Idaho Forester

1991

A Magazine of Natural Resources

Front cover:
Larch — William H. Jones

Inside front:
Rattlesnake — Bruce Rich
Flowers — Qiu Mingjiang

Inside back:
Sunset — Wendy Bromley

Back cover:
Snowy Tree — Mark Robertson

1991 *Idaho Forester* Dedicated To Frederic D. (Fred) Johnson

This year's *Idaho Forester* is dedicated to Fred Johnson, in honor of 40 years of service to our college's students. Fred has officially retired from his positions as Professor of Forest Ecology and Director of the FWR Herbarium.

After Fred received his B.S. in Botany at Oregon State University, he came to the UI in 1950 to study for a master's degree in Forestry. Upon completion of his master's degree in 1952, Fred was employed by the school as a radio-isotope technician for the western white pine pole blight research program with which he had begun working while studying for his master's degree. In 1956 Fred became an instructor.

Some of Fred's many accomplishments over the last 40 years include working closely with the Idaho Big Tree Program sponsored by the American Forestry Association and organizing the Peace Corps Forestry Program in Honduras. Additionally, Fred is a founding member of the Idaho Natural Areas Council and has served on its Rare and Endangered Plants Committee. Fred, as an active member of the Society of American Foresters, has served as the College's faculty advisor for the student chapter. He will also be fondly remembered for his 27 years of summer camp instruction at the McCall Field Campus.

In his many years at the University of Idaho, Fred has received numerous honors. He received the dedication of the "Idaho Tree" at the Honduran Corporation for Forestry Development headquarters in recognition for his work with the Honduran Forestry. He was elected Fellow of the National Society—a privileged honor—by the Inland Empire Section of the Society of American Foresters. Additionally, ASUI awarded Fred the Outstanding Faculty Member award and named him to the Outstanding Educators of America. He has received the UI Alumni Award for Excellence and the Burlington Northern Award for Excellence in Teaching. The students of the college have elected Fred four times to Teacher of the Year.

Fred Johnson has become a legend in the College of Forestry, Wildlife and Range Sciences. His influence will be felt and passed on from forester to forester for a long time to come. Those who appreciate his years of work and care will never forget him. Thank you Fred!

Our Graduates Are Highly Trained in Renewable Natural Resources

Fishery Resources

The fisheries biologist is knowledgeable about aquatic environments and aquatic organisms and can apply this knowlege to managing ponds, lakes, reservoirs and streams. Areas of expertise include aquatic pollution, fisheries management, population dynamics, limnology, and the behavior, culture, diseases, ecology and physiology of fish.

Forest Products

The forest products graduate is well grounded in all phases of forest business operations, including timber harvesting, logging-engineering, transport of goods to market, processing, computerized sawmill operations, wood construction and design, manufacturing, marketing, and research and development for a variety of forest-related industries.

Forest Resources

The modern forester is well versed in economic theory, skilled in computer technology and proficient in public communication, besides being knowledgeable in forest biology, natural history, forest protection (entomology, pathology, fire), reforestation, forest ecology and silviculture.

Range Resources

The range conservation graduate has a strong base in ecology and can assess land capabilities, develop land-use plans, rehabilitate mine spoils, perform soil surveys, administer grazing leases, appraise land values, study nutritive requirements of animals and participate in research on use of natural resources.

Resource Recreation and Tourism

The resource recreation and tourism graduate is skilled in parks and recreation resources management, natural sciences, geography, land economics, conservation of natural resources, human behavior, public administration, communication and tourism. Specialization is available in resource communication, outdoor leadership, resource-based tourism and and wilderness management.

Wildlife Resources

The modern wildlife graduate is interested in all species of wild animals and their roles as components of natural systems and can gather data, conduct censuses, assess productivity, protect and improve habitat, study food habits, establish limits and seasons, control animal damage, protect endangered species and enforce laws.

If you know of job openings, or plan to hire someone in these fields, please contact Carol Spain, College Placement Office, College of Forestry, Wildlife and Range Sciences, University of Idaho, Moscow, Idaho 83843, phone (208)885-6441.

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Editorial

by Greg Wooten

The other day I attended a seminar about being a professional. Near the end of the presentation, there was a comment made that people should not be making decisions on resource management unless they utilize that resource. This seemed to offend some people attending the seminar. At the risk of offending them again, I'll have to say I agree.

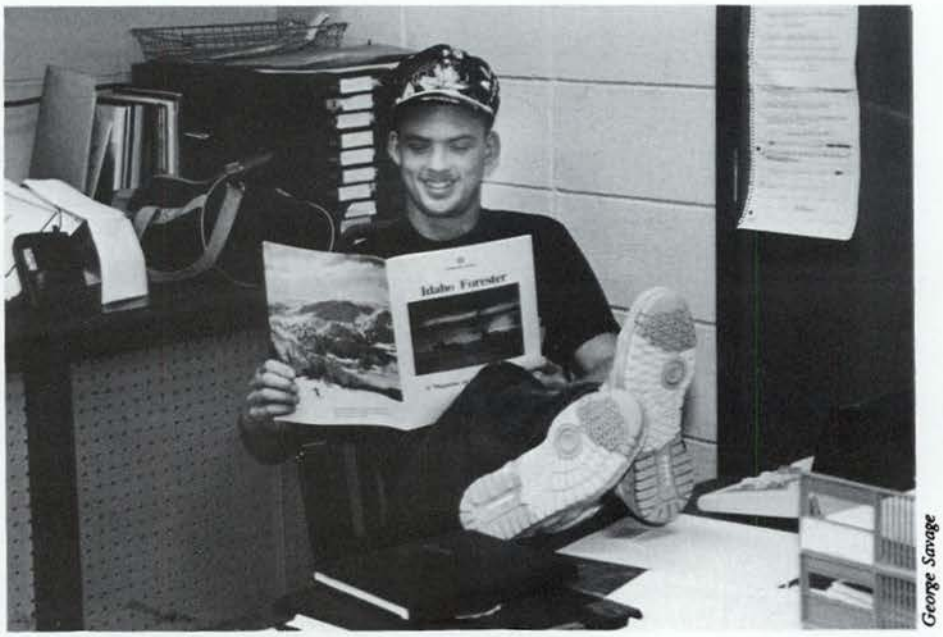
I'm not saying you need to kill animals in order to be able to manage them. You should, however, know something about the sport and something about how people use the land and its resources. Rupert Cutler (1981) stated that biologists should have a good working knowledge of outdoor recreation, and I agree whole-heartedly. A wildlife biologist should have a good understanding of hunting. A fisheries biologist should know something about fishing. A biologist in the Bureau of Land Management should know about ranching. Managers in the Forest Service should know about logging.

Nothing is emphasized more at this college than the need to become better communicators. Wildlife and fisheries biologists could be more effective if they would improve their negotiation skills, especially eliminating defensive behavior. Defensive behavior tends to engender defensive listening and prevents any member from concentrating upon the message (Cutler 1981).

Let's say I'm a biologist and I develop a management plan that is absolutely the best possible plan, but I don't hunt and don't even know the difference between a .243 and a 30-06, or the difference between a hotshot and a wiggle wart. If you stop for a minute and think about how this world actually operates, you will realize that the hunting public is not going to believe in my management decision. They will think I'm just some hotshot, college-educated, fish and game guy that doesn't know squat about hunting; therefore, I couldn't possibly be making the correct management decisions.

I'm going to reverse that situation for a minute. Let's say a layperson came to the college and gave a seminar on wildlife management. This person has been ranching for years and practically lives with the elk and deer. He has developed a plan that he thinks is best for the resource. Do you think that the students here would agree with his opinion? I don't think so. Not unless he had some educational background in wildlife management. Many think that without an education you can't conduct proper management. Notice my use of layperson. After we receive our education we will be dealing with people as well as the resource. In terms of farming, ranching, logging, hunting, fishing and development, we may be the layperson.

With this same respect, I don't think a biologist can deal properly with a depredation problem if he has never farmed or is at least familiar with farming practices. There are biologists today that think the elk and deer depredation here on the Palouse isn't a valid complaint. A biologist should view these complaints with an open mind and not pass judgement quickly. The extremely



George Savage

Our fearless editor Greg Wooten sitting in his "lazy-boy", contemplating just how in the heck he's going to survive another forester paste-up!

strong bias for fish, wildlife and environmental preservation that exists with many wildlife staff people creates a defensive barrier from which decisions and/or negotiations begin (Cutler 1981).

If we want to be good biologists, we will need the ability to talk to people person-to-person, not biologist-to-layperson. A wildlife biologist must be able to communicate with hunters just as well as a fisheries biologist with fishermen, and the range biologist with ranchers. You can't just tell a rancher he is overgrazing the land; this will most likely offend him. The need for a working relationship is imperative. One of my friends from high school accepted a job in Wyoming as a brand inspector. She had heard that the cattlemen were uneasy about an out-of-state woman becoming their new inspector. The first ranch she visited was still separating cattle when she arrived. She threw on her boots, helped finish the job, and has never had a problem. We must constantly re-examine our views and recommendations through the eyes of the people we will be addressing (Cutler 1981). The basic human values of patience, technical competence, an inquiring mind, a reasonable degree of gregariousness, and, most of all, goodwill are special prerequisites for a successful wildlife manager (Peek 1986).

Most of us are going to be public servants in the future. What we are learning here is the scientific background that will support our ability to communicate. If you are here because you don't want to deal with people, you should change your major because this field is becoming more people oriented than most other majors. We must know that our primary obligation is to the resource, and that very little will get accomplished without public support. Our ability to communicate will be greatly enhanced if we increase our common knowledge of the people we will be addressing.

Literature Cited

Cutler, R. M. 1981. Keynote Address, 19th Annual Missouri Fish and Wildlife Conference. 17 pp.

Peek, J. M. 1986. A Review of Wildlife Management. Prentice-Hall, A Division of Simon & Schuster, Inc., Englewood Cliffs, New Jersey. 486 pp.

Greg Wooten is a senior in wildlife resources wondering if he will ever graduate.

MINDING MY OWN BUSINESS

I can hear him moving
as he clanks the steel.
There's a tinkle of glass
and a scuffle of heel.

He's coming this way.
O.K. get ready.
I'll strike in a flash.
Steady. . . steady. . .

Fouled again?
He's grabbed me by the head!
It's the only way
I couldn't kill him dead.

Damn the man, damn the man
just wait till I'm free!
I'll show him who's boss,
You can bet it'll be me.

If I could scream,
I'd let out a screech!
he's milking me dry
like a blood-sucking leech!

My poison drops
into the beaker so clean
He laughs out loud
but not because he's mean.

He looks at me and says
"This is a big un."
"We'll get plenty of milk
to make a snake serum."

I writhe and thrash
while my fangs are pulled wide.
My anger is boiling,
never to subside.

It's over now,
my power is lost
to protect myself
and fight at all cost.

I'm sitting in my den
minding my own business
about to eat my meat
when I start to get suspicious.

While I'm lying there
as peaceful as can be,
I get a whiff
of an evil I can't see.

I slide back further
in my hole to hide,
but the smell of poison
drives me outside.

It's there I find
a long black hose
that was filled with gas
to assault my nose.

I'm outside now
and mad as hell!
Who's bothering me
with that foul, foul smell?

I glared at the world
and I looked around,
Here comes a man
barely making a sound.

Who does he think he is?
The big, dumb bully!
I'll show him what's what.
I'll show him truly.

Stand back you lout!
I want my den!
If it's a fight you want,
I warn you, I'll win!

Just let me get closer
so I can go for the ankle.
My poison, is what he'll get.
Yeah, that'll rankle!

Hey! No Fair!
What's with the bag?
Yikes! I'm caught!
Let me out of this rag!

What's the big idea
to catch me this way?
What's with this bag
that blocks out the day?

Oh, Yeah, right.
Now I'm set free.
I've got no poison,
so I'll have to let you be.

I'm down and depressed
from my encounter with man.
Why does he pick on me?
Just because he can?

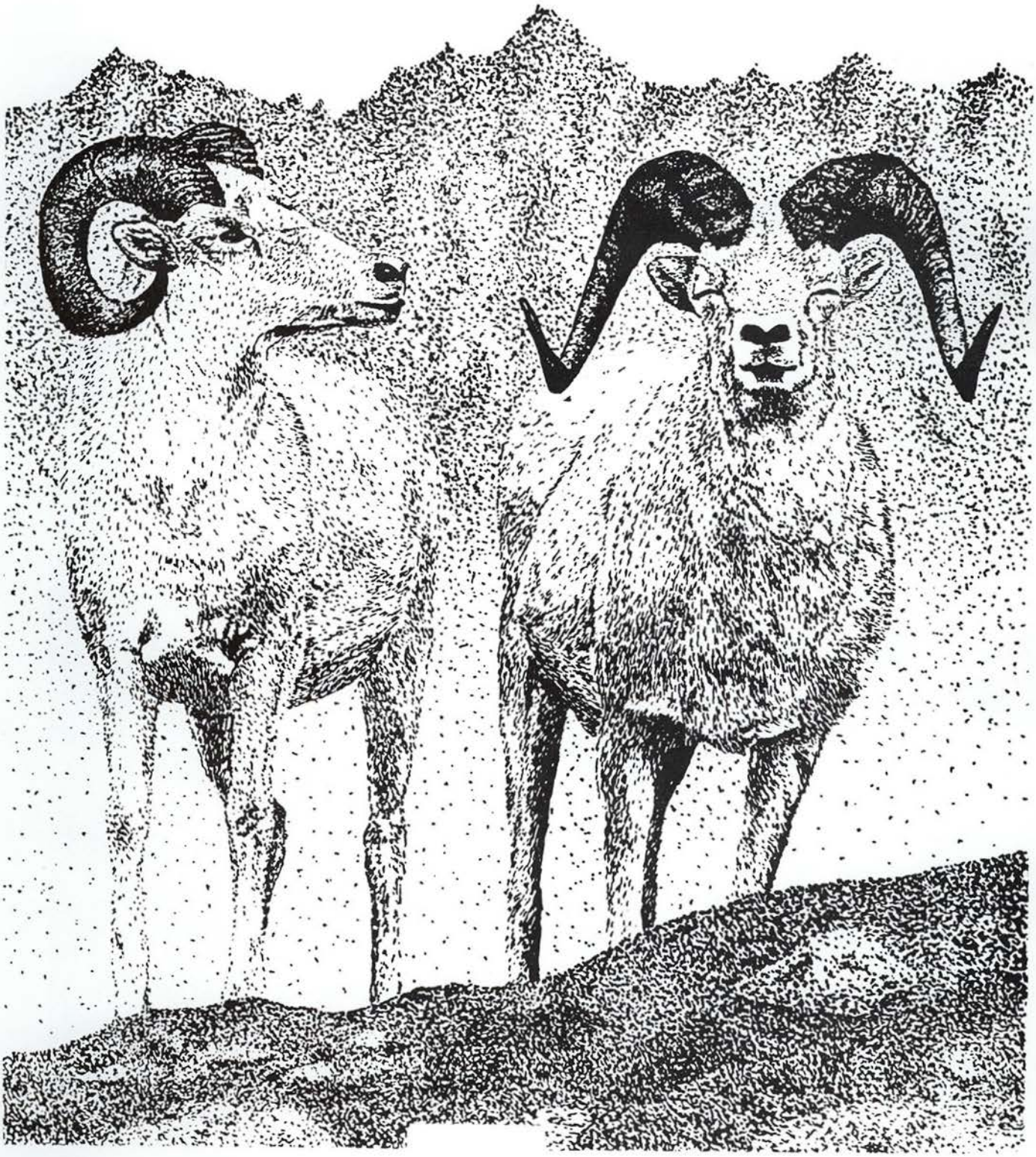
To my rabbit I'll return
hungry and needing rest.
I hope it's still there,
and not stolen by some pest.

I think about that man
as evil as can be.
If I ever see him again,
He'll know it's me!

I'll show him who's boss.
He'd better watch out!
The next time I see him,
I'll kill that lout!

Sonya Ebright

Feature Articles



LONE RANGER OF THE ROCKIES

Why does the diminutive boreal owl lead a restless life of one-night stands?

by Patricia H. Hayward and Gregory D. Hayward

By 6:00 P.M., the February light was fading. I restuffed my backpack after recording data about the subalpine fir, five feet away, where a small brown-and-white boreal owl dozed. The bird didn't even bother to open an eye while I tied a blue flag to the tree so I could relocate it in the summer. Before I finished packing up, a snow squall blew in. The wind's muffled roar and the creaking of trees woke the owl. He looked around anxiously, then shook himself, fluffed his feathers, and went back to sleep, ignoring the snow that fell on his shoulders, melted, and slid over his plumage.

I turned to start the six-mile ski trip back to the cabin to compare notes on the day's owl watching with my husband, Greg. A mile from home, I was skiing by the light of the moon. At the base of the slope covered with ponderosa pine and Douglas-fir, I paused to enjoy the quiet and the moonlight, and to rest my aching muscles. In the distance, two coyotes howled a duet, then silence returned.

Just as I was about to ski on, the air around me was punctuated by a staccato call that began quietly and crescendoed to a briefly sustained peak—the courtship call of a male boreal owl. I scanned a couple of frequencies on my radio receiver, wondering if the calling bird was one of the owls I had radio tagged. On the third try, beeps came booming in. The Moosejaw male, the same owl I had left an hour and a half earlier and six miles away, was singing on the hill above. I tried a few other frequencies, and more beeps sounded. The Flossie female, an owl that Greg had located earlier in the day three miles to the west, was also up on the hillside.

The movement patterns of these two owls typified the behavior of the boreals we studied for more than four years in the Chamberlain Basin in Idaho's Frank Church-River of No Return Wilderness. Long-distance commutes are a way of life for this small, forest-dwelling owl. Likewise, travel became a way of life for us as we and our assistants

An adult boreal owl sits contently on his perch.

skied and hiked more than 16,000 miles trying to follow the owls as they moved about their home ranges, which averaged 3,700 acres.

The owls we studied inhabit spruce-fir forests in the high Rockies, 400 miles south of the species' stronghold in central Canada. Boreal owls breed throughout the northern forests of Alaska, Canada, the Soviet Union, and Scandinavia, where they are the most common forest owl. Until recently, however, ornithologists considered the species a rare visitor to the contiguous United States.

Almost by chance, in 1980 we discovered a breeding population of borealS in the wilderness of central Idaho, and by 1985 we knew that these small, secretive owls breed in the high mountains from northern Montana, Idaho, and Washington south to Colorado. Most recently, they have been seen in New Mexico. But even more surprising than the discovery that this species breeds in the United States were our findings of the distances traveled daily by these owls.

Wanderlust appeared to be an integral characteristic of the population we studied. Although a great horned owl, screech, long-eared, or other forest owl will frequently roost in the same stand of timber—often in the same tree—day after day, we found that a typical Chamberlain Basin boreal almost never roosts in the same tree and frequently sleeps in a tree miles from the one it occupied the previous night.

The owl we called the Boreal Hill male was a good example. His daytime roosts in the winter of 1986 were, on average, more than two miles apart. On March 15, Greg radio-tracked this male and found him four miles east of our cabin, sleeping in a large spruce. The next morning I skied from our cabin eager to find several of our radio-tagged owls. (We had used mist nets and mesh cages holding live mice to capture these owls two months earlier while they were courting at their potential nest sites. Radio signals from the small transmitter we had attached, weighing less than two-tenths of an ounce each, do not travel far).

As usual, the radio signal from the male's transmitter was not audible until I reached a high ridge three-quarters of a mile north of home. Twirling the antenna to the west, I turned in a faint beep. For

Pat Hayward with two young boreal owls that were part of the study.

the next four hours I broke fresh powder as the signal sharpened and I moved higher in the basin toward the bird. My hopes of locating several owls before nightfall faded. Finally, I reached the Boreal Hill male perched low in a subalpine fir, leaning against the trunk, with a dead red-backed vole draped across the branch at his side. This perch was almost seven miles, "as the crow flies," from the previous day's roost and nearly a thousand feet higher in elevation.

Why would these small birds need to travel such long distances and have such large home ranges? Boreal owls rank thirteenth in weight among the seventeen species of North American owls. Weighing from four to six ounces (males are considerably smaller than females), the owls are not much larger than pigeons. Chamberlain Basin borealS, however, occupy areas two to eight times larger than those reported for other small forest owls. The size of their ranges even approaches that of the spotted owl, a species four to five times larger than the boreal.

Like other wild animals, boreal owls can't afford to expend energy needlessly. The cost of movements throughout the home range must be offset by greater benefits. Most animals move to locate mates, avoid competition from others of the same species, find shelter from the elements or predators, or find food. Which factors influence Chamberlain boreal owls?

Solitary birds, boreal owls associate with one another only to mate. However, they do not defend territories or actively avoid one another. Their home ranges may overlap extensively; we found males roosting less than one hundred yards apart. To reproduce, a male locates a suitable nest cavity, where he sings his courtship call in the hope of attracting a female. The male confines his courtship calling to a small area around the potential nest cavity and limits any defensive action against intruding males to this same space. In the deep silence of a winter night, the boreal's song can travel miles, and the female must track it to its source. In most years, she doesn't have far to look because several males will most likely call within her home range. Courtship and

territorial activities, then, account for little of the boreal owl's day-to-day movements.

If boreals aren't seeking companionship, patrolling territorial boundaries to exclude intruders, or wandering the countryside in search of love, can the search either for shelter or for food explain the large home ranges used by these owls? Shelter from the elements, at least in winter, apparently is not the reason for the distances traveled because boreal owls, which occupy coniferous forests throughout the far north, are superbly adapted for the cold. We often found owls roosting in the open, unprotected from wind or falling snow, even during storms. A perch next to the bole of a conifer appeared to provide sufficient protection. So a search for shelter cannot explain the owls' extraordinary movement patterns.

Although not definitive, several lines of evidence suggests to us that boreal owls at Chamberlain need such large home ranges to obtain sufficient food. The lives of many predators are controlled by the availability of their prey. During the four years of our study, we trapped small mammals, the major prey of boreal owls, to determine how numerous these animals were in various habitats and how much their numbers fluctuated from year to year.

If prey influences the owl's movement, we reasoned, the owls should stretch the boundaries of their home ranges in lean years. Results of our mammal trapping indicated large populations in 1984 and 1987, smaller populations in 1985, and extremely low numbers in 1986. We therefore expected to find relatively little movement and small home ranges in 1984 and 1987, and the opposite situation in 1985 and 1986. Summer movements and home range sizes did increase substantially in 1986. Winter home ranges and movements, on the other hand, were surprisingly constant. At first this seemed inexplicable, but after pondering our data, we began to piece together an explanation.

From the beginning of our study, the scarcity of small mammals, even in "good" years, surprised us. Prey populations at Chamberlain were smaller than those reported in other northern forests. Likewise, the number of young raised by Chamberlain boreal owls contrasted sharply with clutch sizes reported at higher latitudes. In Scandinavia, boreal owls fail to breed during small-mammal population crashes, but in good years, pairs commonly fledge five to nine owlets. At Chamberlain, one-third to one-half of the nests failed completely, the largest clutch contained only four eggs, and only one nest in four years managed that many. Two or three eggs were the normal, and two young seemed about the maximum Chamberlain owls were capable of fledging.

Chamberlain boreals are relatively unproductive under any conditions and appear to be barely able to sustain their numbers. Sparsely distributed prey forces the owls to search long and hard for their meals. Even in good prey years, the owls must travel widely if they are to eventually put on weight and breed successfully.

In the wild, breeding occurs only if animals obtain the energy to survive. Studies of tawny owls in England have shown that the level of the female's fat reserves before breeding is the primary factor determining the number of healthy young a pair raise in a given year. In boreal owls as in most owl species, the male does all the hunting for his mate and young from the onset of incubation to near fledgling. Not every night, however, is perfect for hunting. During rain, mice and voles stay tucked away in burrows and nests. In such nights the male may be unable to provide enough food for his mate. If her body fat reserves are high, she can sit such nights out, keeping her eggs and young

Two immature boreal owls snuggle close on a limb in the early morning.

warm. If her fat stores are dwindling, however, she may be forced to leave the nest to hunt on her own, exposing the eggs and young to cold. (Exposure to predators, however, is not a major factor. The main nocturnal predator, the pine marten, may attack even when the female is present.) Thus, any extra fat that a female can acquire prior to nesting helps insure nestling survival. Because Chamberlain boreal owls must range far to find prey even in good years, the size of their home ranges remains relatively constant. Instead, nest success seems to vary directly with the availability of prey.

We did find, however, that the owls traveled farther in winter than in summer. In the high mountain areas inhabited by boreal owls, three to six feet of snow blanket the forest for six to eight months of the year. Most prey remain burrowed beneath the snow, taking advantage of the thick insulation to conserve energy and to protect themselves from predators. Tiny tracks, however, attest to the comings and goings of some individuals on the surface. Deep plunge holes encircled by delicate wing tracings indicate where others succumbed to the owls' acute hearing and sharp talons when they burrowed too close to the snow's surface. During this harsh season, the owls have to work harder to find meals. The distance between roosts used on consecutive days, an index of an owl's daily movements, was on the average 66 percent longer in winter than in summer, and winter home ranges were 25 percent larger than summer home ranges. For males, the latter generally encompassed 2,100 acres or more.

In summer, male owls that are feeding families find easy pickings at high elevations in the old-growth spruce-fir forests. Here, red-backed voles, which are one-third to one-half of the boreal owl's diet, are two to ten times more numerous than at lower elevations. While the voles are protected by six feet of snow in winter, in summer they are vulnerable, despite their habit of hiding beneath rotting logs. Even male borealis that nest at lower elevations find long trips to these high-elevation spruce forests rewarding. In fact, males roosted and, we believe, foraged an average of one and a half miles from their nests—a sharp contrast to the behavior of most owl species.

Why don't the owls simply nest at high elevations, where the food is located? Given a chance, most owls probably would. But for nesting they need large tree cavities that are rare in spruce-fir forest, even in the virgin timber of the wilderness. In four and a half years we saw only two usable cavities in subalpine fir and Engelmann spruce. Ponderosa pines, on the other hand, are "hotel trees" that may contain up to ten good holes for nesting. Woodpecker-excavated holes in aspens are also used by boreals. At Chamberlain Basin, both aspens and ponderosa pines tend to grow at low elevations. Thus, Chamberlain boreal owls commute to exploit the resources at both elevations, and their small clutches reflect the cost of this active life style.

The activity of unmated owls further testifies to the role played by prey and cavity distribution in the owls' movements. One unmated male, the Three-Blaze owl, named for the trail running through the middle of his summer home range, had the smallest home range observed. With an abundance of voles underfoot and no need to travel to a nest, he sometimes moved as little as twenty-five yards between roosts. Although he never used the same tree on consecutive days, we found up to twelve pellets of regurgitated hair and bones, some more than a year old, under certain trees. Because boreal owls regurgitate only one to two pellets a day, such a large number under these trees indicated that they were frequently used favorites.

During an entire summer, he hunted over an area of only 390 acres. When prey is abundant, an unmated owl has little need or inclination to move long distances. Several mated male and female owls that moved to higher, pre-rich elevations after their nesting attempts for the year had failed also immediately confined their activities to small areas.

In May 1988, after tracking Chamberlain boreal owls for four and a half years, we piled our gear into a single-engine plane and said goodbye to the basin. The plane roared down the dirt strip, then silence settled over us as we lifted off the ground. All the streams, valleys, and ridges we had come to know so intimately fled away below, as did the owls that had taught us so much: the Moosejaw male, the Flossie female, the Three-Blaze and Boreal Hill males, and many others. Less than a decade ago, no one knew that boreal owls resided and bred in the contiguous United States. Since then we've answered many questions about their habits and habitat needs. Now we need to look for new teachers to help us answer our new questions about the future of the Rocky Mountain boreals.

Pat Hayward and Greg Hayward are wildlife resources alumni: and now work for the Department of Fish and Wildlife Resources.

BLM's Fish and Wildlife 2000—The Difference Is You

by J. David Almand

Picture yourself in the dead of winter at a small stream in Wyoming called Bone Draw. Now, there are lots of better places to be in the winter than Wyoming. Even the natives of the state will agree with me on that. On this particular day, the water in Bone Draw is icy cold and the wind is ripping across the plain. The temperature is a robust five degrees above zero. Nobody calculates the wind chill factor, because frankly, they'd rather not know.

Yes, there are people outdoors. Now the last thing you'd expect is that they'd be splashing around in the stream. Yet that's exactly what you would have seen that weekend last January, had you been there.

Are these people nuts? Well, yes, in a manner of speaking. They are fishermen.

This particular day they weren't there with their gear. The sportsmen, representing the Sweetwater Wildlife Association, BLM, and Trout Unlimited, were hard at work in the creek, continuing their work to transform it into one of the best "nursery" streams in the Rocky Mountains. They planted streamside vegetation to help improve water quality. They installed gabions and log sills to provide pools. They even refitted old refrigerators and used them as streamside incubators. More than 1.3 million rainbow trout, cutthroat, and kokanee salmon were eventually planted in Bone Draw, with a survival rate of greater than 95 percent.

FISH AND WILDLIFE 2000

What causes people to leave their warm homes in the middle of January and go do some stream rehabilitation work? Well, they're fishermen, so that explains part of it. Seriously, though, I think a lot of it has to do with the way Americans are viewing natural resources these days.

More than ever, Americans want areas for fish and wildlife. The desire to fish, to hunt, to see wildlife, photograph it and otherwise enjoy our natural treasures is greater than ever.

It's a good time for an agency such as BLM to take a long, hard look at the habitat we manage for fish and wildlife and figure out where we are and where we want to go. That's essentially what we began to do a few years ago. We call the results of that long, hard look "Fish and Wildlife 2000."

Fish and Wildlife 2000 is the first comprehensive BLM plan for its fish and wildlife resources. It's provided managers with a sense of where these resources fit in with all of our other resources. It's a plan, but at the same time, a picture and a vision. A picture of where we stand, and a vision of where we want to be.

"THE DIFFERENCE IS YOU"

And you may be surprised to know that we consider you—the public, and particularly the public interested in fish and wildlife—a part of that vision for the future.

You see, if there's one key word to Fish and Wildlife 2000, it's "DOING." Doing more field projects. Doing more with other agencies and conservation organizations. Doing more planning to help make sure that things turn out right throughout the organization, and most importantly, doing more for the habitat on public lands.

As ambitious as Fish and Wildlife 2000 is, we can't do these things alone. We've come to rely on others to help improve on what we have. If we are to pull off the goals of Fish and Wildlife 2000, it won't be because we receive huge increases in our budget or our ability to hire new employees, although we'd like to see that, too. It will come by asking folks such as yourselves to step in and help us to get the job done. One way of saying it is, "The difference is you."

We call this effort "partnerships." Since Fish and Wildlife 2000 was approved, BLM has signed national level agreements with 12 organizations, such as Ducks Unlimited, The Nature Conservancy, Rocky Mountain Elk Foundation, Pheasants Forever, the National Rifle Association, and the Center for Plant Conservation. These national level agreements have strengthened the bond already forged with many of these groups at our district and resource area offices throughout the West.

WORK WHERE IT COUNTS

Some of you are probably thinking, "All of this sounds fine and good, but is anything really

happening, or is this some bureaucrat blowing smoke about another government plan?"

Let me assure you that Fish and Wildlife 2000 is a plan that is working. Here are some examples of how our partners—people like you—are making a difference where it counts—on the land.

- The desert bighorn is an example of a species that has benefited from Fish and Wildlife 2000. Our rangewide plan targets 115 habitats for reestablishing viable populations of bighorns. Ninety of those habitats are currently populated. Since 1987, 26 transplants have occurred, 64 new water developments are in place, and 17 new habitat management plans have been completed or updated.

- Statewide in Idaho, BLM is cost-sharing with the Idaho Department of Fish and Game through its Habitat Improvement Program (HIP) to complete habitat improvement projects for upland game birds and waterfowl. Pheasants Forever and Ducks Unlimited regularly help with these improvements, further increasing the amount of work that is being accomplished.
- In Colorado and Idaho, BLM and the Rocky Mountain Elk Foundation set controlled fires to help increase the quality and quantity of winter forage for elk.

- A reservoir in Custer County, Montana, was completed by BLM and Ducks Unlimited. There's now 64 acres of new wetlands habitat and 1.5 miles of shoreline for waterfowl. Additionally, twenty-five acres of nesting cover were planted adjacent to the reservoir.

- BLM in Oregon, in conjunction with several conservation organizations, were able to acquire valuable wetlands in the Warner Valley.

- In California, 30 volunteers planted 10,000 willows, 3,000 aspens and 200 cottonwoods in the Cedar Creek riparian area.

- In Arizona, the Havasu Bass Club placed cover structures in a lake to improve fishing and protect riparian habitat.

- In Oregon, The Nature Conservancy, the Corps of Engineers, Oregon State University and the Native Plant Society worked with BLM to rid an area of nonnative plant species through prescribed fires. This saved an endangered plant, Bradshaw's lomatium, from being crowded out by the invading plants.

- In Idaho, ranchers and BLM worked together to help restore native vegetation to a riparian area along Thorn Creek. For the first time in anyone's memory, Thorn Creek ran year-round last year.

- In Casper, Wyoming, an elementary school has worked with BLM to improve riparian areas and habitat along Bolton Creek. The site will be used for environmental education classes for school children. Not only has a contribution of time and labor been made, but the school district donated more than $13,000 to the improvement effort.

- Recovery of the endangered peregrine falcon, once on the brink of extinction, has been so successful that the bird may be taken off the list in Arizona and Colorado. BLM contains some of the best birds of prey habitat in the world, and we've worked closely with state wildlife agencies and The Peregrine Fund to bring about this conservation success story.

- Four BLM states—Utah, Montana, Colorado and Wyoming—are looking for sites suitable for North America's most endangered mammal, the black-footed ferret. A captive breeding program in Wyoming has been so successful that re-introduction may take place next year.

- The Carson City District in Nevada cooperated with Nevada Bighorns Unlimited and Corona Gold Mines to install two water projects for desert bighorn sheep.

- The Rio Puerco Resource Area in the Albuquerque District challenged The Rocky Mountain Elk Foundation to help it finance a water source on La Ventana Mesa. The challenge was met, and a catchment with a 5,000 gallon storage tank is in place.

- Wildlife habitat improvement work can be a blast—In Utah, BLM and the state's Division of Wildlife Resources blasted eleven potholes north of the Great Salt Lake, providing new habitat for waterfowl and shorebirds. Similar blasting projects occurred in Montana, Oregon and other states.

- Two hundred cottonwood poles were planted along an abandoned agricultural lease near the Colorado River in Arizona. The cottonwood saplings will improve riparian habitat and provide a new area for a bird listed by the state of California. The Izaak Walton League assisted BLM with the project.

- In Montana, the Jerry Creek access project was a joint effort among BLM, the local chapter of Trout Unlimited, the

Skyline Sportsmen's Association, the Wise River Sportsmen's Club, and Anaconda Sportsmen's Club. These groups helped to construct a place along the Big Hole River that provides vehicle and boat access, along with a parking area and other recreation facilities.

CHALLENGE COST SHARES—SHARING THE PAIN, SHARING THE GAIN

I could go on . . . all of this represents only a sliver of what is going on in BLM today. Partnerships are a good way for BLM to stretch our resources, and at the same time, bring the public back into public land management.

Many of the projects come under a special kind of partnership called the "Challenge Cost Share" program. In simple terms, BLM puts up the money and usually some labor for a project, and other agencies, organizations or individuals donate matching funds or supply material or labor. That way, we all share the pain . . . and we all share the gain.

In 1986, Congress appropriated $300,000 for that program. In 1990, the sum reached $2 million, which was matched by over $2.5 million in outside money, materials and labor. Even with that, we could fund only 60 of the 208 proposed projects. Should we receive more funding for this program in the future, stand back and watch us go. This is something that really works.

NO FREE LUNCHES

BLM's fish and wildlife program, particularly the "2000" plan, is a vision of the future. But its roots are grounded in reality. Reality that has a dollar sign attached. That old saying about the cost of free lunches certainly applies.

Our funding has improved. Since Fish and Wildlife 2000 was approved in 1987, the program's funding has increased from $16.9 million to $31.1 million. Hiring in key field positions has also improved. We have more botanists, wildlife and fisheries biologists than three years ago. That's good news. We'll always go as far as we can on our budget, and in the last few years especially, we've become adept at stretching our money through partnerships and volunteers. But the simple truth of the matter is that we need to increase our funding for Fish and Wildlife 2000 as the program is implemented in order to keep pace with the goals we've set. We estimate that the 1991 budget is about one-third of what we really need to implement the plan.

PROMISES, PROMISES

The time is right for our "Fish and Wildlife 2000" program. BLM is ready to make a huge leap forward. The public is supportive of these improvements; with continued backing, we can make it all work. Additionally, we can make some promises, should the support—financially and otherwise—continue. We can promise that fishing, hunting and wildlife viewing opportunities will all improve, as well as better access to public lands and more recreational opportunities. We can promise faster recovery of endangered species, and further, prevent the need for listing some candidate species. We'll also promise increased economic benefits to local communities.

We can also promise our riparian areas will look better, the water will be cleaner, the soils more stable, and the fish and wildlife populations more numerous and diverse. Finally, we can promise that we'll continue to work hard and tap more outside resources in order to achieve our goals.

A FINAL LOOK

We started in a place called Bone Draw, in Wyoming, on a cold winter day with people risking blue fingers and blue toes to help improve a fishery. Let's conclude with a look at a place in New Mexico, in the Las Cruces District called Placitas Arroyo. I think it represents much of the good that is going on in BLM today.

Placitas Arroyo is a spring-fed riparian area. Five years ago, it symbolized almost everything that was wrong with riparian management in BLM.

Vegetation was in poor condition because of overgrazing. Invading non-native plants were overtaking the area. When it rained, the channel would flatten out to 30 feet wide, scouring the vegetation and leaving behind what our wildlife biologist in the area called "a huge sandbox."

Three conservation groups were challenged by BLM to lend a hand to the area. The groups—The New Mexico State University Chapter of the Wildlife Society, the local chapter of the Future Farmers of America and the Southwest Chapter of Quail Unlimited took BLM up on the challenge and went to work.

They constructed fences around parts of the riparian area. They planted native trees and shrubs—cottonwoods, willows, mesquite, squawberry and tornillo. During the blistering early summer months, Quail Unlimited members were on the site to hand-water the plants farthest from the water source. The new grazing permittees in the area fully supported the improvement steps.

Now, two years later, the area is different. Native vegetation is thriving, and the area is looking green and healthy. When it rains, the channel is now only eight feet

or so wide. Placitas Arroyo is coming back, thanks to people who wanted to make a difference—and did.

It's not a finished project. There's still lots of work to do. BLM and our outstanding partners in the area are all set to do the work. Ten years ago, you wouldn't have seen that kind of cooperation.

It is an exciting new era at BLM in the fish and wildlife program. There's a new attitude from the top on down in the agency. It's a tangible change, with more improvement projects taking place now than ever before in the BLM.

We look forward to accomplishing more. It will take our best effort, the support of Congress, and the help of our friends, such as you, to make Fish and Wildlife 2000 happen. After all, these precious resources of the public lands deserve no less.

J. David Almand is the chief of the Bureau of Land Mangement's Wildlife and Fisheries Division in Washington, D.C.

Black Bears For Christmas

by Dr. John Beecham

Christmas comes but once a year for most people. For me and a small group of co-workers, however, the excitement of getting up in the morning to see what "gifts" were received the previous night was repeated for 75 to 80 nights each summer, not just one morning in December. The "gifts" we were anticipating came in the form of snared black bears —both small and large, sometimes brown, sometimes black, and always unpredictable.

The Christmas-like experience I've just described resulted from an intensive trapping program carried out by the Idaho Department of Fish and Game on black bears. Each summer, we set 15 - 25 foot snares in one of six different areas in the state to capture what can best be described as an extremely shy animal, the American black bear.

These studies were designed to determine population status, food habits, physical characteristics, denning requirements, home range sizes, activity patterns, and habitat use patterns. Recent efforts have been directed toward developing a population monitoring system that will provide information on changes in population size.

The black bear is an extremely adaptable animal that occurs throughout most of the forested areas of Idaho. In North America, its distribution extends from Alaska and Northern Canada south to Mexico, and from the west coast to Maine and Florida on the east coast.

Bears are closely related to the canids (dog family), and there are eight species surviving in the world today. Three species are found in the United States: *Ursus arctos,* the grizzly/brown bear; *Ursus maritimus,* the polar bear; and *Ursusamericanus,* the black bear. Both the grizzly/brown bear and the black bear are found in Idaho.

General Characteristics: During the course of the bear studies we've conducted in Idaho, my assistants and I have had the opportunity to capture and handle almost 1,300 black bears. The average adult (seven years or older) male black bear weighs approximately 250-300 pounds during the summer months. The largest male we weighed was over 235 pounds (fall weight). Although black bears can weigh as much as 700-750 pounds in the eastern United States, they rarely attain those weights in the western United States. Female black bears generally weigh 40-50 percent less than males, and average about 125-130 pounds as adults. The largest female captured during our studies weighed 190 pounds in late August.

Some differences in average size and growth rates were found between bears living in southwestern Idaho and those captured north of the Salmon River in the Lowell area, the Coeur d'Alene River area, and around the Priest Lake area. We found that bears living in southwestern Idaho had faster growth rates and were consistently larger than similarly-aged bears in northern Idaho. The major difference in the areas appeared to be the number of berry species available for the bears to feed on in the fall. Black bears in the Council area fed extensively on 7 species of berries, while those in northern Idaho fed primarily on huckleberries. During years of extensive huckleberry crop failures, the bears in northern Idaho fared less well than those in southwestern Idaho where other berries were available.

Home Range: Intensive radiotracking of black bears wearing transmitter collars indicated that black bears in Idaho are not territorial (don't defend a given area

from other bears), but they do occupy reasonably well-defined home ranges. Adult males use significantly larger (approximately 40 square miles) and less-stable home ranges than adult females (7-12 square miles). Home ranges for males and females overlapped extensively. The minimum home range overlap in the Council area during 1975 was 54-100 percent for males and 34-89 percent for females. Home range overlap between males and females was nearly 100 percent. Home range use and movements of black bears appear to be governed on the distribution and availability of key food plants.

Activity: Many of the stories you often hear about black bears center on their activities around campgrounds and summer homes. These activities and the shyness of bears suggest that they are active primarily at night. Our studies indicate that this is the case only where bears come into contact with people. In areas were man's influence is not a factor, the black bear is more active during daylight hours. In fact, after thousands of hours of following radio-collared bears, my students have found that wild bears generally bed down for the night shortly after dark and awake the following morning about an hour before sunrise. During spring and early summer, three activity peaks were noted, showing that the bears fed through morning hours until about 10:00 a.m., were somewhat less active during midday, and then were very active in late afternoon and evening.

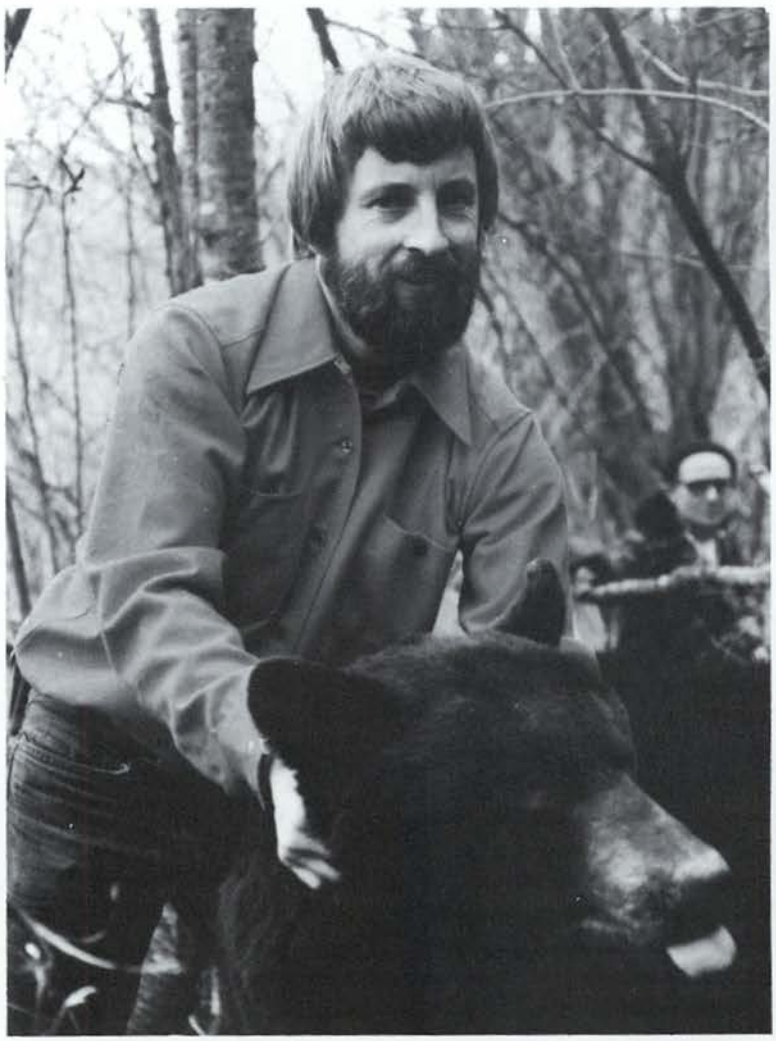
When berries ripened in late summer and fall, black bears fed almost continuously through the day, with only short resting periods.

Reproduction: Black bears are usually solitary animals, but males and females often travel together during the breeding season. They have a very unique reproductive system that is quite compatible with their habit of wandering through the forests for 5-7 months and sleeping during the remainder of the year in their winter den. The breeding season extends from May-August each year, but most of the breeding activity occurs in June.

Once a female is successfully bred, the fertilized eggs she carries do not attach immediately to the uterine wall, as in most mammals, but remain free floating within the uterus until the female enters her den in October. At that time, the eggs attach and begin development.

Most cubs are born in January weighing 8-12 ounces, and with closed eyes. The mother nurses her cubs (usually 1 or 2, but could be as many as 4 or 5), until they leave the den in late April or early May. At that time, the cubs are quite mobile and weigh 5-10 pounds. The female continues to nurse the cubs until September, although they feed on vegetation as well (grasses, forbs, and berries). The cubs remain with their mother through the next denning season and are chased away to live on their own by their mother the following June when she again begins the courtship ritual with another male.

Although black bears are capable of breeding for the first time as two-year-olds, if food conditions are optimal, most bears in



John Beecham posing with one of 1400 black bears captured during his studies in Idaho.

Idaho don't do so until they are 3 to 5 years old. Litter sizes in Idaho range from 1 to 4 and average slightly under 2. How often a female bear produces young depends largely on food conditions and ranges from every other year to every third year. As a result, black bears have a very low reproductive potential and are very sensitive to the impacts of man's activities.

Food Habits: Bears are classified as members of the Order Carnivora (meat eaters), but are omnivorous (eat plants and animals) in their eating habits. Part of our study of black bear food habits involved collecting and analyzing over 2,500 scats or droppings. We found that bears in Idaho feed primarily on plant materials (97 percent) and only occasionally on animal matter (3 percent).

Plants are definitely the mainstay of the bear's diet. Grasses and broadleaf forbs such as clover and dandelions make up the bulk of the bear's diet during the spring and early summer. By late summer and early fall, they switch to carbohydrate-rich berry crops that occur throughout much of Idaho. Huckleberries are the primary species taken in the northern part of the state, while chokecherries, bitter cherries, huckleberries, dogwood, and hawthorne are commonly eaten items in southwestern Idaho.

Animal matter makes up only a small part of the black bear's diet, but it undoubtedly contributes an important source of protein. Insects are the most common animal matter found in scats throughout the summer season. Occasionally, parts of other mammals and birds are found in the scats, such as elk, deer, birds, and bird eggs, and small rodents (ground squirrels and mice). Although these species do not appear to be critical to the bear's diet, they are readily eaten when available.

Dr. John Beecham received his M.S. in Wildlife Management from the University of Idaho in 1970, and his Ph.D. in Wildlife from the University of Montana in 1980. He is presently the Assistant Chief for the Bureau of Wildlife, Idaho Department of Fish and Game and worked with black bears from 1972-1984.

Gap Analysis: A New Approach to Protection of Biological Diversity

by Bart Butterfield

Extinction of species has become a major concern among conservationists as a national and global problem. An estimated 1,000 species are becoming extinct each year and that rate could increase to 5,000 each year by the end of the century.

Extinction is not a new phenomenon in geologic history. But today's extinction crisis differs because it is being created by human alteration of earth's ecosystems. Each day we are losing species of plants and animals that might have provided important future medicines or food supplies. In the process, we are threatening the fragile ecological balance on which our own lives, cultures, and societies depend.

The Endangered Species Act has been the primary tool in the United States to save species from extinction. Currently, over 1,000 species are listed as endangered or threatened. An additional 3,000 species are identified as deserving endangered or threatened status or which need more data to meet the legal requirements for listing. These figures may be misleadingly low. A recent report commissioned by The California Nature Conservancy, for example, estimated that 220 animals, 600 plants, and 200 natural communities may be currently threatened with severe reduction or even extinction in California alone.

The Endangered Species Act directs a large amount of resources at species that are already critically endangered. The California Condor recovery project, for example, operates with an annual budget greater than $1 million. Yet, recovery of listed species has been rare. In fact, only 229 recovery plans have been approved, less than 30% of the listed taxa. Despite our best efforts, species continue to go extinct as the result of human development. Our current programs to address these species have essentially become efforts documenting their loss through the endangered species listing process.

We at the Idaho Cooperative Fish and Wildlife Research Unit believe that the time to prevent extinctions is before species become critically endangered. We also believe it will be more effective to conserve natural, functioning ecosystems with many species than to apply expensive "emergen-

cy room" recovery measures to individual species. A new, preventative and pro-active conservation strategy that goes beyond endangered species is needed to balance the endangered species program.

As a first step toward this proactive conservation strategy, we are developing a methodology to map elements for natural biological diversity and assess their conservation status. Cooperating with us is Idaho Department of Water Resources and Idaho Fish and Game, with funding from the National Fish and Wildlife Foundation and U.S. Fish and Wildlife Service. The process, called gap analysis, uses computers to map the distribution of vegetation types and species, then compares them with the distribution of areas managed to conserve biological diversity. Any element poorly represented in conservation management areas is a "gap" in the conservation system.

Our developmental projects include the entire states of Idaho and Oregon. With over 100 vegetation types and 400 vertebrate species in both Idaho and Oregon, traditional mapping techniques are not practical. We have employed a geographic information system (GIS) to handle this extraordinary volume of data. GIS is a type of computer program that allows us to put maps into a computer where we can manipulate, combine, analyze, and display them.

Gap analysis involving hundreds of map overlays becomes a relatively simple task with a GIS. We can overlay a map of vegetation types with a map of conservation areas and graphically display gaps in vegetation conservation as well as create tabular reports. By combining the distribution maps of individual species, we can compile composite maps depicting species richness and conduct a gap analysis on all species at once, or we can select certain, unique subsets of species. Once we identify a gap, we can use other maps, such as ownership status, to identify potential conservation priority areas.

After developing our techniques, we hope to have gap analysis adopted across the United States. Already, following Idaho and Oregon's lead, California, Nevada, Utah, Washington, Colorado, Wyoming, and Vermont are ready to start gap analysis. Because species don't recognize state boundaries, as individual states complete their analyses we plan to join state-wide data sets and conduct region-wide gap analyses. Ultimately, we would like to see the entire United States completed, a task we believe could be accomplished for less than a penny per acre. In fact, the gap analysis concept has been applied in other countries, and our techniques should be readily applicable throughout the world.

We emphasize that programs for species on the brink of extinction should not be abandoned. However, it is our contention that a more balanced conservation strategy is needed to supplement endangered species recovery programs. It is easier and less costly to protect intact, functioning ecosystems with their myriad species than to initiate emergency room conservation measures for one endangered species after another, or to wait until common species become endangered before acting to protect them. Gap analysis is an efficient and cost-effective way to apply an ecosystem approach to the conservation of biological diversity and to identify conservation priorities.

The Idaho Cooperative Fish and Wildlife Research Unit is funded and supported by Idaho Department of Fish and Game, University of Idaho, U.S. Fish and Wildlife Service, and the Wildlife Management Institute.

Bart Butterfield is a research associate in the Department of Wildlife Resources.

Save The Bats!

by David Sutherland

Dark and swift, she flits over the treetops. A small flying figure under summer starlight, she skims a stream for a drink. Banking and swooping, she dives into the glare of a street light. . . "OOOOOOOOOOU! THERE'S A BAT! OH GROSS! IT'LL GET IN YOUR HAIR AND GIVE YOU RABIES!!"

How many of us have squealed out our attitudes, prejudices and limited "knowledge" about bats with just such a shriek? Poorly understood by most people, bats have suffered from centuries of persecution based on misinformation and superstition. Even today, many people still believe that bats always carry rabies and make nests in people's hair. Our culture is filled with evil bat imagery, from Count Dracula to illustrations of Satan sporting a pair of bat wings. Yet despite their loathsome reputation, these small and unobtrusive animals are actually very beneficial to humankind. They play critical roles in ecological processes around the world, and are unrecognized contributors to the success of many human activities.

Bat populations in many countries, including the United States, are falling due to factors such as destruction of key habitats, overuse of pesticides and misinformed extermination campaigns. Because bats provide us with so many services, we must develop a more accurate and appreciative image of bats, and take steps to ensure their preservation.

Bats constitute the second largest order of mammals, making up fully two-thirds of the mammal species in most tropical forests. It has been estimated that one quarter of all mammals on earth are bats. Flying foxes are large bats of the Old World and Australian tropics, and can have wing spans of over five feet. The bumblebee bat from Thailand is the world's smallest mammal and weighs less than a penny.

Bats in general eat a variety of foods, although individual species often have very specialized dietary requirements. If you were a bat, your preferred menu might include nectar, fruit, insects, frogs, fish, or even blood! Contrary to common belief, most have excellent eyesight. Many bats also use a radar-like system to navigate and find food in the dark. A bat will emit high-pitched cries, and listen for echoes with its large, sensitive ears; the echoes give it an audio picture of its surroundings. Most bats are active at night, and spend the day roosting in caves, attics, or trees. They are devoted parents, and rear only one baby at a time. Bats also learn very quickly, as some bat photographers have found. Captive bats are easily trained to swoop and dive in front of camera strobes.

Bats are often pictured as ferocious, snarling creatures because some photographers hold the bats in uncomfortable positions and blow in their faces. Presto! Snarling bat. Actually, bats are shy and retiring, will bite if molested and handled, and try to avoid humans.

The bat's impact on human economies has seldom been measured and isn't obvious, since bats go about their business in the dark. Yet bats may indirectly contribute hundreds of millions of dollars annually to world markets. For example, an estimated two hundred tropical and subtropical genera of plants rely on bats for pollination and seed dispersal. Bats have played an integral part in the survival and evolution of many economically important plants, such as avocados, bananas, plantains, breadfruit, peaches, figs, dates, cashews, mangos, and cloves. The durian fruit of Southeast Asia provides an estimated $120 million per year in export revenue for Indonesia alone, and is pollinated almost exclusively by one bat species, the dawn bat. The export of kapok fibers (from a bat-pollinated tree) earns $5 million annually for Indonesia. Mexican tequila is produced from the fermented juice of the agave, a plant that in the wild is pollinated mainly by the long-nosed bat. The seeds of langsat fruit trees in Malaysia are spread by flying foxes, and the straw-colored flying fox of West Africa is the sole disperser of seeds of the Iroko tree, which produces approximately $100 million in tropical timber exports annually.

The list goes on and on. Insect-eating bats consume prodigious numbers of agricultural pests such as corn earworm and armyworm moths; many also eat mosquitos. An individual grey bat, native to the United States, may eat three thousand insects in a single night, and a large colony of free-tailed bats in Texas is estimated to consume a quarter of a million pounds of insects every night. Furthermore, bat guano mined from bat roosting caves remains a common form of high nitrogen fertilizer in non-industrialized countries and generates income for subsistence-level families.

As seed dispersers, bats may play an important role in tropical forest regeneration cycles and could assist human efforts to rehabilitate disturbed or degraded rain forests in the wake of destructive activities. In dry forests in Costa Rica, a typical colony of four hundred free-tailed bats may disperse 146 million seeds every year. A square meter of rain forest in the Amazon may receive twelve to eighty bat-dispersed seeds per year, mostly from plant species which colonize disturbed land.

Because of their important roles as pollinators and seed dispersers, bats are crucial to many dominant plant species in healthy ecosystems. Since many other species in an ecosystem depend on the dominant plants for food and shelter, they ultimately depend on the bats. The extinction of one species of bat may thus restrict the reproduction of a dominant plant and greatly alter or destroy the character of an ecosystem, sending shock waves of extinction along the linkages of dependence that bind species together.

Unfortunately, bat populations seem to be in serious trouble. Researchers have noticed a disturbing decline among bats in many parts of the world. Several bat species, including the long-nosed and Indiana bats, are now included on the U.S. Endangered Species list. CITES (the Convention on International Trade of Endangered Species, a United Nations organization which monitors and restricts trade of rare plants and animals) has listed nine species of flying foxes which are threatened by over-hunting for food in Southeast Asia. A census of bat caves in a nature reserve in New Guinea showed that local people, gathering bats for food, had wiped out area populations of several beneficial species. And on the island of Guam, one of the two native fruit bat species has become extinct, while the other has been reduced to a population of around five hundred. The loss of these seed dispersers will certainly affect the health of the native forests on Guam.

Habitat destruction is a major cause of declining bat numbers. Bats starve or cannot find shelter as their forest habitats are cleared or their caves are dynamited shut as part of "control" measures. Because bat populations have received very little study relative to more glamorous species, there is little information to plot population trends or resource requirements.

Because they roost in large groups, bats are extremely vulnerable to massive exterminations. Vandals or hunters can wipe out entire colonies with a shotgun or by simply plucking sleeping bats from walls and ceilings. A communal bat roost also gives the illusion that a species is very common when it may actually be severely threatened. Unlike rodents, which they superficially resemble, bats have slow reproductive rates and most species produce only one offspring per year. A decimated colony may require decades to regenerate its numbers.

The diets of some bats, especially insectivorous ones, expose them to pesticides. High DDT residues have been detected in the bodies of some bats in Latin American agricultural areas, presumably from preying on large numbers of poison-treated pests or eating sprayed fruit in orchards.

If bat numbers are allowed or encouraged to decline further, we may begin to suffer the consequences as some vital ecological processes we depend on begin to fail. Ultimately, a tragedy for bats may become a tragedy for us, too. Yet people do not value bats as some of its effects on panthers and other wildlife, and on the flow of water, eleven sections are being built above ground level to allow

they do cute or cuddly species like giant pandas. Bats suffer from a serious image problem: beyond being unappreciated, they are despised (like snakes) for a host of superstitious and traditional reasons. Many of their beneficial activities are unobtrusively carried out at night, so people don't see the connection between (for example) bats and durian fruits. Encouraging people to work enthusiastically for the protection of bats, or to make sacrifices to co-exist with bats, requires first overcoming a barrier of apathy or even hatred.

In spite of their evil image, bats are remarkable creatures and don't deserve their bad rap, Instead of saying, "OH GROSS!" we should say, "Thank you" to bats, and respond accordingly by offering them some protection. Sharing the world with them can be economically rewarding. Yet if we are to ensure the future survival of some bat species, as well as the ecosystems and human activities they help support, we must become educated ourselves so we can educate others, and take an active role in bat preservation.

So what can you say next time someone shrieks about a bat? 🦇

David Sutherland is a graduate student in Resource Recreation and Tourism.

WHERE HAVE OUR MANNERS GONE?

by Todd A. Butts

"Hey grandpa, I thought you said there was a lot of deer in this area."

"Well son, I thought there was. A few years ago, we used to shoot at least one or two deer off the road here every year."

"But grandpa, we haven't seen one deer all day long. Why isn't there any deer here anymore?"

"I don't know son, I just don't know."

The year is 1991, and big game hunting, for the most part, has evolved into a sport. Like most other sports, hunting has a set of rules and regulations that have been set up in the best interest of the sport, and in fairness to all those who participate. Most rules that govern the sport of hunting are laws. These laws include such things as: hunting seasons, bag limits, methods of take, hunting hours, and license and tag requirements.

Unlike other sports, when hunters are in the field, 99 percent of the time there is no umpire or referee out there to penalize them for breaking the rules. The sheer size of most western states, combined with grossly undermanned and underfunded law enforcement efforts, have caused most hunting laws to be almost unenforceable. The situation is comparable to lawmakers making robbery a crime in Seattle, and only having a police force of 10 people.

Even in rare cases when violators are cited, the courts often drop the ball. Most judges hardly even take crimes against wildlife seriously. This attitude usually results in nothing more than a slap on the hand for the offender, and may provide incentive for them to repeat the crime in the future. Why not? Their chances of getting caught aren't very good, and if they do, the penalties are not really severe enough to worry about anyway.

It is quite clear that hunting laws do not provide sufficient penalties for many hunters to abide by the laws. Because of this fact, the conformity to hunting laws is largely due to an unwritten code of ethics that exists between hunters.

An understanding of this "code of ethics" is largely an education process that is passed on from generation to generation. The new hunter is taught such fundamentals as proper firearm safety, species and sex identification, suitable circumstances under which an animal can be taken, and proper care of the animal once the animal has been killed. The code of ethics is mostly a pattern of behavior that is learned by watching an experienced teacher.

Many young hunters are being taught unethical practices by hunters who set a bad example in the field. As a result of this failure to establish ethics in young hunters, their safety in the field has, in many cases, become very questionable. Violations such as shooting from vehicles and across roads, firing before species and sex have been identified, and poaching animals both after hours and out of season, have become commonplace.

Laws and regulations will continue to go largely unheeded until the penalties for violators increase. Maybe this will get the hunters' attention and make them abide by the laws. More importantly, in order to make a long-term impact on the sport, instructions regarding ethical behavior must be vastly improved. We need to make an impact on the middle-aged hunters so that good ethical behavior can be passed down to their children. Currently our hunter education programs for youngsters are excellent, but if their parents don't have good ethical behavior, they are likely to forget what they were taught in hunter education. If the ethical behavior of hunters in the field is not improved, the cost to wildlife, and the damage to the future of hunting, may be irreversible.

Todd Butts is a senior in wildlife resources.

College Focus

Horse Numbers Running Wild on Western Rangelands

by Brett Dumas

"All animals are equal, but some are more equal than others," wrote George Orwell, in his novel *Animal Farm*. Apparently, most Americans agree with Orwell, judging by the relative popularity of dogs and cats compared to rats and snakes. What do you believe? Is one animal more important than another? This question must often be answered when managing wild and domestic animals inhabiting forests and rangelands. Natural resource managers increasingly are being asked to solve these problems. For example, on our western rangelands a serious conflict exists between the management of feral horses and domestic livestock, wildlife, and the environment.

During the Pleistocene era, some 10,000 years ago, the last ice age resulted in the extinction of many life forms. In North America, the ancestors to the current members of the Equidae family were one such casualty. However, due to the land bridges present at the time, animals native to North America, such as the horse, emigrated into Asia and eventually into Europe and Africa. For the next 10,000 years, the North American environment would evolve without the influence of wild horses.

The horse did not reappear until brought to the western plains by the Spanish explorers in the 16th century. Through the years, escaped or released animals have formed the wild horse herds. Native Americans obtained horses from Spanish camps for hunting, fighting, and travel. As settlers headed West, they lost horses which joined the wild herds. Often the cavalry released horses after Army posts were closed. And still later, ranchers released horses when they couldn't afford their upkeep. Although most horses in todays' wild horse herds are truly wild, they all originated from tame animals. Therefore, they are properly referred to as feral horses.

The herds began to multiply, taking advantage of an empty niche they were well adapted to. As the horse numbers increased in the West, so did the number of people. The horses soon became a nuisance to livestock ranchers. They competed for the same resources the rancher depended upon for a living. For the better part of three decades, beginning in the 1930s, feral horses came under tremendous pressure from "mustangers," who captured or destroyed the animals in one way or another. Many of the animals were slaughtered for dog food or sold to foreign countries as a delicacy.

A Nevada ranch woman named Velma Johnston ("Wild Horse Annie") often witnessed cruel handling of captured horses and mounted a campaign to put an end to it. In 1959, Public Law 86-234, known as the "Wild Horse Annie Act," passed Congress and effectively prohibited the use of aircraft or motor vehicles and the pollution of watering holes for capturing or killing wild horses. In 1971 total protection was granted with the "Wild Horse and Burro Act." The Act declared that wild, free-roaming horses and burros ". . . are living symbols of the historic and pioneer spirit of the West; they contribute to the diversity of life forms within the Nation and enrich the lives of the American people. . . ." Congress required that the animals be protected, preserved, and managed ". . . as an integral part of the natural system of the public lands. . . ."

Responsibility for the animals was delegated primarily to the Bureau of Land Management (BLM), which administers most of the land where the horses roam. Wild horse herds occur in Nevada, California, Oregon, Idaho, Montana, Wyoming, Utah, Arizona, and New Mexico. Two-thirds of all wild horses live in Nevada. The Wild Horse and Burro Act stated that management of the horses would be limited to the home ranges occupied as of 1971.

At the time the Wild Horse and Burro Act was passed, it was estimated that approximately 17,000 animals existed. However, the methodology involved in determining horse numbers at the time was quite subjective. The local resource manager's estimation of feeling, acquired from horses casually seen, was the basis for the original count. At the time though, the horse herds tended to stay in the high country, away from their predator—man. Thus, most of the animals, even herds, went unseen. A few years after protection was granted, the herds began to come out into the open ranges. It became evident, as a result of several detailed studies, that their numbers were in excess of that previously determined.

The range was soon faced with an overpopulation dilemma. In the past, man had served as the lone predator of the horses, keep-

ing the population numbers in balance with their environment. However, with the combination of removing the predator (humans) and the herds exploiting new ranges, feral horse numbers began to multiply. It is estimated that herd populations can increase at a rate of 15-20% a year. The depletion of a critical resource (grass), and the degradation of a sensitive environment soon occurred. This not only posed grave consequences to the horses, but also to wildlife and livestock.

A means of active control became necessary. The laws at the time limited control mechanisms to rounding them up on horseback and storing them in holding facilities, requiring extensive costs in manpower and capital.

The BLM acted to reduce the surplus with the Adopt-A-Horse Program. Beginning in 1973, qualified individuals were allowed to adopt feral horses for a specified handling fee. The BLM maintains title to the horses for one year, pending demonstration of adequate care. Besides looking out for the care of the animal, this prevents their sale to slaughterhouses. As of 1988, approximately 77,000 horses had been adopted since the program's inception.

Additionally, two pieces of legislation have been passed which, in part, address the problems of controlling their population. The Federal Land Policy and Management Act of 1976 authorized the use of helicopters for round-up and motor vehicles for transportation purposes. The Public Rangelands Improvement Act of 1978 allowed for humane destruction of old, sick, lame, or unadoptable excess animals.

Throughout the brief history of managing the wild horse herds, preservation and animal rights' groups have severely reduced the BLM's ability to control their numbers. This has occurred primarily by using the courts to stop roundups. Although the courts have found in favor of the BLM in most cases, the long delays inhibit the BLM from removing sufficient numbers of horses to maintain an optimum population. For example, if the BLM plans to remove 400 horses in October, but is delayed in court until the following summer, they can still only capture 400. However, since October the horses have gone through a breeding season and, thus, perhaps 500 horses need to be removed. A surplus of 100 horses remains on the range. It becomes obvious that if this strategy continued for several years, the horse numbers would continue to climb. Many of the court cases have persisted for several years.

The Public Rangelands Improvement Act requires that when excess animals are identified on public lands, they be removed immediately. Excess animals are removed and disposed of in following order and priority: 1) old, sick or lame animals are to be humanely destroyed; 2) healthy animals are to be placed in private maintenance as long as there are qualified individuals wishing to adopt them; 3) remaining excess animals for which there is no adoption demand are to be destroyed in the most humane and cost-efficient manner possible. However, a moratorium on the destruction of healthy excess animals has been in effect since 1982.

The wild horse dilemma extends beyond the management of the animals or land. Economics has become an increasingly important consideration. How much does it cost to maintain these animals in holding facilities? In 1988 there were approximately 7,000 horses being held, down from 10,000 in 1986. The BLM's 1988 budget for long-term maintenance of excess animals was almost $7 million, or almost $20,000 a day. The 1988 budget for the wild horse program exceeded $18 million.

The BLM estimated the wild horse population in 1988 at about 45,000. The BLM would like to see the population reduced to under 30,000 in order to maintain sound ecological management of both the horses and the land.

How are the horses to be controlled in the future? The Wild Horse and Burro Advisory Board recommended the following five-step process for disposition of excess animals:

1. Regular adoption program at full fees.
2. Special adoptions at altered fees.
3. Training of horses at prisons by inmates, with the trained animals to be made available for adoption. Animals not adopted within 30 days after training should be handled through steps 2 and 4, and if not adopted within 30 days, destroyed in accordance with step 5.
4. Placement of horses on private sanctuaries, with the animals maintained with no federal funds.
5. Euthanasia for any animal not disposed of within 90 days following BLM's certification of its availability for adoption.

Promoters of the prison training program hope the gentling of wild horses will increase the animals' chances of being adopted. It has been successful on a limited basis, and is expanding. The first privately owned sanctuary for unadopted wild horses began operation in South Dakota in 1988. By the end of 1988, more than 500 excess wild horses roamed on the sanctuary.

Due to public and congres-

sional pressure, the 1982 moratorium on the destruction of healthy animals has not been lifted. In addition, research involving fertility control in both the lead stallion and the mares is being investigated.

The wild horse population must be controlled. Accomplishing this has been a running controversy, with public sentiment seeming to be the deciding factor. The public has followed a pattern of loving these animals too much, with a well-meant, but misunderstood sentiment of over-protection. If this continues, the horses are the ones who may suffer the most. The key to the problem and future prosperity of the horses is an informed, ecologically based management program that will include a humane means of limiting animal numbers—just as other wildlife species are managed.

Brett Dumas is a graduate student in range resources. This article placed second in FWR's annual writing contest.

Dead End: Where Wildlife And Pavement Meet

by Philip Tanimoto

One January morning, as I drove to work across Florida's Big Cypress National Preserve, I spotted the brown, hunkered form of an injured bird on the shoulder of U.S. 41, the two-lane Tamiami Trail. I was accustomed to looking for injured and killed wildlife and stopped to investigate. It was a limpkin, a dark brown wading bird, unique to Florida's marshes. As I cautiously approached to avoid startling it, other vehicles sped past me at 65 or perhaps 70 miles per hour. Numerous injuries had reduced the once graceful bird to a cowering mass, swaying on its single unbroken leg. Its right eye hung from the socket and a broken wing drooped. I prepared a supporting nest of clothing in my car, gently lifted the bird into it, and finished my commute to Shark Valley. There, I telephoned the Florida Game and Fresh Water Fish Commission to have the bird transported to one of the wildlife hospitals in Miami or Naples.

During the year I spent in Florida, I saw more road-killed wildlife than any place I lived before. Each day the vultures would descend to the roadsides to feast on the carcasses, occasionally meeting similar fates themselves. I was compelled to understand the factors creating this disturbing situation.

During the winter, the dry season in south Florida, the great sheet of water covering the everglades ecosystem recedes, exposing the land and allowing land animals to disperse. At the same time, fish, crayfish, frogs, turtles, and other aquatic foods for herons, egrets, anhingas, alligators, and otters became trapped in the few remaining pools of deeper water. These concentrated food sources became both a benefit and a disaster to wildlife.

The south Florida topography presents special challenges to developers. To build highways through the seasonally flooded region, the land surface must be raised to avoid annual flooding in this "river of grass." In the winter, the water table is only two feet below the land surface. In the summer, it is one foot above. To avoid importing fill material, machinery was designed to excavate the limestone and pile it on adjacent land, creating a roadbed above water level. Thus, the first highway through the region, U.S. 41, was accompanied by the first canal, the Tamiami Canal. The job was completed in 1929.

Since then, a large network of secondary roads, dikes, and their borrow canals (limestone was "borrowed" to build the roadbeds) has altered natural ecology. Wild animals that gather in the borrow areas to feed on concentrated aquatic life find themselves within a few feet of hurtling traffic. Even graceful herons and egrets are swatted from the sky by speeding vehicles.

The problem is compounded by the "snowbird migration." Each autumn, from October through January, the southbound interstate lanes are filled to capacity by human migrants fleeing their temperate homes. This deadly combination of high traffic volumes and wildlife concentrated at highway canals results in exceptionally high numbers of roadkills.

Roadkills are not restricted to the winter season. From June to October thunderstorms soak the region and thousands of square miles of land are flooded. Only

small islands, comprising perhaps five percent of the total land surface , remain unflooded.

Unfortunately, raised roadbeds offer the most unobstructed travel lanes available to wildlife. The rich aquatic life of the canals also lures predators to the road shoulders. Most wild animals cannot distinguish between the safe and perilous portions of a highway. These factors result in roadkills throughout the year.

The endangered Florida panther, numbering thirty to fifty individuals, and the declining Florida black bear both suffer their greatest mortality on highways. On average, one panther is is killed per year. The largest black bear ever recorded in Florida, over 600 pounds, was killed by an automobile in 1988. The endangered American crocodile (some 200 survive) also suffers its primary known cause of mortality on Floridian highways.

Roadkill occurs wherever highways do, and the statistics are astronomical. The Humane Society estimates that every day, 1.5 million animals die on the nation's highways—over half a billion per year. Over half of these are birds, and approximately 126,000 thousand deer. Both Michigan and Pennsylvania report nearly 30,000 deer killed annually on their highways. Some 100 black bears are road-killed each year in Pennsylvania. On Interstate 80 in Nebraska, Ronald Case of the University of Nebraska surveyed road-killed wildlife from 1969 through 1975 and found 24,244 dead deer, coyotes, badgers, opposums, skunks, rabbits, muskrats, and pheasants. For one 350-mile stretch of Interstate 5 in California and Oregon, the Urban Wildlife Institute estimated a monthly kill of 61,000 animals.

If you drive an automobile, chances are you have already contributed to the problem of roadkill, as I have. While driving through North Dakota, I hit the state bird, a western meadowlark. She might have raised her clutch on the prairie, but upon high-speed impact, the contents of the egg in her body painted the hood of my car. An armadillo I hit on U.S. 41 felt like hitting a rock, and a white-tailed deer I hit in Virginia fared worse than the sheet metal of my car.

The effects of our automobile-based transportation system on wildlife are far reaching. Roadkill are only one aspect of a much broader problem. The destruction and fragmentation of habitat, salt-laden runoff, blockage of migration routes, alteration of natural water flow, and increasing human access caused by highways all act together to deplete and distort wildlife populations.

What can we do to solve this dilemma? Unfortunately for wildlife, the addiction of civilization to automobiles is not going to change in the near future. Nevertheless, the first and most basic steps are to become sensitized to the havoc that our automobiles wreak and to stop laying new highways where they do more harm than good. We must learn to locate roads where they cause the least possible harm to wildlife. We must understand the ways in which our roads disrupt natural processes such as daily movement patterns and seasonal migrations. Instead of bisecting parcels of ancient forest or rare wetland, we should consider routing roadways through more abundant habitats or previously altered areas where particularly rare or endangered species do not occur. Road-building methods and designs also need modification. We must build highways without median barriers or fences that prevent wildlife from reaching the other side.

A limited amount of progress is being made however. Twenty miles north of U.S. 41 in south Florida, State Route 84 (Alligator Alley) is being doubled in width to accommodate the completion of Interstate 75. This highway cuts through the little remaining Florida panther habitat. To mitigate some of its effects on panthers and other wildlife, and on the flow of water, eleven section are being built above ground level to allow safe underpassage. In the same area, speed limits have been lowered and law enforcement has been stepped up to reduce the likelihood of panther kills. In Glacier National Park, a highway underpass is one of the most frequently used routes for goats approaching a natural mineral salt lick. In Colorado, mule deer show considerable anxiety using highway underpass. Nevertheless, they use it frequently. Initial tests with reflectors that deflect headlight beams to the sides of roadways to warn deer of approaching vehicles demonstrate that roadkills were reduced by ninety percent where reflectors were used.

Much more can be done, however. For example, roadkill levels have been closely linked to wooded corridors where wildlife prefer to cross highways. By providing underpasses at these critical locations, road kill frequency could be reduced substantially. Augmented with fences to keep wildlife from venturing onto roadways, they could dramatically decrease wildlife mortality. In the Everglades region and near other wetlands, existing guard rails could be topped with an additional three feet of chain link fencing to keep egrets and other birds from flying across highways just over the pavement. Culverts can be installed under roadways for more than just water. Culverts are used so frequently by mammals that biologists know them as among the best places to set traps.

I remember as a child running to "rescue" a hapless robin that flew into traffic one too many times. I remember the annual toad massacre when the road to school was covered with pancaked bodies because a stone wall prevented the toads from reaching their mating pond just yards away. I recall riding my bicycle behind a friend and cringing when his tires crushed a garter snake that he never even saw. No solace is found in memories like these.

The impacts of highways on wildlife and the problem of roadkill are but symptoms of our greater illness. In many urbanized areas and even in rural America, the days are long past when we looked soberly behind ourselves and asked, "What happened to the verdant land, the sparkling water, and the wild creatures that once comprised our home?" Our society has not yet learned how to share the earth with those who cannot protect themselves. Nor do we assume with pride the stewardship of our irreplaceable natural resources. Rather, we fight among ourselves for crumbs of wealth and power while the true bread of life is disappearing.

There is an old adage among backcountry travellers which says, "leave your campsite cleaner that you found it." Perhaps if we took such care and concern for the earth that feeds us, we could guarantee humanity's survival a million years from now, and even then, have a full complement of wild animals as our neighbors.

Philip Tanimoto is a graduate student in wildlife resources. This article placed first in FWR's annual writing contest.

Bosworth Chops Way Around World

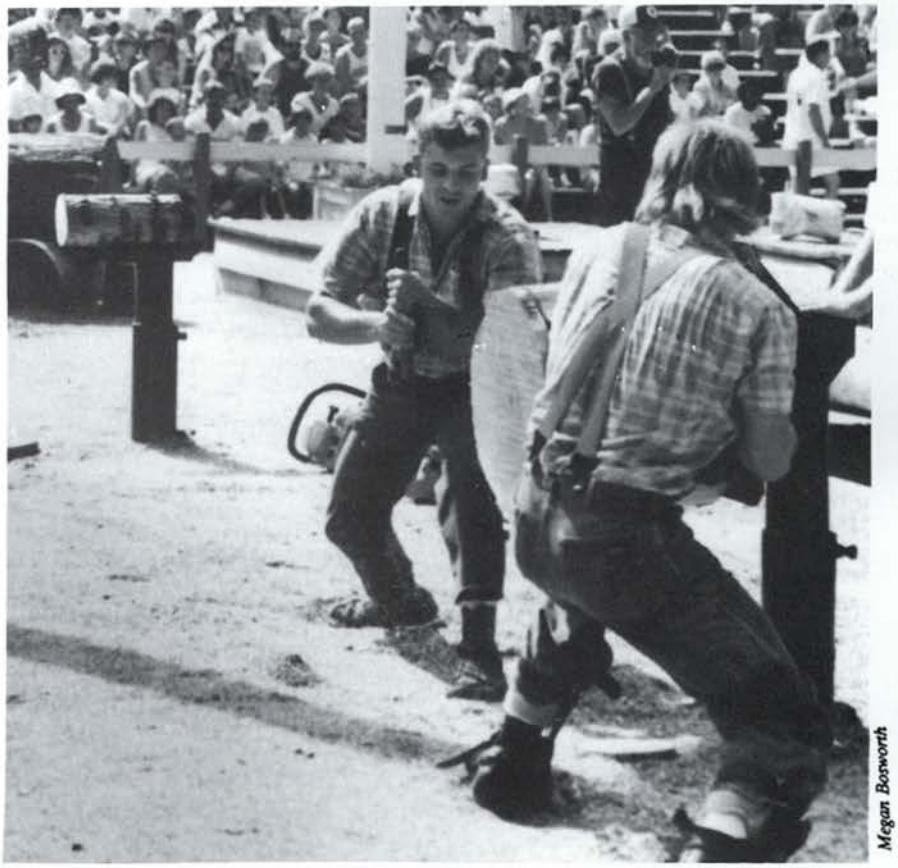
by George Savage and David Silcock

Carson Bosworth (BS—Forest Prod., '90) was "Down Under," in New Zealand, but he was not exercising the skills he learned in FWR's pulp and paper option, at least not yet. He's been exercising his muscles by competing in international logger sports competitions in that country and in Australia, and he's good at it.

While "Down Under" in the Hirstville Domain, he won the 500-mm single-handed sawing handicap in which he cut off the backmark of nine seconds. He followed up with a decisive win in the axe throwing contest. Bosworth filled placings in three chopping finals and in the 500-mm, double-handed sawing final.

Bosworth again dominated the field at the annual Waikala Sports and Gymkhana at Glenary. He gave what experienced officials described as an "awesome" performance in winning the toughest contest on the program—the 500-mm, single-handed sawing contest. Bosworth cut off the backmark by nine seconds. He also showed up in the chopping events and won the 275-mm undercut and notched two seconds in other handicaps from the near back benchmarks.

The Bonners Ferry native has been competing in professional logger sports since the tender age of 8, doing his thing in contests throughout the Northwest and Canada. This past summer, he won the World Pentathlon Timber Championship at the Alberta Lumberjack Championships—for the third time. In doing so, he not only set a championship record, but also became the first 'jack to win three world championships in a row—against contestants from the U.S., Canada, New Zealand, and Australia.



Megan Bosworth

Carson Bosworth (left) shows just how its done at a Logger Sports Demonstration at Sea World, Aurora, Ohio.

The pentathlon is a tough test of a competitor's all-around skills. To win, Bosworth had to excel in vertical chopping, Swede sawing (with a bow saw), obstacle pole bucking, choker racing, and single crosscut sawing.

His abilities have also taken him a step or two into show business. Besides competitions, for the past two summers, he's performed in wood chopping exhibitions at the Sea Worlds in San Diego and Aurora, Ohio. The shows, sponsored by Wickheim Timber Shows of Canada, highlight some of the main lumberjack events: log rolling, tree climbing, wood chopping, crosscut sawing, axe throwing, and chainsaw work. Bosworth performs primarily in underhand chopping, springboard chopping, double bucking, and chainsaw cutting.

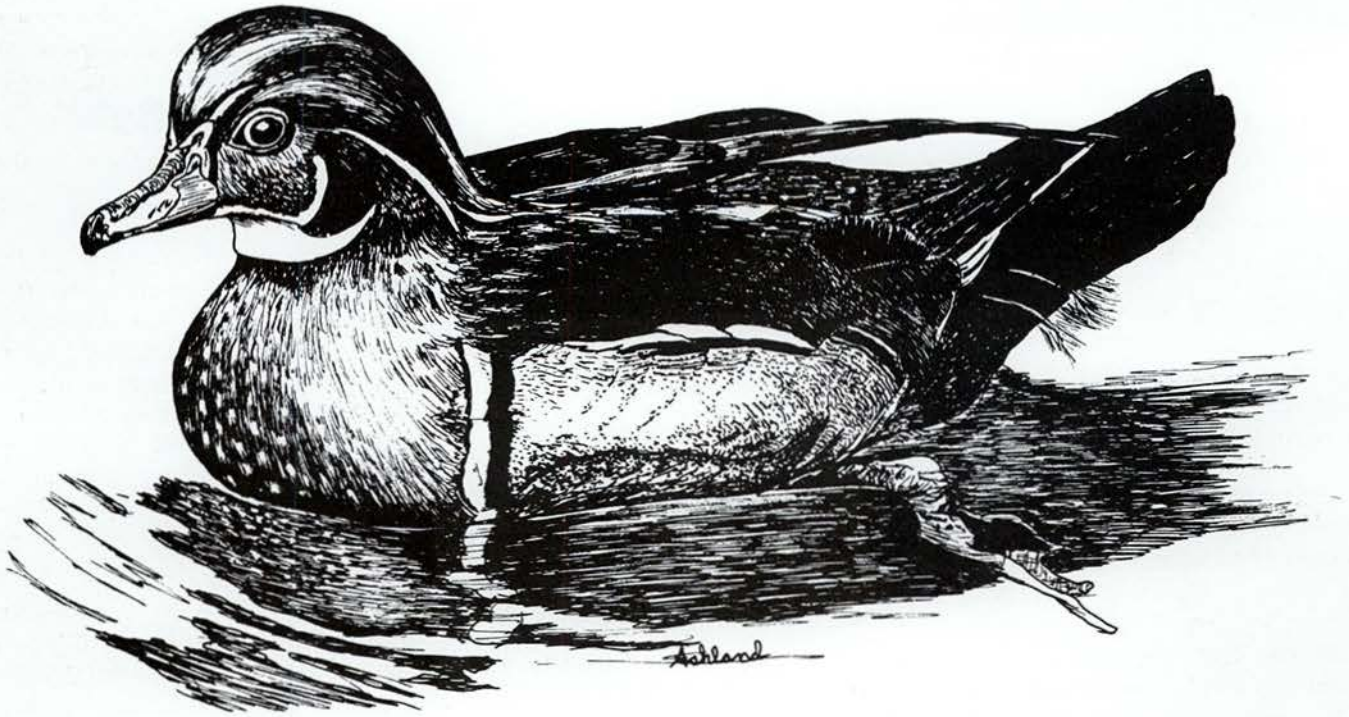
His participation in logger sports is part of a family tradition. His father Robert (MF—Silviculture, '75) and sister Megan also compete on the professional circuit, although, he said, his mother, Jill Bosworth, has "retired" from the sport. While at FWR, Carson coached the college's logger sports team.

Carson Bosworth will return up north from "Down Under" in April. And if the past can predict the future, he'll no doubt return with other championships under his belt, or, more accurately, under his logging-style suspenders.

Megan Bosworth

Carson Bosworth (right center) standing with his father at graduation.

George Savage is director of information services for the College of Forestry, Wildlife and Range Sciences. David Silcock is a senior in wildlife resources.



Commencement Speech

by Chris Vetter

The easy part of my education has ended. Since kindergarten, the main focus of my life had been school: going to classes, reading books, writing papers and taking tests. I have been encouraged, pushed and bodily dragged up a mountain of knowledge. Whenever I slipped, someone was there to get me back on the right track. It had always been someone else's responsibility to see that I acquired the skills and know-how I would need in my life. Gradually, over the years, I took some of that knowledge, tentatively stretched my wings, and took a few hops. I chose wildland recreation as a profession and learned there is more to the woods than babbling brooks and pretty flowers. I decided I would be a forester, too. Now I've reached the top—or at least the second major ridge. And they're going to shove me off a cliff to see if I can fly!

Am I scared? You bet I am! My need to learn won't be any less after today. My technical knowledge may well be out of date even before I leave Moscow. Within the next ten years, changing economies, technology, and social values may alter even the basic principles of resource management. My survival as a professional depends on my being a part of that change. I have only my own drive and self-discipline to rely upon.

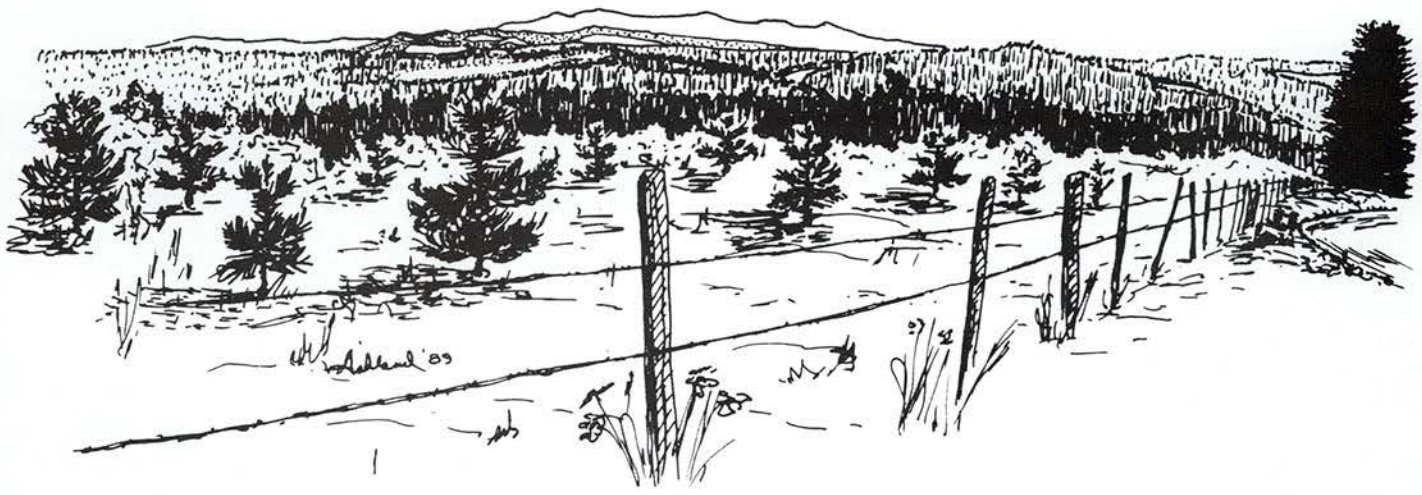
The hardest part of my education is about to begin. The part where mistakes cost you more than a letter of the alphabet. This is the part where classes are at night, reading is at the breakfast table, and tests determine whether or not I get a promotion. There's no such thing as a forty-hour week, and there are plenty of distractions. The lawn needs mowing, the truck needs a tune-up, the Lions Club wants my help at the rodeo. I want to go to Disneyland, my sister wants me to paint her house, and the nice old lady next door needs firewood for the winter. Yes, I know nobody said life would be easy.

It's all up to me now, I have to continue my education, to keep learning. But I have an edge. In the years I've spent at the University of Idaho, I've learned more than the facts that trees grow up, and that the amount of garbage in the campground increases logarithmically with the number of campers. I've learned something much more important: the key to success, my wings.

I've learned how to learn. That's all I need to know. Think about it. With that knowledge I can be almost anything I want to be, do almost anything I want to do. If I decide I don't want to be a forester, I'll learn a new profession. If they want me to grow square trees instead of round ones, I'll learn how. I think the sun finally rose—this is what they've been trying to teach me all these years. You can learn something from every book you read, every person you meet, and every experience you have. If you learn it and apply it, there's nothing to stop you.

I can leave Moscow with confidence. I'll leave behind me many friends, take with me a lot of memories. But it's time. Go ahead, push me off the cliff. I've got wings and I can fly.

Chris Vetter is a lands resource manager in forestry with the Department of Lands in McCall, Idaho. She gave this speech at her commencement ceremony in 1987.



NEWS BREAK

U of I's first head of forestry had to be the whole department.

UI News Bureau

Charles Houston Shattuck arrived at Moscow in 1909 to become the first head of the University of Idaho's Department of Forestry. He found the campus "practically void of trees and shrubbery" and "the surroundings lonesome, the solitude oppressive." Shattuck would change all that, and along the way develop one of the nation's earliest university forestry programs, one that has provided research and technical services throughout Idaho and the Pacific Northwest.

Shattuck had recently obtained his doctorate from the University of Chicago in the new field of forestry. He was not immediately accepted at the University of Idaho, even though he was located in a state rich in timber. "The forestry course was considered as more or less of a fad—an untried experiment," he later wrote.

In the beginning, Shattuck was the entire faculty. He taught all the school's forestry courses in a small classroom. He became familiar with the local landscape and what it offered. Shattuck could frequently be seen leading students on twenty-mile hikes across the Palouse Hills, sometimes slogging through snow, many times leaving before dawn and returning at dark—wet, cold and tired.

One of Shattuck's plans for improving the department was to create an arboretum. During his first year at the university he began to eye "an unsightly disfiguration back of the campus which no one seemed to want, and which could not be kept from weeds." Here he proposed to build his arboretum, and the Regents agreed. In the spring of 1910 he and nurseryman Clement Price began planting seedlings. Through their efforts the arboretum came to hold over 12,000 trees representing 150 species. The former weed patch thrived through the years and became the cornerstone of a landscape-beautification project that eventually encompassed the entire university grounds. It was also the first university arboretum in the West.

In 1917 Shattuck became embroiled in a controversy surrounding the university's president, and the Board of Regents forced him to resign. For a while he taught at the University of California, Berkeley, then moved to Idaho Falls, Idaho, where he died in 1931. Two years after his death a new generation of university officials gave Shattuck a posthumous honor for his untiring work on campus. They named the former weed patch—now a beautiful wooded lot used by walkers, picnickers, recreationists and researchers—the Charles Houston Shattuck Arboretum. And today the College of Forestry, Wildlife and Range Sciences—another of Shattuck's legacies—is one of the most respected natural resource institutions in the United States.

FWR CELEBRATES ACHIEVEMENT

by George Savage and Shawna Zechmann

The annual FWR Awards Banquet proved to be the social event of the year, with nearly 300 students, alumni, faculty, and guests in attendance to pay tribute to specially selected students and faculty for the 1989-1990 academic year. Sixteen students and three faculty members were honored at this enjoyable occasion which brought these people together for mingling, dining, and distribution of awards and applause.

The first order of affairs was the presentation of awards to the outstanding seniors and graduate students for 1990. Recipients of these awards were selected by the faculty from each department. Then, by a ballot of all departments, the college selected an outstanding senior and graduate student to represent the College of Forestry, Wildlife and Range Sciences as a whole.

Outstanding faculty members were likewise recognized within the college. Three faculty awards

are made annually, for outstanding teaching, outstanding research, and outstanding continuing education activities.

Also announced at the Awards Banquet were the winners of the FWR Excellence in Writing Contest. This contest emphasizes the importance of written communications and encourages good writing skills.

OUTSTANDING SENIORS AND GRADUATE STUDENTS

The Department of Fish and Wildlife Resources selected Gregory L. Wooten, a wildlife major from Kimberly, Idaho, as their Outstanding Senior. The department's Outstanding Graduate Student for 1990 is Gregory D. Hayward of Denver, Colorado. Dr. Hayward received his Ph.D. degree during May's commencement ceremonies and is currently an instructor/research associate in the Department of Fish and Wildlife Resources.

George Savage

Left: Fish and Wildlife Head Mike Falter presents plaques and congratulations to his department's Outstanding Graduate Student Greg Hayward (center) and Outstanding Senior Greg Wooten.

The Department of Forest Products chose Eric N. Hansen, from Cambridge, Idaho, as their Outstanding Senior. Eric was also a 1989 recipient of a UI Alumni Association Award for Excellence. Richard L. Folk of Moscow, Idaho, a Ph.D. graduate student and a research associate, was named Forest Products Outstanding Graduate Student.

George Savage

Right: Forest Products Head Ali A. Moslemi presents his department's Outstanding Senior Eric Hanson.

The Department of Forest Resources selected Mark R. Mousseaux, of Pullman, Washington, as their Outstanding Senior. Yvonne Carree, from Chicago Heights, Illinois, was named as Outstanding Graduate Student. She is working on her M.S. in forest resources and has also been employed as assistant UI extension forester.

George Savage

Forest Resources Department Head Joe Ulliman presents awards to Outstanding Senior Mark Mousseaux (center) and Outstanding Graduate Student Yvonne Carree.

The Department of Range Resources selected Kelly K. Crane, from Burley, Idaho, as their Outstanding Senior. Also selected within the department was Outstanding Graduate Student Brett C. Dumas of Mission Viejo, California. Dumas received his M.S. in range resources at the spring 1990 commencement.

George Savage

On behalf of laryngitic Department Head Kendall Johnson, Min Hironaka presents awards to Outstanding Graduate Student Brett Dumas (center) and Outstanding Senior Kelly Crane.

The Department of Wildland Recreation Management (now the Department of Resource Recreation and Tourism) presented to Amy E. Adams, of Moscow, Idaho, the department's Outstanding Senior Award. The Outstanding Graduate Student for the department was Mary Lou Dresser of Neenah, Wisconsin. She received her M.S. degree at the end of the 1989 fall semester.

George Savage

Wildland Recreation Management Head James R. Fazio poses with Amy Adams, his department's Outstanding Senior and the Outstanding Senior for the college.

ALL-COLLEGE AWARD RECIPIENTS

The Department of Wildland Recreation Management's Outstanding Senior Amy E. Adams was selected, by a ballot of all the college's faculty, to be the 1990 Outstanding Senior for the College of Forestry, Wildlife and Range Sciences. Amy has been active in many activities while attending the university, including XI Sigma Pi, Wildland Recreation Management Association, Alpha Zeta Agriculture Society, Phi Kappa Phi, the UI honorary, and Phi Beta Kappa national honorary. Never off the Dean's List, she graduated Magna Cum Laude.

The college faculty selected James M. Saveland as the 1990 Outstanding Graduate student for the College of Forestry, Wildlife and Range Sciences. A specialist in fire management, Dr. Jim Saveland is currently a research forester for the USDA Forest Service at the Southern Forest Fire Laboratory in Macon, Georgia, where he, wife Claire, and their two children live.

Outstanding faculty members recognized for the college included Min Hironaka, professor of range resources, J. Michael Scott, professor of wildlife resources and leader of the Idaho Cooperative Fish and Wildlife Research Unit, and Penelope Morgan, assistant professor of forest resources.

George Savage

Teacher Min Hironaka (M.S.—Range Mgt. '54) receives his award from Student Affairs Council Chairman Mark Hale (Sr.—Fishery Mgt.)

The college's students voted Min Hironaka, a faculty member since 1954, as Outstanding Teacher of 1990. Mike Scott received the 1990 Outstanding Researcher Award for his nationally significant work in using geographic information systems in potential biodiversity preservation.

Penny Morgan received the 1990 Outstanding Continuing Education and Service Award.

George Savage

Associate Dean for Research Leon Neuenschwander took pleasure in presenting the Outstanding Researcher Award to J. Michael (Mike) Scott, wildlife professor and leader of the Idaho Cooperative Fish and Wildlife Research Unit.

George Savage

Leonard Johnson presents his Outstanding Continuing Education Award to Penelope (Penny) Morgan; Department of Forest Resources.

EXCELLENCE IN WRITING AWARDS

The Excellence in Writing Awards for 1990 went to two Wildlife majors and one Range major. The first place award of $250 went to Philip Tanimoto, wildlife M.S. graduate student. Brett Dumas, a range resources M.S. graduate received the second place prize of $125, and taking third place was senior wildlife major Todd Butts, who received $75 for his participation and efforts.

George Savage

Leonard Johnson gives Philip Tanimoto (graduate student—Wildlife) a certificate/check that testifies to Tanimoto's writing skills.

So concludes the distribution of awards to the many deserving individuals in the College of Forestry, Wildlife and Range Sciences.

George Savage is the Director of Information Services for the College of Forestry, Wildlife and Range Sciences.

Shawna Zechmann is a senior in resource recreation and tourism management.

Wildland Summer Camp

by Matt O'Brien

After enduring a grueling year of botanical nomenclature and studying a myriad of new species, I embarked upon a journey that I'll never forget.

I left Moscow and headed south for McCall, Idaho, a small town nestled on the southern end of mile-high Payette Lake. When I arrived at the University of Idaho's satellite campus, the site of the Wildland Ecology Summer Camp, I was greeted by the elderly caretakers. "You can't park here,. . . THIS space is reserved for the teaching staff," was their greeting. Smiling, I indicated that I wanted to unload my belongings and found that "Way over there" would be my new home for the summer. It was a log cabin with ponderosa pines looming overhead. Its present occupants were a family of spiders and the remains of last summer's camp participants. However, in the countryside enveloping the camp I found a wide array of beauty in the mountains which surrounded the nearby lake.

Soon I met some old and new friends who brought their camping gear, fishing poles, and the same eerie feeling of uncertainty about summer camp that I was carrying.

After we settled in, my classmates and I walked to the central building where we were introduced to the man who acted as friend, teacher, and baby-sitter for us all, Jim Kingery. Shortly thereafter, we were bombarded with four pounds of handouts and the sickening news that our days would run from 6:30 A.M. to 5:00 P.M.

No one, except those who have gone through it, can imagine our experiences of the following days. A typical day at Wildland Ecology Summer Camp began with an incessant clanging of a loud brass bell at 6:30 in the morning. We'd then stumble barefoot across the pinecone-laden courtyard in hopes of obtaining a semi-hot shower. At 7:00, we were served breakfast by some of our fellow students who had to get up at 5:30 to make it for us. Then we'd throw together our typical bologna and celery stick lunch in preparation for a long day. At 8:00 we'd wake up all the sleepy heads who skipped breakfast and then head to the classroom for four hours of note taking and lecturing. By 12:00, we crammed into a hot van with our notes, books and lunch in anticipation of a one to three hour ride with an unknown destination awaiting us. We then used the last few hours of our day to apply our recent accumulation of knowledge to our on-the-job training before returning to camp at 5:00 for dinner.

John Roberts

"Oh what a feeling." Adding a new dimension to mountain biking at summer camp.

Back left: Rodrigo Velosa, Mike Swenson, Mingjaing Qui, Nadine Crossly, Marlene Eno, Tom Padgett; Middle left: Matt O'Brien, John Erickson, Doug Nelson, Deborah Strohmeyer, Matt Engberg; Front left: John Roberts, Travis Bosworth, Jeff Barney.

John Roberts does his "Tarzan" impersonation at summer camp.

other groups of students, we were able to interrelate in an open forum and share our ideas and experiences with people from different backgrounds.

Our topics ranged from the question of what temperature zones *Arctostaphylos uva-ursi* is found in, to whether *Agropyron cristatum* was an invader or decliner. Although we may have sounded like botany dweebs to the normal person, we gloated and reveled in our new grasp of the foreign-sounding dialect of botany.

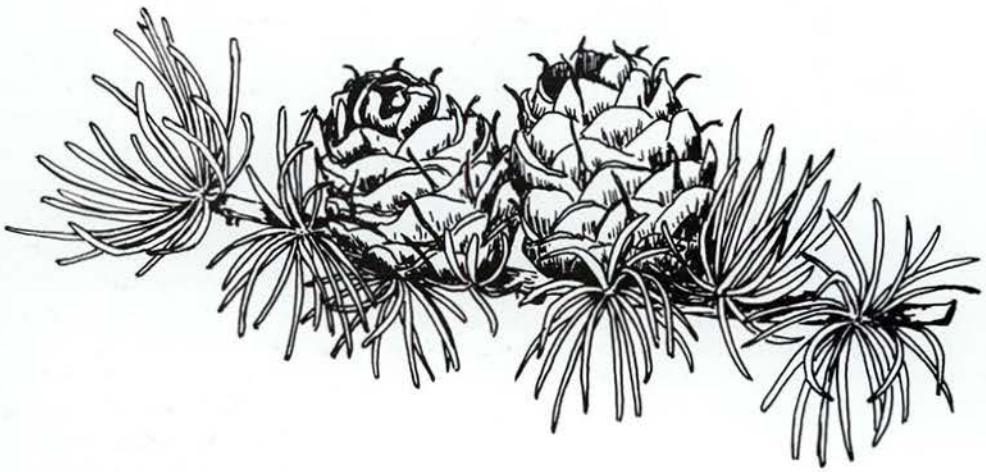
Despite the rigorous schedule, I discovered that the benefit of making new friends, basking in the glory of nature, and learning to apply my new environmental skills far outweighed all of the discomforts that I endured. My experience has bonded me forever with the close friends that I made, and has enhanced my growth as a person and a student.

Matt O'Brien is student of forestry, somewhere near the end of his college career.

After our long day, many of us decided to study, hit the bars, or merely sit around the fire and relax.

Most of our group voted for the fire circle, where a great deal of interaction between the students and visiting professors took place. We found that we could talk to them one-on-one about pretty much anything we wanted. Because we shared the camp with

Back row left: Matt O'Brien, John Roberts, Brett Dumas, Travis Bosworth, Doug Nelson, Mike Swenson, Matt Engberg, Dave Gengaux, Tom Padgett, Brian Sutton, Barti Janson, Kevin Lincoln, Craig Thomas; Seated left: Jeff Barney, Dr. Jim Kingery, Jon Erickson, Hugo Flores, Mingjaing Qui, Omar Diaw, Marlene Eno; Not pictured: Len Young, Rodrigo Velosa.



Outreach

Continue your education with us at the College of Forestry, Wildlife and Range Sciences! Take a short course, join us for a workshop, attend a symposium, or participate in the enrichment series planned for the coming year. Share our excitement with the many constituents we serve, from natural resource professionals to the general public, from energetic senior citizens to youngsters, from locals to those who come from across the country or around the world. Come to our campuses or field stations—we will offer courses in Moscow, Clark Fork, McCall, Boise, and Twin Falls, Idaho; Spokane, Washington, and elsewhere. For more information about any of these courses, call Carol Spain at (208) 885-6441 or write to her at the College of Forestry, Wildlife and Range Sciences, University of Idaho, Moscow, ID 83843.

1990

March 3	Animal Tracks and Winter Ecology—Clark Fork
March 17	North Idaho Fishing—Clark Fork
April 21	Advanced Fly Tying and Casting—Clark Fork
May 19	For Bird Lovers Only—Clark Fork
June 2	Wildflowers—Clark Fork
June 9-12	Grizzly Bear Ecology and Management—Yellowstone National Park
June 11-12	Elk of Yellowstone Biology and Ecology—Yellowstone National Park
June 13-15	Eagles and Ospreys of the Greater Yellowstone—Teton Science School, Kelly, Wyoming
June 13-17	Behavior of Ungulates—Yellowstone National Park
June 21-24	Field Botany: Teton Flora—Teton Science School, Kelly, Wyoming
June 23-24	Getting Published—Clark Fork
June 23-26	Interpreting Animal Tracks and Sign—Teton Science School, Kelly, Wyoming
July 9-11	Rocky Mountain Wildflower Photography—McCall
July 15-20	Alpine Ecology—Teton Science School, Kelly, Wyoming
July 15-21	Elderhostel: Wild Country Botanizing—Clark Fork
July 17	History and Archaeology of Warren's Chinese Occupation - McCall
July 21-22	Wildflower Identification—McCall
July 22-25	Pattern in Nature—Teton Science School, Kelly, Wyoming
July 23-27	Elderhostel: The Wild Nature of Idaho—McCall
July 25-27	River Channels—Teton Science School, Kelly, Wyoming
July 30—August 3	Understanding Animal Behavior—Teton Science School, Kelly, Wyoming
July 30—August 3	Natural Science Illustration—Teton Science School, Kelly, Wyoming

August 11	History of North Idaho Railroads—Clark Fork
Aug 27-29	Alpine Landscape Photography—McCall
Sept 8	North Idaho Folklore—Clark Fork
Sept 22 (or 23)	Fossil Collecting and Geologic Tour of the Lake Pend Oreille Area—Clark Fork
Oct 4-6	Fall Colors of the High Country Photography—McCall
Oct 6	Wetland Ecology and Water Birds—Clark Fork
Oct 20	Rocks, Rocks and Minerals—Clark Fork
Nov 3	Astronomy—Clark Fork

Alumni News

David Gabrielson of Superior, Montana, graduated with a degree in Forest Resource Management in 1990. He is a purchaser representative on U.S. Forest Service timber sales for D.A.W. and a forestry consultant on private timber purchases. While a student at the university, he was involved in logger sports and was a member of the student logging crew.

Eric A. Holt graduated with a B.S. in Wildlife Resources in May 1990. He lives currently in Las Vegas, Nevada, and is working with the endangered desert tortoise. Most of the work he does as a biology analyst involves issues associated with Yucca Mountain, a proposed high-level nuclear waste repository.

Bob Dice, a member of the Wildlife Society, graduated from the university in May of 1989. He currently resides in Pomeroy, Washington, and works for the Washington Department of Wildlife as a habitat biologist. Bob's outdoor activities include snowmobiling, cross-country skiing, hiking and hunting.

Dennis Parent, a 1989 graduate from the College of F.W.R., is currently living in Hayden Lake, Idaho. He acquired his M.S. by correspondence. Currently, he is a member of the Technical Advisory Committee for the Clean Lakes Coordinating Council and the Watershed Planning Committee for Newman Lake, Washington. In addition, he is Forest Operations Manager for Inland Empire Paper Company.

Jalan Sunu, a 1989 graduate of the university, currently lives in Ujung Pandang, Indonesia. Jalan is on the teaching staff of the Department of Forestry at Hasanuddin University and is working on projects which concentrate on tropical silviculture and soil conservation related to plantations.

Roy Kinner of Riggins, Idaho, is a 1988 B.S. in Wildlife Resources graduate. He worked as a biological aide for the Department of Fish and Game in Idaho and as an enforcement technician. Roy is presently a conservation officer involved in issues such as wolf recovery, depredation effects, and predator control programs.

Francis N. Ntlale, a graduate of the University of Idaho's College of F.W.R. in 1987, currently lives in Lesotho, S. Africa. While at the university, Francis participated in the U.I. Soccer Club and Range Club. His career after leaving Moscow, Idaho, has involved a position as a range manager and inventory specialist. He hopes to work as a teacher in Lesotho Agricultural College.

Bill Ehinger graduated from the College of F.W.R. in 1986 with a B.S. in Forest Resources. He earned his M.S. in environmental science from Western Washington University in 1988. Currently, he is living in Chiloquin, Oregon, and enjoys canoeing, fishing, photography, and backpacking. He is involved with studying the eutrophication of Upper Klamath Lake in Oregon and is working on his Ph.D. in ecology at the University of North Carolina.

Tracey Parker earned her M.S. in Forest Ecology from the University of Idaho in 1979. In 1986 she earned her Ph.D. in Forest Science. She is currently living in Wichita Falls, Texas. She enjoys trekking, equitation, gardening, small livestock, and mountain biking. She is currently involved in establishing a national park in Nepal and in promoting environmemtal tourism. She is a member of the Society of American Foresters, Xi Sigma Pi, Gamma Sigma Delta, Association for Women in Development, Somali Ecological

Society, and International Society of Tropical Foresters. She has worked as a researcher, natural resource adviser, and a computer programmer.

Vaiden Bloch graduated with a M.S. in 1985. He presently works in Lewiston, Idaho, for a consulting firm specializing in forestry management services. While at the university, he was a member of the Forestry, Business, and Golf Clubs. The current issues he's involved with are old growth management, smoke management, and site impact mitigation.

Nicholas Kent received his M.F. degree in May 1985. He currently works for the Donald Mackenzie Forestry Services writing and supervising timber harvest plans. A primary environmental issue which concerns Nicholas is the work with the forest management cumulative impact assessments for watersheds in northern California.

Craig Madsen graduated in 1985 and currently resides in Davenport, Washington. Since graduation, he has taken temporary jobs with the Forest Service, Bureau of Land Management and in a private range consulting firm. For the last three years, Craig has worked for the Soil Conservation Service, where he helps farmers and ranchers improve their range management program.

William Stormont, a 1983 graduate, lives in Hilo, Hawaii, and is working as a protection forester in the Division of Forestry and Wildlife. His position involves protecting and enhancing remnant populations of feral animals. His interests include body surfing, hiking and tennis.

Lee Boeckstiegel graduated from the College of F.W.R. with an M.S. in Forest Resources in 1982. He received a B.S. in Forestry from the University of Missouri in 1955 and worked as an assistant district ranger and an assistant timber staff officer in the Olympic National Forest, district ranger of the Willamette N.F., and forest silviculturist in the Mt. Baker-Snoqualmie N.F. before retiring in 1990.

Craig W. Obermiller graduated with a B.S. in Wildlife Resources in 1982 and resides in Niamey, Niger, where he is involved in research on the effects of Third World land-restoration techniques, including socio-economic and agro-forestry development and implementation. Craig received his M.S. in Range Management from the University of Arizona and is a Peace Corps volunteer.

Gary Bender graduated in 1981 with B.S. degrees in Forest Products and Forest Resources and is currently living in Tijeras, New Mexico. He's working on a second career in microelectronics in Albuquerque, while raising horses on his land adjacent to the Cibola N.F.

Vincent P. Corrao, a graduate from the college of F.W.R. in 1980, currently resides in Moscow, Idaho, and continues to pursue a career in natural resources with his business in forestry consulting, Northwest Management Inc. He was involved with the Society of American Foresters while at the University of Idaho and now spends his spare time hunting, fishing, and cross-country skiing.

Martin Vidak graduated in 1980 and is at present working in wilderness management. He is also a recipient of 1989 National Primitive Skills Award for his work on acid rain. He recently returned from a skiing/climbing trip to the Himalayas in Nepal and the Karakoran Range in Pakistan.

Lawrence Cole, who graduated with a B.S. in Forest Management in 1979, worked as a seasonal employee in fire management at the Clearwater and Nez Perce National Forests. He is currently a permanent employee in fire management, planning and marketing on the Helena National Forest in Helena, Montana.

Cindy Mitiguy-Lane started with the Forest Service in 1979 as a co-op student before graduating in 1982. She is now a District Ranger in the Nez Perce National Forest. Her interests include hunting, camping, and horses. While at the university, she was a member of S.A.F., and editor of *Idaho Forester.* She also enjoyed participating on the logger sports team.

A. Lynn Burton graduated from the University of Idaho with a B.S. in Wildlife Resources in 1977 and presently lives in Enterprise, Oregon. She has worked as a regional biologist technician for the Idaho Department of Fish and Game and is presently a range specialist on the Wallowa-Whitman National Forest. She is concerned with excellence in riparian management, range biodiversity and making the N.E.P.A. process user-friendly.

Eve Marie Gebhardt graduated with a B.S. in Forest Resource Management in 1977. As a mother of three children, she finds herself enjoying short day hikes, camping and fishing in the Olympia N.F. and Mt. Rainier area.

Tony Klein, a 1977 B.S. in Forest Resources graduate of the College of F.W.R., is currently living in Ontario, Oregon. While attending the university, he was a member of the Phi Kappa Tau Fraternity. After graduating, he opened his own construction business and he now owns an insurance company.

John P. Roberts of Boise, Idaho, graduated with a B.S. in Forest Resources in 1977. He was employed shortly after graduation by the Idaho Department of Lands and spent 12 years as resource

manager. In May 1989, John was promoted to forest practices advisor for the Southwest Idaho Supervisory Area.

Tom Shew lives in Boise, Idaho, and graduated with a B.S. in Forest Products in 1977. He is currently a lumber sales manager for Northwest Mills. He is also active in "Wise Use" of our forests and timberlands. Tom was president of the Forest Products Club 1975-1977.

Thomas Francis, after graduating in 1976, joined the Peace Corps and traveled to the Fiji Islands and Belize. At present, he works for the U.S.F.S. in the Klamath, Mendocino, and Stanislaus National Forests. Residing now in Sonora, California, his interests are hiking, swimming and gardening.

Duane B. Hatch graduated with a B.S. in Wildlife Resources in 1976 and is currently an officer in the U.S. Navy. He lives in Chicopee, Mass. While at the university, he was a member of the Wildlife Club. Duane's outdoor interests include hunting, golf and fishing.

Remy H. Pochelon of Bigfork, Montana, graduated in 1976 with a B.S. in Forest Resources and currently works with the U.S. Forest Service's Swan Lake Ranger District on the Flathead N.F. While at the University of Idaho, Remy participated in Society of American Foresters and American Forestry Association. Remy continues to spend time outdoors hunting, fishing and skiing.

Sharon Bradley graduated in 1975 and currently has strong interests in recycling programs for local communities and new perspectives in forest management. After graduating from the university, Sharon worked for the Caribou National Forest and the Pacific Northwest Experiment Station. Presently, she lives and works in the Challis National Forest as a timber and recreation specialist.

Clifford Dorr, who received a B.S. in Forest Resources in 1975, is currently living in Ketchum, Idaho. While attending the university, He was a member of the Forestry Club and Xi Sigma Pi. He enjoys hiking, backpacking, backcountry skiing, photography, horsemanship, gardening, and animal husbandry. He is also involved with avalanche search and rescue. He has worked on the Sawtooth National Forest since 1971 in trail maintenance and construction and is currently a trail crew supervisor.

Randy Muate, a 1975 graduate of the College of F.W.R., is currently living in Coeur d' Alene, Idaho. While attending the university, he was a member of the Society of Wood Science and Technology. After graduation, he served four years in the U.S. Army as a First Lieutenant. From 1979-1985 he worked as an industrial engineer for Weyerhaeuser Co. He is currently vice president of Custer Building & Supply, Inc. He enjoys fishing, hunting, boating, and golf.

Mark Anderson of Tyler, Texas, a 1974 B.S. graduate in Forest Resources, is a field director for The Boy Scouts of America. He enjoys camping, hiking, canoeing and history. While in college, he was a member of the Society of American Foresters, the Forestry Club, the Student Affairs Council and the *Idaho Forester* Staff.

Robert G. Jacobsen lives in Nampa, Idaho, and graduated in 1971 with a B.S. in Forest Management. He is currently part owner and general manager of Lloyd Lumber Company. His outdoor interests include fishing, hunting, boating and skiing.

J. Craig Carter graduated with a B.S. in Forest Resources in 1970 and now lives in Paradise, California. He worked for Boise Cascade in Idaho and Oregon, spent five years with the Air Force in Montana, and presently works for the California Department of Forestry. The current environmental issues which concern him the most include old growth liquidation and the spotted owl controversy.

Loring Jones, a 1969 graduate, is currently living in Moscow, Idaho. He enjoys watching wildlife, photographing native plant species, and collecting wildland seed. He is a member of the White Pine Chapter of the Idaho Native Plant Society and is co-owner of North Plant Seed, a supplier of native wild seed.

Larry Townsend, a 1969 graduate from the College of F.W.R., is currently living in Coolin, Idaho. While attending the university, he was program director and DJ for K.U.O.I. radio. He has been employed by the Idaho Department of Parks and Recreation and the U.S. Army. Currently, he is park manager at Priest Lake, Idaho.

James Soeth, a 1969 graduate in in Forest Resources, is currently living in Young, Arizona. While attending the college, he was a member of the Forestry Club. He enjoys hiking, fishing, hunting, and golf. Additionally, he is involved with the spotted owl issue, riparian areas, and smoke management. He served in the U.S. Army, held temporary positions with the U.S. Forest Service and the Oregon Board of Forestry, and has taught at a community college. Also, he has held a number of permanent positions with the U.S. Forest Service, most recently Resource Forester, which he began in 1974.

Jim Thiemens, a 1969 graduate from the College of F.W.R., currently resides in Moscow, Idaho. He enjoys backpacking, fishing, and photography. Currently, he is involved with New Forest-

ry and existing road management. After graduating, he was employed by Weyerhaeuser Co. in Coos Bay, Oregon, as a truck boss and logging foreman. In 1973, he went to work for Potlatch Corporation as an Area Forest Manager.

John Herbst, a 1968 graduate of the College of F.W.R., is currently living in Imbler, Oregon. Presently, he is on the Oregon Forest Practices Committee and is involved with bald eagle management. He has been an Extension Service Forester, a Forestry Consultant, and a Forester for Avery Land Company. John enjoys hunting, fishing, and skiing.

Arthur W. Anderson currently resides in Cheyenne, Wyoming. He graduated from F.W.R. in 1967. His career in natural resources has included two years with the Idaho Fish and Game as a fisheries biologist, two years with the B.L.M., and eighteen years with the U.S. Fish and Wildlife Service. Current environmental issues important to Arthur are the restoration of the Platte River Ecosystem and Snake River within the Jackson Hole area.

Lee McConnel of Montour, Idaho, received a B.S. in Forest Resources in 1963 and an M.S. in Forest Management in 1967. Lee worked as a soil scientist for the Soil Conservation Service, and on the St. Joe and Tongass national forests. He currently works in the Custer N.F. While in college, he was a member of Xi Sigma Pi, the Associated Foresters, and the Vandal Flying Club.

Ned Pence, who earned B.S. and M.F. degrees in Forest Resources in 1959 and 1967, is currently living in Moscow, Idaho. While attending the University of Idaho, he was a member of the Associated Foresters, Xi Sigma Pi, and was associate editor of the *Idaho Forester.* He has been involved with the issues surrounding the Tongass National Forest. After graduation, he worked for the Washington State Department of Natural Resources until 1965. He taught at a community college and gained his M.S. in 1967. He worked for the U.S. Forest Service until 1990 and is currently a consulting forester for Pence Construction.

Charles Edwards of Nevada City, California, is a 1966 B.S. Forest Resources graduate. He served in the U.S. Army in Europe from 1966 to 1969, was district manager of the Santa Fe Pacific Timber Co. in Grass Valley, California, from 1969 to 1988, and is presently working as a right-of-way agent for the California Department of Transportation in Marysville. His outdoor interests include long-distance, open-water swimming and downhill skiing.

David Cox, a 1966 B.S. Forest Rersources graduate, is currently living in Beaverton, Oregon. While attending the university, he was a member of Xi Sigma Pi and the Forestry Club. After graduation, he attended Duke University for two years and then served in the U.S. Army for three years. From 1971-1978 he was a forest economist for the Industrial Forestry Association. He is currently a shareholder in Mason, Bruce & Girard, Inc.

Dennis Nelson, a 1966 B.S. graduate in Range Management, now resides in Stone Mountain, Georgia. After graduation, he spent four years with the U.S. Navy, received an M.B.A. from the University of Florida and worked for the Bell South Corporation as staff manager of the accounts payable system.

William Foster graduated from the university in 1965 with a B.S. in Range Resources and presently resides in Troy, Kansas. He taught high school for 21 years and is currently teaching physical sciences at Highland Community College. He was a member of the *Idaho Forester* staff and secretary of the University of Idaho Foresters in 1964-65.

Ronald Henderson, a 1963 B.S. Forest Resources graduate, worked for the Apache National Forest from 1963 through 1965, the Cibola N.F. from 1965 to 1968, the Tonto N.F. from 1968 through 1971, the Carson N.F. from 1971 to 1976, and has worked from 1976 to present with the Gila N.F. in Silver City, New Mexico, where he presently resides. He is interested in wilderness management, the grazing of public lands, and the disposal/acquisition of lands.

.Dick Hodge of Moscow graduated with a B.S. in Forest Resources in 1962. While attending college, he was a member of the Society of American Foresters and the Forestry Club. He has been a forest check cruiser at the Coeur d'Alene Supervisor's Office, worked on the Wallace Ranger District in presale forestry, and on the Bitterroot National Forest as a timber assistant. He has been District Ranger of the Palouse R.D. in Moscow since 1981.

Richard A. Ogle received his M.S. and Ph.D. from Syracuse University after receiving a B.S. in Forest Resources from Idaho in 1961. He currently lives in Houston, Texas, and owns Applied Earth Sciences, an environmental consulting firm.

John Crawford received his master's degree from the University of Idaho in 1960. After working as a wildlife biologist for the B.L.M. at various locations, he retired in 1985 as Chief of Wildlife in Washington, D.C.. His interests at present are photography, hunting, and fishing. He lives now in Boise, Idaho.

Henry Kidd, a 1960 graduate from the University of Idaho, cur-

rently resides in Burke, Virginia and represents the Bureau of Indian Affairs on the Departmental Council on Global Change. His career has included seasonal work with the U.S.F.S. and B.L.M. in Idaho, Oregon, and Montana. From 1985 until the present he has been the Natural Resources Planning Coordinator for B.I.A. in the Washington office. His interests include outdoor photography, hiking, snow-shoeing, and pen and ink sketching. Henry also spends time writing short articles and books about Native Americans.

Laurie Fowler graduated in 1958. She is a Xi Sigma Pi member, and likes fishing and backpacking. She is presently employed by Rangens Inc. as a technical advisor in the Aquaculture Division.

Bruce Hronek of Bloomington, Indiana, graduated in 1958 with a B.S. in Forest Resources. He spent 33 years with the Forest Service, including such positions as District Ranger, Forest Supervisor, Legislative Liason and Regional Director of Recreation and Wildlife. He now teaches a number of law and recreation-related courses at Indiana University. After graduating from the College of F.W.R., he received his M.S. degree in Business and Law.

Bill Billings currently lives in Carlsbad, California, and is a licensed land surveyor. He graduated from FWR with a B.S. in Forest Resources in 1957 and was a member of the *Idaho Forester* staff.

Russ Hudson lives in Libby, Montana, and graduated in 1957 with an M.F. in Forest Management. He retired from Champion International Corp. in the spring of 1990 after 33 years of work with the company. He now does limited growth yield work and tree improvement collections.

Lawrence Johnson, a 1954 graduate of the College of F.W.R., is currently living in Chehalis, Washington. While attending the university, he was a member of the Forestry Club. In 1984 he retired from the Washington Department of Natural Resources. Presently, he is the Quality Control and Safety Director for Cascade Hardwood. Additionally, he is Chairman of the Western Hardwood Association Legislative Committee for Washington State and the Washington Hardwoods Commission. Lawrence is involved in the promotion of timber management in the biodiversity of conifer stands in the lowlands and coastal areas of western Washington. In his spare time, he enjoys lake and ocean fishing, as well as traveling.

Charles Ohs, a 1954 graduate of F.W.R., has been involved in timber, grazing and wildlife management during his career. Before returning to St. Anthony, Idaho, in 1988, he served as Special Agent on the Supervisor's Staff, Mendocino National Forest, in Willows, California.

Roger Bay of Bozeman, Montana, graduated with a B.S. in Forest Resources in 1953. While attending school, he was a member of Xi Sigma Pi and editor of the *Idaho Forester* in 1953. He received a Ph.D. in Forestry from the University of Minnesota, served as Director of the Intermountain Research Station for nine years, and was Director of the Pacific Southwest Research Station for five years. Now retired, he serves as a part-time consultant for the University of Hawaii. He is also a member of the F.W.R. Alumni Association Board of Trustees and is current board secretary.

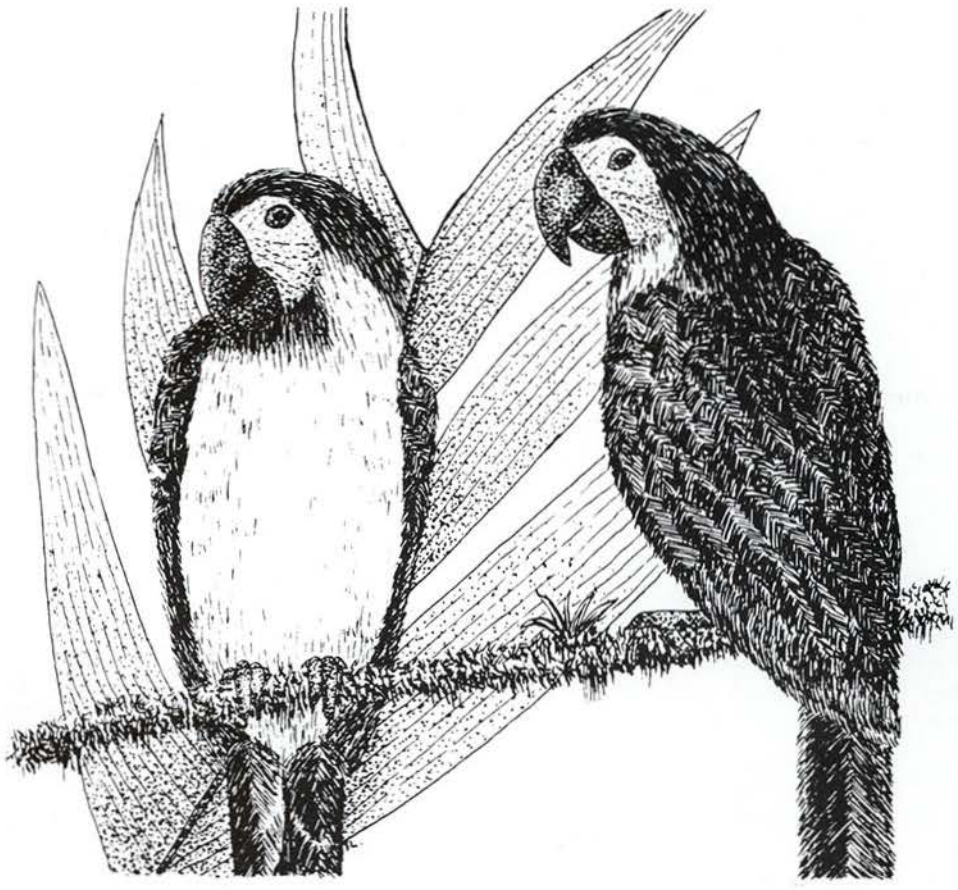
William R. Marr graduated with a B.S. in Forest Resources in 1953. While at the university, he was involved in S.A.F, the *Idaho Forester* and participated on the ski team. He spends his time working with The Boy Scouts of America and hunting and skiing. William presently lives in Potlatch, Idaho.

Lou Spink graduated in 1953 with a B.S. in Range Management. He is currently living in Nampa, Idaho. While attending the university, he was a member of the Society of American Foresters, Society for Range Management, Rodeo Club, and Ski Club. He enjoys hunting, fishing, and camping. Currently, he is involved with fisheries on the Columbia, Snake, and Salmon rivers. He is also involved with Idaho water rights adjudication and Payette River adjudication. After graduation, he held seasonal employment with the Bureau of Entomology and the U.S. Forest Service. He served in the U.S. Air Force from 1953-1956. From 1959 until retirement in 1987, he worked in U.S. Forest Service Region Six.

Shag Taynton now lives in Reno, Nevada, and graduated in 1953. Since graduation he has worked as a smokejumper, a ranger on the Toiyabe National Forest, and in timber management appraisals. He retired in 1985 after 33 years government service.

Delmar Vail graduated from the College of F.W.R. in 1953 with a B.S. in Range Management, and presently lives in Eagle, Idaho. He worked for 35 years with the Bureau of Land Management and is the Idaho state director. As a member of the F.W.R. Guidance Council, he is concerned with everything that is involved in the multiple use of resources. He enjoys hunting, fishing and camping.

Lorin Welker, who received a B.S. degree in Forest Resources in 1950, is currently living in Chester, Idaho. While attending the university, he was a member of the Forestry Club. He enjoys hiking, boating, traveling, camping, and carpentry. He is currently involved in the "let burn" policies and ac-



tion on federally administered lands. He was employed for thirty years by the Bureau of Land Management, eight of them as a forester in Oregon and California. Additionally, he worked with the U.S. Dept. of Justice as a protection specialist and criminal trespass investigator who prosecuted timber trespass cases. He spent seven years as a district manager for the B.L.M. in Price, Utah, and has worked in Washington, D.C., and at the B.L.M. state office in Boise, Idaho.

Albert Palmer, a 1949 graduate, recently retired after 31 years with the Bureau of Indian Affairs in Arizona and New Mexico. His current home is in Yreka, California. He spends his time RV camping, skiing, and becoming involved in the spotted owl controversy.

Hilton Thrapp, a 1949 B.S. Forest Resources graduate, is currently living in Lenore, Idaho. He has worked for the Soil Conservation Service and in farm implements and is presently a private rancher.

Rex Zobell, a 1949 graduate of F.W.R., presently lives in Rowan Montana. While at the university, he was a member of Xi Sigma Pi, Track Squad and football team. During W.W.II he served in the Navy. Afterward, he worked as a wildlife biologist befored working for the BLM for 43 years. His current environmental interests include public land management and aerial photography with an emphasis on vegetative inventories.

Kyle Bates received a B.S. in Range Management in 1947. He has been forester and land manager for the Pack River Lumber Co. since 1952. He enjoys hunting and currently lives in Post Falls.

Richard Campana graduated in 1943 with a B.S. in Forest Management. He was a member of the *Idaho Forester,* the Society of American Foresters and the Pershing Rifles. He has worked as a professor and head of the Department of Botany and Plant Pathology at the University of Maine. Additionally, he has been on the staff of or in service to Penn State University, North Carolina State University and Harvard University.

Gene Payne graduated with an M.S. in 1943 and is currently involved with range resources. His activities since graduation include traveling to Mexico, Kenya, and Saudi Arabia for work on his Ph.D. He retired from M.S.U. in 1979, and is currently living in Bozeman, Montana.

Paul Easterbrook, a 1942 graduate in forestry, is currently living in Emmett, Idaho. While attending the university, he was the vice president of the Associat-

ed Foresters and business manager of the *Idaho Forester.* After graduating, he served 4 years with the U.S. Navy. Additionally, he worked for the U.S. Forest Service as a district ranger, for Boise Cascade as a forester and regional logging supervisor. Paul enjoys hunting, fishing, and cross-country skiing. He is a member of the F.W.R. Alumni Association Board of Trustees.

Finley McNaughton graduated from F.W.R. in 1942 and is currently retired after being a ranger on the Payette National Forest, and on the Division of Administration Staff, Washington, D.C. His current interests include orcharding and gardening.

Edward Slusher, who received a B.S. in forestry in 1942, is currently living in Rockport, Texas. While attending the university, he was a member of Xi Sigma Pi and the Associated Foresters. He enjoys hiking, backpacking, downhill and cross-country skiing, canoeing, tennis, sailboarding, and running. He is currently reviewing and making comments on a draft of the Northern Region U.S. Forest Service's history. After graduating, he held several summer positions in the Northwest and then joined the U.S. Navy in 1942. He held a number of positions with the U.S. Forest Service and retired in 1972 from the Regional Office staff in Missoula, Montana, where he worked in wilderness classification management.

Robert Harris, a 1941 B.S. in Range Management graduate, is currently living in Wilsonville, Oregon. While attending the university, he was a member of the Forestry Club, the *Idaho Forester* staff, The Curtain, and was the president of Delta Tau Delta Fraternity. He enjoys golf and gardening and is a member of the Isaac Walton League. He spent 39 years of his career in forest research. He also served on the Board of Directors for the American Forestry Association from 1985-1989.

Ken Baldwin graduated in 1939 with a B.S. in forestry. He worked as a seasonal employee on the Clearwater National Forest, on blister rust control for the U.S.F.S. in Montana, and as a pipe fitter at the P.S.N.S. He is a member of the Nature Conservancy, resides in Bremerton, Washington, and enjoys fishing and travel.

Dale Kinnaman graduated with a B.S. in Range Management in 1939 and is currently a rancher in Jerome, Idaho. While at the university he was a member of the *Idaho Foresters.* He worked for the U.S. Forest Service from 1937 to 1940, the Bureau of Land Management from 1940 to 1943 and 1945 to 1970, and served in the U.S. Marine Corps from 1943 to 1945.

Carl Wilson received a B.S. in forestry in 1939 and is currently a resident of Berkeley, California. He served 10 years with the U.S. Forest Service and 28 years with the Forest Service Research Center, State and Private Forestry. He has been a consultant to the California Department of Forestry; Ontario, Canada, Ministry of Natural Resources; and the United Nations (F.A.O.).

Paul Anderson received a B.S. in Forest Management in 1938. He now lives in Albuquerque, New Mexico. After graduation, he worked for the State Welfare Department in Boise, and later for the Air Traffic Control Branch of the Federal Aviation Administration. He retired in 1974.

Victor O. Sellors graduated from the University of Idaho with a B.S. in forestry in 1938 and an M.S. in Forest Pathology in 1940. He currently resides in Omaha, Nebraska, and is retired president of V.O. Sellers Co. He presently spends his free time with Irises Nebraska Arboretum Society.

Ernest L. Thompson of Albuquerque, New Mexico, graduated in 1938 with a B.S. in Forest Management. He is currently involved in the National Wildlife Federation and local federations, the Society for Range Management and S.A.F. During his career he was employed by the U.S. Forest Service and the Bureau of Land Management.

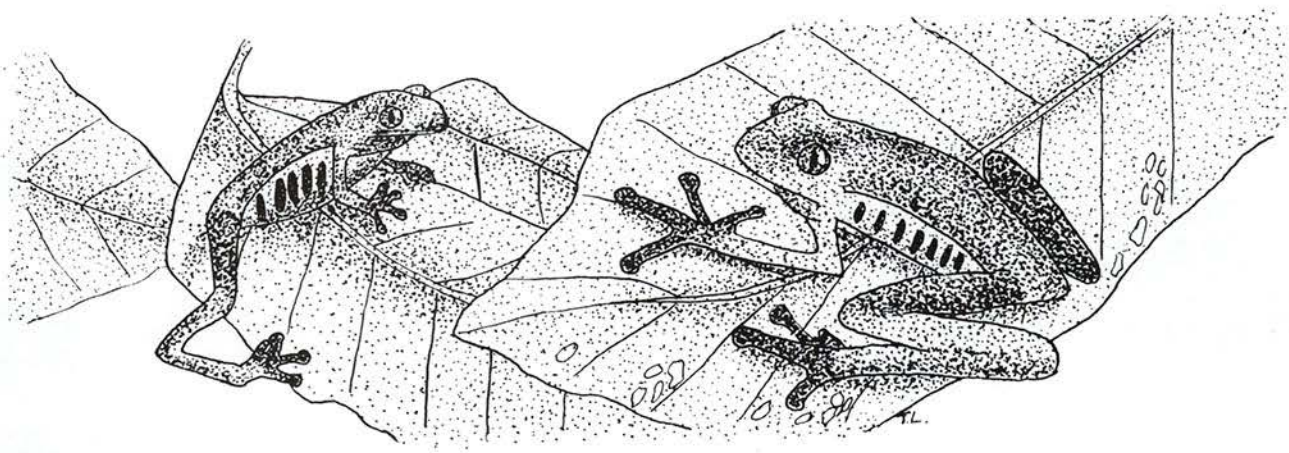
E. William Anderson graduated from the college of F.W.R. in 1937 with a B.S. in 1940. He is a charter and lifetime member of the Society for Range Management and of the Soil Conservation Society of America. Also, he is a member of the Australian Rangeland Society. From 1936-1974 he was employed with the U.S.D.A. as a specialist in range management and resource conservation. From 1961-1975, he was the state range specialist for Oregon. He is living in Lake Oswego, Oregon, where he is a certified range management consultant.

Thomas Wilson graduated in 1937 with a B.S. in Range Management. He currently lives in Sandpoint, Idaho. While attending the university, he was a member of Xi Sigma Pi and the Associated Foresters. He enjoys hunting, fishing, golf, and gardening. Presently, he is a member of the Clark Fork Coalition and the Idaho Conservation League. He spent 38 years working for the U.S.D.A., first as a seasonal employee with the U.S. Forest Service, and then for 36 years with the Soil Conservation Service, He also served in the U.S. Army for three years.

Warren H. Bolles, a 1926 graduate from the College of F.W.R., is currently living in Albany, Oregon. While attending the University of Idaho, he was a member of the School of Forestry Student's Association and a non-fraternity group called The Barbs. He enjoys hunting and fishing in his spare time.

1990 Calendar of Events

Jan. 16	Second semester starts
Feb. 13	Lecture presentation by Professor George Klontz on fish diseases; following the American Fisheries Society meeting
Feb. 23	Wild Game Feed at Moscow Community Center
Mar. 3	Society of American Foresters (SAF) Prof-n-Stein
Mar. 12-15	Western Wildlife Conclave at Humboldt State
Apr. 3	American Fisheries Society and the Wildlife Society lecture featuring Frank Nesmith on law enforcement
Apr. 11	Arbor Day
Apr. 14	Speaker Mark Childs from Greenpeace, UI SUB
Apr. 16	Earth Day Proclamation by Moscow Mayor
Apr. 21	John Muir Day SAF Tree Planting Paradise Creek Clean-Up PCEI Earth Day Dance, Moscow Community Center
Apr. 22	EARTH DAY — Greet the Dawn Sunrise Service, UI Golf Course — Procession and Clean-Up through Moscow to Mountain View Park — Picnic, Games and Music, Mountain View Park
Apr. 23	Chemicals on the Farm, Consumer Education Co-op
Apr. 24	Identifying birds by songs and calls, Moscow Community Center
Apr. 22-28	UI Natural Resources Week, Environmental Ed. Booths
Apr. 28	Moscow Household Toxic Waste Clean-Up
Apr. 29	Greenfire Roadshow by ICL and Earthfirst!, UI SUB
May 5-6	Moscow Renaissance Fair, East City Park
May 19	Commencement Day



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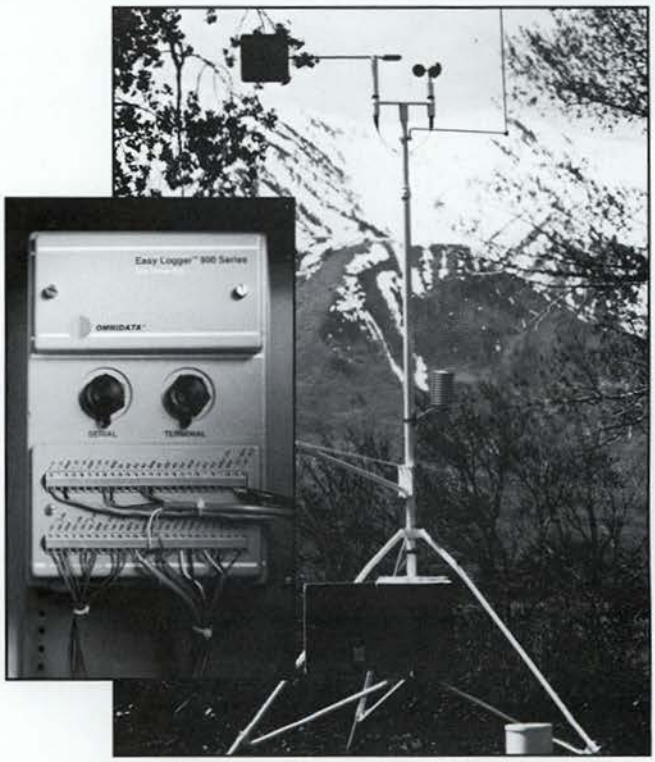

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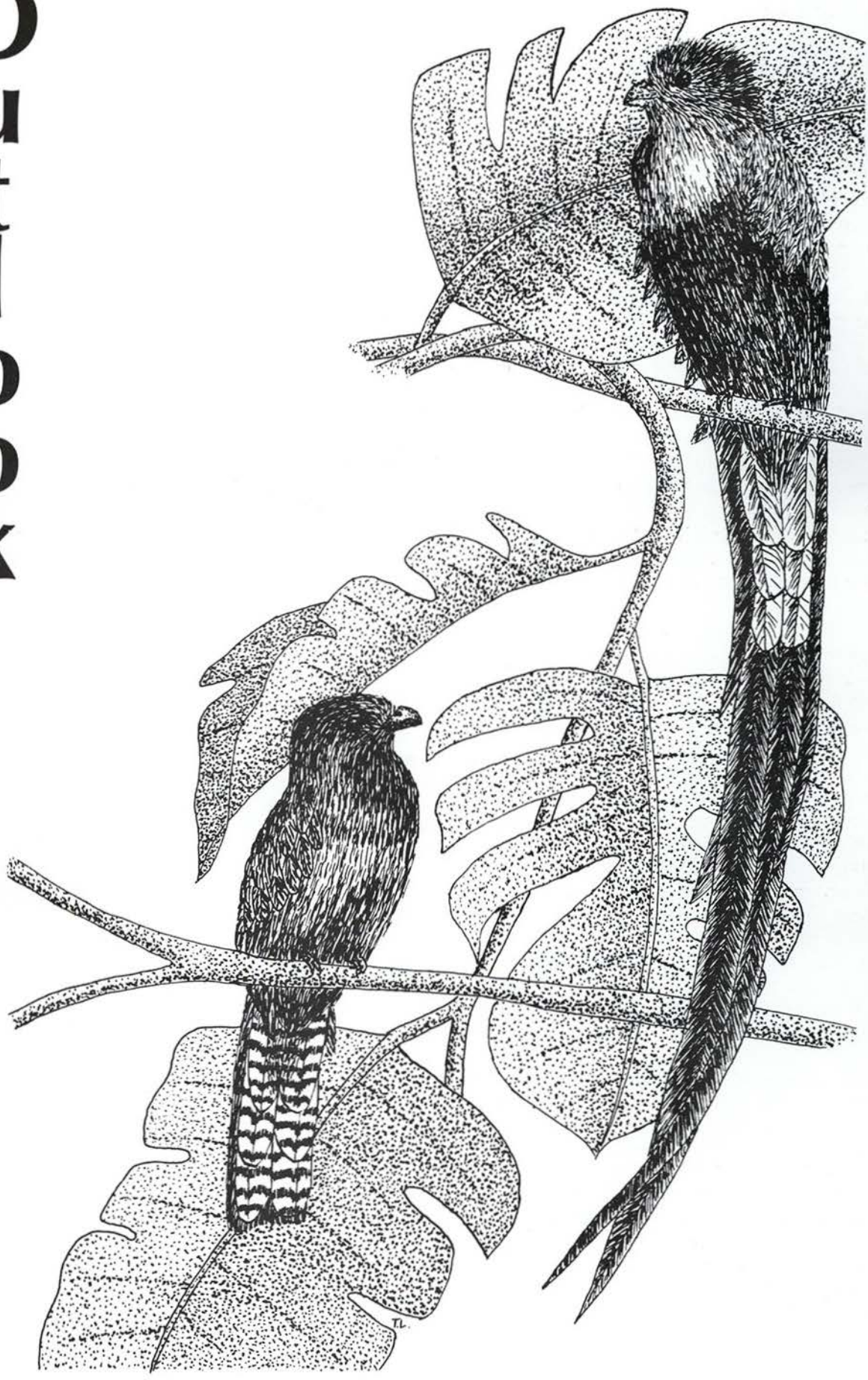


Corned Moose For Dinner and Moose Milk For Lunch

by Jim Peek

It's an "elg" in Sweden, a "hirven" in Finland, a "moose" in North America and a "los" in the USSR, and my attempts to better understand it over a 30-year period have taken me to many places. But my pursuit of the Butorlini moose of Chukota, in the far eastern USSR, topped it all. Chukota is a trackless, limitless land of tundra and high-latitude larch forests occupied by Chukchi reindeer herders and associated native peoples, wild and tame reindeer, brown bears like our grizzlies, the rare and mysterious snow sheep, and the largest moose of Eurasia.

My first encounter with the moose was in a "banja," the Russian sauna, part of a camp 450 km from the nearest town and just below the Arctic Circle. This camp consisted of 19 wall tents occupied by geologists exploring for minerals. We found ourselves sitting without clothes alongside seven tall, lean Russians who spoke little or no English. With the help of an interpreter and Nicholas, our host for the trip, they had invited us to their bath. The sauna, extremely hot, took your breath away when the first blast of steam came off the stove, and the river we jumped into afterward was extremely cold, perhaps 35 degrees, and smelled of the present salmon run.

After we alternated several times between the sauna and river, we drip-dried in the outer room of the log building called the banja, and used gestures and smiles to indicate our pleasure with the experience. Then one of our hosts went out and brought back a skewer loaded with alternating strips of meat and fat. When another brought in a pail of homemade beer, we proceeded to eat some of the tastiest barbecue and drink some of the best beer ever. Nicholas raised a skewer and exclaimed, "Butorlini moose!" And so, I ate moose before I saw it on the field. The fellows had taken that bull in July as meat for their camp, smoked, corned, and salted it down to preserve it. There were plenty of rifles in the camp, used for bear protection as well as to acquire meat.

Later, we ate a huge dinner, including bits of moose meat wrapped in dough and fried in butter. This, along with the inevitable cabbage salad, bread baked in a dugout oven built into a bank and heated with the hot-burning larch, Bulgarian peppers, and numerous toasts with vodka and Crimean champagne, made our introduction to these people most memorable.

Later we had a chance to learn of their concerns and activities, and I realized once again, that people who work outdoors have much in common regardless of what they do or where they come from. We didn't have to understand our hosts' language to know that we were among friends who were very pleased with our response to their work and problems. My belief that we do a much better job of caring for our resources when we, the people who manage them, free ourselves from the institutionalized constraints, spend time on the ground together, and communicate with each other, was reaffirmed. But then one wonders, considering that so many of our current resource management problems were recognized decades ago, if indeed it does take a language barrier to encourage us to listen closely.

All of this experience was part of a trip to the Third International Moose conference, held in Syktyvkar, Komi SSR, 600 miles north of Moscow, in early September of 1990. The seven of us who went through the so-called "backdoor" to the USSR, from Nome to Providenyia, were taking the long slow route, courtesy of Nicholas Zheleznov, the zoologist for the Russian Academy of Sciences stationed at Anadyr. Nicholas provided us with the tour through Chukotka, and then put us on an Aeroflot flight from Anadyr to Moscow, where we finally arrived at Syktyvkar for the formal meeting. After Chukotka, the meeting itself was anticlimatic, but a field trip to the moose domestication project was awaited with great anticipation.

I first heard about the Russian attempts to domesticate moose in the 1960s, via contacts in Canada and Alaska. It seems there was a Russian biologist, E.P. Knorre, who had succeeded in breaking moose to draw sleighs and carry people and packs. Then, when I was studying a German translation of a Russian book, I came across the pictures. There was this wily moose under saddle, carrying a heavily clothed Russian. Another photograph showed a moose in harness, pulling a sleigh with a bunch of Russian children on board. It actually happened.

No one realizes that the Russian taiga is the largest, most vast forest of our world, and when I had the opportunity to see some of it from the air and the ground, I was definitely impressed with its size. I have flown over the Canadian forests east of Whitehorse and around Lake Nipigon, and you get this feeling of being very small and insignificant in time. But the Russian taiga imprints that impression on you BIG TIME!

Now, imagine yourself in the 1930's living in a small village in this trackless land, where the temperatures are low and the snow is deep. Your main mode of travel in the winter and summer is the river. The forest is full of muskeg and downfall, which makes the going for your ordinary horse just a bit difficult. But you know that those moose, with their peculiar gait, long legs, and big hooves, can quickstep through the taiga. It makes sense to bring in some of these critters and domesticate them, eh? If we can tame the reindeer, then why not the moose?

E.P. Knorre finally made an appearance in 1973 in the West at the First International Moose Conference in Quebec City to describe his experiences with the domestication of moose. Apparently, he was the first person to figure out how to break these critters to harness and saddle. Those of you who have dealt with the taming of the horse and the mule for these purposes, know that repetition is the name of the game. Apparently with moose, one must select the beast with the right disposition and work with it constantly. And after the Great War, the taiga began to be opened up for logging, and the airplane provided more transportation. Therefore the laborious process of breaking moose for draft work took on a lower priority.

When the project became more active, there was a major attempt to eliminate as many wild moose around the pastures as possible. Often, the migrating wild bulls stole the domesticated cows. We saw a broken-down drift fence made of poles and jacks, about 8 feet high, in one area. Migrating moose would encounter the fence and move along it into the blinds of waiting hunters. We learned that one reason there were so few wild reindeer in the areas where reindeer were herded further east because the wild bulls would steal whole bands of cows.

When we got to the Pechora-Illych Game Preserve, about 600 km north of Moscow in the Komi SSR last September, there were moose that were 6 generations out of the wild for us to see. A spritely woman went into the pasture, which was a well-stocked stand of *Pinus sylvestris,* and called as if she were expecting the cows to come in. Sure enough, there came the moose right into the corrals, right up to her, where she fed each one a few potatoes just as you might feed your horse a handful of oats. Several walked into a barn to stalls where they were used to being fed.

After much picture-taking and handling (it is an experience to pat a free-ranging cow moose on the nose and have it stretch for more), she got one cow, which towered over her by at least three feet, over to a feed bunker well stocked with aspen leaves. Motioning everyone away from the cow, she proceeded to milk it just like you might your pet Jersey, except with a moose you don't need a stool.

The milk is, to say the least, rich. The milk mustache around your lips stays put. We were told that they would like to process the milk for purposes of curing ulcers, something I have heard our version of milk being used for as well. For now, they take the milk to another pasture, where the calves are kept, to bottle-feed them. When we got to that pasture, we were almost trampled by four-month-old moose calves which tried to suck our fingers and nosed us for a potato.

We asked the people just what sort of research and purpose the moose farm was put to, and were told that they were now researching the process of domestication. I suspect that in another 2000 years and several hundred generations, they might actually get a domesticated moose. But for now, I think you could take a newborn female moose calf from the wild, confine it and give it all the feeding and handling possible, and you could probably milk it as much as we saw those Russian moose being milked.

The wildlife biologist in me says we are in the business of keeping wild things wild. But nowadays, with all the habitat loss and exploitation, we find ourselves in need of zoological parks to preserve gene pools and species. I would like to think this isn't an end in itself. When we return individuals to the wild, people should get the message that if we behave, there is room for those individuals out there. And of course, there is a need to confine animals for experimental purposes as part of wildlife conservation, to find out how they respond in controlled environments. Despite all of these thoughts and misgivings, I still considered the experience at that farm on the Pechora River an all-time highlight, an interesting part of the record of human interactions with wildlife, from the land of Peter, the Wolf, and the moose.

Jim Peek is a professor in the Department of Fish and Wildlife Resources.

"Like Islands in a Social Reality"

by Terry Lawson

Jose Courrau awoke with a start after five cold hours of sleep. He rose to the muffled sounds of birds chirping in a heavy fog. Dressed in his dark green uniform and knee-high rubber boots, he carefully tied his Swiss Army knife to his belt loop with a worn-out string.

He set out along a familiar muddy trail through a dark tunnel of trees, with a rifle slung over one shoulder. When he reached the top of a hill overlooking a deep, misty canyon, he cupped his hands and yelled a long, echoing "hello" to the forest below. A moment later, a fresh breeze blew and the orchids moved in rhythm with the bromiliads and slender copey trees.

Jose's power to summon the wind with a hello is doubtful, but his influence over this magical patch of Costa Rican rain forest is unquestionable.

Jose Courrau is assistant superintendent of Braulio Carrillo National Park in the tiny Central American country of Costa Rica. For the past several years, he has been methodically chipping away at the social circumstances that lead some national parks in developing countries to be sadly nicknamed "paper parks."

As the green wave of environmentalism spreads across the world, developing countries are establishing new national parks and protected areas. Unfortunately, with little in the way of money, law enforcement, or support from local communities, many of these parks exist only on a piece of paper. Often, people who have lived on the land for generations are removed, leaving them landless and resentful.

The U.S. model for national parks has not transferred well to many countries where designating a new park has often meant denying locals the use of land needed for their subsistence. To these people, the value of the forest lies in how those forests can be used, not in their esthetic appeal.

The conflicts between locals and parks are as varied as the landscapes themselves. In 1978 the Royal Chitman National Park was established in Nepal. At the time, approximately 320 villages with a total of 261,300 people surrounded the park.

New regulations forbid villagers from grazing cattle or collecting firewood inside park boundaries. But, local livestock and park wildlife have little respect for park boundaries. Stray cows fall victim to tiger attack inside the park, and outside the park, rhinoceros eat their way through farmer's fields. Because locals can no longer hunt for food inside the park, the loss of crops and cattle is especially bitter.

The resentments of local people are further aggravated in many cases by tourism. In Zambia, people near South Luangua National Park had a difficult time understanding why wealthy hunters from distant countries were allowed to hunt for trophies while locals were not allowed to hunt for meat. To agitate the situation further, the money being earned from these tourists was not finding its way into the local economy, but was instead leaving with the guides and tour companies. As far as villagers were concerned, there were no benefits from the park, only hardships.

Just as the U.S. concept of a national park is not exportable, the solutions to problems in our parks do not always work around the globe. Often it takes unconventional methods and unique, dedicated people to keep park boundaries a reality on the ground and not just a line drawn on paper.

Jose is one of those unique and dedicated people. By U.S. standards he hardly fits the image of an assistant superintendent of a national park. He was hired practically out of college with only a brief stint as a high school marine biology teacher. At 29, he is younger than most of the people he is in charge of.

His serious responsibilities are balanced by a childlike energy and sense of humor. At night, during the few hours the generator runs, he listens with a vengeance to Rock and Roll music and flips through Mad magazines.

He is of average height for a Costa Rican, but the green eyes and light brown hair are remnants from a French grandfather. When necessary, he speaks with almost impeccable English, except for the few words he has unknowingly created himself.

The park he oversees covers more than 44,000 hectares in the mountainous heart of Costa Rica. The abrupt terrain drops from the cool cloud forests in the highlands to the thick forests of the middle elevations and to the warm, steamy forests of the lowlands.

Waterfalls, streams, and volcanos have sculpted the slopes and the soils into a castle-like landscape. Perhaps 6,000 plant species cling to the steep mountain walls and some four hundred species of birds busily fly among the trees eating fruit and chasing swarms of army ants. Dividing the park in half is a busy highway, one of the nation's earliest roads connecting the capital city to the Caribbean coast.

Because Costa Rica abolished their army in 1949, there has been more money and political support for social causes, including the protection of the environment. But even with the establishment of the Costa Rican park system in the early 1970s, the country still has one of the highest deforestation rates in Latin America.

Deforestation around and sometimes within the parks continues in part because the needs of local people are not being met.

As Jose describes it, "Parks in Costa Rica have grown like islands in a social reality."

When Jose was hired by the Costa Rican National Park Service several years ago, the resentment between local communities and Braulio Carrillo National Park had gone from a simmer to a boil.

During the establishment of the park, people were thrown off the land. The Costa Rican government reimbursed the landowners, but they were paid slowly and cheaply.

Next, park personnel moved in and new regulations against poaching, bird trapping, land squatting, and plant collecting were enthusiastically enforced. In the process, they created "environmental enemies."

Unlike many classically trained biologists, Jose was quick to recognize that in order to halt the steady stream of law enforcement problems, blame would have to be set aside and the social problems involving the park would have to be given attention.

"There's nothing wrong inside of the park," says Jose "Everything is perfect. It took millions of years to work it out and it's perfect. The problems come from outside."

A comment by one Costa Rican sums up what the main problem is, "My grandfather and my father used to come here to go hunting. Suddenly a group of men wearing brown pants and beige shirts with a patch on it tell us that we can not do it anymore."

According to Jose, the situation deteriorated until, "Wearing our uniform in certain communities was risky business."

Jose was put in charge of a new environmental education program, research programs, and tourism management. He also works side by side with park rangers.

But like parks in many developing countries, good intentions often outrun financial realities.

Few rangers are college educated and some never completed high school. Equipment is scarce, and if it exists at all it's often barely in working condition.

The guns carried by the rangers during law enforcement activities are temperamental. Sometimes they fire, sometimes they don't. The new truck that was recently donated by a U.S. conservation organization can only be used when there is money for gas. Often rangers will walk or hitchhike along the main highway to reach other parts of the park.

The living conditions aren't much better. The rangers stay at the park for twenty straight days, then go home or to other jobs for the remainder of the month.

The main headquarters for Braulio Carrillo National Park is located at the highest point on the main highway. The unheated buildings are often wrapped in cold mists and persistent rains. One building is missing window panes.

In the living quarters, the shower pumps out an avalanche of ice cold water. Rice, beans, bread, a vegetable or fruit are served every lunch and dinner. For breakfast, the rice and beans are mixed together.

Even safety equipment that is taken for granted in the U.S. is almost nonexistent. Camouflaged against the dark forest background, rangers will often conduct roadblocks to check for illegal collecting. The single orange safety vest is passed from ranger to ranger while the others stand almost invisibly on the road.

It was with this lack of equipment and a strong sense of commitment that Jose and the rangers began their first positive contacts with the communities surrounding the park.

It started in local schools with talks, slide shows, games, and songs about the park and its natural resources. Soon there were requests for more appearances and when there was money, visits to the park for school children.

Through the schools, Jose and the rangers came in contact with parents and other adults in the community. What they discovered was a huge discrepancy between how the locals viewed the park and what the park is really all about.

The park staff began to carefully weave themselves into the

communities by attending meetings of community associations, youth groups, and development associations. They found out what the local people's needs were and set out to alter their "policemen" image.

Soon the park personnel began to organize community fiestas and Christmas parties for poor children. They used their government connections to get access roads repaired. It was their intention to show the communities that the forest reserve surrounding the park acts as a biological buffer zone, but they also needed a "social buffer zone" made up of people to protect the park.

Because the rangers all have different educational backgrounds, a proposal was written by the park staff and accepted by the Dutch embassy to finance a series of classes for the staff of Braulio Carrillo National Park. For five days a month the rangers, cooks, and supervisors sat together as students and learned about environmental education, ecology, natural history, and skills in working with local communities. It was the first time such a course was offered within the park system.

Slowly the locals began to recognize the benefits of the park and the natural areas it protected. Keeping the park protected became a way to make money. Local lodges, guides, and horse rental businesses are kept alive because of the park.

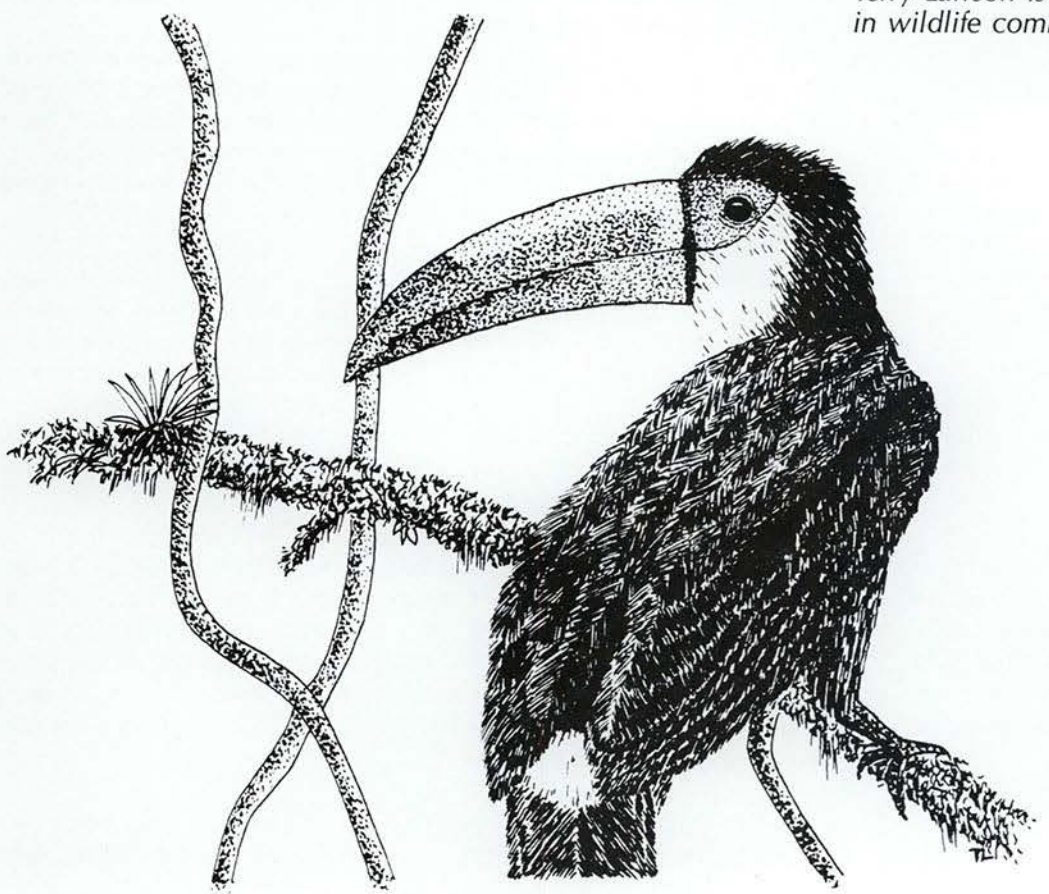
The effort has now gained a momentum of its own. Communities are organizing their own groups for the protection of wildlife and natural resources. One town, San Miguel, has recently planted 5,000 trees in their area and the park service and local communities have produced the first issue of a joint newsletter to inform others about events at the park.

The future of Braulio Carrillo National Park is precarious, however. The flow of money has once again fallen behind good intentions. Recent budget reductions have meant cutting back on many programs and postponing new projects. Visitation problems such as litter, rock and plant collecting are also increasing as tourism grows.

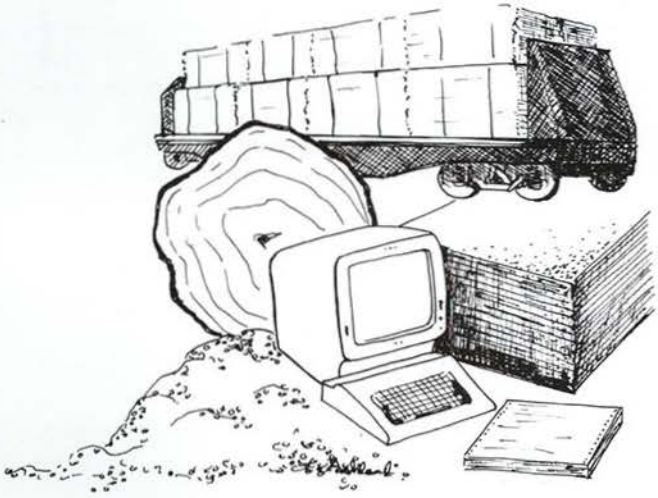
But one thing is certain, the purpose of Braulio Carrillo National Park is now more understood and respected. The groundwork has been laid for continued community support and park boundaries seem more likely to be marked with signs among the trees then with a pen on paper.

For Jose, his thoughts continue to extend beyond Braulio Carrillo's boarders. He explains, "The park is not an island. The park is not my farm. The park belongs to all the Costa Ricans and more than that, it belongs to all the human beings on Earth."

Terry Lawson is a graduate student in wildlife communications.



Club News



THE WILDLIFE SOCIETY

by Mark Sands

The Student Chapter of The Wildlife Society (TWS) started off the 1990 spring semester with John Lamb taking a few brave souls over to Washington State University to fly raptors. John takes about five individuals every Friday afternoon to fly rehabilitated birds of prey.

Next, we had the opportunity to help the Idaho Department of Fish and Game (IDF&G) enhance the wildlife area located next to their office in Lewiston. We did this by planting a variety of perennial grasses and shrubs that wildlife will use for food and cover.

Our next big outing came when five members experienced the wet and cold of Arcata, California, to attend the Annual Wildlife Convention at Humboldt State University.

April turned out being a busy month for the club. The first week started out by assisting IDF&G with goose nests surveys. This survey is always a thrill because we get to take a jet boat up and down the Clearwater River.

Next the club had an annual chili cookoff and a "what's it?" contest during Natural Resources Week. This went very well, with the club making a few dollars to help out our depleted checking account. Also, Washington State University's Wildlife Club invited a few TWS members over for a trap shoot and a barbecue afterwards. Our member, Chuck Maddox, ended the shoot with the "crack shot" award.

Beginning in May, a few members went with Dr. Peek's graduate class to Craig Mountain Wildlife Management Area. Here we had the opportunity to look at some controlled burns and to assess the types of plants in these areas. The weather was bad so we didn't have a very good opportunity to view wildlife, but we did see some chukars and a few mule deer.

Right before finals we held elections for new officers. I was elected president, Alan Jenne was elected vice president, Lorraine Blasch was elected treasure, and Todd Butts was elected secretary. That concluded our spring semester.

Our fall semester started off good. At our first meeting, we had over 30 new members. Our first activity was a volleyball game at Robinson Park and when it got too dark to play any longer, we all built a bonfire and ate s'mores. This was an excellent way to get to know some of the new members.

We had several guest lecturers. Graduate student Mark Robertson and Ph.D. student Rich Fischer spoke on "The Ecology of Sage Grouse on the Southwestern Desert." Ph.D. student Tony Apa spoke on "Sympatric Relationship Between Sage Grouse and Sharp-tailed Grouse." Alan Sands, a BLM wildlife biologist, spoke on his roles within the BLM and how the job opportunities look in the future. Frank NeSmith, Chief of Law Enforcement for IDF&G, spoke to us on what he thinks are outstanding characteristics for an IDF&G law enforcement officer. He also spoke of job opportunities.

In mid-October we attempted to have a shotgun clinic and trap shoot, but the weather didn't cooperate. We were hoping to teach some of the members, who had never shot a gun before, the proper ways of handling a firearm. It looks like we are going to move this activity to the spring semester.

This year we have a new T-shirt design, and we're hoping the shirts will be back before Christmas break. Also, a few members participated in Project Wild. This is a workshop to gain certification to teach and to help instructors teach children about wildlife and our natural resources. Those of us that participated had an excellent time.

Finally, we are going to wrap up the semester with a field trip to a fish hatchery in Washington, where we will be shown the latest technologies in hatchery operations.

Mark Sands is a senior in wildlife resources.

Jennifer Leach

Back row left: Steve Rogers, Mike Igilman, Mark Sands, Alan Jenne, Lewis Miller, John Lamb, John Citta, Mark Hale; Middle row left: Lorraine Blasch, Margret Arthur, Angie Elkins, Greg Wooten; Front row left: Pam Wilkins, Vicki Sink, Janet Seabolt, Greg Felton; Not pictured: Jennifer Leach, Carolyn Steiner, Zach Bane, Chuck Maddox, Greg Hanson, Lori Hunter, John Hunter.

Western Wildlife Student "Conclave" 1990

by Janet Seabolt

The tension was thick in the air as onlookers held their breath to see if the University of Wyoming's wildlife bowl team could answer one more question correctly and take the lead away from the University of Montana's team in the last round of the competition at the 1990 Western Wildlife Student Conclave.

That moment was only one of many exciting and stimulating events that took place from March 12 to 15, 1990, at Humboldt State University in Arcata, California, where the Western Wildlife Student Conclave was being hosted. Teams from Montana, Colorado, Nevada, Idaho, Texas, Wyoming, and New Mexico participated in the events. The agenda was packed with social gatherings, workshops, field trips, a photo contest, student presentations and the main competition.

The University of Idaho's participating team consisted of Alan Jenne, John Lamb, Mark Sands, Janet Seabolt, and Greg Wooten. The trip from Idaho was a quick overnight drive through Oregon. We arrived in Arcata Monday evening, just in time for the first social gathering. We were welcomed by a mixer pizza party where all of the competing colleges could get together and get acquainted.

Tuesday, after registration, everyone viewed photos that had been entered in the photo contest. Students presented technical papers in the morning through mid-afternoon, followed by workshops. We had our choice of five workshops to attend; needless to say it was difficult to chose only one. I attended the basic radio telemetry workshop, while Greg, Mark, Alan, and John all attended the marine mammal and pelagic bird identification workshop. The evening entertainment consisted of a beach party blow-out, including an animal behavior contest.

On Wednesday, the Wildlife Bowl competition, a college bowl competition based on wildlife trivia, was held and lasted most of the day, concluding with an awards banquet that evening held at the Samoa Cookhouse just outside of Arcata.

On Thursday, we had our choice of four different field trips to go on, they included: a pelagic trip, to do some whale watching up close; a trip up the coast, to observe different wildlife habitats; a trip to the tide pools and the Trinidad Marine Lab; and a trip to Prairie Creek State Park and Redwood National Park. John and I went on the pelagic trip, while Greg, Mark and Alan went on the trip up the coast to observe the different wildlife habitats.

We all had a really great time, formed new friendships, and went away from Humboldt State University with a lot of good memories. I'd like to thank all the people at Humboldt State for making the 1990 Conclave a very memorable one.

Oh, the answer to who won the 1990 Conclave—the University of Montana. They will also be hosting the 1991 Conclave in Missoula, Montana, on March 25-28. Good luck to the University of Idaho.

Janet Seabolt is a senior in wildlife resources.

Mark Hale

Janet Seabolt, Alan "Pee Wee" Jenne, John Lamb, Mark Sands; Front: Greg Wooten.

American Fisheries Society

by Joel Hunt

The elected officers for 1990-1991 were Colleen Fagan as president, Joel Hunt as vice president, and Ken Lepla as secretary.

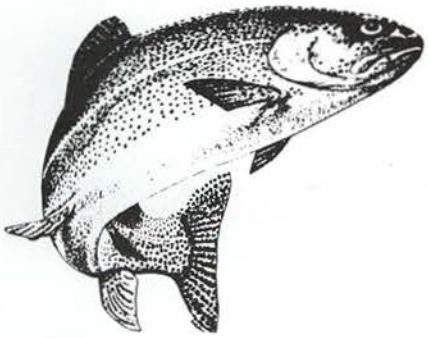
One of the primary functions of the Palouse Unit is to present guest speakers that lecture on topics of interest to the membership. Larry Wimer, from Idaho Power, spoke about the role of private industry in state fishery management. Kim Apperson and Bruce Rieman, of Idaho Fish and Game, lectured on white sturgeon and kokanee, respectively. Dennis Scarnecchia, from the University of Idaho, talked about Atlantic salmon in Iceland, and Gary Thorgaard, of Washington State University, discussed the role of genetics in salmon conservation.

The Palouse Unit and the student chapter of The Wildlife Society are cooperating to have a mural painted on the wall outside the Fish and Wildlife Cooperative Unit offices in the Forestry, Wildlife and Range Sciences Building. The mural will emphasize fish and wildlife resources in Idaho.

The 14th annual wild game feed was held on February 15, 1991. Donations were solicited from mail order and local businesses and raffled to raise operating money.

Several members of the Palouse Unit attended the Idaho Chapter of the American Fisheries Society state meeting in Boise on March 7-9, 1991. To encourage student attendance, we paid for undergraduate registration fees, motel rooms and transportation. At the meeting, we hosted a social where students were provided the opportunity to interact with members of the parent chapter.

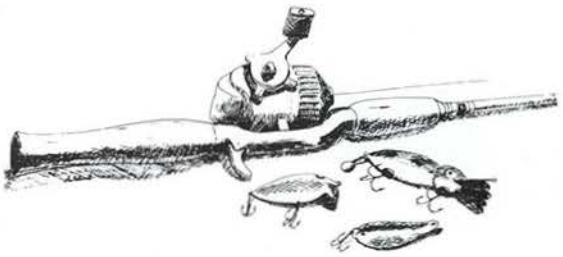
Joel Hunt is the vice president of the Palouse Unit of the American Fisheries Society and a graduate student in fisheries resources.



George Savage

Left to right: Clinton Rasmussen, Brent King, Jodie White, Andrew Whipple, Ken Peters, Joe Lukus, Colleen Fagan, Michelle Baer, Kurtis Plaster, Cynthia Kulongowski, Jeff Barney, Horst Keiser, Jim Durfey, Juan De La Garza.

George Savage



Left to right: John Carlson, Paul Sankovich, Alf Haukens, Joel Hunt, Catharine Collins, Chris Perry, Jo Dupont, David Arthaud, Ken Lepla, Mark Liter, Charles Baines.

Society of American Foresters Student Chapter

by Doug Nelson

It was another successful year for the U of I student chapter. We started the year out by sending Brian Glodowski and Chris Maranto to the Society of American Foresters (SAF) National Convention in Washington, D.C., held in August.

This last school year the SAF strove to involve itself more with the community and the entire university. We sponsored an informative forum concerning Dutch elm disease, which has been killing large numbers of elm trees in the Moscow area. To promote public involvement in reforestation, our members handed out 300 seedlings at the U of I homecoming parade. SAF involved itself in the "Adopt-a-Stream" program in Latah County, promoting improved watershed management and land-use practices. On the university scene, we promoted a change in the instructor evaluation program to create more incentives for teaching as well as research. We also sponsored a university-wide resume writing workshop for students.

We had many fund-raisers throughout the year. A few dedicated members, in a joint effort with the Student Management Unit, cut wood on the Flat Creek Unit of the school forest. Members ran the concession stand at the range dance held in the Moscow Community Center, and we held our Annual Valentine Carnation Sale.

Our chapter was proud to be involved in the establishment of a SAF National Student Chapter. This organization was formed to unify the student component nationwide so that it could be an effective, efficient, and usable tool to the professional society.

U of I's chapter hopes to have approximately 20 members at the SAF Inland Empire Section Meeting in Clarkston, Washington, on the second week of March. Seven members attended the 74th annual Foresters Ball at the University of Montana. They showed those foresters how to have a good time.

Our chapter would like to wish a happy farewell to Dr. Fred Johnson who retired this past September, and thank him for his years of patience and advice as our past advisor.

Doug Nelson is a junior in forest resources.

Mark Hale

Left to right: Bret Daugherty, Keith Brink, Deanna Meade, Patti Wold, Brian Glodowski, Doug Nelson, Karen Brenner, Tim Wincentsen, Carl Brenner, Mike Pelke, Leanne Marten, Amy Stillman, Gene Phillips, John Roberts, Rick Noggles, "Mighty Mack".

The Society of American Foresters received a national award for Outstanding Student Chapter at the 1990 SAF National Convention in Washington, D.C. Left to right: Lauren Fins, Dean John Hendee, Chris Maranto, Dr. Joe Ulliman, Brian Glodowski, Dr. Jim Moore, Dr. Jo Ellen Force.

The FWR Guidance Council

by John C. Hendee

The Guidance Council of the college of Forestry, Wildlife and Range Sciences is comprised of approximately 70 representatives of federal, state, and local organizations from throughout the West.

The Guidance Council was formed as part of the college's Quest For Excellence Plan, and plays an important role in helping the college stay in touch with the needs of our constituent groups. Guidance Council authority is advisory, but has a major influence. The entire council meets once each year, and departmental subcommittees meet on an as-needed basis throughout the remainder of the year.

Responsibilities of the Guidance Council include:

1. Assisting the college in developing balanced and relevant goals, objectives and programs.
2. Helping to keep CFWR informed on emerging resource problems, needs and situations that can be addressed in the college's teaching, research and service programs.
3. Becoming informed about the college's activities, accomplishments, operations and problems, and advising on their implementations, communications and resolution.
4. Providing ideas and input to plans, directions and proposals by the college.
5. Helping to arrange and conduct forums aimed at strengthening relationships between the college and constituent groups, and discussion of renewable resource concern.
6. Helping to communicate and provide support for college programs among constituent groups, the public, the legislature and the university system.

John C. Hendee is dean of the College of Forestry, Wildlife and Range Sciences.

Executive Council

by John C. Hendee

The Executive Council of the College of Forestry, Wildlife and Range Sciences is comprised of the dean, two associate deans, the director of administration, five department heads, one faculty representative, one graduate and one undergraduate student representative.

The mission on the Executive Council is responsibility for coordination of teaching, research, and service missions of the college. While the dean is ultimately responsible for decisions, the purpose of the council is to achieve participatory management and college-wide cooperation through pro-active internal communication.

The Executive Council works as a management team, advising the dean and recommending action on issues affecting the college. It takes into consideration that tradition, energy, wisdom of staff and faculty, along with stu-

tives and independence, are the key to the college's productivity and integrity.

John C. Hendee is the dean of the College of Forestry, Wildlife, and Range Sciences.

Left to right: Mark Hale, Lynn Mineur, Ernie Ables, Leonard Johnson, Peter Steinhagen, Mike Falter, Richard Bottger, Joe Ulliman, Kendall Johnson, Leon Neuenschwander, Ed Krumpe.

Mark Hale

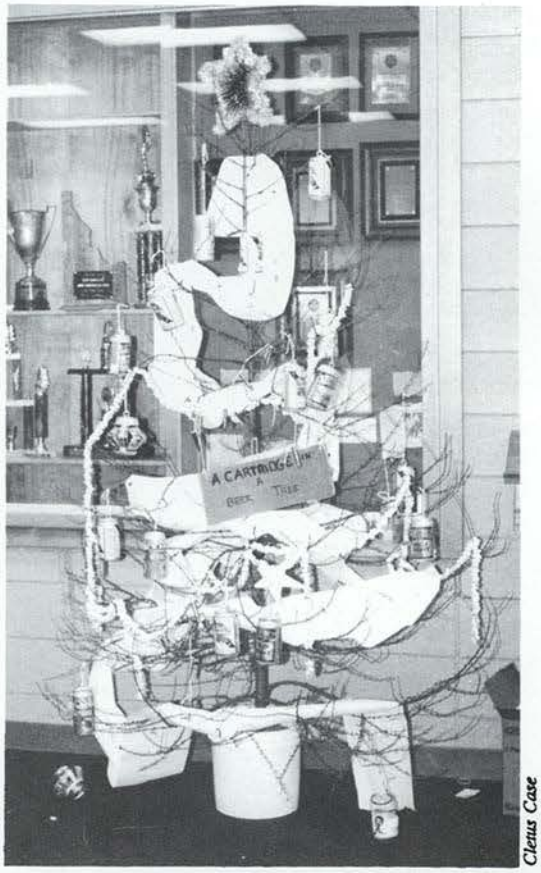
Happy 25th Birthday, Steve Gravelle! Well, aren't you gonna introduce us to your four girl friends?

Mark Hale

Gardening again boys? Juan De La Garza (left), Alf Haukenes, Scott Wisely, and Horst Kaiser study complex carbohydrates at the Garden.

Mark Hale

Student Affairs Council homecoming float.



Cletus Case

"A Cartridge in a Beer Tree!" The reading room Christmas tree.

Gene Phillips

See what too much studying will do to you. Brian Sutton working on his Fish 418 paper in the reading room.

Mark Hale

Who said there were conflicts between departments? Dave Silcock (left), Greg Wooten and Pam Wilkens playing a game for Project Wild.

Deanna Meade

"Yeah mom, we study every night!" Travis Bosworth (left), Shawna Zechmann, and Mark Hale hanging out at the Plantation.

Nathan Fulner

Fred Johnson gives Joe Ulliman the proper technique to tossing flapjacks at the Student Affairs Council Pancake breakfast.

Mark Hale

"All right!" "Who peed in my Mountain Dew?" Left to right: Zach Banes, Wayne Hutchins, Alan Jenne, Mark Sands, Eugene De Limata, Margaret Arthur, and John Hunter studying in the reading room.

Mark Hale

"You think I'm wading in there, you got another think coming!" Sue Ireland waiting to pick gill nets on a Fisheries 418 field trip to Noxon Reservoir, MT.

Student Affairs Council

by Mark Hale

The Student Affairs Council (SAC) of old is no longer. During a long but needed metamorphosis in the past year, Student Affairs Council has been revamped, revised, and transformed into a stronger voice and a more innovative leader of the College of Forestry, Wildlife and Range Sciences. This year many things have been changed. One of our major innovations is the addition of co-chairpersons instead of a single chair. Through student input and actions, the SAC has taken a strong and needed position in college and student affairs, which was often misconceived or often overlooked. The outlook for Student Affairs Council looks bright and can only shine brighter. Activities of the year thus far, have included a pancake breakfast, a parade float for Homecoming, and more involvement in college affairs, teaching, and research.

Our annual pancake breakfast went well. We had our share of trials and tribulations, but managed to stay on top and out of the red. We also made a float for the university's Homecoming Parade. Kelvin Daniels rode our float and did well in representing our university and college. Seedlings donated by the Potlatch Corporation were handed out during the procession, and were a big hit with the community.

We also took a stand, spawned by student concern, for the improvement of teaching in the college. This has prompted more student input to the dean's office and periodic meetings with the dean to discuss and work out problems. The college is now working more closely to improve teaching and student involvement in college affairs.

Student Affairs Council also sells hats and shirts with a college logo. These funds help the organization to promote and help fund activities that occur within the college.

Endeavors that are in the planning for the rest of the year are Natural Resources Week and improvements to our reading room. Activities planned for Natural Resources Week include a panel discussion, guest speakers, chili cook-off, club olympics, logo contest, awards banquet, and numerous other great ventures. It looks to be a great epoch of fun and education. Improvements to the reading room have already begun with changes in furniture and club boards.

The future for Student Affairs Council has many barriers to leap, but with an increase in student involvement and awareness, it can only grow and prosper.

Mark Hale is a senior majoring in fish and wildlife resources.

Back row left: Christine Hunter, Doug Nelson, Brian Glodowski, Dave Silcock, Gene Phillips, Chuck Maddox, Karen Brenner; Front row left: John Roberts, Kara Lagerquist, Patti Wold, Rick Noggles, Mark Hale. Not pictured: Sandy Pike, Dave Poxleitner.

The Snag

by Sandy Pike and Kara Lagerquist

The Snag is a bi-weekly newsletter published by the students of the College of Forestry, Wildlife, and Range Sciences. It is an essential link between the students, faculty, and staff. Many people work together to produce *The Snag* on time.

The staff currently consists of eight students. There are two co-editors, Sandy Pike, a junior in resource recreation and tourism, and Kara Lagerquist, a senior in forest resources, who gather the articles for each issue. The staff writers consist of Mark Hale, a senior in fisheries, Travis Bosworth, a senior in resource recreation and tourism, and Steve Rogers, a sophomore in wildlife resources. There are also two artist on the staff who contribute personal drawings. Shayne Watkins, a junior in forest resources, creates "Broken Arrow," a cartoon strip about an Indian brave who is always getting into mischief. Robin Creath, a senior in range resources, creates word searches and other puzzles.

There are nine sections of *The Snag*. A short description of each section appears below.

1. LETTER FROM THE DEAN: In this section, the Dean is able to relay pertinent ideas to the students.

2. EDITORIAL: This is written by either of the two editors on subjects of concern. They are either serious or humorous.

3. LOOKING AHEAD: Used as a calendar for reminding students of special functions, club meetings, and academic deadlines. This section is put together by the editors.

4. TRIVIA AND MISCELLANEOUS FILLER: The trivia usually gives interesting natural resource facts, while miscellaneous filler gives a thought for the day, as well as articles which don't fit under other sections. They are currently written by Travis.

5. SPOTLIGHT: This section is reserved for interviews featuring students, new faculty, and staff, or anyone who has done something exciting. Steve is currently the staff interviewer.

6. SNAG SAGA: As a creative writing piece, each series lasts for a semester, with a different adventure occuring in each issue. Mark is currently in charge of the Saga.

7. OPINION: This section allows people to submit articles in which they can voice their own opinions.

8. HOT RUMORS: This section of *The Snag* is the responsibility of the entire college, staff, and readers alike. It is a chance to embarrass a friend, enemy, or professor by providing details to the readers about extraordinary occurences.

9. SNAG MAN: This is another creative writing piece. It is about a forestry experiment gone haywire to produce a half-man/half-snag creature that goes around terrorizing specific students. This piece was created by Mark.

As you can see, a lot of work goes into each issue of *The Snag*. It would be impossible to publish it without the help and cooperation of all the staff members. We would like to thank the staff, the college, and everyone else who helps in the production of *The Snag*.

Sandy Pike, a junior in resource recreation and tourism, and Kara Lagerquist, a senior in forest resources, are co-editors for The Snag.

Mark Hale

Back row left: Steve Rogers, Kara Lagerquist, Sandy Pike, Shane Watkins; Front row left: Mark Hale, Travis Bosworth.

Forest Products Club

by Dennis Scott

In the spring of 1990, the Forest Products Club was busy finishing up a fundraiser in which we sold cantilever bookshelves. The bookshelves were built the previous year by club members. Later in the spring, club members went to area conferences dealing with harvesting and wood science topics. The club finished up the year by having the annual John Howe Pig Roast at Harry Lee's house. During the spring and fall of 1990 club officers were:

Dennis Scott	President
Kim Pence	Vice President
Paula Yochum	Sec./Treas.

For the spring and fall of 1991, officers elected are:

Richard Schaefer	President
Wayne Hutchins	Vice President

The club has future plans of inviting guest speakers to come and talk to the college, along with attending the area conferences.

Dennis Scott is a senior in forest products.

Mark Hale

Back row left: Dennis Scott, Mike Waisanen, David Poxleitner, Richard Schaefer, Tom Gorman; Front row left: Richard Folk, Wayne Hutchins, Kim Pence, Paula Yodium.

Wildland Recreation Management Association

by Shawna Zechmann

The 1990-1991 academic year is proving to be a busy one for the Wildland Recreation Management Association (WRMA). Various activities, from university and community projects, to state and national events, have been included in our busy, yet rewarding schedule.

Two of the projects that the WRMA members have enthusiastically decided to support include an interdepartmental public forum on the effects of logging on natural resources, local economy, and asthetic value; and the "Adopt-a-Creek" program, developed to improve water quality. We are jointly adopting Paradise Creek. Other community service projects that the WRMA has been involved with include environmental health and education projects, like the McDonald School Project. These projects not only assist in introducing the world of natural resources to children, but they also help our students apply the knowledge and techniques learned in the classroom.

Club members also participated in various fundraising events in order to help cover project and travel expenses. Two such fundraisers included a clean-up project at Kamiak Butte County Park and tee-shirt sales. These funds are also used to finance outdoor activities for the students, such as white water rafting, canoe trips and weekend outings.

With club money, the association will be sending students to two professional conferences within the state. Both the Idaho Governor's Conference and the National Association for Interpretation Conference provide students with opportunities to hear professionals speak on related topics. The conferences also allow the students to meet professionals in related areas.

Social functions, such as departmental potlucks, help develop faculty/student and student/student relations. One such function will be held this spring as the Department of Resource Recreation and Tourism welcomes its new department head. Dr. John Hunt will leave his University of Massachusetts position to join our distinguished faculty. He is a pioneer in suggesting the linkage between resource research and tourism. We feel very fortunate that Dr. Hunt will head the department. We look forward to his arrival on July 1st.

Officers for the 1990-1991 academic year are as follows:

Jeff Barney	President
Brian Sutton	Vice president
Travis Bosworth	Student Affairs Council Representative
Shawna Zechmann	Secretary/Treasurer and Student Faculty Representative
JoAnn Tynon	Faculty Representative

The Wildland Recreation Management Association looks forward to another successful year.

Shawna Zechmann is a senior in resource recreation and tourism.

Mark Hale

Back row left: Brian Sutton, Deb Kozioe, Mike Swenson, Patti Wold, Jeff Barney, Dale Schmidt, Deanna Meade, Keith Sandy; Front row left: Vicki Sink, Jo Tynon, Shawna Zechmann; Not pictured Travis Bosworth, Sandy Pike, Mark Hale.

Xi Sigma Pi

This year's Xi Sigma Pi was by far the most outstanding in many years. The club was involved in numerous projects involving extensive time, commitment, and dedication.

The organization received many honors and awards, and is continuing to play a leading role in the shaping of the college's best and brightest students.

The rigorous demands these students place upon themselves by serving in the club will have substantial pay-offs in their future, including organizational skills, communication skills, and advanced coffee-making procedures.

A major project, known as the "Doughnut Decision," in cooperation with Rosauer's Inc., greatly enhanced skills in goal programming and decision making.

This year's members were Amy Estes, Todd Butts, Paula Yockum, Brian Glodowski, Deb Koziol, and Steve Szwek.

Author's name withheld upon request.

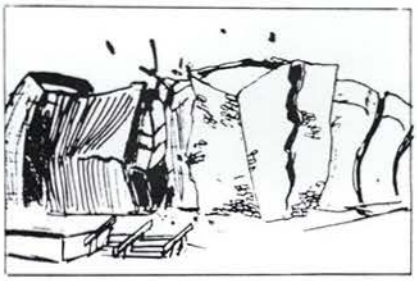
George Savage

Brian Glodowski and Keith Brink showing off one of Xi Sigma Pi's functions that came to a timely demise; the daily brewing of morning java.

"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

Student Management Unit

by Wendy Albrecht

This year the Student Management Unit has once again continued the tradition of being the only "hands-on" organization in the College of Forestry, Wildlife, and Range Sciences. We have been very busy—thanks to the energy and participation of both experienced and new members.

Our projects included cutting and hauling firewood out of the Big Meadow Creek Recreation Area to sell during the fall. Another project involved cleaning up the new addition to the school forest, the Blodgett Outdoor Classroom. This included the removal of about half-a-mile of old fenceline, clearing the road of small trees and brush, and installing water bars along the roadway to prevent erosion. At the end of the day we headed to Flat Creek Cabin for our annual overnight barbecue.

Mark Hale

Left to right: Chuck Maddox, Gene Phillips, Pam Wilkins, Matt Cerkel, Ivonne Elliot, Greg Hanson, Vicki Sink, Karen Brenner, Doug Nelson, Wendy Albrecht, John Roberts; Not pictured: Zach Bane, Chuck Maddox, Kevin Bartz, Dave Persell.

Plans this spring include designing a future management plan for the 140-acre tract of the Student Management Unit. We also look forward to sponsoring the Second Annual Moscow Mountain Mud Run, a day-long bike/foot race on the Hatter Creek section of the Experimental Forest.

During the month of December, Dave Persell stepped down as chairman of the SMU, and the club elected Wendi Albrecht and Gene Phillips as co-chairs.

This past year involved both fun and work. We look forward to the return of present members and hope to recruit new faces with as much enthusiasm as demonstrated this year. Certainly the experience gained will help shape our future as natural resource leaders.

Wendi Albrecht is a sophomore in forest resources.

Logger Sports Club

by Wayne Hutchins and Pat McHargue

The Logger Sports Club, a campus-wide organization with student membership from many colleges, attempts to keep alive the art of woodsman's competition that took place in the logging camps throughout the Pacific Northwest during the turn of the century.

Spring semester has now started with a membership of more than 20, including two graduating seniors and a great deal of enthusiasm. Mike Waisenan, winner of the All-Around Logger Award at the AWFC Conclave at the UI in 1988-89, has returned for his last year in competition for the UI Logger Sports team. The other senior is Mike Tetwiler.

During the fall semester, the beginning of the 1990-91 logger sports season, a rebuilding plan was set in motion with the formation of the Logger Sports Club and election of officers. Pat McHargue was elected club president, Ruth Neils to secretary-treasurer and Wayne Hutchins as logger sports team captain. Two Logger Sports Scholarship recipients, Gene Phillips and Bret Daugherty, have assumed their duties as equipment steward and student government representative.

Mark Hale

Back row left: John Fuller, Chuck Oliver, Bret Daughterty, Ruth Niels, Bob Atwood, Mark Losko, Jeff Smutney, Mike Pelky; Front row left: Wayne Hutchins, Greg Felton, Gene Phillips; Not pictured: Michelle Bemis, Brian Hoover, Pat McHargue, Rob Tebbs, Mike Waisanen, Robert Pitwood.

Fund-raising is the backbone of the Logger Sports Club. Already this season, a very successful effort cutting firewood on the UI Experimental Forest has netted the Club $400. After paying expenses and a pizza party, the club was able to purchase badly needed safety equipment, axe handles, and materials for building a box to store and transport cross-cut saws. Several club members, including Wayne Hutchins and Doug Nelson, have finished construction on the saw box designed by Pat McHargue. A second fund-raising project is planned for semester break that will take 8-10 Club members to Priest Lake for a tree planting and landscaping project. The crew will be headed by John Fuller. Proceeds will be used to purchase new competition equipment, for travel expenses to competitions, and for improvements on the UI Logger Sports site. In the near future, the club plans to provide lighting for evening practices and to improve safety and security on the site with fencing and a secure cabin.

Other preparations for the 1990-91 logger sports season include purchasing two new

Richard Folk

"No, no, no, Doug, we can't pull at the same time!" Left to right: Doug Nelson, Chuck Jones, Gene Phillips, Steve Thornock, Mike Pelkey, Jeff Smutney.

competition-grade chopping axes and maintenance on all equipment. Bob Bosworth, a UI alumnus and professional competitor from Bonners Ferry, is again filing the club's saws, which have proven to be the winning edge in six out of the last seven competitions. His son Carson, a former logger sports competitor, has re-worked the club's practice axes, and a local saw filer, Larry BeVan, will be sharpening the practice saws. Jeff Schwartz is working to get a new club logo on shirts and/or hats, and Greg Felton is evaluating the site lighting project. A Woodsman's Workshop at the UI is planned in February for individual instruction in sawing, chopping, pole climbing and other events. Alvie Marcellus, a professional competitor from Spokane, will instruct the club.

As for the 1990-91 competition schedule, British Columbia Institute of Technology (BCIT) will sponsor a meet on March 22-23. The annual AWFC Conclave will be held at Colorado State University in Ft. Collins from April 1-6. Spokane Community College, in Spokane, Washington, will hold a meet on April 12-13, with Flathead Valley Community College in Kalispell, Montana, scheduled for the following weekend. Competitions at Treasure Valley Community College and the University of Montana have not yet been announced. The UI Club has decided to sponsor a meet during the 1991-92 season.

This season, a lot of time and effort have been given by our advisors, Harry Lee and Richard Folk, and UI alumnus and team coach, Mark Lesko. The Logger Sports Club is in a rebuilding phase and there are many financial needs for equipment and travel. But more important, there is a need for you to become a club member, whether it is for the thrill of competition, a liking for hard work, or a desire to learn and pass on the art of being a skilled woodsman.

Wayne Hutchins and Pat McHargue are both seniors in forest products.

Richard Folk

"Hey guys, look at this!" "I just created* Stump Henge." *Wayne Hutchins cleans up the logger sports aftermath.

Richard Folk

"I'm gonna drop this sucker like a bad habit!" Doug Nelson practices his axe chopping.

Richard Folk

"Okay gang, who's next on the teeter totter?" Left to right: Angie Elkins, Jeff Smutney, John Fulner, Michelle Bemis, Mike Pelkey, Chuck Jones, Steve Thornock.

Travis Bosworth

Perhaps Wildland Rec. needs a class in the highly technical field of pumpkin carving. Jeff Scheuerell and Shawna Zechmann carving pumpkins at a "Wreckie" pumpkin carving party.

Rick Noggles

Yes, you too can graduate from the College of FWR and be qualified for a position in tele-marketing. Dale Schmidt plays secretary for the day.

Mark Hale

"And for our next trick...!" Patti Wold (left), Shawna Zechmann, and Travis Bosworth hanging out at the Plantation.

Mark Hale

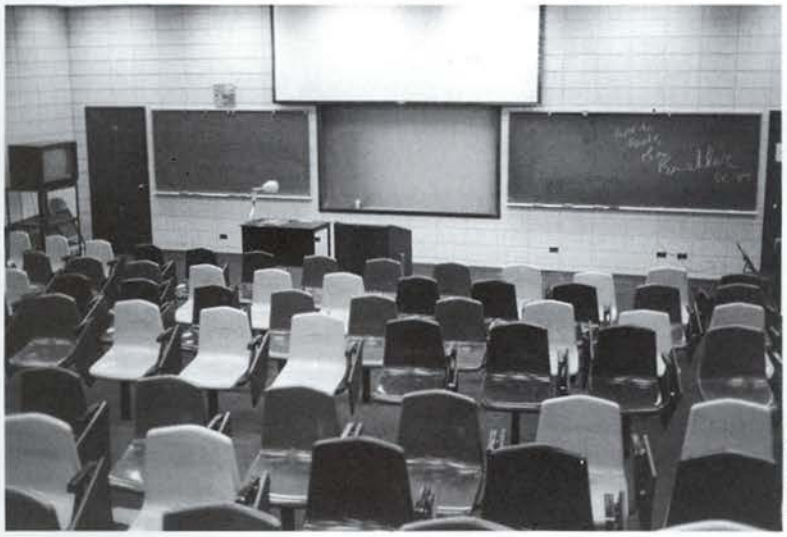
Gene Phillips contemplating the statistical chance of whether he can graduate before he starts receiving social security.

Nathan Fuhrer

Joe Ulliman talks to his plants.

Clenis Case

"Deanna, do we know these guys?" Mark Hale (left), Shawna Zechmann, Deanna Meade, and Jeff Barney begin to crack under finals pressure in the computer lab.

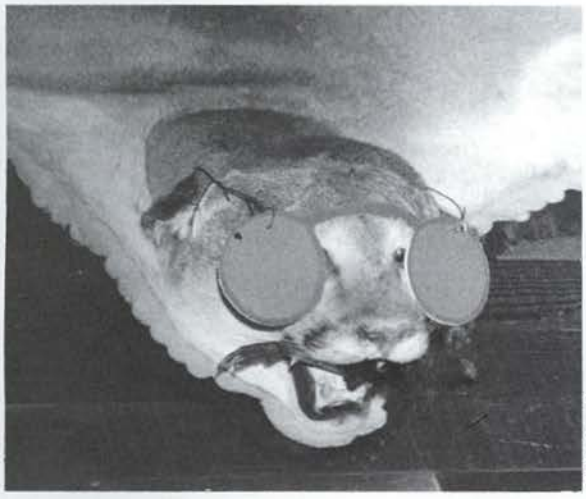


Rick Noggles

Who Were *those guys seen going into the forestry building with drills and what were they doing? Room 10 after April Fools Day.*

Nathan Fulner

Rick Noggles is finally successful in teaching Brian Glodowski the proper way to eat.



Rick Noggles

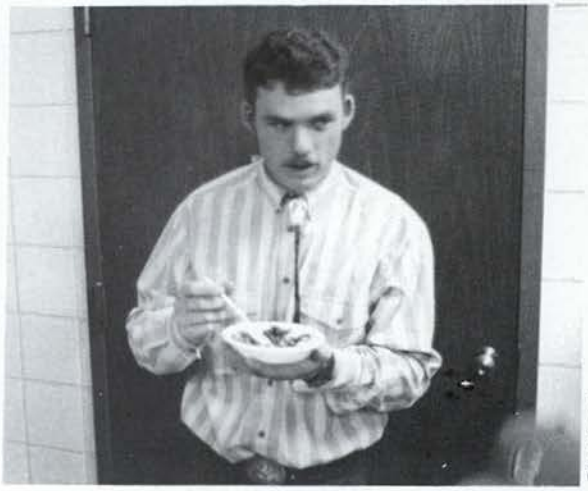
It's not like we don't appreciate you Coug's over in Washington! April Fools on the Cougar!

Kara Lagerquist

"Gee, I wonder what makes a pancake work?" Al Moslemi flips pancakes at S.A.C.'s annual breakfast.

Mark Hale

"Last one to the North 4-D is buying!" Mike Igilman, Tiajuana Cochnauer, Mark Sands, Shawna Zechmann, Christine Hunter, Michelle Grover, Deb Koziol, Pam Wilkens, Glenna Sherupski, Dave Silcock, and Greg Felton playing "Oh Deer" during Project Wild.



Rick Noggles

"Oh bunk!!" "Somebody is going for the last piece of cake!" Greg Wooten eating chili at the Wildlife Society's chili cookoff during Natural Resources Week.

Society For Range Management

by Nadine K. Crossley, Dale Schmidt, and Mike Courtney

The Range Club was very busy this past year raising money to attend the international meeting of the Society for Range Management in Washington, D.C. The club sponsored a raffle which was won by Ray Kelley of Gooding, Idaho. In conjunction with the student chapter of the Society of American Foresters, we held a western swing dance at the Moscow community center. The dance was a great success and was much appreciated by the Moscow community. We also sold limited edition cowboy prints donated to us by the noted cowboy artist Charlie Swearingen.

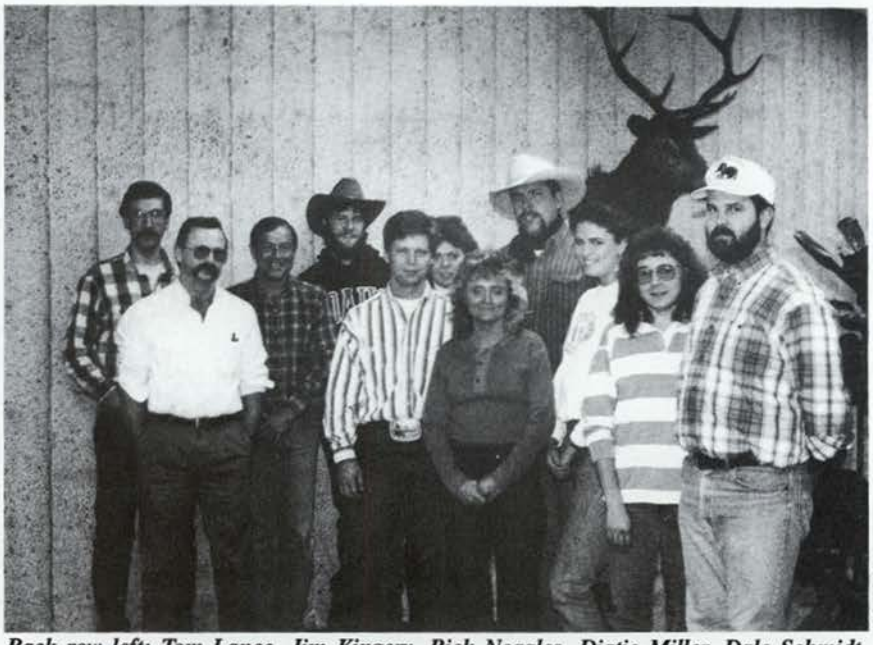
With this money, the club was able to send Rick Noggles, Elwood Burge, Dale Schmidt, Mike Courtney, Kim Cannon, Nadine Crossley, and Diane Ledlin by train to the International Society of Range Management (SRM) meeting. During the meeting, the students participated in the Undergraduate Range Exam and the Plant Identification Contest, as well as attending many seminars and a workshop on job hunting skills. We were also able to see the sights and meet with our congressmen.

Elwood Burge was elected president and Rick Noggles was elected secretary of the National Student Conclave of the SRM. Both are looking forward to a busy year.

Despite a few minor mishaps along the way (a certain few of us missing the train in St. Paul and taking an expensive taxi ride only to miss the train again), everyone had a good time.

Currently, the club is preparing for next year's meeting in Spokane. We are also involved in a riparian area fencing project on the school forest and a joint service project dealing with improvements along Paradise Creek.

Nadine K. Crossley, Dale Schmidt, and Mike Courtney are seniors in range resources.



Mark Hale

Back row left: Tom Lance, Jim Kingery, Rick Noggles, Diatie Miller, Dale Schmidt, Racheal Little; Front row left: Elwood Burge, Mike Courtney, Diane Ledlin, Karen Hammons, Greg Hanson; Not pictured: Zach Bane, Chuck Maddox.

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College of Forestry, Wildlife and Range Sciences, 1990—1991

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Todd Butts
B.S. Wildlife Resources

Jerry Deal
B.S. Wildlife Resources

Gene Ebright
B.S. Wildlife Resources

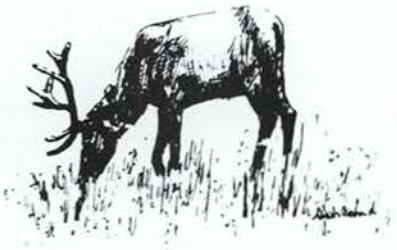
Steve Gravelle
B.S. Forest Resources

Kaye Gussenhoven
B.S. Range Resources

Ghulam Keerio
M.S. Range Resources

William Grigsby
M.S. Forest Resources

Kevin Lincoln
B.S. Wildland Resources



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Deanna Meade
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B.S. Forest Products

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B.S. Forest Products

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Bruce Rich
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Mark Robertson
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Keith Sandy
B.S. Wildland Recreation

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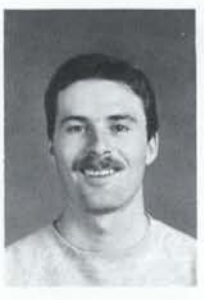

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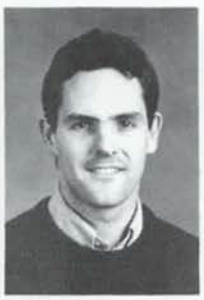
B.S. Wildlife Resources

David Sutherland
B.S. Wildland Resources



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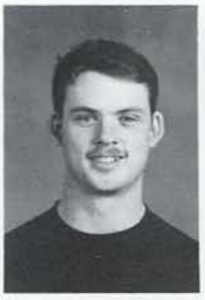
M.S. Wildlife Resources

Tim Wincentsen
B.S. Forest Resources

Jeffrey Wolter
B.S. Forest Resources



Greg Wooten
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Graduating Students Not Pictured

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Scott Dunmire
Steven Kammeyer
Marc Petersen
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Jonathan Hunter
Amelia Larson
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Idaho Forester

by Mark Hale

What do caffeine, Copenhagen, sleep deprivation, missed classes, and paste-up have in common? Not much, unless of course you're on the *Idaho Forester* Staff. Yes, it's that time of year again, when a band of merry men and women unite together in the reading room to produce one of the Northwest's finest publications, the *Idaho Forester.*

This year we had a most excellent staff. A lot of sacrifices were made, including lack of sleep, class, and sanity. The staff was animated (lack of food and large amounts of caffeine tend to have this effect), innovative, and diligent.

In this year's issue, we strived for more college-related issues and reader interest. We also tried to capture the memories and fun that are a major part of college life. Our goal to maintain the quality and traditions of the *Forester* were met head on by the staff, and all should be proud of the work that has been accomplished.

Mark Hale is a senior majoring in fish and wildlife resources.

Mark Hale

Left to right: Dave Silcock, Patti Wold, Pete Gomben, Gene Ebright, Greg Wooten, Shane Dickard, Mark Hale, Nicole Haynes, Matt O'Brien, Shawna Zechmann, Derik Hamilton; Not pictured: Steve Rogers, Janet Seabolt, Michelle Drysdale.

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Steve Rodgers	Woodland Elf
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We are especially grateful to the following friends for their help and encouragement on the 1991 *Idaho Forester.*

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George Savage—FWR Publications
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Jory Shelton—FWR Copy Center Technician
Lorranie Ashland—Graphics Specialist
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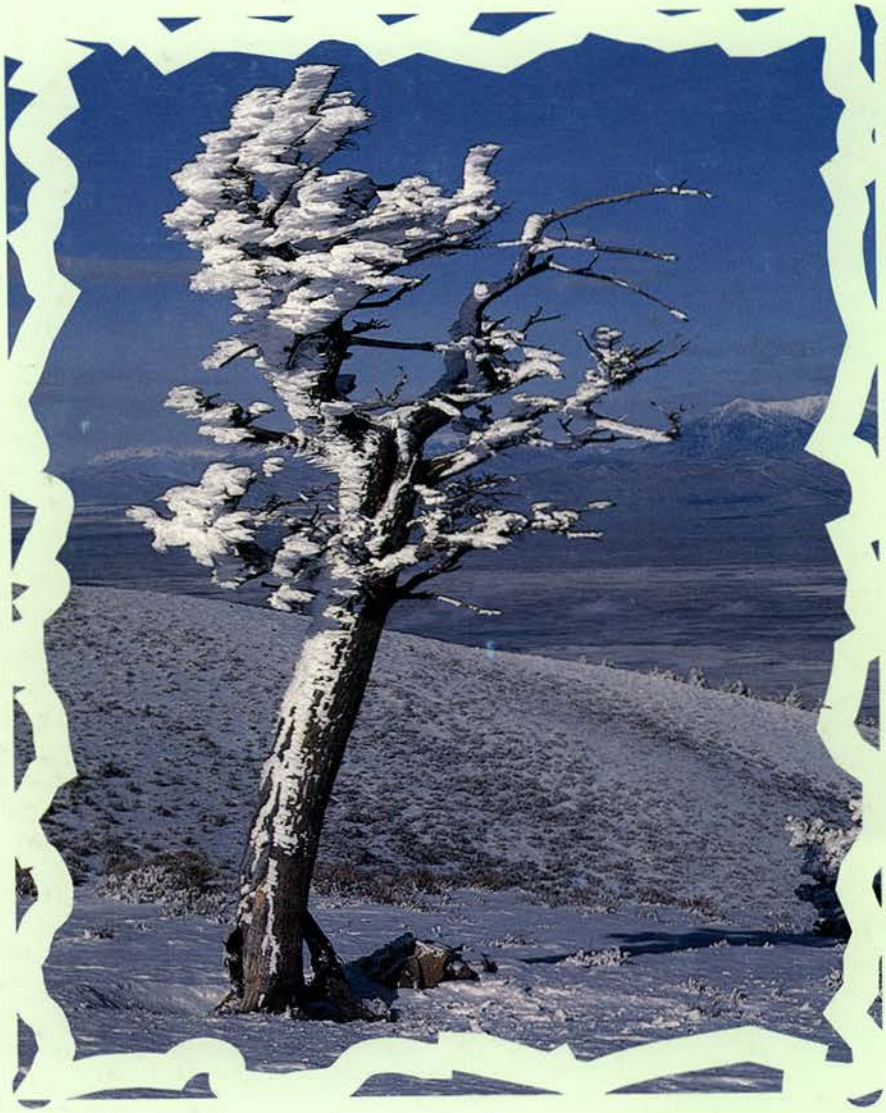
Index to Advertisers

There comes a
time when all
good things
must end.



An annual publication by the students of the College of Forestry, Wildlife and Range Sciences at the University of Idaho.

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