forests in books and classes and labs. So my data is all filed under headings like: peaceful, good cover for game, open, thick, solitary, charming, lonely, beautiful, awesome, seductive, colorful. I think you also had some of that input. I cannot imagine that MD-level knowledge of physiology and anatomy enhances one's gentleness with a lover. So I wonder if the names and numbers which your learning associates with the forests merely serve to recall conflicting (if only morally so) information.

I would *not* say, or even think, whilst walking in some autumn glade with a victim, "Why, yonder stands at 89° due to the prevailing wind, a fairly healthy (except for a scarred butt section) *Acer saccharum*, which has lost 62.8% of its 3 trillion leaves. Note that this specimen would yield 300 CF of timber, excellent for millwork and light in color, and 1½ cords of tops. Incidentally, its harvesting would release its seedling stand. (What the skidders didn't set free)."

I would say, "This looks like a nice place." What would you say?

Peter Sector  
Thetford, Vermont

*We regret for ourselves that which we cannot really know. We regret for others that which we cannot really teach them.*

J. Robert Oppenheimer

*Knowledge is like a sphere in space; the higher it rises, the more it balloons.*

*- Pascal*

## **WILDERNESS RESEARCH ACCELERATES AT NEW STUDY CENTER**

**by James R. Fazio**

*(Ed. Note: James Fazio is a professor of wildland recreation management at the University of Idaho.)*

Throughout the United States there are institutes and centers for the study of every conceivable problem that plagues modern man. At the University of Idaho, the Wilderness Research Center stands unique among these organizations.

This special "Center" has no walls or roof, and its scientists have only one geographical limitation - wilderness. According to Dr. John E. Ehrenreich, director of the center and dean of the College of Forestry, Wildlife and Range Sciences, the purpose of the center is twofold. It attempts to stimulate wilderness-related research, and it is dedicated to educational efforts that will increase human understanding of the wilderness resource.

Wilderness in a modern society presents both problems and opportunities. This is readily seen in the kind of research projects conducted under the auspices of the Center. Some studies involve the behavior of wildlife in their undisturbed habitat. The movements of mountain sheep, for example, are being monitored by graduate student Jim Bennett who, with his wife Carolle, spent the winter deep in the the Idaho Primitive Area. In another study, the water quality of crystal-clear mountain streams is being studied by Dr. Michael Falter. This will be used for "baseline" data in future comparisons. Such data would not be available outside a wilderness ecosystem.

### **Social Dimension**

Social research is also an important function of the center. The purpose here is to measure impacts of human visitation and determine ways to reduce its effects on the wilderness environment. One current study, by Dr. John Mitchell and graduate student Elizabeth Coombs, is designed to look at vegetation changes that might result around popular camping sites. In another, graduate assistant Bill Bramlette and I are trying to find how wilderness users receive certain information, so that educational efforts to protect the wilderness environmen-

*Kathy McArthur*



Kevin North

tal can be improved. Some day, studies will explore the psychology behind man's need for wilderness, and the moral or ethical implications of preserving these natural remnants.

Freeman Tilden, the pioneer national park interpreter, said that public understanding leads to appreciation and appreciation leads to protection. Recognizing this, the Center's educational efforts focus on promoting a better understanding of wilderness and its use. This is done through Dr. John Schomaker's new wilderness management course, seminars, publications, and special wilderness trips. Last summer a backpacking trip (sponsored in part by the center) crossed the Idaho Primitive Area, providing wildland recreation management students the opportunity to view at first hand a variety of visitor and managerial problems.

Other educational efforts include sponsorship of undergraduate summer research, and plans call for at least one annual graduate assistantship. The intent is to make these available on a competitive basis and provide unique opportunities for students to work and study in the wilderness. In the future, programs will also be developed for teachers, wilderness managers and wilderness recreationists.

The center, like the wilderness concept, is relatively young. The idea was conceived by wildlife professor emeritus Paul D. Dalke and others in 1966. The idea became reality in 1972, but the center perhaps saw its true beginning in 1975 with the formation of a technical board that set down policies, drew up plans and published the first annual report.

The center, like any institution that reflects new ideas, has its detractors and faces a variety of practical and philosophical questions. The five-member technical board is working out answers, trying to meet the challenges, and in coming years hopes to offer even more opportunities for students, scientists, and the general public. As the center gains strength and continues to evolve toward being a significant unit of the university, it needs the support of all students and faculty. At stake is a unique approach to solving many of the problems of wilderness in the Twenty-first Century. □

## COLLEGE STAFF EXPANDS AGAIN

by Kathryn Hunter

This year the staff of the College of FWR has expanded once again. Nine new members can be counted among the burgeoning ranks of the College teaching and research personnel.

Dr. Ali Moslemi, the associate dean of research and graduate students, comes to Idaho the long way. Originally from Iran, he received his B.S. in Agriculture from the University of Tehran. He was recipient of the Junior Science Award from the government of Iran for graduating first in his class. He received his M.S. and Ph.D. in Forest Products from Michigan State. At Southern Illinois University he was a member of the faculty for ten years, for the last three of which he served as head of the Department of Forestry. He was cited for outstanding service by the President of S.I.U. Dr. Moslemi has published 35 scientific papers, including two books.

Our newest man in fisheries is Dr. Dave Bennett. He received a B.S. in wildlife from the University of Connecticut. Then he "saw the light" and changed to fisheries for his M.S. He attended Virginia Polytechnical Institute for his Ph.D. His professional concerns are with man-altered aquatic ecosystems and reservoir fisheries. He is married and has two daughters.

Although Dr. Elmer Canfield is the newest faculty member, he is by no means the newest face. He received his B.S. in forest resource management from the University of Idaho, as well as his Ph.D. in pathology. He now teaches Forest Pathology. For 24 years he served in the Air Force. He is married and has a daughter and a granddaughter. His hobbies include rifle and pistol shooting, and ("when I have the money") gun collecting.

### Where Theres Smoke

Any student of fire control will verify the fact that Leon Neuenschwander shows enough movies to put the NuArt Theatre out of business. "I like fire," says Leon with a grin. He is married and has a four-month daughter. He has a B.S. in zoology, an M.S. in plant ecology, and is working on a doctorate on fire as a management tool.

Although he is a family man, Joe Hoff-

man lists partying as one of his primary hobbies. He also enjoys fishing, backpacking and hunting. How he finds time for these pastimes is an unsolvable mystery, since his job entails teaching five recreation courses. The University of Idaho offered a quality education program and opportunities to do research, and in spite of all the work, Joe says he's glad he came.

Ken Sanders, the newest bachelor on the faculty, comes originally from New Mexico. Besides teaching three range classes, he is advisor of Range Club, and the Range Plant Team coach. He is in the Naval Air Reserve and enjoys playing basketball and tennis.

Dr. John Schomaker is another recreation man. He received a B.A. in Chemistry from Carleton College, his M.S. in outdoor recreation from Utah State University, authored or co-authored ten publications. John enjoys backpacking, photography, and handball.

If you hear a man talking in a strong "Oregon" accent, chances are it's Dr. Karel Stoszek. Born in Argentina and raised in Czechoslovakia, he has been in America since 1964. Karel received a Diplom. Ingenieur in forestry from the University of Brno, Czechoslovakia, and a Ph.D. in entomology at Oregon State University. Previous to coming to Idaho, he worked for Weyerhaeuser, first as a forest entomologist, and later as the silviculturist for the eastern Oregon region. Besides his knowledge of forestry, Karel speaks or writes in seven languages. He is married and has two daughters.

Dr. Jerran Flinders, is in Wildlife resources. He majored in biology at the University of Utah, and received his B.S. and M.S. there. His Ph.D. was in animal ecology at Colorado State University. Jerran has a list of seventeen publications to his credit. He is married, and has one daughter and four sons.

These nine men are a part of the continuous growth in personnel resources in the FWR College. We would like to extend a welcome to each of them, and a hope that they will be able to contribute to the education and future of renewable natural resources in Idaho. □



Victor Bullen

## COLLEGE RECREATION AREA IN LIMELIGHT

College authorities will be relinquishing the problems of the Big Meadow Creek Recreation Area to the Wildland Recreation Department this year.

The recreation area was established by the College several years ago on School Forest land near Troy, and has been administered by Professor Frank Pitkin. Over the years it has deteriorated from vandalism and lack of funding. The area, though poorly maintained and often ignored except for beer parties, has been the subject of numerous studies by various segments of the Recreation Department in the past several years.

During the fall semester Dr. John Schomaker's Recreational Management class (FWR 385) conducted a term project in which no fewer than six different management plans were drawn up by class members. One of these plans is now to be implemented under the direction of the Wildland Recreation Department.

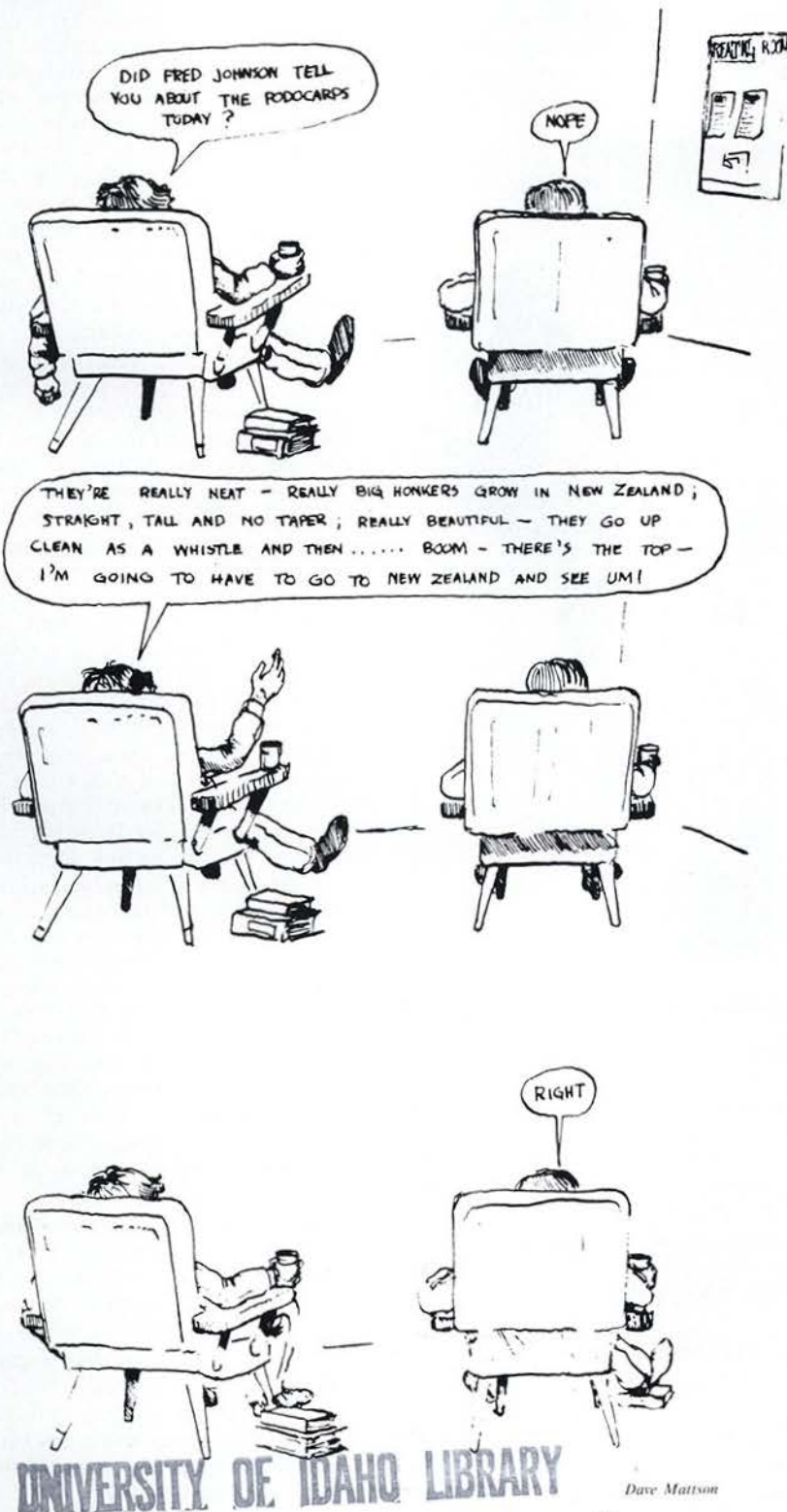
The plan will center around a student manager, hired on a 40-hour work-study program. A budget of \$1,000 will be set up, and additional help may be forthcoming from other students. Efforts will be directed toward curbing vandalism and theft, and providing better maintenance of the site. □

## WOLVERINES RECEIVE RESEARCH ATTENTION

by Maurice G. Hornocker

Little is known of the population ecology of the largest land-dwelling member of the weasel family, the wolverine. Although it has a vast range in the northern latitudes around the world, few scientists have attempted to study wolverines in their natural habitat. Two notable exceptions were both Europeans. The few wolverine studies carried out in North America have been concerned with the species' breeding biology and utilized information obtained from carcasses collected by fur trappers.

The 1973 edition of *Threatened Wildlife of the United States*, the most recent supplement to the 'Red Data Book,' listed the wolverine under 'Status-Undetermined Mammals.' A status-undetermined species is "... one that has been suggested as possi-





from the collection of Clifford Ott

ble threatened with extinction but about which there is not enough information to determine its status. More information is needed . . . ." Clearly there was a need for research on this little-known animal.

In 1973, the Idaho Cooperative Wildlife Research Unit initiated an investigation of wolverine populations in northwestern Montana. Initial support for the project was provided by the Flathead National Forest and the University of Idaho's Wilderness Research Center. Now in its third year the research is supported by the U.S. Forest Service, the National Science Foundation, the National Geographic Society, the Boone and Crockett Club, the New York Zoological Society, and the Audubon Society. Personnel involved are Maurice Horner, the principal investigator, Howard Hash, in charge of field operation, Gary Koehler, research associate, and Pete Ramirez, graduate assistant.

The research is designed to study wolverines by observing marked individuals in a free-ranging population. The work is being carried out in the South Fork of the Flathead River drainage in northwestern Montana. Wolverines are captured in live-traps, immobilized with drugs, individually marked and released for future identification. They are also fitted with collars containing miniature radio transmitters. By locating and following these radio signals, individuals may be studied, undisturbed, through a season, from season to season, and year to year.

By March 1976, 21 different wolverines have been captured. Seventeen of these have worn radio transmitters for continuous periods up to eleven months. More than 300 radio location recorded on these wolverines have supplied information on range and movements, foot habits, seasonal habitat use, and many other aspects of the species' biology and ecology.

Concurrent with work on the wolverines is an appraisal of their suspected food supply - small mammals. The numbers and different kinds of small mammals such as ground squirrels, mice, and voles are being investigated in different vegetative types. Other species of predators also occupy the study area; their numbers and possible relationship with wolverines are being studied.

It is hoped the results of this research will

not only provide knowledge about this little-known animal heretofore unavailable but will enable management agencies to better manage the wolverine wherever it occurs.



Kevin North

## CONTROVERSY FLARES OVER LOGGING SITE

For several years the Forestry Club has sought construction of a logging meet site where it could host regional logging meets. When the Field House was removed from the Arboretum on campus this year, all at once the goal seemed within reach. While the demolition cranes were still in place, the club jumped at the chance and had two stout climbing poles erected. The site was under way.

But since that moment of success, the club has become embroiled in a bureaucratic battle that threatens to remove the poles and put an end to the dream. It happened this way:

Through the efforts of Mark Munkit-

trick, the club had persuaded a local cedar company to donate two tall poles. They were temporarily stored in the parking lots by the agricultural barns on campus where the Building & Grounds Department had given permission for a site to be constructed.

The Forestry Club had felt all along that the Arboretum was a better site for their logging area, and when someone noticed the cranes in the Arboretum in February, a quick decision was made to get permission to set up the poles in the Arboretum while the equipment was on hand.

While the holes were being dug, club president, Kevin North was getting the approval of Prof. Fred Johnson, who manages the Arboretum, and Dr. Ali Moslemi of the College for the raising of the poles. Arneburg's Landscaping of Moscow moved the poles and dug the holes free of charge.

But in the meantime, Dr. Ernest Ables was contacted by a University authority, wanting to know what was going on. North assured Ables that the project had been okayed by Dr. Boe, head of the Arboretum Committee.

No sooner had the poles been sunk, than Ables received a call from Buildings and Grounds, wanting know why they hadn't been consulted. And a day later a memo arrived from Dr. Ernest Hartung, President of the University, for Dean Ehrenreich, instructing the club to take down the poles.

North met with Hartung to explain the club's position. Hartung said that he himself wanted the poles down, but that he did not have operational control over the situation. The Club was referred to the Campus Planning Committee, where Prof. Johnson took the opportunity to argue the question of the boundaries of the arboretum, which he manages, and the surrounding area, which the committee administers. The committee voted to leave the poles in until unspecified "future development" or a "better use" arise to warrant their removal.

Already, the Athletic Department wants the poles removed to make way for handball courts. More demands on the relatively small area will undoubtedly be made before long, but for now the poles will stay in place.

The Forestry Club is busy preparing for a fall logging meet of Pacific Northwest and Canadian teams. Sawing stanchions and chopping blocks are under construction, and even a birling pond is being discussed — location as yet unknown. □

# America's first industry: now more important than ever.

Over the years, industries have come and gone. But the first industry in America—the first enterprise that produced finished products from raw materials—is still vital and dynamic. In fact, it's more important today than ever before.

When early English settlers landed at Jamestown, Virginia, they were awed by the immensity of the forest. But the leader of the group, Captain John Smith, quickly recognized its commercial possibilities. He conveyed his ideas to London, and several months later Dutch and Polish millwrights arrived in the New World. Under the direction of Captain Smith, they constructed a sawmill near Jamestown, and America's first industry was born. The year was 1607.

## The Value of Lumber

Soon, America's vast virgin forest was supplying products for many industries. The forest also provided building materials for homes, shops, and churches.

Because of the heavy demands on the forests and inaccessibility of the enormous wood supply in the interior, the early colonists actually worried about a wood shortage. As early as 1798, newspapers and magazines were urging conservation measures to preserve and improve the forest. It's interesting that the methods advocated at that time are common in modern silviculture (forest management). Editorials urged the thinning of diseased and stunted trees. The harvesting of old trees to promote growth of younger, faster-growing trees. And the thoughtful regulation of fires which settlers often used to clear land for crops.

But conservation was difficult because wood was vital for the colonists. They used it to build buggies, buildings, ships, butter churns, walkways, furniture—almost everything.

The colonists and early Americans found other interesting uses for trees. A famous colonial charter was hidden in the base of a tree to keep it from the British. On a tree in northeastern Tennessee, these words were carved: "D. Boon



cilled A BAR On Tree in THE YEAr 1760." "D. Boon" was, of course, Daniel Boone. George Washington assumed command of the ragtag colonial army beneath another famous tree, the "Washington Elm," in Cambridge, Massachusetts.

## The Future of the Forest

These are just a few examples of the role played by the forest in early America. It was important then. It's important now. And it will be even more important in years to come. Because wood is a renewable resource. And, while other natural resources are dwindling, the forest can go on forever.

Georgia-Pacific is helping protect this natural resource by managing its forests scientifically. In addition, the Company is planting millions of trees each year. And, each year, more of the newly planted trees are "supertrees" which are bred from superior stock. The "supertrees" grow faster, are healthier, and have more usable wood fiber than ordinary trees.

However, a wood shortage in the U.S. is possible in the near future because vast tracts of forestland, most of it government-owned, are *not* being managed to best advantage. That is why it is so important that G-P, as a private timberland owner, is heeding the words of the conservationists of 1798. Because, as much as Americans relied on the forest products industry in the past, they'll rely on it even more in the years to come.

**Georgia-Pacific**  
The Growth Company



## THE EMPLOYMENT PICTURE

by John Ehrenreich

*John Ehrenreich is dean of the College of Forestry, Wildlife, and Range Sciences at the University of Idaho.*

One question I often hear from students, prospective students and parents is, "What is the employment situation?" It is not an easy question to answer, and of course employment opportunities vary a lot between various disciplines and even within the disciplines. And it also depends a lot on the persons seeking employment. But, in general, the employment situation is good and getting better.

We have some detailed information from the Society of American Foresters on employment in the forest resources area, and I'll try to summarize it for you and add some of my own information and thoughts. Employment opportunities increased 49 percent in the 3 years from 1972 to 1974 (Table 1). In 1975 the number of employment opportunities leveled off and decreased slightly. However, I anticipate a sharp increase in 1976 due to factors I'll discuss later.

In 1975, there was a 10 percent decrease in employment opportunities at the bachelor's level, a 10 percent increase at the master's level and a large 25 percent increase at the doctoral level. At the bachelor's level there were significant increases in all areas of the public employment sector (city, county, state and federal), but the largest increase was in the federal sector — a 33 percent increase. Employment opportunities also significantly increased at the bachelor's level in educational institutions and in the foreign sector. However, all of these increases were negated by a sharp decrease in the private industry sector. This could be expected because of the current economic slump being experienced by the private forest industries.

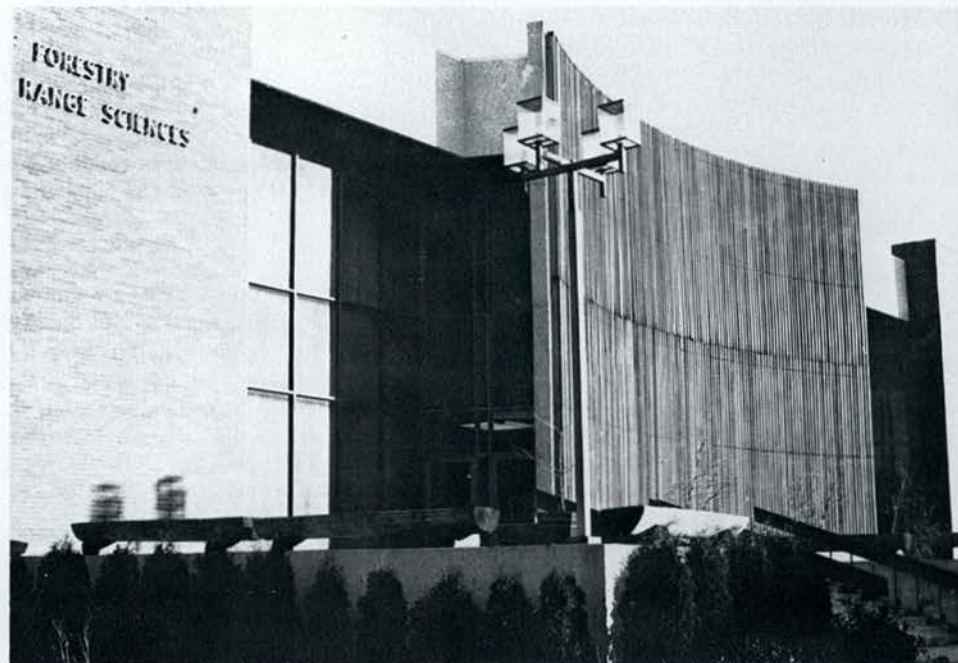
On the master's level there was also a decrease in 1975 employment opportunities in private forest industries and in the foreign sectors. However, the decreases were not great, and were more than offset by increases in all areas of the public sector and in the educational institutions. The largest increase, 62 percent, was felt in the federal employment area.

At the Ph.D. level there were large increases in 1975 employment opportunities in the federal sector and in educational institutions, balancing the slight decreases in the private industry and foreign sectors. The largest increase, 72 percent, appeared in the educational institutions.

### A Further Insight

What about graduates who did not seek forestry employment (went on to further education, into the military or into non-forestry employment) or could not find employment? Well, students are aware that employment opportunities are better at the M.S. and Ph. D. levels than at the B.S. level.

The percentage of the total number of graduates who were unemployed but searching for forestry employment as of last summer increased at the bachelor's level from 4 percent in 1974 to 6 percent in 1975; at the M.S. level from 3 to 4 percent and at the Ph.D. level from 0 to 1 percent. This rate of unemployment, while increasing from 1974 to 1975, is not out of line compared to unemployment levels in other professions — in fact, it is much better than in most professional areas. There is always a certain number of graduates who do not find employment in any graduating class, whether the employment market is good or bad. This is due to a number of factors, viz.



And as you would expect, there was an increase in both number of bachelor's and master's graduates going on for further education in 1975 — a 21 percent increase. There was also a slight increase in the number of baccalaureate graduates going into the military, but not so at the M.S. and Ph.D. graduate levels. One of the most significant factors is the number of forestry graduates at all levels going into the non-forestry employment area. Non-forestry employment increased 88 percent from 1974 to 1975, and I expect to see this trend continue.

1) the ones near the bottom of the graduating class always have a harder time finding employment; 2) sometimes the graduates impose too many restrictions on the type of position they want or the part of the country in which they want to work; or 3) the graduate may not be as aggressive in seeking a position as he should be, or may lack good technique in searching for a position.

### Idaho and the West

In general, forestry employment opportunities in 1975 were better in the Western



Region than in the Northeastern, North Central or Southern Regions. For one thing, the largest increase in employment opportunities occurred in the federal sector; most of this increase was in the Western Region. In fact, there were nearly 50 percent more federal employment opportunities in the Western Region than all the other regions combined. Forestry employment was generally also slightly higher in the Western Region in most of the other employment sectors. For the Western Region, however, employment opportunities in non-forestry areas were only about half that of any of the other regions.

During 1974 and 1975, all of our Forest Resources graduates found employment, with the possible exception of a few we cannot locate. Not all found permanent jobs, and the jobs they got may not have been ideal, but they were employed. A recent study by Dean Emeritus Ernie Wohletz reveals another factor which should also give heart to Idaho graduates. That is the relatively high number of Idaho graduates of past years who have advanced rapidly and now hold high positions in both public and private sector employment areas. Few similar institutions can boast as many graduates in key positions today.

#### The Future Employment Picture

Future employment opportunities look good in the forest resources area. The passage of much legislation concerned with management of our nation's forest lands should cause a continuation of the upward trend in number of forestry employment opportunities in the public sector. State Forest Practices Acts and land use legislation will result in a continuation of forestry employment not only in the U.S. Forest Service, but also in several other federal agencies. Indeed, much, if not most, of the 1975 increase in federal forestry employment was in agencies other than the Forest Service.

There will also be a continual increase in employment in educational institutions — particularly in the West. There should also be increased employment opportunities in the foreign sector — by international agencies and foreign governments as well as by private companies. Of course the increase in foreign private opportunities will depend on the overall economic recovery of the wood products industries in general. Employment opportunities in the foreign sector have in-

TABLE 1. Number of Forestry Employment Opportunities<sup>1</sup>

1972 .....	1,371
1973 .....	1,710
1974 .....	2,039
1975 .....	1,916
1976 .....	2,600

(estimated) <sup>1</sup> Information from surveys by the Society of American Foresters, except 1976 which is based on growth estimates made by author.



Stuck between a rock and a hard place.

Stephanie Martin

creased steadily for the past several years and should continue for years to come.

One of the employment areas which is particularly of interest is the rapid increase for forestry graduates in what I have previously called non-forestry employment. Actually, many refer to this area as "the non-traditional forestry area," and perhaps this is more correct. With the increase in environmental concerns this area should continue to expand in the future. Forestry graduates with a good, broad general forestry education will continue to compete strongly for employment opportunities in these and other related areas. This is good because we need people with forestry backgrounds in these types of positions.

The big increases in employment opportunities in 1976 and 1977 should come in the

private industry sector, as the wood products economy recovers from the slump of the past few years. Many industry leaders look for sharp upturns beginning in mid-1976; this should see a corresponding increase in employment opportunities in this area.

For the more distant future, the employment picture also looks good. There may be brief ups and downs, but the overall trend has to be up. As a nation we are moving into intensive forest management, which will increase employment opportunities. We are also beginning to focus attention on the need to stimulate productivity on small private forest holdings. The Forest Incentives Act is but one example of this increased attention. Another is the activity of large industries to move into contractual agreements with small private owners to help them manage their forest lands in an exchange for the right to purchase the timber.

To be sure, there is great concern over court actions and legislation limiting forest management. There is also concern over withdrawals and environmental concerns. But forest industries and professionals are reacting to these happenings, and I am optimistic that the result will be positive for all concerned. One of the results will be continued increases in employment opportunities for forestry graduates.

Another very important factor is the almost unlimited potential for wood as an energy source and as the base for a myriad of new products — not only construction products, but also many products now made from petroleum. As a nation we are realizing more and more that wood, as one of our most valuable renewable resources, must play an increasing role in our future. Some may call me a mere optimist, and point out the many pitfalls. Sure there are pitfalls, but we will overcome them. I firmly believe that the real golden age of wood is still to come — and with it a bright employment future for forestry graduates. □ □

*"Independence - that's middle class blasphemy! We are all dependent on one another, every soul of us on earth.*

*George Bernard Shaw*

# KEY TO THE FUTURE - GROWTH OF THE TREE FARM FAMILY



by Leverett Curtis

*Leverett B. Curtis is Tree Farm Family Manager for the Weyerhaeuser Company's Willamette Region in western Oregon. He is a 1950 forestry graduate of the University of Idaho.*

The success of America's forestry efforts now — and in the future — will require a much higher intensity of management than is presently being practiced on most of our commercial forest lands.

Despite the progress achieved in forest management since the end of World War II, we face today another crisis of confidence in American forestry. The concerns are complex and widespread; protection of forest soils, air and water quality, aesthetics, wildlife habitat, and a wood fiber supply for current and future generations.

In America alone, most predictions indicate that our need for wood fiber will increase nearly 60 percent by the year 2000. Worldwide, the U.N. Food and Agriculture Organization predicts a doubling of wood fiber demands by the end of the century. These demands are being created by larger populations, increasing affluence, and rising standards of living. In many parts of the world, per-capita demand of wood fiber is growing faster than it is in America. By the year 1980, Europe and Japan combined are expected to have a wood fiber supply deficit of some four billion cubic feet.

This suggests that wood fiber, like oil, wheat, corn, and soybeans, will move internationally to fill a market. American forests and manufacturing plants are among the world's most productive, and their geographical location is well suited to meeting the wood fiber demands of America and the world. Our laws and regulations must permit wood fiber producers to seek out and fill available domestic and world markets, if there is to be any significant investment in forestry.

### Privately Owned Lands

If we assume that world markets will remain accessible during this century and into the next, how may America's foresters and commercial tree farmers go about increasing the productivity of their lands?

First: I believe the industrial tree farms must continue to take the lead in research, capital investment, and forest management intensity.

Second: If American forestry is to meet the challenges before it, the highest standards of industrial forest management must become target for all tree farming.

Third: A cooperative effort by all commercial tree farm owners will be needed to grow more wood fiber, and at the same time take care of the forest environment.

Historically, the non-industrial forest landowner has not sought to improve forest productivity on his property, for a variety of real and valid reasons: a lack of long-term economic incentives; a lack of ready cash to pay for work that needs to be done; in some instances, a lack of knowledge as to what needs to be done; and more often than not, a lack of manpower or equipment to do the job.

### Sound Investment

It is my belief that the lack of economic incentive is being removed, and that the economics will continue to improve. A recent publication by the Pacific Northwest Forest and Range Experiment Station averaged the log prices by species and grade for the period 1963-1973. The data were separated into domestic sales and export sales, from an annual transaction base of approximately 1.5 billion board feet.

Table 1 further summarizes the data by species and average grade, and indicates the percent price increase from 1963 through 1973. The ten year increase in average log prices ranged from 87% for white pine to 233% for Western redcedar. For comparison, the U.S. Bureau of Labor Statistics' wholesale price index for the same period rose 43% for all commodities and 125% for lumber alone. It would be reasonable to assume that similar log price increases have occurred in the other major timber producing regions of the United States.

Now if we assume that the cost of logging and hauling remained at 50% of log price, then the return to stump has also increased comparably. However, while averages are fine to indicate trends, we need to exercise caution in their application. Each individual tract of forest land has to be measured on its specifics of access, topography, volume of wood fiber, species, grade and market area.

There have been numerous studies, surveys and proposals for assistance and incentives to encourage the small woodland owner toward higher productivity on his woodlands. Frankly, there has been a lot more surveying, studying and proposing than *doing*. I don't pretend to have any final, brilliant solutions, but I am convinced that the non-industrial tree farmer isn't going to practice forestry on his woodlands until it has been made profitable for him to do so.

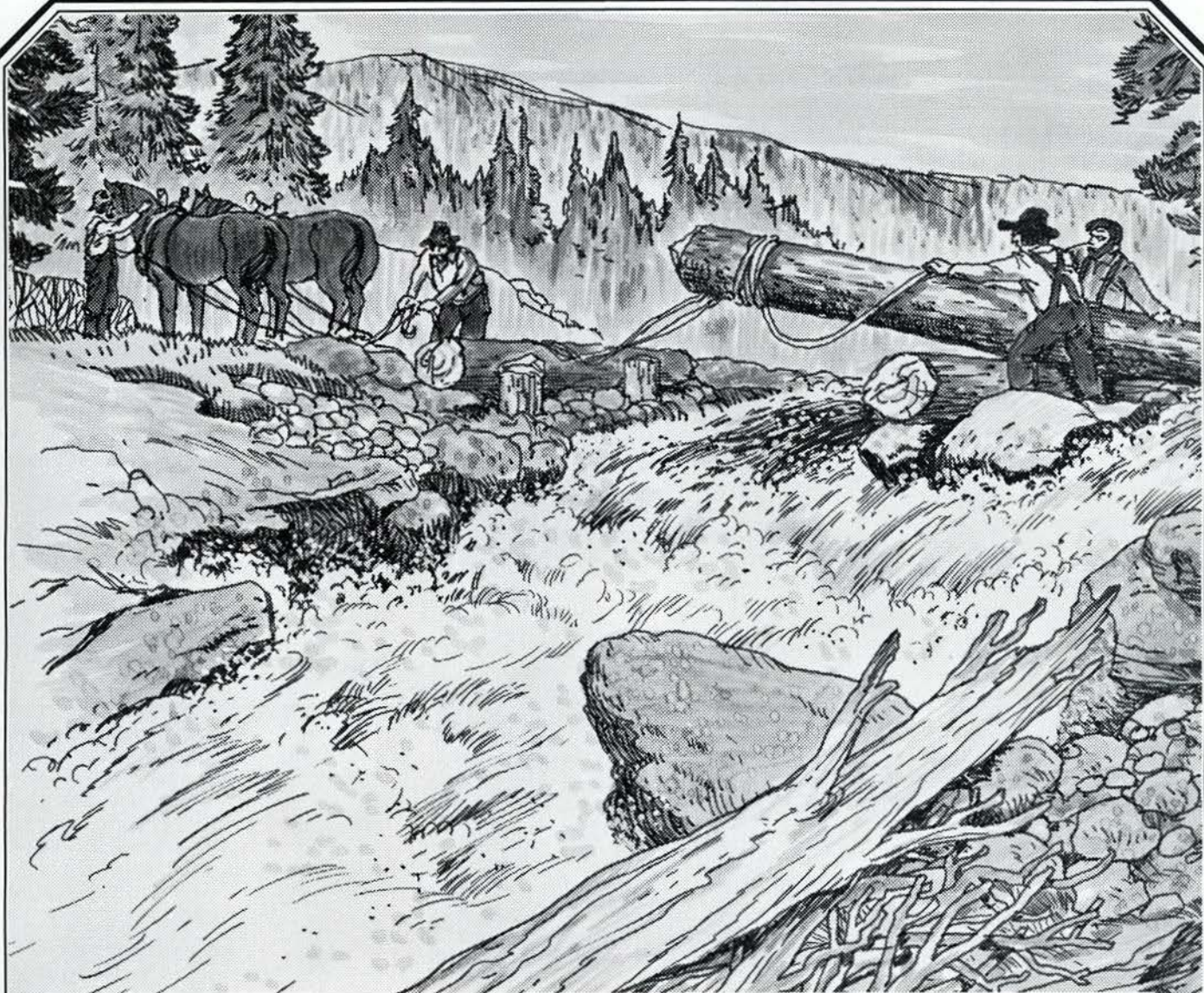
(Continued on page 40)

TABLE 1  
SUMMARY - DOMESTIC LOG PRICES - 1963 - 1973<sup>1</sup>  
WESTERN WASHINGTON & NORTHWESTERN OREGON

SPECIES	AVERAGE GRADE	PRICE <sup>2</sup>		PERCENT INCREASE
		1963	1973	
Douglas-Fir	Peeler	\$86.00	\$186.00	116
Douglas-Fir	Sawmill	\$57.90	\$137.30	137
Western Hemlock	All	\$46.90	\$112.90	141
Noble Fir	All	\$51.50	\$128.20	149
White Fir	All	\$51.10	\$112.00	119
Sitka Spruce	All	\$56.00	\$152.00	171
Red Cedar	All	\$51.80	\$172.30	233
White Pine	All	\$48.60	\$90.90	87

1 - U.S.F.S. Research Note PNW-235 - August 1974.

2 - Dollars/MBF - Scribner Log Scale



## Bridges to better times

It seldom occurs to people in this era of great, graceful spans, that the rivers of the West were real barriers to the pioneers.

In those days, crossing the swift, treacherous streams could be worth a man's life and, too often, that tragic price was paid. No wonder men pooled their skills and time and risked their lives to erect a rickety crossing that might not survive the next spring's floods.

It was a beginning, though; it made travel easier and safer. Trails became roads that supplied the settlements and took out the timber, grain, and ore.

From the first, back-breaking steps, this required energy—muscle power, horse power, steam, and then electricity — often generated by the falling water of the same turbulent rivers that had once barred the way.

Now, more than ever, our world requires energy. It is an irony of the time that with the need so urgent, organized forces are trying to stop or delay the building of power plants. These plants are essential to the public and public support is essential to the building of the plants now, before time runs out.

**THE WASHINGTON WATER POWER COMPANY**



# ENVIRONMENTAL IMPACT STATEMENTS- SOME THINGS TO CONSIDER

by David Pavelchek

*David Pavelchek has worked for the last three years as staff assistant to the Sierra Club's Northwest Regional Office in Seattle, which oversees the Club's concerns in Washington, Oregon, Idaho, and Montana. He has specialized in forestry-related topics including land use planning on public lands, timber supply, wilderness and park matters, and forest practices. He has also done extensive work preparing administrative appeals on Forest Service actions. He is currently in private practice as a consultant.*

The fusion of modern land use planning and the National Environmental Policy Act (NEPA) Environmental Impact Statement procedure has created many problems for government land management agencies. The tasks of upgrading what heretofore had been a generally primitive form of land use planning, and at the same time implementing the new procedures required by NEPA, have taxed the patience, skills, and learning abilities of agency personnel and citizens. An additional problem arrived in the form of the clear need to develop procedures to evaluate lands for their 'wilderness', preserved, or nondeveloped values — a skill



Fred Johnson

in which there has been a marked shortage of expertise in most agencies.

However, several years of EISs have now passed. I sit in the threatening shadow of about 10 billion of shelving covered completely with precariously perched EISs, draft and final, for Forest Service land use plans — and that covers only four states. I have spent much of the last three years, along with other concerned citizens, reading, analyzing, and discussing these plans and the actions they represent in both their procedural and their substantive aspects. There have been some truly wretched and inadequate statements, some which have advanced the state of the art, and a vast mass of mediocre ones in the middle. Of course, the average is getting better, but it appears that new ideas and successful approaches are spread only by slow osmosis. This is probably partially due to the rapid changes in the 'state of the art' since 1970.

I believe that after these trial years, certain issues in need of discussion and clarification have emerged. I have concentrated on the Forest Service planning process, although much of this discussion should be applicable to other agencies dealing with public lands.

## The NEPA Mandate

The National Environmental Policy Act has three major directives that affect this type of process.

First, NEPA formally elevated environmental quality protection to high importance among national priorities. This is not a particularly controversial aspect today, though it was undoubtedly long overdue by 1969.

Second, NEPA mandated certain procedural requirements within agencies: consideration and evaluation of alternative courses of action, and their impacts, both long and short term. Particularly important is the requirement to consider *all* impacts, whether or not such impacts were previously within the purview of the agency involved, and whether or not they are quantifiable. Another important note from this section is that *all* 'major Federal actions' must be so covered.

Last, NEPA mandated consultation with other agencies and with concerned citizens. It is the implementation of this last mandate that has created many controversial situations. In effect, this section opens up

the process. It dictates that not only must the agency consider and evaluate a full range of alternatives and impacts, but that outside agencies and individuals must also be brought into the process to suggest other alternatives, mitigation measures, etc. This thwarts the obvious bureaucratic ploy of stating that alternatives or impacts were considered, but not publicized.

Within this framework, the following points appear of major interest.

1. Public input on alternatives should be gathered before any one alternative is selected. Experience shows that agencies are highly reluctant to change their minds once one alternative has been publicly announced as preferred. This tendency is even more marked after an agency has invested further effort in evaluating, refining, or justifying one particular alternative. Therefore, for meaningful public involvement, public response should be gathered before one alternative has been selected, if at all possible, and definitely before further effort has been expended on a particular alternative.

2. The land use plan must be based on adequate information. The courts have held that reasonably attainable information, if it is of significant importance to the proposed action, must be obtained and presented. The Forest Service itself often repeats that "facts are the foundation of land use planning." This means specific facts about the area under consideration, in addition to generalized facts about similar situations.

This problem most often comes to light with regard to wildlife resources. Far too many land use plans proceed to completion without any systematic analysis of the actual wildlife resources of the planning unit. Too often generalized information about situations thought to be similar is substituted for facts about the actual situation. As a minimum requirement, an inventory of species by competent field personnel, along with population and range analyses for the most important species, should be considered prerequisites for any land use plan. Reliance on habitat type assumptions in the absence of factual data is insufficient. In general, information should enable the planning staff to make sound population-level predictions for key species for each of the management alternatives.

3. Information must be included in the EIS. The consultation mandate of NEPA requires that outside participants be



John Dorman

able to understand the situation and proposed action in considerable detail. A mere assurance, such as "Road construction will be restricted to stable land types" is insufficient. Some discussion of the criteria and a mapping of the situations involved are essential, otherwise the process remains essentially closed except for paternal assurances.

Outside reviewers must be able to evaluate, on an extensive basis, both the situation in regard to resources and past development, and the action proposed. Much of this information can be successfully conveyed only by maps. It is an integral and necessary part of any functional EIS that such information as past development, vegetation, productivity, roadability, wildlife habitat, and landtype, as well as the proposed action, be accurately mapped. Such information is not an extraneous frill, but the very substance on which an understanding and evaluation of the proposed plan and its alternatives *must* be based. A typical catalogue might include: Daubenmire habitat type; existing roads, trails, and harvest units; timber site class; roadability; regeneration potential; wildlife habitat; slope class; landtype; erosion potential; recreational suitability; archaeological sites; past multiple-use plan, and proposed development.

Two other items of information often neglected are existing vegetation and timber stratification. Daubenmire typing is useful, but is primarily an indicator of climax vegetation. A textual section relating the Daubenmire mapping to existing vegetation should be included. A vital part of any land use allocation is the proposed timber stratification. While it may not be possible to give exact yield percentages due to the state of various timber management plans, a stratification into standard, special, marginal and deferred components should be given, along with a discussion of the meaning of that stratification. The latter is necessary due to the fact that the treatment of stratification components varies from forest to forest.

**4.** An adequate range and number of alternatives must be presented and considered in a comprehensive and unbiased manner. While it is true that an infinite variety of alternatives can be constructed for a land use plan, it does not follow that it is impossible to construct an adequate presen-

tation. However, at the simplest level, an adequate range means considerably more than the three or four alternatives presented in many typical EISs.

A good minimum outline for the average case might consist of the following: a) a section evaluating each separate roadless area in terms of both objective and subjective outputs and impacts; b) an extreme or no-harvest alternative; c) a no-further-development alternative, continuing activities on lands already accessed; d) a minimum of *three* middle alternatives; e) an extreme development alternative, representing maximum permissible development.

Such an array would enable the administrator and reviewer to have not only baseline alternatives for comparison, but also an array of intelligent options within the middle ground, which is, after all, where the majority of all decisions will end up. Unfortunately, too many EISs contain only one alternative within that middle ground — not surprisingly, the selected alternative.

However, several problems remain, the largest of which is that parts of some planning units might reasonably be managed with a heavy environmental emphasis, while other parts of the same planning unit might equally well be managed with a strong extractive resource emphasis. To cover all the combinations would require a huge number of alternatives. The Boise National Forest has suggested a reasonable solution, although their application of this technique was insufficiently developed. One of their most recent land use plans divided the planning unit into thirteen separate "analysis units," each of which was evaluated under alternative management schemes. Different management alternatives were selected for different "analysis units," depending on outputs and impacts.

This type of approach, further sophisticated and coupled with adequate resource maps and dates could enable the reviewer to construct a large number of viable alternatives, evaluate them with a reasonable degree of accuracy, and comprehend the intervening range of possible alternatives

In brief, this calls for early delineation of analysis units within the planning unit, based on resource, constraint, and current condition criteria. Several different manage-

ment alternatives are then prepared for each analysis unit, and output and impact tables along with Benefit/Cost ratios are prepared for each analysis unit, allowing comparison of various alternatives on an analysis unit basis.

If each roadless area is then designated as one or more separate analysis units, then the major quantitative part of roadless area consideration can be incorporated directly into the rest of the process. It will still be necessary to construct several over-all alter-

*(Continued on page 44)*



John Nycum

## THE WHOOPER TRANSPLANT

by Elwood G. Bizeau

*Elwood Bizeau is assistant leader of the Idaho Cooperative Wildlife Research Unit, which is jointly supported by the College of FWR, the Idaho Fish & Game Dept, the U.S. Fish and Wildlife Service and the Wildlife Management Institute. His main research interests are with waterfowl, upland game and non-game marsh species.*

On June 3, 1975, a crane chick work its way out of a large buff-and-brown mottled egg at Grays Lake marsh, 35 miles north of Soda Springs in southeastern Idaho. The golden-hued chick lay in the nest, temporarily exhausted, while the sun dried its wet down. The shell from which the chick had emerged still lay in the nest - its top neatly severed by the chick's egg tooth. It looked like numerous other eggs being incubated in sandhill crane nests around the marsh, and the bedraggled chick was a look-alike for several hundred sandhill crane chicks at Grays Lake which would soon be hatching. But there was a difference. This was a whooping crane - the first of its highly-endangered kind destined to spend its first year of life under the protection and guidance of foster-parent Greater sandhill cranes.

Within the next week, 'foster-parent-whoopers' hatched in eight other sandhill crane nests around the edge of the 22,000-acre marsh. A unique experiment was on its way, conceived and guided by Dr. Roderick Drewien, wildlife research biologist working for the University of Idaho under a U.S. Fish and Wildlife Service contract. The research project is a cooperative effort between the Canadian and United States federal wildlife services, which have joint jurisdiction over the continent's whooping cranes. How did the College of Forestry, Wildlife and Range Sciences get involved in whooping crane research? The sandhill crane took us there.

### Beginnings

Research on Idaho's sandhill cranes started in a small way in the summers of 1949 and 1950 when I was sloshing around Grays Lake marsh as an inexperienced but eager graduate student doing a waterfowl production study. As a sideline to the waterfowl study, I marked every crane nest encountered, recorded hatch data, observed the activities of the cranes throughout the

busy summer months, and reported the results as a brief appendage to a master's thesis.

In the process I fell in love with these unique birds, whose ancestry dates back to the Paleozoic Era. But love alone does not acquire scientific data. It was 1968, 18 years later, when Dr. Maurice Hornocker and I, both newly-appointed to administer the Idaho Cooperative Wildlife Research Unit, made the decision to involve the Unit in long-term research on the Greater sandhill crane population which ranges through the Rocky Mountain states.

We began the search for research monies and a suitable graduate student who could devote his or her entire efforts to the project. The researcher selected to head the project was Roderick C. Drewien, already an established wildlife scientist at the time he undertook the sandhill crane research as a requirement for his doctoral degree. Drewien arrived on the scene in June 1969 and immediately went to work capturing and marking cranes in southeastern Idaho.

Initial monies for crane research were provided by the Audubon Society, the U.S. Fish and Wildlife Service, and the Welder



Richard J. Naskali



Greater sandhill crane nest.

Elwood Bizau

Wildlife Foundation. Later, when the relationships between the breeding biologies of the sandhill and the whooping crane began to come in focus, the National Science Foundation provided a substantial grant.

### Birds of a Feather

This article is about the foster-parent whooping crane research, and you might easily think I am diverting from the subject with all this talk about the sandhill crane. But there is no way that the whooping crane research can be understood without a brief review of what Drewien learned about sandhills.

By the following the life and travels of individually marked cranes (more than 600 sandhills were marked from 1969 to 1974), Drewien found that each pair of breeding cranes establishes and lives on a discrete territory on the marsh. Each pair resides there for six months of the year, nesting, molting and rearing young. These tracts of marsh real estate which the cranes 'own' average about 40 acres.

In September and early October, the cranes migrate as family groups to their

major migration stop in the San Luis Valley of Colorado. In November they move south to winter in the vicinity of Bosque del Apache Refuge along the middle Rio Grande River in New Mexico.

Return migration in the spring, still in family groups, retraces the path of the fall migration. By the time the adult cranes get back to their breeding territories at Grays Lake to start a new annual cycle, the almost-yearling cranes are ejected from the family, to face the world on their own for the first time.

By repeated observation of marked birds, Drewien slowly built up a dossier on the year-round activities of a large number of marked pairs, including migration patterns, production records and survival of offspring. He then began to compare the breeding biologies of the sandhill and the whooper.

Most sandhill cranes (and whoopers) typically rear only one young, even though they usually hatch both eggs of their 2-egg clutch. Regardless of whether the cause of this mortality in crane families is predation, food shortage or sibling rivalry, the result is the same - usually only one chick makes it to flight stage. Why not restrict each pair to only one chick so the parents can lavish their care on the one bird and perhaps enhance survival? But how would sandhills react to the theft of one of their eggs?

### Shell Game

Drewien tested this by removing one of the two eggs from a number of crane nests and comparing the nesting results to a large number of other nests which were left undisturbed. Nesting success on both groups was virtually the same. The sandhills did not mind at all having their clutches reduced from two eggs to one!

How about the time-table of nesting for whoopers and the Grays Lake sandhills? The only known nesting area for wild whooping cranes, discovered by Canadians in 1954, was at remote Wood Buffalo National Park near the 60th Parallel in the Northwest Territories of Canada. Canadian Wildlife Service biologists found that the peak of hatch in a normal year for the whoopers occurs in early June. This corresponded almost exactly with the normal hatch peak of the sandhills at Grays Lake.

How would whooping cranes react to the theft of one of their 2 eggs? Fortunately, Dr. Ray Erickson, head of the U.S. Fish and

Wildlife Service Endangered Species Research Program, in cooperation with the Canadian Wildlife Service, had been finding that out at Wood Buffalo National Park since 1967. The objective of Erickson's program was to artificially propagate whooping cranes at his headquarters, the Patuxent Wildlife Research Center near Laurel, Maryland. Erickson and the Canadian Wildlife Service biologists found that the whoopers didn't mind hatching and rearing only one youngster. In fact, survival of young whoopers at Wood Buffalo National Park appeared to improve under the egg-napping program.

Drewien began to consider seriously the possibility of requesting some of the eggs from Wood Buffalo National Park and placing them under marked foster-parent sandhill cranes on which he had precise production, movement and survival records for several years.

### Family Affairs

If the project went forward, would the young whoopers adapt to the sandhill crane diet - different from the traditional whooper fare in some respects? Whoopers on the wintering area at Aransas National Wildlife Refuge on the Texas coast live largely on marine life, particularly blue crabs. Sandhill cranes subsist on agricultural crops once they reach the flight stage.

And how about the hazards of the 800-mile migration from Grays Lake to New Mexico for the foster-parent group? Those hazards appear to be considerably less than the current 2,500 mile migration route of the Wood Buffalo-Aransas whoopers.

The proposal was presented to the U.S. Fish and Wildlife Service, to the Canadian Wildlife Service, to various private organizations like the Audubon Society which have had a long-time interest in the whooping crane, and to all of the state wildlife agencies along the proposed migration route. Two years of negotiation ensued. Finally, a few weeks before the whoopers started their 1975 nesting chores in Canada, the project received official approval. A contract for Dr. Drewien to perform the biological follow-up on the project was signed between the University of Idaho and the U.S. Fish and Wildlife Service.

The immediate objective of the whooping crane research launched in 1975 was to test

(Continued on page 42)



Migration routes of Whooping and Greater Sandhill Cranes.

cartography by Tim McGarry

## FORESTRY — A GLOBAL AFFAIR

by **Chuck Harrison and  
Kathryn Hunter**

*Chuck Harrison is a Ph.D. candidate in forest genetics at the University of Idaho. He received his B.S. from the University of Georgia and his Master's from Syracuse. Prior to coming to Idaho he was a research officer for the South African Department of Forestry for three years.*

*Kathryn Hunter is a senior in forest resource management.*

A Navy flyer was piloting a new supersonic fighter plane on a test flight across the continent. First his communications went out, then he developed serious engine trouble. Realizing that an explosion was imminent, he ejected. As he drifted down in his parachute, he surveyed the countryside below, and decided he was probably somewhere over Iowa or Nebraska. Soon after he landed, a local farmhand walked up. "Where am I?" asked the flyer. Replied the farmhand, "Why you're in Jerry Brown's cornfield."

Even in this day of jet travel and satellite communications, it is surprising how many people are just about that provincial in their thinking. A question one often hears in the coffee room is, "When you graduate, do you plan to work for the state, the federal government, or private industry?" What is usually meant is the the State of Idaho, the U.S. Forest Service, or some company like Boise Cascade or Potlatch. But we shouldn't forget, that there are 50 states in the U.S., and almost 200 national governments in the world. Private industry is not unique to this corner of the world either. Even when jobs are plentiful, the dyed-in-the-wool Idahoian who would not think of leaving her/his home state severely limits her/his career opportunities. When jobs are scarce, as they are today, it behooves persons nearing completion of their studies to investigate the world-wide job situation. Of those who do take positions overseas, some will remain permanently. Others will eventually return to the United States. In either case, they will almost certainly find their overseas experiences valuable professionally and rewarding personally.

The possibility of employment is not the only reason for taking an interest in the forestry situation in other parts of the

World. Even those who remain in Idaho or in the U.S. will find that a knowledge of conditions and practices in other countries will be of value to them in their jobs here.

Only a brief introduction to the world forestry scene can be presented in an article of this length. In this article, the world will be divided into six broad climatic zones — viz., the tropics, the subtropics, the warm-temperate areas, the middle-temperature latitudes, the boreal forests, and the sub-arctic zone. A general overview of each zone will be presented, along with a closer look at one or more representative countries in that zone.

### The Tropics

This is the zone of perpetual summer. There is little or no seasonal variation in temperature, and change of seasons, is due to rainfall patterns. Where rainfall is abundant and well-distributed throughout the year, tropical rain forests are found. Elsewhere, the land may support other tropical forest types, savanna-woodland, grass-lands, or arid and semi-arid types. As representatives of the zone, we shall consider the central American countries, which contain most of the forest and non-forest types found in the tropics.

The history of forestry in Central America is being made right now. The situation is reminiscent of the U.S. in the early days of western expansion: the forests are considered a problem to be conquered, rather than a resource to be managed, and

the general trend is to cut down the forest, use the wood as fuel, and plant corn in its place.

There are several reasons for this. The first is that in many parts of these countries, poverty is common. A government can hardly justify planting trees when starvation is a very real threat. The corn is much more important in terms of immediate survival.

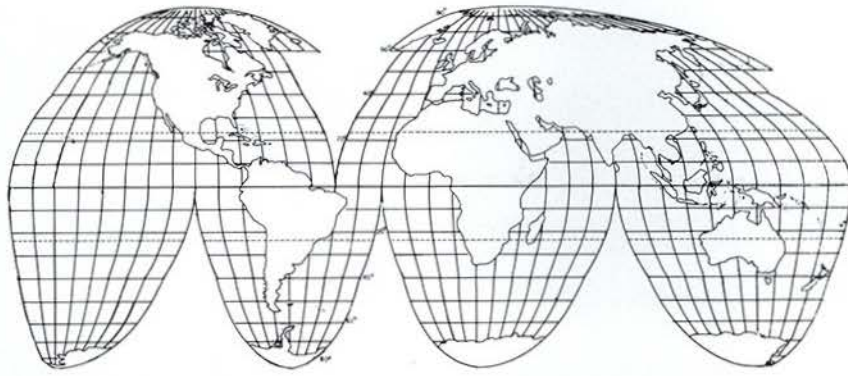
Second is the fact that until recently there were very few trained foresters to make important management decisions. There are now several universities which teach forest management; slowly, a corps of trained professionals is emerging.

Third is the problem of pure economics. Local demand is sufficient to support only a small number of forest industries. The export of raw timber is seldom feasible, and in any case not the best way to stimulate the local economy. The export of finished products manufactured by local mills and factories would be a much better solution, but to do this on a large enough scale, foreign investment will probably be necessary. Another economic problem especially in the rain forests, is the wide diversity of species, only a few of which are profitable to harvest. This means that harvesting is a matter of plucking out a tree here and there and leaving the rest. This greatly increases logging costs. Conversion to pure stands would probably present ecological problems. The best solution here may lie in the acceptance of a wider variety of species by consumers.



Fred Johnson





Finally, there is the problem of public education in land management. The people regard forest land as common, and feel free to cut down trees and burn brush at their convenience. Until the government can convince the people that they will benefit more by leaving the trees, sound forest management will be nearly impossible.

One advantage tropical foresters do have, however, is that the climate is conducive to rapid growth of trees. If the foresters of Central America can team up with the agriculturists, perhaps they can find a solution that will feed the people and still maintain the forests for future production before it is too late.

### The Subtropics

This is a transition zone between the tropical and the temperate. It has definite temperature seasons, but frost is rare or non-existent even in the coolest month. Foresters generally face the same problems as in the tropics, though in modified form. They also share the tropical advantage of year-round warmth, which permits rapid growth. The only truly sub-tropical forests in the continental U.S. are in southern Florida; but sub-tropical forests are found on all continents except Europe and Antarctica, and are of considerable importance to the world. A typical sub-tropical country is Paraguay.

Paraguay is a landlocked country, about the size of California, in the heart of South America. It is poor and undeveloped at present, but is rich in natural resources, of which its forests are one of the most valuable. Over 50 percent of the land area is forested, and it is estimated that there are about 5 million hectares of highly valuable timber. The leading commercial timber tree is quebracho (which means axe-breaker). Its wood is very hard, heavy, and durable. Its main economic importance so far, however, is that its bark is rich in tannin, important in a country where cattle outnumber the human population by almost three to one.

Development of the forestry industry in Paraguay has been hindered by poor transportation facilities, uneven population distribution, and lack of available energy. The capital and largest city, Asuncion, is on the Argentine border. Most of the population lives within 100 kilometers of that city. Even in this area, roads are poor, and in the



Kate Sullivan

vast hinterland they are practically non-existent. The only railway runs through the populated area from Asuncion to Posadas, also on the Argentine border. The rivers are a potentially rich source of hydroelectric power, but the harnessing of this power has only recently begun.

As new roads are built and electric power is made available, vast new areas of forests will become economically productive. The tardiness of forestry development in Paraguay could actually prove to be a blessing in disguise if the exploitation and management of the forests can be begun on a sound, scientific basis. Although agriculture seems to have priority in government planning, there are indications that the government realizes the importance of sound forest management to the country's future. Experiments with the introduction of pines and other exotics have begun. Where it is decided that forest land must be cleared for agriculture, portable sawmills are brought in to ensure that the timber felled is used and not wasted.

### The Warm-Temperature Zones

These areas generally have long, hot summers and short, mild winters. Though

the tropical and sub-tropical areas may ultimately hold greater potential, it is in the warm-temperate areas that commercial forestry has reached its peak at the present time. These areas have the advantage of a lengthy growing season without the drawbacks that have hindered the development of forest industries in the tropics. The southeastern states of the U.S. are in this zone. In the southern pine belt, pulpwood rotations can be as short as 25 years, saw-timber rotations as short as 35 years, and commercial thinnings as early as 15 years.

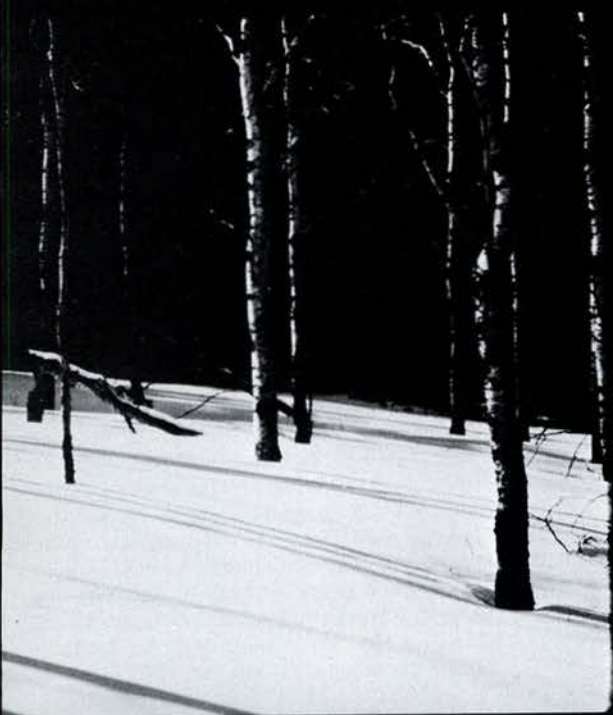
Unfortunately, many of the land areas that might otherwise support warm-temperate forests do not receive sufficient rainfall, and instead support grass, shrubs, savanna-woodland, or mere deserts. Nevertheless, warm-temperate forests exist on all inhabited continents. As an example of a country the bulk of whose forests lie in this climatic zone, we might take the Republic of South Africa, where the success story of reforestation and afforestation is probably unequalled.

The story of forestry in South Africa really begins with the landing of Jan van-

(Continued on page 37)



*Douglass, Henderson*



*David Mattson*



*Fred Johnson*

*When we have suckled at the breast of  
mother nature to the point of satiety, What  
then?*

**MKR**

## A LOOK AT HELLS CANYON — THE LEGISLATIVE BATTLE ENDS

by Greg Outcalt

*Greg Outcalt is a senior at the U. of I. College of Forestry, Wildlife and Range Sciences, majoring in forest genetics.*

Hells Canyon is the home of the free and the wild. The steep gorge of the Middle Snake River is rich with wildlife and vegetation. Its history, as one of America's last frontiers, encompasses the struggle for survival of those who enter and attempt to conquer as well as struggle for survival of the canyon itself. Many biological, geological and archaeological features are housed within the walls of this great "canyon of many hells."

The 125-mile-long, 10-foot-wide canyon, with its treacherously steep basalt-cliffed walls, constitutes the deepest canyon of the North American continent. The 7,900-foot-deep gorge is bounded by two mountain ranges, the Seven Devils to the east and the Wallawas to the west. If the Grand Teton Range were inverted and dropped into the canyon, there would be room to spare in all three dimensions — length, width and height. The Catskill Range in New York State would fall short of the top of the canyon by 1,500 feet.

Hells Canyon cradles a portion of one of America's mightiest rivers, the Snake. From its source in Yellowstone, Wyoming, the Snake runs its 1,038-mile course through some of the most varied habitats, ranging from alpine tundra to desert, before reaching its confluence with the Columbia River at Burbank, Washington. On its course through Hells Canyon it passes through diverse complexes of flora and fauna as well as archaeological features that will intrigue any voyager.

For the wildlife enthusiast, many species can be encountered; from elk, black bear, and cougar at higher elevations to otter, mink, and coyote at lower elevations.

For the avid fisherman, there are 25 different species including steelhead, chinook salmon, catfish, Dolly Varden, and white sturgeon. The Snake is the last stronghold of one of America's largest freshwater fish, the white sturgeon, which has been recorded at lengths up to 8 feet and weights up to 1,200 pounds.

The keen eyed bird watcher can view some 150 different species, ranging from prairie falcons and golden eagles to Canada geese and wild turkey.

### Floral Spectrum

The trained eye of the botanist will be able to spot many different plants as he descends into the bottoms of the canyon. At elevations above timberline (better than 9,500 feet), species of wild pink, whitlow grass and spring beauty can be found. Descending from timberline he will notice whitebark pine and subalpine fir, then Douglas-fir and

Drawings have been found that tell of the fishing and hunting migrations of the Nez Perce tribe. Artifacts and documented reports tell of the Nez Perce crossing of the Snake at Pittsburg Landing to escape capture by the U.S. Army. The cunning of the Nez Perce enabled them to use the treachery of Hells Canyon to outwit and elude a superior force under the command of General Howard in their flight for freedom from the Wallowa Valley in 1877.

The white man has found the terrain of the Middle Snake more difficult to conquer.



The Snake River above the Hells Canyon Dam

Fred Johnson

ponderosa pine. Upon reaching the canyon floor he will encounter prickly pear cactus, mountain mahogany, and blue grass.

This diversity of flora and fauna is further enhanced by the discovery of drawings and artifacts of ancestral native Americans, early trappers and settlers. Some 200 important archaeological sites have been discovered, with untold secrets still to be found that may hold the answers to the puzzles of man's arrival and migration of North America.

The first white men to encounter the fury of the river were a band of trappers and fur traders sent to find the great beaver populations that had been reported in the 1805 journals of Lewis and Clark, in 1810. John Jacob Astor, a wealthy New York merchant, sent a party of 34 men to find the mouth of the Columbia River and the reported beaver-rich country.

These novice pioneers, led by Wilson Price Hunt, set out from St. Louis and followed the Missouri River to its source.

"Only the mountain has lived long enough to listen objectively to the howl of a wolf."

Aldo Leopold

Upon finding the Snake River, they journeyed from Jackson Hole, Wyoming to the south entrance of Hells Canyon. Realizing the river was too swift and turbulent to attempt a river descent, they abandoned their canoes and, carrying what supplies they could, they ventured into the canyon on foot, not knowing what lay in store.

Within the canyon they encountered steep, unscalable walls which posed insurmountable problems. The elements forced their retreat. Some of the party drowned, others went mad, and everyone came near starvation; the survivors were obliged to bypass the "accursed river." Since then Hells Canyon and the Middle Snake have lived up to their reputation — for miners, steamboatmen, homesteaders, ranchers, and a long line of mailboat captains. The awesome Snake lies in wait for all comers.

In more recent years there has been considerable controversy over attempts to tame the powerful majesty of the Snake River in Hells Canyon. Amid Congressional battles and bureaucratic infighting, balancing the value of an undisturbed environment against kilowatt-hours has proved a difficult, lengthy, and expensive task. With private enterprise pitted against government, and the merchandized world pitted against environmentalists, the struggles have been bitter.

**Power Struggle**

For 40 years the power companies of the Pacific Northwest have busied themselves with damming the Snake River for electricity, until only the Hells Canyon stretch remains in a wild and untouched condition. Numerous efforts were made during those decades to dam this portion of the river as well; but opposition was strong, and construction was continually postponed due to legal action. This year the prospect of a new dam faded as Hells Canyon, and the river that flows through it, was designated a national recreation area to be administered by the U.S. Forest Service.

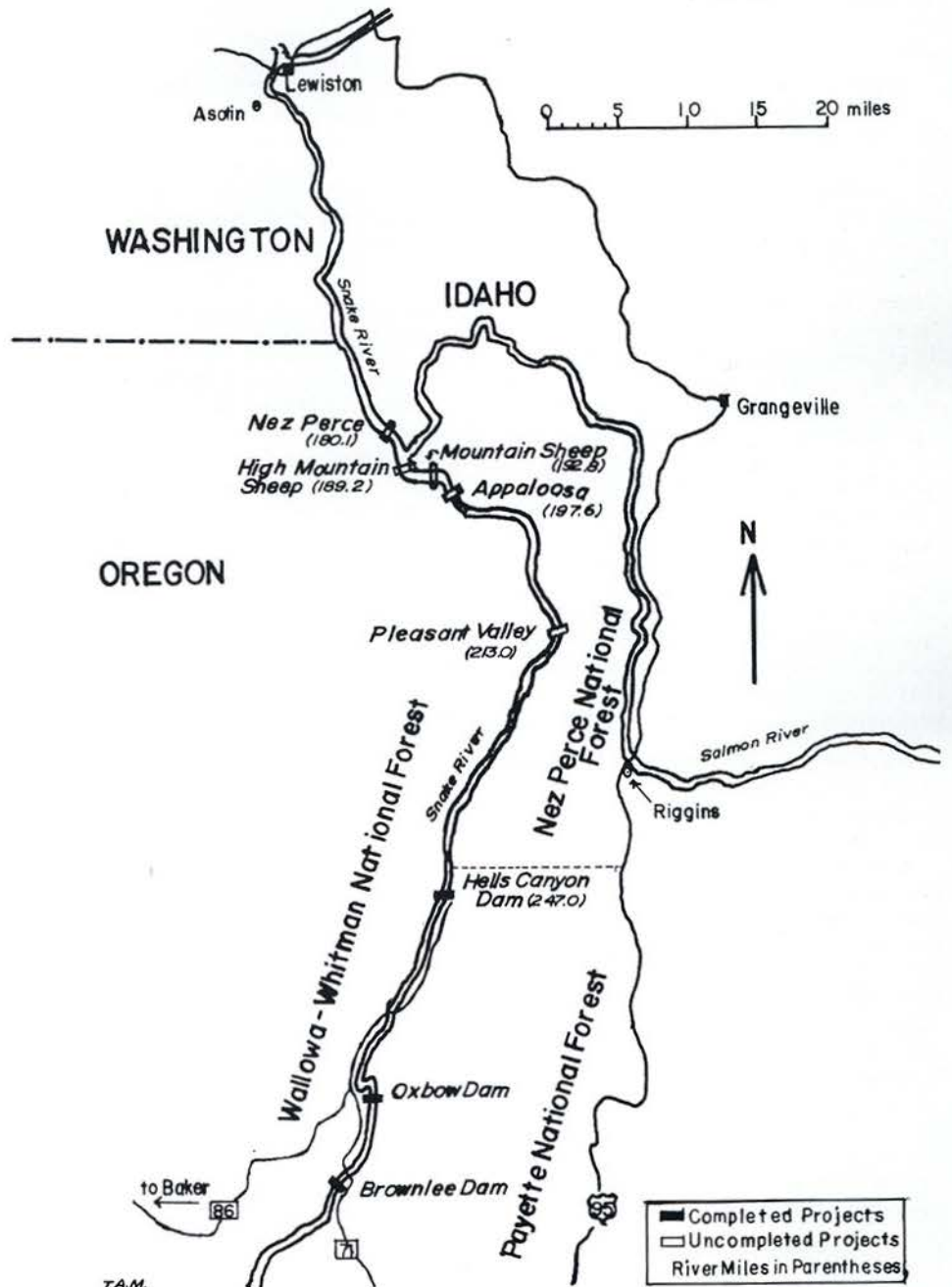
There has been numerous congressional hearings, volumes of written material, and almost endless court proceedings on every phase of development during the last 30 years. Following is a calendar of the important events that have occurred in the battle over man's activities in Hells Canyon.

**1947-** First public hearing held in the field for a federal High Hells Canyon Dam.

The Idaho Power Company (IPC) submitted to the Federal Power Commission (FPC) a license application for a single Oxbow Dam. The U.S. Army Corps of Engineers, in their report to the 85th Congress on the Columbia River Basin, proposed a High Hells Canyon Dam and

Nez Perce Dam which would provide 10 million acre-feet of storage capacity. At the same time the Federal Bureau of Reclamation and the Department of the Interior recommended High Mountain Sheep Dam, 602 feet high with initial capacity of 800,000

(Continued on page 41)



Map of Hells Canyon

cartography by Tim McGarry

## REMOTE SENSING RESEARCH IS BLOSSOMING IN IDAHO

by Robert C. Heller

*Robert Heller is a Research Professor of remote sensing at the U. of I. Before coming to the College of FWR he was Project Leader of the Pacific Southwest Experiment Station for the U.S. Forest Service. He not only has worked for the U.S. Forest Service for 30 years but he is also a commercial pilot with 8000 hours logged.*

What does "remote sensing" mean? One still cannot find the term in dictionaries, and people at cocktail parties raise their eyebrows when it's mentioned. For a subject which has such potential to affect people's lives, remote sensing is remarkably little understood by the general public.

Publicity on the Earth Resources Technology Satellite (now called LANDSAT) since mid-1972 by the National Aeronautics and Space Administration (NASA) has stimulated widespread interest because the synoptic coverage of familiar locations has provided a broad view of the earth never available before. Each LANDSAT scene covers about 13,000 square miles, showing landforms, water bodies and vegetation in almost maplike projection. However, the satellite program, exciting as it is, is only the tip of the remote sensing iceberg. Other sensing systems include radar, microwave, thermal, multispectral — and an old friend, aerial photography.

The term "remote sensing" was coined about 12 years ago to cover all means of detecting and identifying objects at some distance and without physical contact. Thus, remote sensing could conceivably include extensions of three of our five senses: sight, hearing and smell. Touch and taste imply physical contact, which eliminates them from consideration. Radio tracking of wild animals, sonar detection of objects in the water, magnetometry for mineral detection, and even water divining might fall within a broad definition of remote sensing. Natural resource investigators, however, usually restrict the term to the collection of information by cameras and electromechanical devices from airborne platforms (balloons, airplanes, helicopters, and satellites).

### University Research

What is the present status of remote sensing in Idaho? In 1975, a Remote Sensing Research Unit was established at the

University of Idaho to coordinate research and service opportunities for the University and state agencies. The coordinators are Professors William Hall and Robert Heller, of the College of Mines and College of Forestry, Wildlife, and Range Sciences, respectively, who carry on teaching and research in their own fields and direct inquiries to other specialists in the University or state agencies. Some others doing investigations in aerial photography and remote sensing at the University are Prof. Harry Caldwell, geography; Prof. Minoru Hironaka, range; Prof. Sam Scriptor, geography; Associate Prof. Joseph Ulliman, forestry; and Prof. Roscoe Watson, Plant Pathology.

Perhaps a few examples of the studies being conducted will illustrate the scope of remote sensing in Idaho.

A land use map of Idaho was recently compiled, at a scale of 1:250,000 (1" = 4 miles), for the Pacific Northwest Regional Commission. At this small scale, only the broadest land uses were classified: urban, forest, range, water, agricultural, etc. U. S. Soil Conservation Service maps were used wherever available, but updating and identification of unclassified areas was done from LANDSAT imagery (color transparencies at 1:1,000,000 scale). Prior to the availability of satellite imagery, such a task would have taken two years to finish, instead of the three months it actually took.

Irrigated lands are being developed at an unprecedented rate in southern Idaho. The Idaho Department of Water Resources needs to know the amount of acres under irrigation, the type of irrigation (sprinkler or flood), and the kinds of crops being grown on the irrigated lands. A cooperative study with this department and the College of Forestry, Wildlife and Range Sciences is being undertaken to answer these questions. LANDSAT imagery is used as the first level of information in a multi-stage sampling design which employs high-altitude color infrared (CIR) photographs (taken by NASA's U-2 aircraft), low altitude CIR 70mm sample photos (taken by University of Idaho personnel), and ground examination of the 70mm photo plots. Each stage of information provides data valuable for the next, and improves the over-all estimate of the resource being sampled. LANDSAT data and U-2 imagery are being furnished by NASA Ames Research Center at no cost to

the state. Computer-assisted mapping procedures are being developed for this study by NASA and the U.S. Geological Survey.

### Tussock Moth Study

Another study in the College involves the Douglas-fir tussock moth. Forest managers in Idaho need to know why some fir forests suffer recurring attacks by the caterpillar while other similar forests are relatively immune. It appears that certain factors of slope, aspect, fir density and openness of the tree crowns have an effect on susceptibility. If these characteristics, identifiable on CIR aerial photos, provide enough information



Mark Ambruster



Fred Johnson

to identify susceptible stands, such stands could be given preventive silvicultural treatments. A photo interpretation study is under way in the College, with the assistance of a USDA Cooperative State Research Service grant.

Plant pathologist, Dr. Ross Watson, has been successful in using 70mm CIR photography to detect early dying of potatoes verticillium wilt, and to identify leafy spurge on range lands. Leafy spurge is toxic to range animals; because its occurrence is both extensive and difficult to locate on the ground, aerial CIR offers a rapid and efficient detection tool.

Photogeologist Hall has developed a unique remote sensing technique called COSA, for *Color Oblique Stereo Airphotos*, which provides students, field geologists, or other investigators a three-dimensional view of the landscape similar to that seen from a low-flying aircraft. Color photos are taken in rapid sequence from a high-wing aircraft with a motorized 35mm camera. When these are projected in stereo, the viewer can identify geological formations, recreation sites and other natural resource features far better than from single-photo projections. The geologists are also using LANDSAT imagery, LANDSAT computer compatible tapes and small-scale aerial photos to identify lineaments and associated minerals in the Owyhee Mountains. A similar array of remote sensing data is being collected and analyzed for the Boise Front geothermal development area.

From these instances, one can see that remote sensing is well on its way in Idaho. Remote sensing has a place wherever inventory information is needed at low cost, in a short time and for inaccessible areas. Remote sensing data also aid in detection of changes over time — urban encroachment, clearcutting of timber stands, reservoir construction, and highway and power line changes.

#### New Facilities

Capabilities and facilities at the University are showing growth and improvement. Within the College of Forestry, Wildlife and Range Sciences, two additional professors were added to the staff in 1974 to teach air-photo interpretation and remote sensing. A darkroom was built and equipped for the processing and printing of color aerial photography. New equipment within the

college includes a Bausch & Lomb Zoom Transfer Scope (an instrument to transfer information from photos to maps of various scales), a Spectral Data Image Combiner (for registering and enhancing LANDSAT transparencies), and a Numonics Electronic Graphics Calculator (a rapid area calculator and digitizer.)

The College of Mines has two darkrooms, stereo projection equipment, a Zoom Transfer Scope, and many stereoscopes and light tables. Neither college has access to a precision mapping camera (9 x 9 inch format); however both are using rapid-sequence Hulcher 70mm cameras and Nikon F-2 motorized 35mm cameras.

In the College of Agriculture, Dr. Watson is using two motor-driven Hasselblad cameras for his pathology studies.

Computer-assisted processing of map and remote sensing data is also under development at the University. For example, Dr. Scriptor has produced computer programs for land use maps which overlie each other on a geographical coordinate system. Such

information systems will simplify the understanding of land patterns and related uses, for more rational land-use planning. Computer processing and "signature" development of LANDSAT spectral data are just getting under way, but will eventually permit the semi-automatic interpretation of satellite data.

Finally, several employees of state agencies in Boise (Departments of Lands, Water Resources, Agriculture, and Fish and Game) were trained at the Earth Resources Observation Systems data center at Sioux Falls, S.D. to understand and use LANDSAT data and U-2 CIR photography. Training is also being done by NASA at the Ames Research Center at Moffett Field, California. The training prepares these employees to identify land-inventory problems in their work, so that they may directly assess the usefulness of LANDSAT data. Travel and administrative costs are being paid by the Pacific Northwest Regional Commission, which authorized the Land Resource Inventory Study in Idaho, Oregon and Washington. □



"Who said it never rains in McCall?"



Fred Johnson

# WOOD OFFERS ALTERNATIVES TO THE ENERGY PINCH

by John E. Houghton and  
Leonard R. Johnson

*Professors Houghton and Johnson are assistant professors of forest products in the College of Forestry, Wildlife and Range Sciences.*

Throughout his history, man has depended upon wood as a valuable raw material. Historians have traced the movements of some early civilizations to the quest for wood. Strict regulation and taxation of colonial forest lands were in part responsible for the revolution which we are celebrating this Bicentennial Year. In recent decades, man has become even more dependent on wood and wood fibers to supply a variety of products to meet his needs.

The energy crisis has brought renewed interest in one of the earliest uses of the forest and its woody biomass: wood as an energy source. As the cost of energy from other sources such as coal, oil, and natural gas rises, it is reasonable to look to our renewable forest resource as a possible energy source. This potential for the Northwest and for the state of Idaho is significant. The key, of course, is economic feasibility. Do the benefits justify the costs?

Economic feasibility is greatly influenced by two factors: (1) the cost per BTU of gaining access to the raw material and transporting it to the energy conversion site, and (2) the efficiency of the energy conversion process. At current levels of technology, wood combustion efficiency is about 80 per cent. With further advances, this figure may approach 100 per cent. The BTU content of wood is much lower per pound than that of coal or some of the other fossil fuels. However, the cost per pound for wood is also significantly less, and the \$/BTU cost for wood is thus competitive with other fuels. Therefore, the economic feasibility of wood will be primarily dependent upon access costs.

## For the Taking

The most accessible sources of wood for energy, and thus the most economic sources, are unused mill residues and bark residues from timber processing operations. Assuming 80 per cent combustion efficiency, the annual energy potential for these sources in the Northwest is estimated to be the

equivalent of 12.4 million barrels of oil. In Idaho alone, the equivalent is over 1.75 million barrels of oil. It appears that the cost of producing energy from these sources would be below the costs of natural gas and oil, and comparable to that of coal, at present price levels of those fuels.

As the prices of fossil fuels rise, logging residues and mortality on previously logged sites may also become feasible sources of energy, on account of their relative ease of access. Research has been proposed to analyze the costs involved. It is estimated that the annual energy potential of these sources in the Northwest and Idaho could be economically providing the energy equivalent of 26 million and 2.75 million barrels of oil, respectively, on an annual basis.

These estimates represent only a small portion of the total physical potential; much more is contained in dead and dying timber now standing in our forests. The estimated energy equivalent of dead and cull material in the forests of the northwest exceeds 600 million barrels of oil. The same figure for Idaho is in excess of 65 million barrels of oil. If we assume that the future of our non-

renewable fossil fuels will be one of continued shortages and increased prices, the economic feasibility of utilizing all forest residues for energy production warrants consideration.

## Where There's Smoke

In the final analysis, wood will probably never become the primary source of energy for the Northwest or the state of Idaho. Indeed, the future of energy rests with the technological development of nuclear, solar, geothermal, and as yet unknown energy sources. However, wood can and will play an important role as a supplemental source of energy: especially in the short run, while other energy forms are being perfected. The forest products industries of the Northwest and Idaho are very well suited to further conversion to wood energy systems, either to supplement or to totally replace their present systems. In addition, other industries and municipalities close to wood supplies may find wood an economically feasible source of energy to fulfill or supplement their requirements.

*(Continued on page 46)*



Stephanie Martin



# FOCUS ON WILDERNESS SPOTLIGHTS INADEQUACIES OF USE INVENTORIES

by Jack G. Utter

*Jack Utter is a graduate assistant in the College of Forestry, Wildlife and Range Sciences who is working on a Ph.D. in wilderness management.*

With passage of the Wilderness Act in 1964 came a great deal of concern with wilderness classification. Simultaneously, foresters realized that management, particularly use management, would play a critical role in the preservation of our nation's Wilderness Areas. During the evolution period of management, "Wilderness use" has become nearly synonymous with "recreation use." Although this probably fitted past circumstances, we are now at a stage where a more comprehensive attitude toward use is required on the part of wilderness managers.

According to the Wilderness Act, all designated wilderness areas are to be devoted to six primary uses: recreational, scenic, scientific, educational, conservation, and historical. The reason for the over-emphasis on recreation has been the comparatively heavy public participation in this use. Each of the primary uses, however, will greatly increase in value as society continues to expand, causing wilderness to become more unique.

For all practical purposes, Wilderness has no substitutes and is irreproducible. These inflexible facts can cause use-management decisions (seemingly routine for some non-Wilderness areas) to become important and far-reaching determinations in which mistakes might be irreversible. Thus it is essential that foresters with Wilderness-use responsibilities weigh all primary uses in their planning.

An important problem currently is the development of use management plans for individual wilderness areas. The need for these plans is becoming more urgent as recreation and other use pressures increase, and serious professional interest is now being directed toward methods of answering this need.

## Incompatible Data

Use information upon which any management plan is based affects the quality of that plan, and ultimately the quality of the area managed. In view of the fragility of the wilderness resource, it is vital that foresters involved in Wilderness planning have comprehensive and realistic procedures by which to obtain use data.

One major area of difficulty is the inconsistency and duplication of use-inventory efforts within and between agencies. Use data are collected in a number of Wilderness



David Mattson

Areas, but the type and quality of information gathered, and the procedures employed, vary considerably. Some areas (e.g., the proposed Idaho Wilderness, which is under the jurisdiction of six national forests) have multi-agency hindrances to coordinated use inventories. Still other Wilderness Areas have no established inventory systems for obtaining use data. However, the Wilderness Act affords a basis for devising a method.

The six primary Wilderness uses were declared by law to apply to all areas within the Wilderness Preservation System. In consideration of this universal legal directive, it would be legally possible as well as managerially practical to develop a primary use inventory methodology adaptable to all Wilderness Areas. To accomplish this proposed task an integrative approach must be employed by the various disciplines associated with the primary uses. Such action could largely eliminate some of the initial stumbling blocks encountered in wilderness planning. But perhaps the most significant result would be the substantial contribution to coordinated management of our wilderness resources. □ □



Mark Armbruster

# OFFER ME CORNUS TEA

by Stephanie Martin

(Ed. Note: The author, a senior in communication at the University of Idaho, extracted this article about useful plants from an Idaho wildflower booklet she wrote for the 4-H organization.)

Land managers usually concern themselves with the plants they are regenerating, logging, habitat typing, or building roads over. These plants serve one purpose in getting the job done; yet they have additional uses which anyone can benefit from.

The plants in this article are a sample of those in Idaho that can have other uses if you are willing to forage for them. (Foraging is the collection of parts of forbs, shrubs and trees for use as food, teas, or for medicinal purposes.)

Merely reading about such things is never as good as getting out and using a wild plant for yourself. Try it the next time you are camping, hunting, or at work. Start with obvious plants like the huckleberry; later, you can progress to making your own herb teas and healing salves.

*Gaultheria humifusa* (Grah.) Rydb.

western wintergreen

Ericaceae

This evergreen shrub is found in subalpine and alpine forests and on moist slopes. Depressed, prostrate branches are usually 8-10 inches long. Leathery leaves can be  $\frac{3}{4}$  inch long, and the solitary flowers are white. The fruit is a red, berry-like capsule with a spicy taste.

Young leaves are good to chew raw on dusty hikes. Poultices were made of leaves for bruises and insect bites because of their astringent effect. The leaves contain a substance used in the preparation of aspirin, and the Indians decocted them into a tea for fevers, hemorrhage, and rheumatism. To brew wintergreen tea, put one teaspoon of dried leaves (use more if leaves are fresh) per cup of water in an earthenware pot. Pour boiling water over them and let steep for 5-10 minutes, depending on how strong you like it. Sweeten with honey and drink hot or cold.



*Ribes L.*  
currant or gooseberry

Grossulariaceae

These berry shrubs are found along streams, on open hillsides or in the woods. They can reach up to 5 feet in height, and all are deciduous with simple, alternate, exstipulate leaves. Twigs are covered with spines or stiff hairs, and the flowers can be white, yellow, red or purplish. Indians used the yellow, red, blue or black berries in their medicine bags. They cooked them in porridge for fevers and gastric troubles. The inner bark was used for ointment, and the roots were cooked for a soothing poultice.

The berries were enjoyed the most when cooked with sweet young corn or in pemmican. To make pemmican, pound a dried, lean steak into a dry powder. Add a few cupfuls of currants and then pour melted fat over all and let solidify. It may not sound too appetizing, but it sticks to your ribs.

*Rubus parviflorus* Nutt.  
thimbleberry

Rosaceae

Open woods and slopes up to 10,000 feet are where the thimbleberries grow. This 3-6 foot spreading shrub has alternate leaves 3-7 inches wide. The five-petaled flowers are white or pink and borne on hairy stems. Indians ate the tender shoots of thimbleberries in the spring as potherbs. The fruit is a fleshy, red drupelet, which was gathered by the Indians and dried into cakes for winter use. They especially liked the fresh berries with half-dried salmon eggs.

A good use for these slightly sweet berries is in pancakes and muffins. To make thimbleberry muffins, mix together  $1\frac{1}{2}$  cups wheat flour, 1 teaspoon salt, 2 teaspoons baking powder, and set aside. Combine 1 egg with 1 cup milk, 1 tablespoon liquid shortening, and 2 tablespoons molasses. Stir the wet and dry ingredients together lightly and don't worry about the lumps. Add one cup washed thimbleberries and then spoon batter into greased muffin cups until  $\frac{2}{3}$  full. Bake at 400 degrees for 20 minutes and then serve with butter and honey. About 20 muffins.



*Rubus parviflorus*

David Mattson

*Amelanchier alnifolia* Nutt.  
western serviceberry

Rosaceae

Serviceberry can be a shrub or small tree up to 14 feet in height. It grows in open woods in canyons and on hillsides from low elevations to the subalpine zone. White, racemose flowers and purplish-black pomes are borne among the oval, toothed leaves. The pomes were crushed and dried in cakes or mixed in pemmican. An eyewash was made from boiled inner bark.

Pioneers used serviceberries in jelly and pies, and like raisins in puddings. Try the pomes in bread pudding. Pour 1 quart hot milk over 1 pound of coarsely broken bread. Set aside. Blend 3 eggs, 2 cups sugar, and 2 tablespoons vanilla; add to bread and mix well. Stir in 1 cup serviceberries and pour batter into a well-buttered 9-by 13-inch baking pan. Bake at 350 degrees for 40 minutes or until firm. Makes 12 servings.

*Populus balsamifera* L. ssp. *trichocarpa* T. & G.

black cottonwood

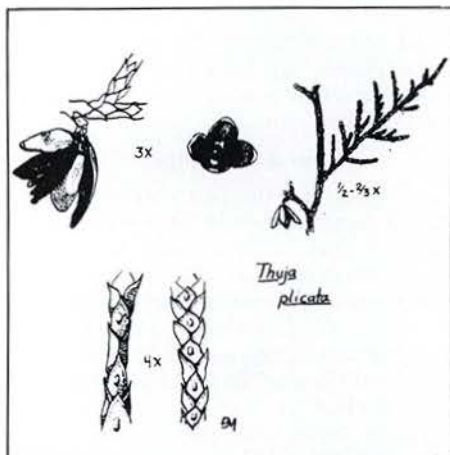
Salicaceae

Streams, lakeshores, and moist, well-drained soil support this roughbarked tree. Leathery leaves can be 5-6 inches long and were used in decoction as a tonic and for dropsy. The hairy capsules were brewed for a blood purifier in the spring. Indians favored the bark in a decoction for tuberculosis. They used the resinous buds to make a healing salve for scratches and burns. To make black cottonwood salve, melt 8 ounces of vaseline in a double boiler. Add one cup of young buds and heat them for 20 minutes on low. Let the salve cool slightly and stir in a small piece of gum benzoin as a preservative. Strain out the buds and store this salve in an amber-colored jar.

*Thuja plicata* Donn.  
western red cedar

Cupressaceae

Scale-like, opposite leaves in four rows are found on this tree, which can reach up to 70 meters in height. It grows mainly in moist



David Mattson

or swampy sites, and has highly decay-resistant wood. The reddish-brown bark is ridged, and peels off in fibrous strips. Indians boiled a decoction of fruits and leaves for coughs. In 1850, Chief Red Cloud of the Teton Dakotas treated his people with this decoction for Asiatic cholera, reportedly with good results. Cambium was stripped from the trees in the spring and eaten fresh or dried for future use. Cambium can be used for an emergency food at any time of the year by stripping it from the tree and cooking it into a mush. Flavor it with rose hips, mint leaves or wild berries.

*Taxus brevifolia* Nutt.  
western yew

Taxaceae

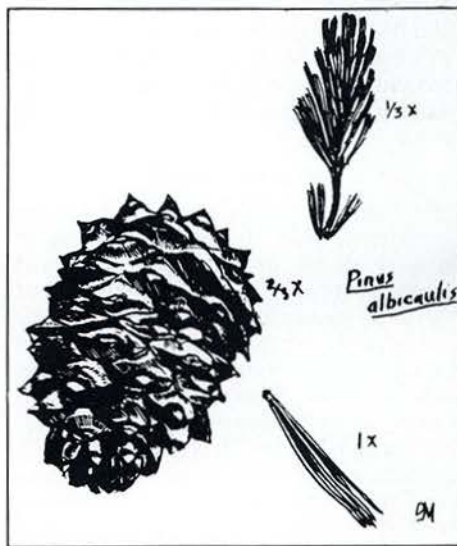
Yew trees are known for their durable wood and ornamental value. They are found in moist forests, especially along streams. Yellow-green, mucronate leaves can persist 5-6 years on these 5-25 meter trees. The bark and leaves are used as an antispasmodic. Poisonous, single seeds are surrounded by a bright-red, edible aril. This aril can be made into a ruby-colored jelly by heating 3 cups of crushed arils with 1 cup of water. Bring to boil and then squeeze out juice. Add 1/2 cup of lemon juice, and then apple juice to this equal 3 1/2 cups. Add one package of pectin to the juice and bring to a boil. Stir constantly. Add 4 cups of brown sugar and bring to a boil once more. Keep stirring. Boil hard two minutes and then pour into sterilized jars and seal. Makes approximately six cups.

*Pinus albicaulis* Engelm  
whitebark pine

Pinaceae

This five-needle pine can be found at or near timberline. Its ovoid purplish cones tend to have closed, nondeciduous scales, and the bark has whitish scales that are brown beneath. Indians used the nuts and cambium for food. Needles were brewed to extract their oils and then the steaming liquid was inhaled for bronchitis and sore throats. The inner bark and resin were used in poultices for sores and burns.

To make a poultice for burns, cook a half pound of inner bark until it simmers down into a paste. Let cool and then spread it on a large cotton cloth, fold over, and apply to the burn area. The moist cloth should be left on the burn until the sting is drawn out.



David Mattson

Information in this article was gleaned from the following:

Harrington, H.D. *Edible Native Plants of the Rocky Mountains*. University of New Mexico Press. Albuquerque N.M. 1967.

Scully, Virginia. *A Treasury of American Indian Herbs*. Crown Publishers Inc. New York 1970.

Yanovsky, Elias. *Food Plants of the North American Indians*. Misc. Pub. #237. U.S.D.A. July 1936. □ □

# CONTROVERSY ON THE SELWAY — BLACK BEARS OR ELK?

by Ed Rieckelman

*Ed Rieckelman is a junior majoring in wildlife management in the College of Forestry, Wildlife and Range Sciences.*

In northcentral Idaho, citizens, biologists, and game managers have watched a once-plentiful elk population decline significantly for more than a decade. Three years ago game biologists began capturing elk calves, putting radiolocation collars on them, and releasing them in order to investigate how many were being killed by black bears. This calf study has been done chiefly in the Selway-Bitterroot Wilderness Area.

Results for the last two years showed that between 50 and 60 percent of all calves tagged were killed, some by cougars, but most by bears. These findings naturally aroused hunters, many of whom claimed to have foreseen the problem years ago.

During the past several months, various opinions have been voiced concerning the exact cause of the elk decline. It has become apparent that more may be involved in the matter than simply bears preying on elk calves.

## Opting For Removal

On January 28, the Idaho Fish and Game Commission held its annual meeting in Boise to decide on hunting seasons and management policies for 1976. It was agreed that there were too many bears in the Selway, and there was concern over whether the Commission would decide to kill the bears or to move them elsewhere. The Commission chose to transplant the animals. Starting May 20, and continuing into 1977, 50 bears will be taken from an 80-square-mile area at the confluence of the Selway and Lochsa Rivers, and relocated in other areas.

For anti-hunters and black bear lovers this was a victory, but others felt differently. John Beecham, a senior research biologist working on the problem, predicts that the bear population will increase if bears are removed. It is the older, more experienced bears that are doing most of the killing; and Beecham cites a Canadian study which found that when older males are removed from an area, younger bears gain freedom to remain or move into that area. Sam McNeill of Lewiston, an Idaho Fish and Game biologist, expresses the same concerns: "If you remove the old bears . . . survival of young bears may increase

dramatically, along with immigration by other bears."

And not only might the plan backfire; most of the national forests in Idaho, as well as the surrounding states, have refused to take the bears.

## Open Season Urged

Some feel that the best remedy for the bear-elk situation would be a more open hunting season on bears, with no tag requirements. When the Fish and Game Commission came out with no such decision, it drew sharp criticism. Dave Sage of Stites, a respected man among hunters and president of the local Citizens' Band Radio Operators Club, says that the Commission should "let the people take care of them." He puts the average hunter kill in the area at fifteen bears a year before the days of individual tag requirements. Sage opposes winter hunting, however, "because during hibernation it's cruel. With a good set of hounds a sleeping bear is easy to find . . . and I know people who have taken unfair advantage of that fact." Sage has raised nine bear cubs, and claims to be an expert on the animals. The cubs were those left motherless by his own gun.

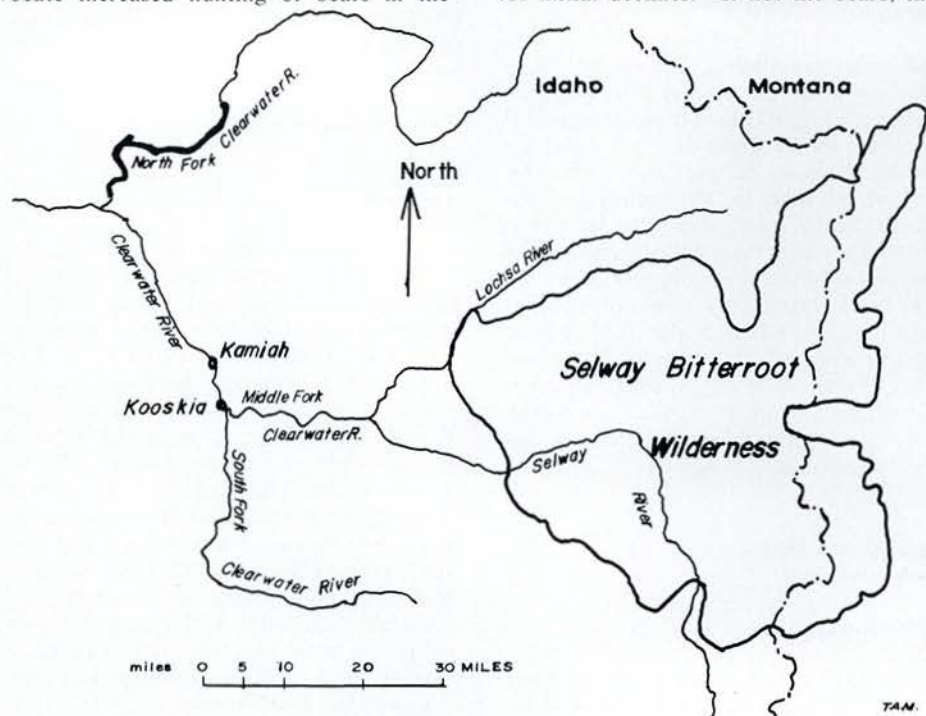
Hunters are not the only ones who advocate increased hunting of bears in the

area. Maurice Hornocker, professor of wildlife management at the University of Idaho and leader of the Idaho Cooperative Wildlife Research Unit, feels that bear hunting should indeed be increased. He states, "We do it with over-populated prey species—why not with predators?"

On the other hand, Sam McNeill feels that heavier hunting wouldn't have much effect on the bear population. James Peek, also a member of the wildlife staff at the University of Idaho, agrees with McNeill: "It will be difficult to achieve a very high harvest of bears in that area, because it's so inaccessible. If a reduction in bear predation on elk calves is desirable, then it should be done during or immediately before calving season. However, snow drifts will hinder access to the area at that time."

## Are Bears the Cause?

Despite the bear removal decision, the bears themselves are generally not considered to be the fundamental cause of the elk decline; at least, this is the consensus of biologists and management officials who have studied the situation. McNeill says, "Predators may become significant once the prey population is down, or in unusual circumstances . . . Rarely are they responsible for initial declines." If not the bears, then



Selway-Bitterroot Wilderness Area

TAM.  
cartography by Tim McGarry



Lynn Burton



Richard J. Naskali

what is the cause? In general, the root of the problem is thought to be *habitat loss*. As McNeill explains, the Selway-Bitterroot Wilderness Area and surrounding regions experienced massive fires, once in 1910 and again in 1934. Not long after both fires, elk herds were booming, because the fires had allowed fresh, nutritious plant growth to resprout, thereby providing excellent feeding grounds for elk.

Since 1934, there have been no more big fires in the area, and the larger shrubs such as serviceberry and mountain maple have grown out of reach of the elk. This process is being helped by the elk themselves, which, by trampling and browsing upon the few herbaceous plants that are left, allow the less

palatable, woody growth to move in more rapidly.

As the vegetation now stands, it is perfect for the bears and not nearly adequate to support large elk herds. Experienced black bears are able to use the taller brush for cover while preying on the elk calves.

In support of the idea that habitat is the underlying problem, Hornocker points out that in the St. Joe and Coeur D'Alene National Forests, calf survival is much higher, despite large bear populations. He attributes this to favorable habitat conditions.

Ray DeJean of Asotin, Washington, an avid hunter and native of the Northwest, dis-

agrees with the biologists. He feels that habitat loss is not the cause, and that predators are responsible for the decline in elk. DeJean says that the original cause of the increase in elk numbers was that hunters kept predators down during the 1930's. "During the Depression," says DeJean, "rather than work for one dollar a day, people would trap and hunt predators for their hides, and make much better money selling the hides and collecting bounties."

DeJean says that modern restrictions on hunting have allowed predator numbers to get too high. However, Walt Brown of Lewiston, Region Two Supervisor for the Fish and Game Department, disagrees. "The bears have been around for a long, long time, and we've never had any trouble with them before. You can't pin predators as the sole problem"

#### Habitat Manipulation

Without a doubt, black bear predation is taking its toll on the Selway elk; but if this predation is only a symptom of the larger problem of habitat loss, then how are the elk to be saved? "Over-all, there will be a decline in elk unless habitat conditions change," says Jim Peek, who suggests that the elk calving area could be burned to alter both the vegetation and the bear-calf relationship. This burning might have the same effect as a natural fire, allowing fresh browse material to again take hold for the elk to feed on.

Hornocker agrees that burning would be the best way to reestablish a good-sized elk population, but warns that it won't be easy to sell some people on the idea. For instance, the forest industry would cringe at the thought of burning an area that in a few decades might be ready for timber harvest. Also, there are those who feel that the few wilderness areas we have left should be left alone, to proceed along a natural course.

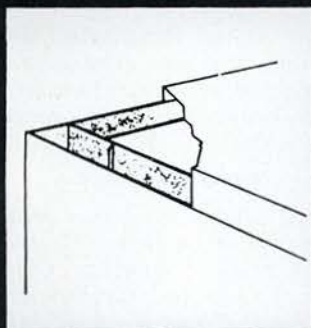
Wildlife biologists in northcentral Idaho are charged with maintaining the elk herds. Elk hunting is a major recreational activity, with high social and economic values to people in the area. It is a matter of priorities. If the elk are to be saved, then the bears will have to move, along with the other animals that thrive at the present successional stage. Habitat management is a growing concept, and it won't be without its controversies. Managing the habitat for one species often means managing against another. □ □

You can lose  
your valuable  
biological and  
geological  
collections  
through  
improper storage!

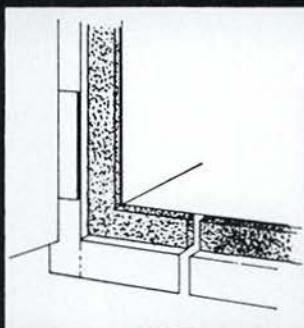
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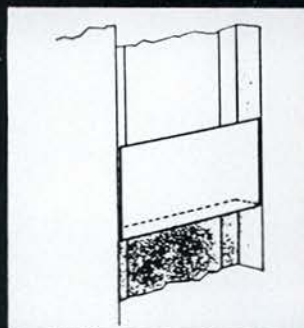
*Lane*  
**SCIENCE CABINETS**



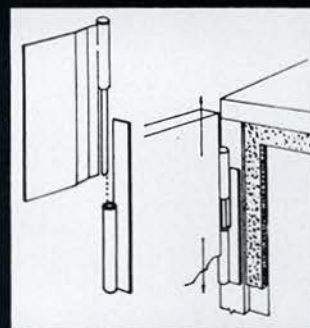
DOUBLE WALL CONSTRUCTION



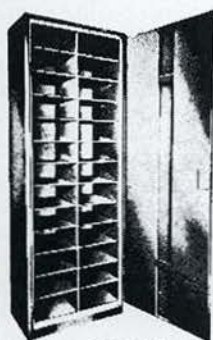
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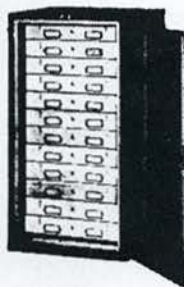
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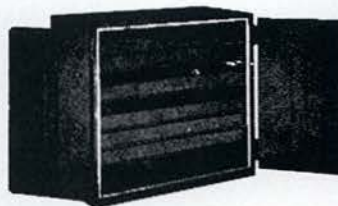
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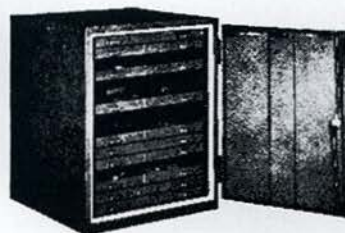
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Riebeeck with the first shipload of permanent settlers at what is now Cape Town in 1652, although small amounts of indigenous timber had been utilized by Portuguese navigators prior to that. Unlike the first settlers in North America, those in South Africa did not find a land of dense woods and navigable rivers. Instead, they found a semi-arid country with a narrow, well-watered, forested coastal belt. The early settlers in South Africa were just as shortsighted as their American counterparts. During the timber boom in the once-magnificent Outeniqua forests in the late 1700's, over 90 percent of all timber felled was left to rot in the forest. Only the choicest grades and sizes were removed, and forest fires were often lit for no other purpose than smoking out game.

As early as 1778, Governor Joachim van Plettenberg, alarmed at this shockingly wasteful exploitation, appointed one Johann Meeding to stewardship over the forests. For a time, this conscientious, hardworking officer was able to restore order, but it wasn't long, before new pressures began to bear. Three waves of human migration and settlement took terrific toll of the remaining timberlands. While the Dutch settlers were trekking eastward and northward from Cape Town, British settlers were occupying Natal Island, black Africans were pushing southward through the Transvaal and populating much of the eastern part of the country. The Europeans exploited the large timbers for dwellings, furniture, wagons, and in later years, telegraph poles and railway sleepers; the blacks concentrated on saplings and poles for hut-building, etc. Both groups consumed considerable quantities of fuelwood, and timberlands were also cleared for agriculture.

By the time the first professionally trained forester, the Count de Vasselot de Regne, was appointed Superintendent of the Cape forests in 1880, the country's forests had been exploited beyond recovery. The count placed what was left of them under sound scientific management; but, if the country were to supply even a significant portion of its own needs, an alternative to the indigenous timbers was necessary. For one thing, South Africa's native timber species, though generally of very high quality, are for the most part very slow-growing. Even as far back as van Riebeeck, it had been recognized that the introduction of faster-growing species would be desirable. It was not until the latter part of the 19th Century, however, that experimental planting or exotic species began in earnest.

One of the most successful exotics was *Pinus radiata*, or Monterey pine, from the California coast. Today, it is the most important commercial species in the Cape Province. It is not grown commercially elsewhere in the country, however. *Pinus patula*,

from Mexico, and *P. elliottii*, from southeastern U.S., are the leading exotic species. Other exotics which have proven well-adapted to South African conditions are *Pinus taeda* and *Populus deltoides* from the U.S., *Acacia melanoxylon*, *Eucalyptus grandis*, and *E. diversicolor* from Australia, and *Pinus pinaster* from the Mediterranean.

By World War I, about 40,000 hectares of exotic plantations had been established in South Africa. During the wartime timber shortage, it was decided to fell 75 hectares of older *P. radiata* in the western Cape. The high yield (20,862 cubic metres) and value (about \$260,000) of this harvest stimulated more extensive planting of exotics. About the same time, a government decision to employ white labourers in the Department of Forestry, as a poor-white relief measure, gave additional impetus to the planting of exotics. By 1938, state-owned plantations alone amounted to 137,393 hectares.

World War II did for private planting what World War I had done for state planting. Planting on private lands has proceeded at such a rapid pace in the last 30 years that today, of the slightly over one million hectares of exotic plantations in South Africa, almost 700,000 are on private land. The annual yield of forest products from these lands is about 10 million cubic metres, or about 90 percent of the country's total requirements. By contrast, less than 7,000 cubic metres are harvested annually from the remnants of the indigenous forests. South Africa's forest lands save the country about \$460 million in foreign exchange an-

nually and provide employment for nearly 100,000 South Africans.

Employment opportunities for professional foresters are perhaps more numerous in South Africa than anywhere else. The Department of Forestry is seriously understaffed professionally; the lone forestry school, at Stellenbosch University, only grants a dozen or so degrees per year. This number would not be sufficient to supply the Department's needs even if all Stellenbosch graduates went to work for the Government, which they don't. Foreign professionals are generally recruited on a three-year contract basis, with renewals available indefinitely. Those who elect to acquire South African citizenship can obtain a permanent appointment. Persons who are interested should write The Personnel Officer, South African Department of Forestry, Oranje-Nassau Bldg., Schoeman St., Pretoria, Republic of South Africa; or see the author for further details.

### The Middle Temperate Latitudes

This is the familiar four-season climate, with hot summers, cold winters, and mild autumns and springs. Idaho lies in this zone, as do large portions of North America, Europe, and Asia. A few relatively small areas in the Southern Hemisphere also lie in this zone. Although tree growth is slower than in warmer climates, middle-temperate forests are of great importance. For one thing, most of the industrialized countries, and thus most of the wood-using industries of the world, are in this zone. Long-distance



David Mattson

transport of timber is usually not feasible; and even if it is, it is wasteful of energy and elevates the prices which must be charged for the finished product

In the advanced industrial countries, the keynote of forestry is scientific management and tree improvement. To obtain maximum productivity from every hectare of forest land. Being a Communist country, Czechoslovakia approaches forest management and timber production in a manner rather different to that generally practiced in Western countries. Practically all forests and wood-using industries are owned by the state; the government has a much freer hand in planning and carrying out forest policy, because profit, supply, and demand are of secondary importance. The state does not have to compete with private industry for the services of the most proficient personnel, and since the government does not have to worry about employees quitting, it can move them about the country and use them where their services are most needed. Vast areas of forest land lie in the Communist countries, and a survey of world forestry would be incomplete without a consideration of the methods employed and results achieved under that system.

When the Communists came to power in 1945, only 16 percent of the country's forests belonged to the state, the rest to private individuals and groups, and management decision frequently reflected immediate needs of the owners. Nationalization of these lands has enabled their management to be co-

ordinated toward a national goal. Today, over 90 percent of forest land is included in the Czechoslovak State Forests, most of the remainder belongs to agricultural co-operatives, and private ownership is negligible.

State forests are divided into two broad categories — viz., economic forests, managed primarily for the production of timber; and special-purpose forests, managed primarily for recreation, wildlife, or some other amenity. About 85 percent of these lands fall into the former category. These are divided into basic management units called forest enterprises, which are sub-divided into districts and sectors. Forest inventories are taken at 10-year intervals.

Afforestation has been a major activity of the government. About 100,000 hectares have been afforested in the past 30 years; this represents an increase of about 10 percent in the total forest area. At present, forests cover just over one-third of the total land area. Czechoslovakia now supplies all its own timber needs and should be able to do so for the foreseeable future. About two-thirds of the timber is coniferous, mostly spruce. Beech is the leading hardwood. An increasingly high percentage of the total harvest consists of pulpwood. Production of fibreboard, chipboard, etc., is also increasing rapidly. A high degree of mechanisation of harvesting and processing of forest products has been achieved.

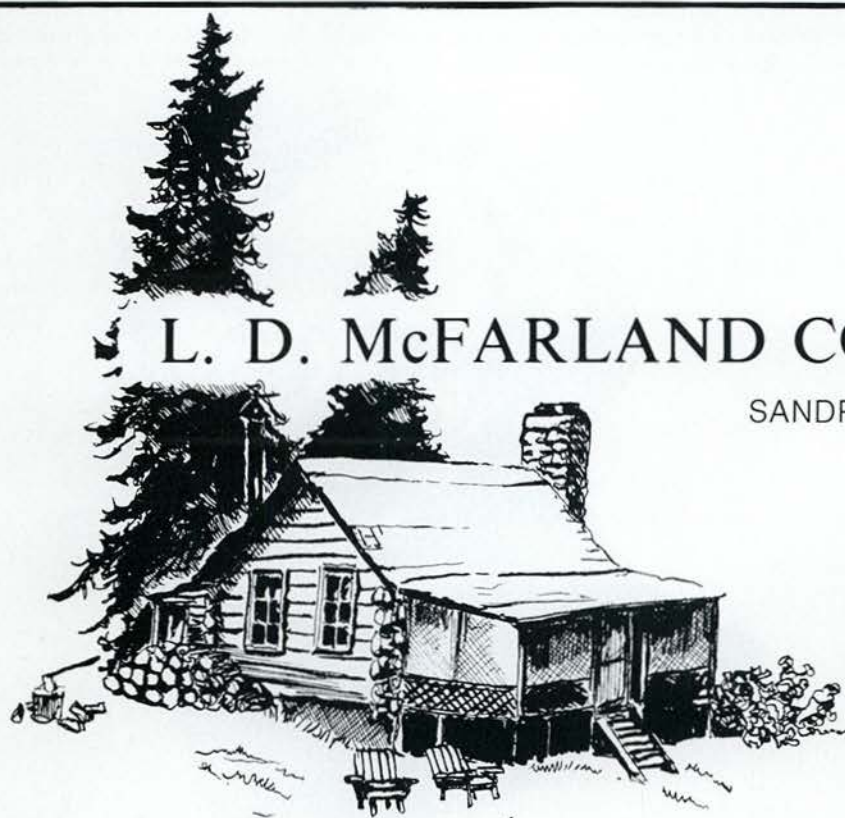
Forestry education and research receive

priority attention in Czechoslovakia. There are two professional forestry faculties and 44 technical and vocational schools which train forestry personnel. Research had a long history even before the advent of Communism, with some plots dating back to the 19th Century. The central institute is in Zbraslav; and research stations are scattered throughout the country. IUFRO, UNESCO, and other international organizations also have research centres in Czechoslovakia.

Since its territory is the watershed of several of the principal rivers of Europe, Czechoslovakia has a special international obligation to practice sound watershed management, and this is given special importance in national forest policy. Recreation also sets priority consideration in many areas, especially near urban centres; over 6,000 hectares have been set aside for this purpose. Czechs and Slovaks have always been great hunting enthusiasts, and game management plays an important role in forest policy.

### The Boreal Forests

This is the broad band of coniferous forests that extends across Europe, Asia, and North America at the higher latitudes. It is characterized by long, cold winters and short, warm summers. This zone is generally sparsely populated and has few industrial centres. Large areas of virtually untouched forest land await scientific harvest and



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management. The boreal forests have the disadvantage of slow growth, due to the short growing season. With planned exploitation and regeneration, however, they may supply a significant portion of the World's future timber needs. The bulk of the boreal forests lie in two countries, Canada and the Soviet Union. The great Russian *taiga* would indeed be an interesting topic of discussion, but for now, we shall concentrate on our neighbour to the north.

Since most of us have visited Canada at one time or another, it really needs little introduction. Though slightly larger in area than the U.S., it has only about one-tenth as many people, most of whom live in a narrow strip along the U.S. border. (In fact, the majority of Canadians live closer to the border than we in Moscow do.) The boreal forests, for the most part, lie north of this populated area. Logging in the Canadian northwoods began well over a century ago, and huge volumes were exported to the U.S. and U.K. As the more accessible sites were worked out, timber industrialists moved northward and westward, cutting the worthwhile timber, floating it down river to suitable mill sites, and sawing it into lumber. Still, the devastation only marginally affected the great boreal forests of Canada.

Scientific forestry and environmental consciousness developed early in Canada. As early as 1900, the rapidly increasing volume of pulpwood being exported to the U.S. led to embargoes on the export of pulpwood from Crown lands. Not long after that, government authorities began to require sustained-yield management as a condition for leasing of Crown forest lands. This far-sightedness has paid off. Today, pulp and paper is the nation's leading industry. Canada provides nearly 50 percent of the world's newsprint needs, and is second only to the U.S. in total pulp production.

The first professional forestry faculty was established at the University of Toronto in 1907. Today, there are six such facilities, five offering instruction in English and one in French. Ten schools offer technical training. *The Forestry Chronicle*, a high-quality publication similar to the *Journal of Forestry*, is produced by the Canadian Institute of Forestry, the Canadian counterpart of the Society of American Foresters. Canadian employers often advertise in both journals. Persons interested in working in Canada might also contact the Canadian Forestry Service, Department of the Environment, Ottawa, Ontario; or any of the provincial forest services.

### Work Abroad

For those who are interested in employment abroad, there are five main sources of such employment: the U.S. government, U.S. companies with operations abroad, international organizations, foreign governments, and foreign companies.

Most foresters stationed abroad by the U.S. government are members of the Peace Corps, but other Federal agencies send foresters abroad at times. The Peace Corps has representatives in most sizable U.S. cities. Information about other Federal opportunities at home and abroad can be obtained from the Civil Service Commission. Their tollfree number in Idaho is 800-632-5916.

Many U.S. companies which employ foresters have operations or subsidiaries abroad. Often, in addition to basic salaries, these companies provide generous allowances and benefits as inducements for employees to accept positions abroad. When writing to a company, it would be well to state in your letter that you would be interested in a position abroad; unless you know that company has no operations or subsidiaries abroad. If you have already lived abroad, it would be advisable to include this information in your letter also.

Various international organizations employ foresters. Comprehensive lists of international organizations, with information about the activities of each and their addresses, are available in *The Statesman's Year Book* and *The International Year Book and Statesman's Who's Who*, both of which are available in the University of Idaho library. Some of the leading international organizations which employ foresters are the Food and Agriculture Organization of the United Nations (FAO), the U.N. Educational, Scientific, and Cultural Organization (UNESCO), the Commonwealth Forestry Bureau, and the International Union of Forestry Research Organizations (IUFRO).

The governments of most countries give preference to their own citizens when filling civil service positions. Many, however, will hire foreigners if sufficient numbers of qualified citizens of their own country are not available. The method used, successfully, by the author to obtain a foreign civil service position was to visit the consulate-general in person. Many countries have consulates in major West Coast cities, and nearly all have representatives in Washington. Another approach would be to write directly to the department of ministry concerned with forestry in the country or countries in which you are interested. This information is also presented in the two yearbooks mentioned above. One word of caution: if an oath or affirmation of allegiance to another country would be required for the job you seek, check with the U.S. Department of State first to be sure you will not be jeopardizing your U.S. citizenship. Finally, there are foreign companies. A good source of foreign company names and addresses are foreign forestry journals, most of which are available in the libraries of this and other universities which have forestry schools. □

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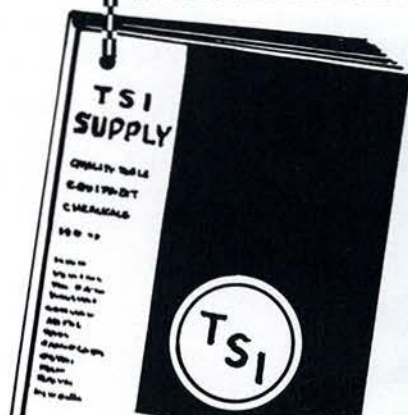


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from page 16

Basically, I believe that the responsibility for bringing about such a situation belongs to the industry which needs his timber; and also to the society that needs his wood products and the perpetuation of his forests.

There are a number of landowner and tree farm assistance programs throughout the United States. In 1970, my company, Weyerhaeuser, took a long look at the situation and began to formulate plans for what has become our "Tree Farm Family Program," designed to bring the small landowner and the company together into a "Partnership for Profit."

**Mutual Benefit**

Since its inception, the program has been refined to the following key points:

First, the landowner is allowed full profit from the forestry end of his operation. This means that top dollar is paid, in recognition of the fact that the landowner is providing not only his timber resource, but is also making his land resource available to help the needs of industry and society.

Secondly, every management and harvest prescription in the Tree Farm Family Program is drafted only after close consultation with, and by consent of, the cooperating landowner. Every phase of the operation is carefully explained, and the landowner

remains the final judge of the program as it affects his lands.

Thirdly, harvesting guidelines are designed to promote a clean, careful logging job. In the months since I assumed the duties of Tree Farm Family manager in the Willamette Region, I have been impressed by the number of landowners who fear that loggers will high-grade their stands and cause irreparable damage to the soil and the remaining growth. It takes an educational program to overcome these fears which are not entirely unfounded.

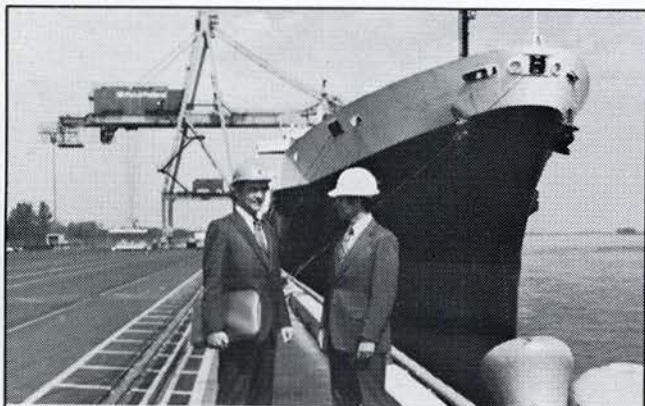
As in most business arrangements, there is something for everybody in such programs. The landowner receives the profits from his forestry, and a reasonably reliable market for his timber. The company gets a reliable source of supply, and the profits of manufacture.

Programs of industry assistance such as our Tree Farm Family Program point the way to upgrading the productivity of our forest lands. In addition, state and federal assistance should be forthcoming in some form. The land is our basic resource; and we have weighty responsibilities in taking care of the forest environment, increasing forest yield and financial return, and providing for society's growing wood fiber needs. □ □

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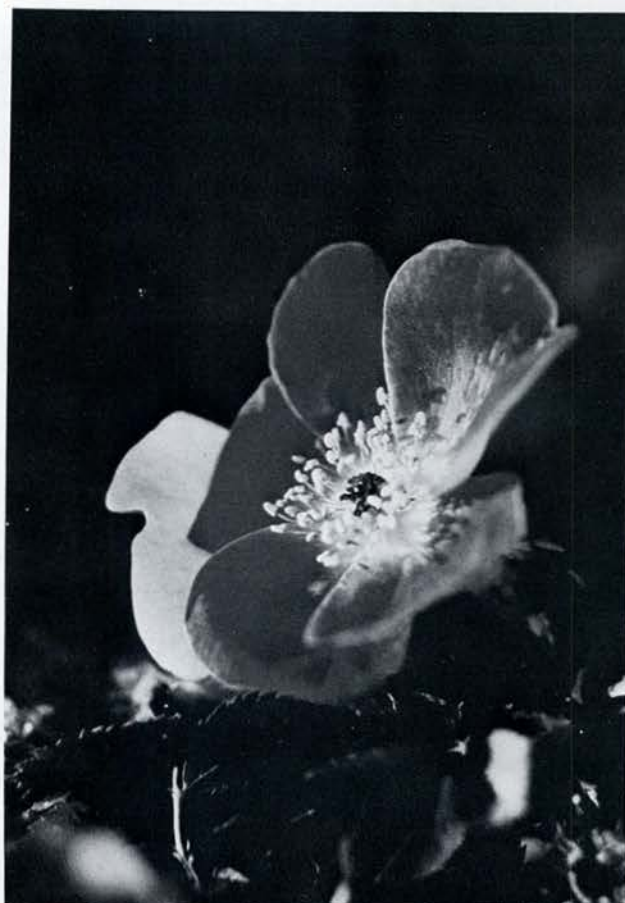
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John Nycum

from page 27

kilowatt hours per year. The IPC filed applications for a 3-dam project (Brownlee, Oxbow, and Low Hells Canyon Dams).

**1950-** While the 3-dam project was still under consideration, IPC piled a 5-dam project application.

**1952-** The 3-dam IPC project of 1 million acre-feet was challenged by a federal 3.9 million acre-foot project. The Secretary of the Interior was opposed to the federal plan.

**1953-** The FPC issued a license to IPC for the 3-dam project.

**1954-** The Pacific Northwest Power Company (PNPC) filed the first license application for a 2-dam project; the Low Mountain Sheep Dam just above the confluence of the Imnaha River, and the Pleasant Valley Dam 20 miles upstream. FPC granted approval and later withdrew it. The PNPC applied for the High Mountain Sheep Dam 1/2 mile above the confluence of the Salmon River, a 670-foot-high dam to create a 58-mile reservoir in the Imnaha gorge.

**1955-** Construction of IPC's Brownlee Dam began. At the same time the National Hells Canyon Association (NHCA) appealed to the U.S. Court of Appeals to halt construction of the IPC dams. The request was denied.

**1957-** The U.S. Supreme Court denied NHCA petition to review the U.S. Court of Appeals decision. The IPC requested and received a multimillion dollar "tax-write-off privilege" on its Hells Canyon project, but soon thereafter surrendered the privilege for fear of "beclouding the issues."

**1959-** Brownlee Dam completed.

**1960-** Washington Water Supply System applied for a Nez Perce Dam one mile below the Salmon River confluence. Opponents said this dam would kill two rivers at once and would be "the most destructive dam ever built."

**1961-** Oxbow Dam completed.

**1962-** The FPC granted a license to PNPC to build the High Mountain Sheep Dam. The Interior Department intervened, arguing that a federal dam would serve the public best.

**1963-1967-** The private-versus-federal High Mountain Sheep Dam issue went to the U.S. Court of Appeals, which upheld the FPC decision. It finally reached the U.S. Supreme Court where Justice Wm. O. Douglas favored the idea of considering no dam at all. The Idaho Alpine Club, the Sierra Club and the Western Outdoors Club filed petitions and encouraged letters to congressmen, and the Hells Canyon Preservation Council compiled evidence against the dams' construction from fish and wildlife biologists, recreation experts, ecologists, archaeologists and a nuclear scientist (on other sources of energy.)

**1968-** The Low Hells Canyon Dam was completed. After feeling considerable opposition, the PNPC and Washington Water Power Co. filed jointly to build and share the High Mountain Sheep Dam, Pleasant Valley Dam or the Nez Perce Dam, or even a newcomer, the Appaloosa Dam, 12 miles upriver from High Mountain Sheep. At the same time the Wild and Scenic River system Act proposed protection of 101 miles of Hells Canyon from Hells Canyon Dam to Asotin, Washington.

**1971-** FPC Examiner William C. Levy gave a tentative green light for the Pleasant Valley and Low Mountain Sheep Dams, but also ordered a moratorium on dam construction until September 1975, pending investigation of protection under the National Wild and Scenic River Systems Act of 1968.

**1973-** A proposal was made to protect Hells Canyon from further hydroelectric development by designating it a national recreation area.

**1975-** On Dec. 31 the Hells Canyon National Recreation Area (NRA) was approved by both house of Congress and signed by the President.

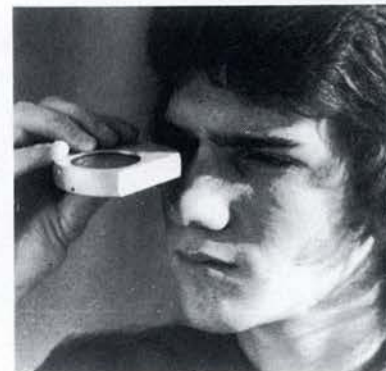
**1976-** The Hells Canyon NRA is being supervised by the U.S. Department of Agriculture's Forest Service with emphasis on recreational management planning. Headquarters is at the Wallowa-Whitman Ranger District Office in Baker, Oregon.

Now that the battles are over and the dust is settling, what does all this mean to the Public? The 662,000 acre Hells Canyon National Recreation Area is open to the public solely for recreational use. There are no more threats of dams being constructed within the boundaries of the NRA, which runs from Hells Canyon Dam to Asotin, Washington. Of this 662,000 acres, 193,840 have been designated the Hells Canyon Wilderness Area, 110,000 acres in Oregon and 83,840 acres in Idaho. Within the boundaries of this wilderness no motorized equipment of any kind is permitted.

Also covered is the Middle Snake River, which is protected by the Wild and Scenic Rivers Act of 1973. From river mile (RM) 247.0 to 214.5 the river is classified as Wild; from RM 214.5 to 180.1 the river has been designated as Scenic and from 180.1 to Asotin the river has been classified as a Wild and Scenic River Act Study Area. The provisions of this act also protect the Hells Canyon area of the Snake from any further development by dam or irrigation construction. □ □

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from page 21

the feasibility of employing Greater sandhill cranes as foster-parents to hatch the whooper eggs, rear the chicks to flight stage, take them south in family groups to winter in New Mexico and return the young whoopers to the vicinity of their natal marsh the following spring. The success of the venture depended upon the maintenance of family integrity, with the young whoopers being reared as progeny by the foster parents.

The ultimate objective is to establish an entirely new wild population of whooping cranes which will nest in southeastern Idaho and winter in New Mexico. This would provide valuable insurance against the extinction of wild whoopers - there were only 49 of them left on the continent in the winter of 1974-75.

#### No Place Like Home

These are some of the initial assumptions which were made in planning the first year of the foster-parent whooping crane project:

(1) That the whooper chicks would become 'imprinted' and rely on the guidance of their foster parents for food and protection;

(2) That the foster-parent sandhill cranes would accept the adopted whooper chicks as their progeny and raise them accordingly;

(3) That this relationship would continue through most of the critical first year of life.

Adoption, of course, would not be a new occurrence in the animal world. Numerous instances of successful cross-species adoptions by foster-parent birds and mammals can be cited.

The adoption procedure was completely successful. Of the 14 whooping crane eggs brought to Grays Lake on May 29, 9 hatched, 3 were infertile and 2 were destroyed by nest predators. Six of the 9 whooper chicks survived to the flight stage. In comparison, of the 14 eggs left in the whooper nests at Wood Buffalo National Park, 11 hatched and 8 survived to successfully complete their 2,500 mile fall flight to Aransas National Wildlife Refuge on the Texas coast. The combined total of 14 young on the wing exceeded that of any year since records have been kept on wild whooping cranes!

The 6 young whoopers at Grays Lake, carefully led by their devoted foster-parents, grew and thrived on a rich assortment of riparian foods (juicy invertebrates, grasshoppers, frogs, mice, bulbs.) On the wing at about 3 months of age, they quickly adapted to barley in the fields at Grays Lake National Wildlife Refuge.

#### On the Move

In October, the foster-parent families departed south on the usual sandhill crane migration path which takes them first to a major crane rendezvous in the San Luis

Valley near the headwaters of the Rio Grande River in southwestern Colorado. Here, 10 to 15 thousand sandhill cranes stop each fall to feed in harvested barley fields and 'rest up' for the final leg of their southbound migration. Five of the 6 foster-parent families made this stage of the journey successfully.

By December, 4 of the whooper families arrived at their winter destinations along the middle Rio Grande River south of Albuquerque. Two of the families made Bosque del Apache National Wildlife Refuge their winter headquarters. They immediately adopted consistent life styles, feeding on the abundant corn and barley grown for migratory birds on the refuge and roosting in communal roosts with the several

thousands sandhill cranes which winter there. A third whooper family preferred the protection of a state waterfowl sanctuary north of Bosque Refuge, while a fourth family settled on a private ranch elsewhere in the valley.

The two missing whooper families were never located for certain during the winter months, although there were scattered unsubstantiated reports from some likely and unlikely locales within the possible wintering range. The fate of those two whoopers may not be known until spring when the gray foster-parents should return to their breeding marsh, perhaps with their white youngsters in tow.



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By mid-February, spurred by an open winter and running out of primary food on the New Mexico wintering areas, several thousand sandhills accompanied by whoopers began their return migration northbound. By early March all 4 of the whooper families which had wintered in New Mexico were in the San Luis Valley of Colorado, feeding in the same fields they had occupied the previous fall. In all probability, the cranes will stay in the San Luis Valley for a month to six weeks before continuing north.

**Coming of Age**

The next question? Following the established behavior pattern of sandhills, when will the foster-parents disown their adopted young as the adults move into their new breeding cycle? Will they keep the youngsters until the families arrive intact on breeding territories at Grays Lake? Or will they sever the family bonds somewhere along the route? Drewien has witnessed both occurrences with sandhill families in the past. We are hoping that the foster-parent families will return intact and that the whooper yearlings will then spend the summer with non-breeding sandhills in the Grays Lake area.

Breeding age for whoopers is probably 5 to 7 years. It will be years before we can hope for any reproduction at Grays Lake, and there is the possibility that they may

never successfully breed there. However, even if the ultimate objective of establishing a new western population of whooping cranes is never attained, the follow-up research by Drewien will yield valuable information on the adaptive behavior of transplanted whoopers. This will be extremely valuable in any future restoration efforts which may be attempted by the U.S. Fish and Wildlife Service and the Canadian Wildlife Service.

In 1976 we will be proceeding into the second year of the whooper transplant program, and receiving eggs once again from Wood Buffalo National Park via the Canadian Wildlife Service. Drewien will be employing some of the same marked sandhills as foster-parents, and some new ones.

Why should any of us be concerned about endangered wildlife? In the natural order of things, the inexorable march of evolution creates new species and others disappear. In fact, we have watched several species go extinct within our own lifetimes. Their demise was not due to evolutionary processes, however, but were directly traceable to the adverse activities of man. In the case of the whooper, as with other endangered wildlife, we are trying to make amends for the man-caused environmental changes which have placed these unique creatures on the brink of extinction. □ □



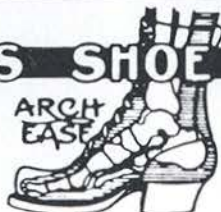
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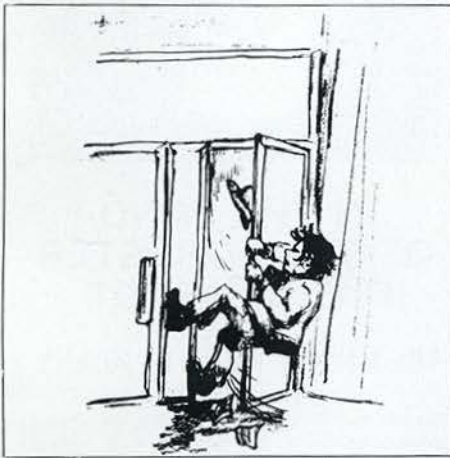
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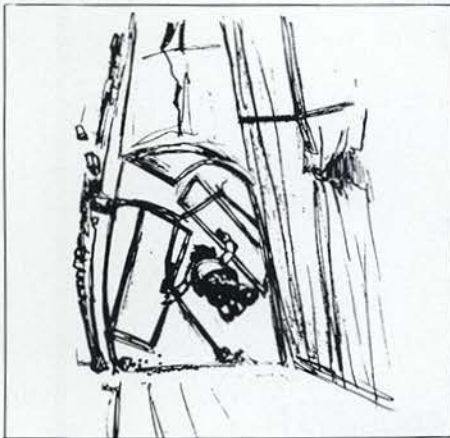
from page 19



"I walk up to the door, I grab and brace,"



"I have to pull hard 'cause the suction is great."



"Finally, I'm in the Forestry Building gate."



David Mattson

natives, but they will consist merely of summaries of the outputs and impacts of the various alternatives chosen for the analysis units.

**5.** The rationale for the proposed decision must be fully explained. If reviewers are to be able to recommend other alternatives or mitigating measures with any effectiveness, they must understand on what criteria such suggestions will be judged. Too often, land use plans end with a decision which is very hard to objectively justify based on the contents of the EIS. Obviously, in such cases some additional criteria are being applied in decisionmaking which are not expressed in the EIS.

**6.** Past mistakes, accidents and controversies must be described and dealt with. Too often an EIS fails to mention specific problems already in existence on a planning unit, or situations which are of high public interest or awareness. Regeneration and road fill failures are frequently thus ignored. This is particularly true if past difficulties cast doubt on the ability of the agency to successfully carry out the proposed action efficiently.

The proper way to deal with such situations is to thoroughly explain the situation and its implications in the draft EIS if not earlier, rather than wait for a reviewer to raise the question. If the problem exists, it should be admitted and discussed from the beginning.



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Similarly, some discussion of changes in timber inventory from the past plan should be included. Often a substantial change in the timber contribution of a planning unit is at least partially due to a revised inventory of the productivity, stocking and area of timber stands, rather than land allocations. This situation should be clarified where it exists.

7. Finally, there are some areas of alternative analysis which may not be covered adequately by the above process. For example, it appears that there are some areas of National Forest land in which virtually all the land not already committed to timber management by road construction cannot be placed under timber management except at a negative Benefit/Cost ratio. Further, there appears to be some areas in which not only is the B/C ratio for development negative, but a simple accounting of timber management costs indicates development to be a losing economic proposition, even without accounting for environmental factors. Since such areas are generally of low productivity, it becomes a salient and important question whether there is some alternative to deficit development of these lands. It is possible that labor-intensive

management of better sites already developed would yield a comparable amount of employment to the local economy with reduced negative impacts.

This obviously is a relevant alternative within the scope of NEPA, but there are few planning staffs that have the capability or funding at present to analyze this kind of an alternative. Similarly, there are questions of alternate methods of timber supply that have far greater scope than the average unit plan, but which would impact such plans greatly.

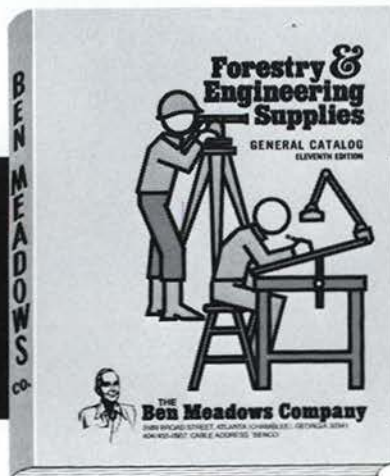
It appears that the logical way of dealing with these problems — short of a forced impasse resulting from citizen litigation — would be for Regional Offices to begin, as a high priority study, (possibly in connection with the Renewable Resources Planning Act) case studies and procedural analyses to determine the parameters within which these types of alternatives become significant to individual Forest and unit plans, and to create accurate models which can be used on a case basis for evaluating such alternatives. This process of course should not be carried out without some public involvement, and the results should be fed into national program planning.

This is obviously not a complete catalogue of the major or significant issues of NEPA land use planning. I believe it is, however, a reasonable assessment of some of the key points. I hasten to point out that many of the items I have suggested as standard parts of EISs have already been done well once or repeatedly by some planning team somewhere, and are not impossible or hugely expensive to achieve. □ □



Jack Whitman

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Stephanie Martin

The idea of burning wood for energy brings to mind the vast smoke plumes and air pollution problems associated with the tepee burners of our past. These concerns are unwarranted, to a large degree. Technology has developed methods of burning wood that result in almost total combustion. If total combustion is attained, the only pollution problem associated with the burning of wood is the waste disposal of the solid ash.

Research is now under way throughout the country to improve current combustion techniques and to find beneficial uses for ash residues. In addition, methods are being developed to reduce wood to its chemical and gaseous components. In the future we could see greater use of wood to produce alcohol (methanol), methane gas, and other chemical elements useful for energy, and a variety of other products. When compared to the more costly alternatives of oil and natural gas, and in view of the potential environmental impact of strip mining, wood as an energy source could provide significant benefits to society. □ □

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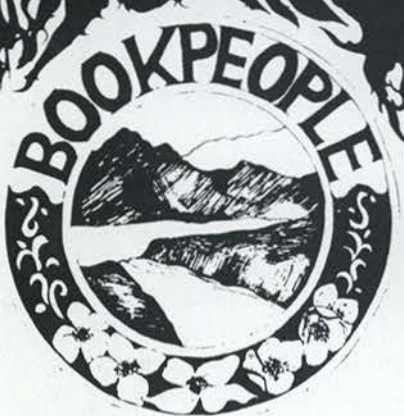
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## A PRACTICAL GUIDE TO BURNING WOOD IN YOUR HOME

(Ed. Note: More valuable information concerning the burning of wood for home use can be found in *The Woodburner's Handbook* by David Havens (Harpwell Press). We got our copy from L.L. Bean's of Maine.)

As the costs of heating with some of the new-fangled inventions such as oil and electricity continue to rise, more and more of us are turning or returning to wood as an alternative source of heating in our own homes.

Much of the finesse of heating or cooking with wood has gone the way of hand-felled trees and steam-driven automobiles. Pockets of stoicism, however, have preserved some of the traditions and knowledge that have accumulated along with the history of the nation.

Whether you are burning wood in a fireplace for aesthetically satisfying warmth or are making a serious attempt to heat your home or cook your food, there are certain rules to heed and tricks of the trade to master.

### The Wood Itself

The first consideration, no matter what your motives is to take best advantage of your wood. Certain woods burn hotter, ignite faster, last longer, or season quicker than others. Much frustration can be avoided by learning some of the properties of woods that you'll need to deal with.

Generally, there are two kinds of wood — hard and soft. It is the former that is ordinarily burned in stoves. Hardwood burns longer, more evenly, and can be controlled to a more efficient degree. Softwoods contain considerable quantities of resins and oils that tend to make them good fuel but also cause them to be consumed at a quicker rate. Pines, for example, make for a fast, hot fire, while oak burns more slowly and gives an even heat.

Moisture in the wood is the most important factor in its heating value. When wood is burned, the water in it must be raised to the boiling point, converted into steam, and finally superheated to the temperature of the flue gases. The heat required to drive off the moisture does not serve to heat anything else.

Drying the wood for a short time is better than not drying it at all; if air is allowed to circulate freely about the wood for three months in reasonable dry weather, seasoning will be about half complete, and the fuel value will then be about 90 percent of that of thoroughly dried wood.

### The Woodpile

For green wood freshly cut from the

forest, from six months to a year is usually required for thorough seasoning. The rate of evaporation of the moisture will depend on such factors as temperatures, relative humidity in the air, exposure to rain or snow, and movement of the air about the individual stacks.

The wood should be stacked outdoors where it is exposed to sun and wind, and preferable on a hilltop. For best results some form of roof or covering should be provided. The top layer of sticks can be packed closely and slanted to help prevent rain from reaching the interior of the pile. If branches of live trees felled during the summer are left intact for two or three weeks, considerable moisture will be drawn out through the leaves.

Tree species vary considerably in the proportions of moisture usually contained in their wood at the time of felling. For example, green Douglas-fir heartwood is so dry that it has very little extra fuel value when seasoned. Under emergency situations it may be desirable to cut fuel wood for use within a very short time. Species that are improved comparatively little by drying include the following:

white ash	shagbark hickory
American beech	Osageorange
Douglas-fir	lodgepole pine
alpine fir	red pine
noble fir	white spruce

Usually more seasoning is necessary because of higher moisture content in the alders, birches, cottonwoods, maples, oaks and most pines, as well as grand fir, Pacific silver fir and white fir.

Anyone who has ever attempted to split wood knows that it can be one of the most frustrating aspects of woodburning. Remember that the line of least resistance on a piece of wood is found along the radius of the wood rays. The straighter the grain, the easier the task will be.

Always chop the log on top of another wider log or stump. If chopped directly on the ground, the soft earth will absorb most of the shock and the return for effort will be halved.

Aside from the major stockpile, kindling is a necessity. It should be small and very dry. Some say that pine cones work well as they contain a great deal of sap which burns quickly and radiates a great amount of heat. Corncobs and dried citrus peels also work well. All softwoods, especially pine, will serve admirably.

### Wood Stoves

There are a number of different types of wood-burning stoves. Each type is designed to provide the best heat under certain conditions.

Airtight stoves are the most efficient



Kevin North

woodburners, and are used by those who need a constant source of heat. Open stoves are most aesthetic but deliver a much lower level of heat. Cast iron stoves hold heat for long periods of time, but take longer to actually begin radiating their warmth. Sheet metal stoves radiate very quickly but do not hold warmth for long. Ceramic stoves hold heat for extremely long periods of time, but must be of massive proportions to do so.

### Burning Wood in a Stove

When wood is used as fuel, there are certain rules that should be applied in adapting and operating the heating equipment.

**1** Stove wood must be cut short enough to lie flat in the firebox. Several sticks should be packed in closely, side by side, with only very narrow spaces between them, if a hot fire is wanted.

**2** Measures should be taken to keep flames from going up the pipe and wasting the heat. With dry wood, the problem is to hold down the rate of release of combustible gas from the wood and at the same time to admit enough oxygen to burn all the gas that is released. The draft from below the grate on a wood stove should therefore be restricted carefully, while about four-fifths of the air is admitted around and above the fuel, usually through slots in the fuel door or by way of draft valves.

**3** In stoves, green wood should not be used in a slow fire (such as might be needed for certain types of cooking), because it will tend to leave soot deposits, creosote, and acetic acid in the smoke pipe and flue. Burn the green wood in a hot fire, and save well-seasoned sticks for use in starting the fire or maintaining it at a low rate. □ □

## THE FROZEN LOGGER



As I sat down one eve-ning — With-in a small ca - fe, — A



for - ty - year - old wait-ress — To me these words did say:

*As I sat down one evening  
Within a small cafe,  
A forty-year-old waitress  
To me these words did say:*

*"I see you are a logger  
And not a common bum,  
For no one but a logger  
Stirs his coffee with his thumb.*

*"My lover was a logger,  
There's none like him today;  
If you poured whisky on it,  
He'd eat a bale of hay.*

*"He never shaved the whiskers  
From off his horny hide,  
But he drove them in with a hammer  
and bit 'em off inside.*

*"My logger came to see me  
On one freezing day,  
He held me in a fond embrace  
That broke three vertebrae.*

*"He kissed me when we parted,  
So hard he broke my jaw;  
I could not speak to tell him  
He'd forgot his mackinaw.*

*"I saw my logger lover  
Sauntering through the snow,  
A-going gaily homeward  
At forty-eight below.*

*"The weather tried to freeze him,  
It tried its level best  
At one hundred degrees below zero  
He buttoned up his vest.*

*"It froze clean through to China,  
It froze to the stars above,  
At one thousand degrees below zero  
It froze my logger love.*

*"They tried in vain to thaw him,  
And if you'll believe me, sir,  
They made him into axe-blades  
To chop the Douglas-fir.*

staff



— from this point we're flying!

Kurt Fritzer

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*go to Aldo Leopold*

*and all others*

*who exist in the world.*

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