

NORTHWEST ENERGY NEWS

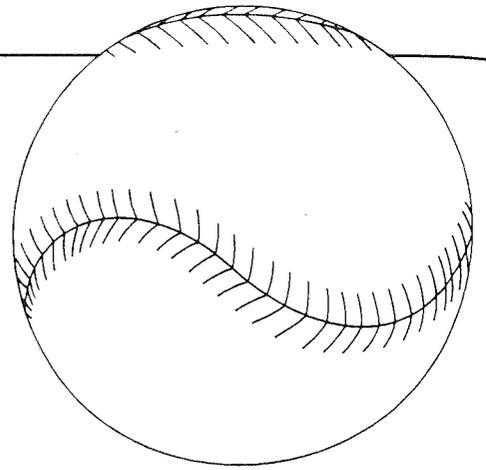
Northwest Power Planning Council

In the near future, there will be a new Northwest. It will still be where it is today, but it will not be what it is today. What it becomes, and what happens to our economy and our quality of life, depends a lot on what kind of power system we decide to build and on how we deal with the changes and transitions occurring in the utility industry.

Want Power?



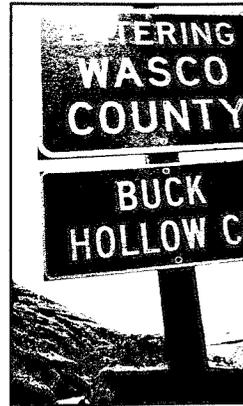
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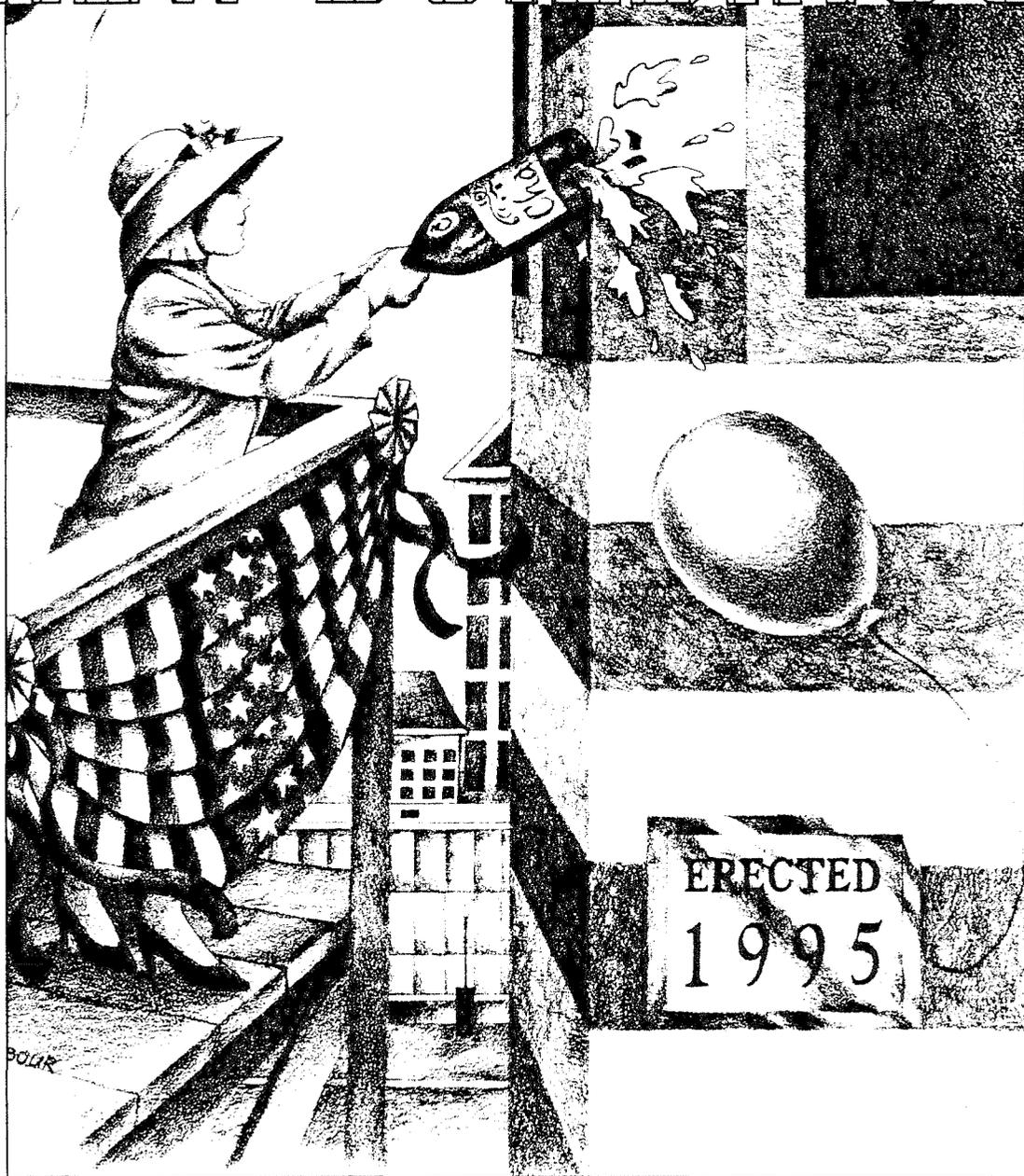
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This issue's cover illustration, from the "Want Power?" brochure, is by Larry Milam.

Making sure buildings operate the way they're designed to saves time, money and energy.

COMMISSIONING A FLEET OF NEW BUILDINGS

by
Carlotta
Collette



It's been about a decade since Nancy Benner got her first big clue that something was wrong in the commercial building industry. The organization Benner now di-

rects, Portland Energy Conservation, Inc. (PECI), had been hired by the Bonneville Power Administration to help coordinate Bonneville's commercial conser-

vation effort, "Energy Edge." Through the program, Benner would assemble a design team to computer model proposed commercial buildings to determine if

and how they could be made more energy efficient.

The team would look at the original design and experiment on the computer with newer technologies and alternative strategies. Bonneville and its utility partners would pay for measures that raised the building's efficiency above the Northwest Power Planning Council's model conservation building standards, which have since been adopted as building codes in much of the region.

When the structures were completed, Benner's group would send inspectors to test the various building components. "We hired good inspectors to test the energy-efficiency equipment," she says, "but it didn't occur to us at first to have the inspectors make sure the whole building worked as a unit, all the equipment sequencing the way it was supposed to. We thought that was already happening."

The wake-up call came one day from a group of engineers who were occupying one of the first buildings she worked on. "They were freezing and their heating bills were double what they had been in their old building," Benner says.

She sent the inspectors back in. What they found was that two of the building's three heaters weren't hooked up, and the utility had applied the wrong billing formula for that type of customer. All the pieces were in place, all right, they just weren't doing what they were supposed to be doing.

Then came Benner's second big surprise. When she tried to find documentation of how the building, with its heating, cooling, alarm and lighting systems, was supposed to operate — how all the complicated equipment was

integrated — she found nothing. Not only was there no overall documentation for that building, she found that integrated systems documentation is rarely developed for commercial buildings. There also was nothing in the building's plans to show how any of it should be maintained.

Architects and engineers told her they used to write everything down, but now they can't get contracts if their bids include enough money to cover the costs of documenting all the building systems. New buildings are so much more complex than they used to be, with a vast choice of building materials, electronic components, air handlers, advanced sensors and more. Few architects or engineers understand how all the pieces should fit together.

The kind of quality control needed to ensure all the parts are working correctly just looks like expensive paperwork to building owners. Building owners and operators assume that their building will do what it's supposed to do

when it's completed, but, in fact, there is generally no one taking the big view, seeing how structural designs, heating and cooling systems, and electronic equipment should be functioning. In many cases, architects and engineers don't even return to structures once their portion of the job has been completed.

In the Navy, they'd say a ship is not ready to see action until it's been through a "start up" test, a "shakedown cruise" and finally, until it's been "commissioned." The Navy understands that one little thing going wrong on a big, complicated ship can cause major problems, so they put the effort in up front to make sure it all works as planned.

The building industry is just beginning to borrow that notion from the Navy. Engineers and architects are looking at buildings as complex structures similar to naval vessels, structures that rely on sophisticated electronics to keep operating efficiently. Unless the building systems are working correctly, energy savings that are expected from those buildings don't materialize. To make the buildings work efficiently, engineers and others are turning to the concept of "commissioning."

"Ideally, a commissioning agent would get involved before the building owner even hires an architect," explains Jeff Harris, energy conservation analyst with the Northwest Power Planning Council. "The commissioning agent works with the building owner to help define the building's future uses — what the owner will expect from his or her structure. Then they stick with the project, testing equipment as it's hooked up, making sure there is documentation of every process, until all

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the components are in and the building is completed and running.”

“Because a well-run building could save between 5 and 40 percent more energy, utilities that are paying for some of the energy saving equipment have also been among the first to take up the idea of commissioning their customers’ buildings,” Benner explains.

One Northwest utility, PacifiCorp, has had a considerable amount of experience with commissioning, probably more than any other utility in the nation, Benner figures. Since 1991, PacifiCorp has been offering its commercial customers both design assistance and financing to improve the energy efficiency of new and existing commercial buildings. Commissioning has been a part of the program from the beginning.

The company worked with commissioning agents to test the performance of the measures put into the buildings to save electricity. Virtually every building had problems. Some had dysfunctional control systems. Others had heat pumps that didn’t perform as designed. About a third had broken or miscalibrated sensors that passed faulty information to control systems.

“We have done enough projects now to convince me that commissioning is a vital component of the construction process,” says Rachel Yoder, commissioning administrator for PacifiCorp’s program. “Our efforts also serve as a type of demonstration project, showing what commissioning is and how it can be done cost-effectively.”

Benner applauds PacifiCorp’s efforts. “Utilities like PacifiCorp got into commissioning to make sure they get the savings they’re paying for. They learned, some of

them the hard way, that they could put the extra effort in up front, or pay for it later with customer complaints,” she says. “Since the conservation effort was intended both as a resource acquisition — purchasing energy savings — and as a customer service, satisfied customers with lowered electric bills were critical. But the reality is, the problems PacifiCorp was seeing are a building industry problem, and the building industry should be solving it.”

After several utility and building industry discussions, Benner and her organization set a goal: they want to see building commissioning become “business as usual” in the construction industry, and they think it’ll take five years to get there. 1995 is year three in that strategy.

Their approach includes convening annual national conferences that bring together building industry professionals and utility experts to explore the barriers to commissioning and ways to overcome them.

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At the first national building commissioning conference in 1993, attendees identified some of the barriers to commissioning. These barriers fall into four broad areas: 1) extra costs; 2) lack of infrastructure (Who would do it? How?); 3) lack of understanding about what it is and what it can accomplish; and 4) no legal requirement to commission as part of building codes. Through case studies and focused discussions, participants began developing solutions to the problems.

The second national conference brought forth some of the solutions. To address the cost issue, participants suggested documenting and promoting the benefits — both energy savings and non-energy values. To develop an infrastructure, they should work closely with the building industry to forge partnerships, establish guidelines and practices, and create incentives, such as lower premiums on insurance for commissioned buildings. To overcome a lack of understanding about what commissioning is and can accomplish, they need to educate just about everybody involved in the industry, including owners and operators of the buildings. To institute better legal requirements, they could lobby for better building codes and more direct liability for building shortcomings.

This year’s conference participants asked themselves: “Are we there yet?”

“We’re close,” says Benner. Portland Energy Conservation, Inc. has produced a list of successes that demonstrate that there is definite movement toward the five-year goal.

Hundreds of buildings, both new ones and existing structures, have been commissioned nationwide, the majority here in the West. Several industry associations and code-writing entities have produced guidelines for how to commission, many of them following the model guidelines developed by the Portland group in 1992, under contract to the Bonneville Power Administration.

"The biggest issue we're encountering now is just the restructuring of the utility industry," says Benner. "Some utilities are actually expanding their commissioning activities as a service they can sell to their customers. Others are less interested. That's why it's critical that the building industry adopt commissioning as its own standard procedure."

As utilities move away from funding commissioning, Benner's group's five-year goal must shift into high gear. "To get to the point where all buildings are being commissioned as part of the overall design and construction process, we've looked at other values commissioning provides," Benner says.

Speakers at the 1995 national conference were asked to describe some of these non-energy values. Most of them noted improvements in occupant comfort and tenant relations, as well as increased productivity.

Forty-two percent of the conferees pointed to reduced equipment maintenance costs and longer equipment lives resulting from the ongoing maintenance that is a part of building commissioning. Commissioners make sure maintenance procedures are documented and staff trained before they sign off on a building.

All of the conference participants noted that the buildings perform better over the long term

if they've been commissioned. Equipment designed to protect indoor air quality, for example, does its job, eliminating much of the "sick building" syndrome and accompanying employee absenteeism. When there are problems, they are detected earlier if there is a commissioning process in the works.

There were also fewer warranty and liability claims and better overall communication and contract enforcement in commissioned buildings. The latter refers to one of the roles of the commissioning agent, that of referee and arbiter on contract discussions with the building's design, engineering, construction, installation and operating team.

The commissioning agent looks out for the owner's interests, making sure that when the keys are handed over, and the tenants move in, there will be no surprises. "Some of the biggest savings from commissioning could come from not having to pay legal fees," suggests the Council's Harris. "Today's buildings are so complex that when something does go wrong, there's almost certain to be a lawsuit." Fear of liability is one of the problems

commissioning is trying to solve. By having each step checked by an agent for the owner, and the same person signing off on the whole building, the likelihood of systems not operating goes way down.

"It's really just quality assurance," says Harris. "But it's not happening in the building industry. If Honda decided to build commercial buildings, our industry would have to change fast. Honda understands quality assurance. They build cars that do what they're supposed to do — from the first time you start the car, it runs, sometimes for a hundred thousand miles or better before there's any problem. That's how our buildings should be."

Benner agrees. "Whether it's the utility that pays for or sells commissioning to its customers, or the building industry that takes it on as standard practice, matters less than that the buildings are made to be as efficient, healthy, comfortable and economical to operate as possible. That's what commissioning can accomplish. That's our goal." ■

MORE...

To help ensure the energy efficiency and overall performance of both new and existing commercial buildings in the Pacific Northwest, the Northwest Power Planning Council and Portland Energy Conservation, Inc., are among the co-sponsors of the region's first

Northwest Conference on Building Commissioning

The conference will bring together building owners and operators with design and construction professionals.

A location and dates are still to be set.

For more information about the conference, or about building commissioning in general, contact Debby Dodds at:

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The Forgotten Fish

Other fish are also declining — for many of the same reasons as salmon.

by John Harrison

You might call them the forgotten fish.

They are Pacific lamprey, the eel-like fish you may have seen clinging to fish ladder observation windows at the major Columbia River Dams, waving in the current like gray streamers in the wind. They are burbot, freshwater cod that spawn in only the coldest water, once a favorite of ice fishermen in Montana and Idaho. They are the mysterious white sturgeon, whose inland population appears to be growing older, but not more numerous. And they are the brilliant redband trout, glimmering jewels of desert tributaries in the far southern reaches of the Columbia River Basin.

In the clamor of activities aimed at declining populations of higher-profile fish, particularly Columbia Basin salmon and steelhead, comparatively little attention is paid to these forgotten fish. Like salmon, however, the forgotten fish are native to the basin and, also like salmon, their numbers are declining. In their decline, the forgotten fish share a fate with salmon and steelhead: hydroelectric dams, habitat destruction and overfishing all took a toll.

But just as work is under way to restore and rebuild salmon runs, so is there work under way to help the others. In fact, to many, particularly Columbia Basin Indian tribes, they are not forgotten at all, but vitally important in the tribal web of life. Here is a look at four of these species:

Lamprey

First of all, lamprey, the “eels” you see in the fish ladders, aren’t eels. They are relatives of sharks, and they are ancient, primitive fish. While it is not known when they first inhabited the Columbia River, fossil records elsewhere in-

“They’re probably the most important fish to tribal members, after salmon,” said Blaine Parker, a fisheries scientist for the Columbia River Inter-Tribal Fish Commission. “Like salmon and roots, they are a culturally significant food and are commonly procured for feasts, funerals and name-givings.”

Rich in nutrients and calories, the oily lamprey flesh is considered a delicacy by Native Americans. To some, the Nez Perce, for example, they are a harbinger — that is, when spawning lamprey return up the rivers in late

spring, salmon aren’t far behind.

At one time, Pacific lamprey were abundant in the

Columbia. Indians

caught them in nets. Fish counters at Bonneville Dam recorded as many as 400,000 returning up the fish ladder in some years, and that didn’t include night counts, when eels usually migrate. Recent estimates vary from 25,000 to 30,000 passing Bonneville Dam. Pacific lamprey also migrate into the Snake River, and their numbers are declining, too. Although counts in the 1960s recorded nearly 50,000 passing Ice Harbor Dam, day and night video



Lamprey

dicate they were present as long ago as 280 million years.

Like salmon, Pacific lamprey are anadromous — they are born in freshwater, spend their adult lives in the ocean and return to freshwater to spawn. Lamprey are parasitic. Endowed with sharp teeth and sucking mouth parts, they attach themselves to their prey. Feeding, however, only occurs in the ocean.

counting recorded only 40 in 1993 and 399 in 1994. Parker said the reason for the decline is not known, but hydroelectric development and habitat losses likely have played a part.

Researchers from Oregon State University and the Columbia River Inter-Tribal Fish Commission are completing a status report. The Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program calls for such research and a plan of action. The research and action plan respond to a program amendment that was proposed by Indian tribes.

Otherwise, and aside from tribal interest, lamprey may have fallen into the ranks of forgotten fish for purely discriminatory reasons. "There's a mystique about lamprey," Parker said. "They have a less-than-pleasant feeding apparatus. They're parasitic; they suck blood and body fluids from living fish. It could be just basic discrimination — you know, 'we don't like the way you look so we're going to exclude you.'"

This discrimination could have been behind the construction of lamprey barriers in the Bonneville Dam fish ladder in the 1940s, but the fish still managed to pass. Eventually, the barriers were removed.

Excluding lamprey from their natural environment would be unwise, not only because of their importance to Indian tribes, but because lamprey tell us something about the environment.

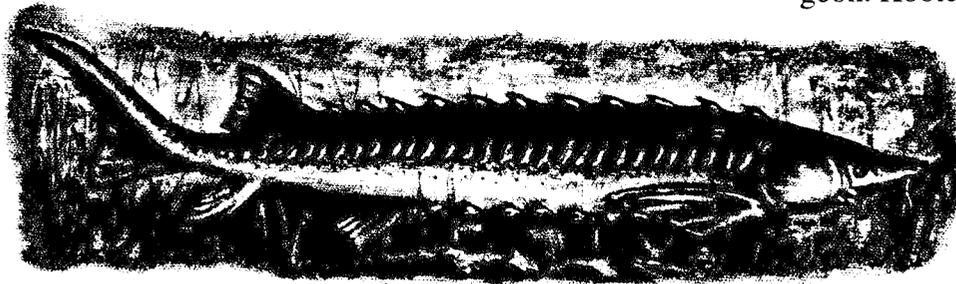
"They're an indicator species," Parker said. "Juvenile lamprey require a stable habitat. Eels spend

five to seven years in freshwater before going to the ocean. During that time they live along the shoreline and feed on diatoms and other microscopic organisms."

Thus, the health of lamprey indicates the health and cleanliness of the river and its suitability for other anadromous fish.

White sturgeon

Historically anadromous, white sturgeon once ranged up the Columbia into British Columbia and up the Snake River to Shoshone Falls, also the upper limit of salmon and steelhead before dams



White Sturgeon

were built. White sturgeon are huge fish, which can live 80 years or more, grow longer than 10 feet and weigh more than 1,000 pounds. Over time, some Columbia Basin sturgeon populations became landlocked by natural barriers such as waterfalls. In the modern era, others found their passage to the ocean impeded by dams.

Like eels, sturgeon have cultural significance to Columbia Basin Indian tribes. Like salmon, Columbia Basin sturgeon were overfished in the early part of this century. Downstream of Bonneville Dam, where sturgeon can travel back and forth between freshwater and saltwater, the population is considered healthy. Above Bonneville Dam, populations generally are less healthy. "There are more problems above Bonneville because sturgeon

can't move easily past the dams," Parker said. "They are isolated in the reservoirs between dams, and so they depend on the food and spawning habitat that is available in a particular reservoir."

Bonneville Dam once had a fish elevator to help sturgeon cross the dam, but it saw only limited use.

Currently, the sturgeon population attracting the most attention is that in the Kootenai River of northwestern Montana and northern Idaho, although the Council's fish and wildlife program also calls for additional research on mid-Columbia sturgeon. Kootenai River white

sturgeon were listed as a federal endangered species in July 1994, and a recovery plan is being developed by the U.S. Fish and Wildlife Service.

One possible cause for the decline of Kootenai River sturgeon could be the operation of Libby Dam, which changed the river's historic flow patterns. Before the dam, which was completed in 1972, the river ran highest in the spring and lowest in the winter. After the dam, flows generally were lower in the spring, as water was held in the reservoir behind the dam, and higher in the winter, when water was released to generate electricity.

Sturgeon spawn in the spring, when the Kootenai historically experienced its highest volume and fastest flow. Since the dam began operation, there has been little, if any, sturgeon spawning, said Paul Anders, an expert on Kootenai sturgeon who is a biologist for the Kootenai Tribe of Indians in Bonners Ferry, Idaho. This year, beginning on May 12 and lasting about 40 days, the U.S. Army

Corps of Engineers, which operates Libby Dam, boosted flows in an attempt to prompt sturgeon spawning.

"It's a pretty good approach," Anders said. "It is an effort to restore natural river conditions, as much as possible."

The goal was to sustain flows of about 20,000 cubic feet per second. That's less than the average, pre-dam spring flow of 60,000 cubic feet per second, but it's likely to help, Anders said.

"We have collected white sturgeon eggs in discharges from 12,000 to more than 50,000 cubic feet per second," Anders said.

But higher flows, apparently are not all the sturgeon need. There is a deeper mystery surrounding these mysterious fish.

"In seven of 20 post-impoundment years we collected hard evidence that sturgeon spawned, but no juvenile fish resulted," Anders said. "We want to know why. One cause might be a large reduction in nutrients in the river as the result of dam operations — nutrients remain in the reservoir behind the dam, and juvenile fish can starve during their first winter," he said. "Other reasons could be that spawning habitat is limited because rocks and gravel on the river bottom, where sturgeon lay their eggs, are covered with silt. The limited population itself may be a cause — the population may not produce enough eggs."

Under the Council's fish and wildlife program, the Kootenai tribe is operating an experimental sturgeon hatchery that could be used to supplement the remaining run if natural spawning doesn't lead to more juvenile fish. The results, if any, from the higher flows should be noticeable within a year, Anders said. Meanwhile, the tribe is about to begin a five-year study of all fish species in the

To many, particularly Columbia Basin Indian tribes, they are not forgotten at all, but vitaly important in the tribal web of life.

Kootenai River ecosystem. The work will be financed by the Bonneville Power Administration through the Council's program.

"We're pretty certain that low nutrient levels, low sturgeon productivity and the altered hydrograph of the river are responsible primarily for the sturgeon decline, but what we need to show now is that sturgeon are a symptom of a river system that is having problems," Anders said. "There are other species up here that have suffered equally. We don't want to manage the system for just one species."

Burbot

Flows out of Libby Dam, which apparently have not been high enough in the spring to prompt sturgeon to spawn, may be too high in winter to allow burbot to spawn. Thus, burbot, freshwater ling cod, may be another victim of the flip-flop in river conditions caused by the operation of the dam.

Unlike sturgeon, burbot are small fish — and weak swimmers, at that. Most Kootenai River burbot apparently spend their adult lives in Kootenay Lake across the border in British Columbia. They spawn in tributaries in winter, including tributaries on the Idaho side of the border. Before the dam, flows rarely were higher than 4,000 cubic feet per second in winter. But after the dam, flows routinely approached 20,000 cubic feet per second. In short, the current was so strong that the fish apparently couldn't reach some tributaries to spawn.

That is the theory burbot researcher Vaughn Paragamian of the Idaho Department of Fish and Game has been investigating — and hopes to continue investigating.

"Burbot once were very abundant in the Kootenai River. There even was a commercial fishery in the 1960s," Paragamian said. "Locally, burbot were very popular. They provided an excellent winter fishery. But after Libby Dam, there were substantial changes to the river ecosystem. Seasonal flows reversed, and since the dam, the burbot fishery has essentially collapsed. No harvest is allowed. It is a worse and graver situation than sturgeon, in my opinion."

In two years of studying burbot and other fish in the lower Kootenai River system, Paragamian has been able to catch only 29 fish. Not one was a juvenile fish. Similar research in Canada was more successful — 33 fish between December 1994



Burbot

and February 1995. He fitted some with radio transmitters and followed their movements. The results were intriguing.

"When the Corps was operating Libby within its normal winter [flow] range, fish remained in the area of their release, in deep holes," Paragamian said. "But on several occasions in December and January, when the flows dropped down to about 4,000 cubic feet per second, the fish moved upstream toward their spawning areas. When the Corps brought the river back up, fish moved back downstream, usually much farther than their point of capture. On about January 27, the Corps dropped the discharge from 18,000 cubic feet per second to 4,000, and nearly every fish moved back upstream."

Paragamian believes that says a lot about the impact of Libby Dam. "One has to be careful to assume too much with little information and with such small numbers of fish, but it implies a lot," he said. "It is interesting that the burbot fishery in the west arm of Kootenay Lake collapsed at the same time it did in the United States — right after Libby Dam went in. This is not unusual, as other burbot fisheries in the United States and Canada have collapsed after dams went in."

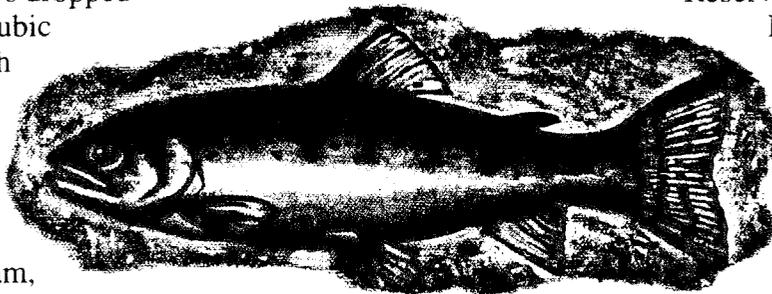
Paragamian said he hopes to test his hypothesis that discharge from the dam and the resulting river velocities impede burbot spawning, but he admits it could be a tough sell in the competitive world of biological research.

"It's hard to draw a lot of interest in that fish," he said. "For most people, it's not as important a fish as sturgeon, although I personally think every fish in that river is important."

Redband trout

In the Columbia River Basin, redbands truly are unique for their ability to survive in water so warm it would kill most other species of trout.

Redband trout, genetically linked to rainbow trout, are believed to have migrated north to the Columbia River from



Redband Trout

California's Sacramento River Basin some 30,000 years ago, as glaciers from the last ice age were retreating. At that time, high water allowed the trout to move into the far eastern and northern parts of the basin, including the Snake River as far as Shoshone Falls and the Kootenai River. While the Kootenai population is the farthest inland, redbands in the Owyhee River Basin are most southern and, in at least one respect, the most unusual, in the Columbia Basin.

There in the desert reaches of the southern Columbia River Basin, redband trout have evolved to live in a harsh environment where extremes of water temperature and river flows are common. Redband trout have been caught in water as warm as 82 degrees. Despite this hardiness, populations have suffered from habitat destruction and competition with non-native forms of rainbow trout introduced into river systems to rebuild declining fisheries.

The Council's fish and wildlife program calls for resident fish substitutions in the area above

Hells Canyon Dam to partially replace the salmon and steelhead lost as a result of dam construction. Historically, redband trout, like salmon and steelhead, inhabited the Snake River and its tributaries as far upriver as Shoshone Falls. The Council's program calls on the Shoshone-Paiute Tribes, whose Duck Valley Reservation straddles the Idaho-Nevada border, to stock trout in reservation lakes and streams, and to acquire or construct a trout production facility, perhaps in conjunction with the Shoshone-Bannock Tribes, whose reservation is in south central Idaho.

This proposal has been controversial. The Shoshone-Paiute Tribe stocks its reservoirs with rainbow trout. Oregon's Department of Fish and Wildlife is concerned that if the tribe increases its lake-stocking efforts, some of those fish could escape down tributaries into the Owyhee River and interbreed with native redband trout, potentially diluting the redband's unique genetic makeup.

Terry Gibson, natural resources manager for the tribe, disagrees. "The two reservoirs that we stock are at the end of screened water diversions," he said. "We do not believe any of the fish will escape. This fishery is very important to the tribe; it is our only source of tribal income. We hope to build a hatchery to raise trout, including redbands, for cultural as well as economic purposes."

The tribe would not knowingly harm redband populations, he said. "Redband trout are very important to our culture, and we pray for their return." ■

Foresters look to biomass power to help restore ecosystems in damaged woodlands.



Crowded forests, especially those stressed by drought and disease, burn hotter and faster than healthy ecosystems.

Picture April in the Blue Mountains of eastern Oregon and Washington. Thunderstorms are promised, and there are rumbles in the distance some ridges away. But on the hills above La Grande, Oregon, where the Grande Ronde River still meanders wildly back and forth (below, in the valley, it's been straightened out, run through canals) hints of rain are chased away by breakthrough sunlight. Service-

berries bloom wild along the roadside, their fine white frills standing out against the bare rusty clay. Grasses are greening up. There are bird calls, the kind that seem to come from miles away — echoing. It sounds good, and the air is clear. But the trees — mile after mile of them — tell a different story. Many of them are brown or black. They seem dead or dying.

Crowded together, 2,000 to 3,000 to an acre, they are nearly all of a size and species. Spindly.

The trees are so dense, you can barely walk among them. Deer and elk can pass through, but only with difficulty. Overhead, stiff limbs form a thicket, a scratchy web against the sky.

“This is the worst of it, but a lot of the forest is pretty bad,” says Steve Fletcher, forest health coordinator for the U.S. Forest Service in the Wallowa-Whitman National Forest, one of the four national forests that share the Blue Mountains. Altogether, the Blues

FIGHTING

by Carlotta Collette

Fire with Fire

cover more than 5 million acres, some of it in national forests, some state-owned, some tribal and some private. About 3 million acres have been stressed by overcrowding and desiccated by years of drought. The weakened trees could not fight off invading budworms and bark beetles, traditional allies in natural forest cycles, but devastating killers in a system out of balance.

"When the trees are healthy and fast-growing, they can pitch the beetles out of their bark," explains Fletcher. "When they are already so bad, the bugs take advantage. Infestations spread fast. Bark beetles can kill a tree in a season. Budworms may take several years to defoliate a tree. Sometimes the trees stand there looking almost OK, but they're dying, too."

It is an awful sight. It's what longtime Blue Mountains forester and current chief of the U.S. Forest Service, Jack Ward Thomas, called the "collapse of an ecosystem."

The skeletal trees are like grim soldiers already dead, but still standing in tight formation. They form what foresters call a "fuel ladder" — a loose wood pile that can carry fires from the forest floor to the crowns of the trees in a frighteningly short time.

"Whenever you've got a fire on the ground, you've got some hope of managing it," Fletcher explains. "When it's running through the crowns, you can't control it." One match, one bolt of lightning, one spark of metal on metal and the Blues could go up in flames. Since 1986, when the region's long drought began and with it the seasons of fire, more than 300,000 acres of the Blues have burned.

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The pattern is similar throughout the West. A decade of drought, almost a century of management practices that disrupted natural forest cycles and then the infestations have left trees from California to the Canadian border vulnerable.

The Forest Service maintains that more than 60 percent of all the nation's woods need help. In the Blues, foresters say, at least 355,000 acres need immediate care to reduce the fire hazard and begin recovering forest health.

Most of these areas were logged out decades ago. Once the trees were cut, few loggers replanted because it would take about a hundred years to regrow to big, marketable trees.

Forest fires also deterred replanting. Why invest in new trees when they could just burn up? The Forest Service adopted the strategy of fire suppression in part to assure timberland owners that they could plant young trees with some certainty the trees would grow up.

But fire in a healthy forest, with a mix of young and old, small and large trees, had been part of the natural cycle. Fires, along with bugs and other forces, culled out the unhealthy trees.

Healthy, thick-barked trees widely spaced could withstand a good deal of fire before they were permanently damaged. For the most part, natural forest fires burned low, along the ground. They cleared out refuse and opened the soil to new growth, which in turn provided forage for wildlife.

In the absence of fire and commercial replanting, "volunteer" trees seeded in, many of them of lesser timber value than the trees that had been logged. It is this second or third growth woodland that is now threatened with wildfires.

"Nature will take care of this if we don't," says John Tanaka, deputy manager of the Blue Mountains Natural Resources Institute, a coalition of more than 80 local, state and federal agencies, Indian tribes, universities, environmental groups and private businesses. The Institute is trying to devise ways to work *with* nature in the Blues.

The hope is that at least some of the forest can be returned to a more sustainable condition, where a mix of tree types, in varying densities, will again form the backbone of diverse and healthy ecosystems, as well as new economic opportunities. The question is how to reach that goal.

Seeing the trees for the forest

People who care about trees disagree about what needs to happen to restore the health of the nation's forests. Some argue that the forest can restore itself, that fires and insects are nature's tools to take down the unhealthy trees and leave the best to regenerate the forest. These people fear that labeling the forests of the Blue Mountains or anywhere as in des-

perate need of repair will only encourage their further destruction through new logging and road building.

"Nature doesn't need chainsaw doctors to maintain itself," argues Asante Riverwind of the Blue Mountain Biodiversity Project. He says the whole "dead and dying issue is a hoax" used to "justify salvage logging."

Salvage logging of the Blue Mountains and throughout U.S. forests has been proposed, and legislation to enable it was attached to the federal budget bill that was vetoed by President Clinton, but was again under his consideration as this issue went to press. The legislation would allow loggers and timber companies to clear out dead and dying trees in areas where there is fear of forest fires or where fires have already

burned much of the woods. To speed the wood removal, salvage operations would be exempt from certain federal guidelines and restrictions on logging in national forests.

Environmentalists who opposed the bill argued that the definition of "salvage" included virtually any tree in the forest. Loggers might only take out the healthier, marketable trees, leaving behind those with lesser value, as well as all the logging debris. The result could be an even more fire-friendly forest, environmentalists argued.

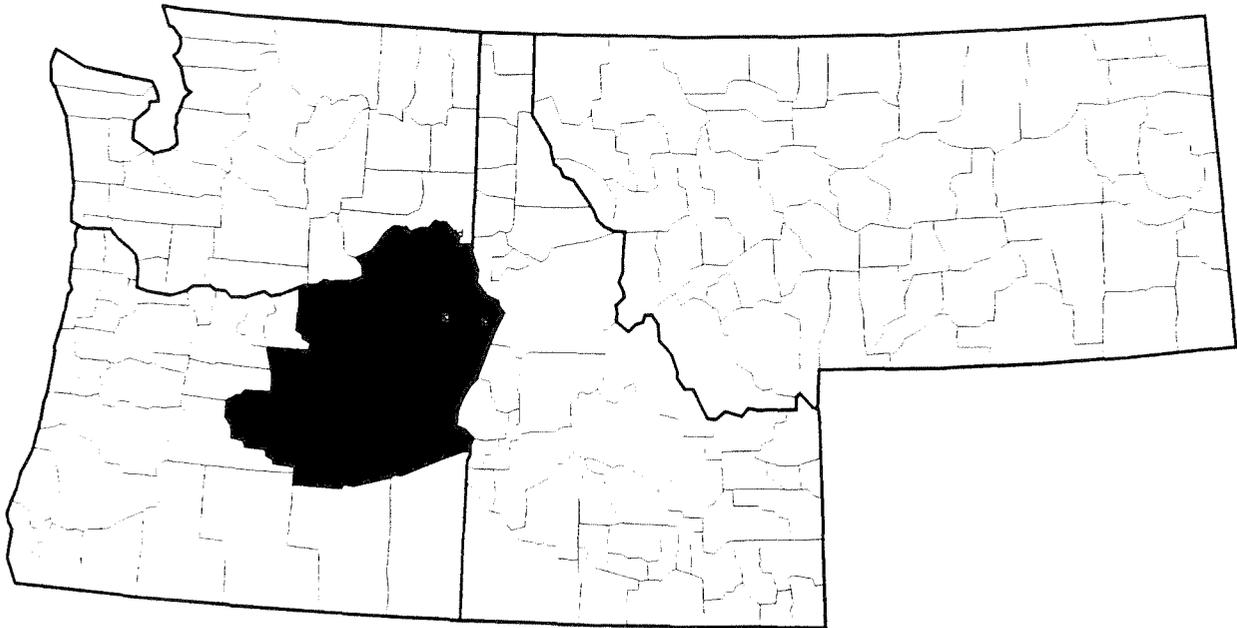
Fire under more managed conditions could be another approach to forest recovery. The Forest Service already does some of this so-called "prescribed burning" in the Blues and elsewhere, when the

woods are wet enough to provide a fair degree of certainty that the fires won't get out of control. But the clear air of the Blues could suffer if prescribed burning is practiced as widely as it might need to be to restore forest ecology.

There is one approach that seems to have tentative support from almost everybody in the forest health debate: forest thinning. Forest thinning entails removing some of the least healthy trees and undergrowth, after first marking the biggest, healthiest ones as "leave trees." Leave trees would be protected.

"The need to thin is always there, whether it's carrots or trees, but just like with carrots, the emphasis is on what you're *leaving*, not on what you take," says one of thinning's biggest advocates in

The Blue Mountains



the West, Jerry Duffy, plant manager at the Wheelabrator Shasta Energy Company, Inc., in Anderson, California. Duffy's power plant burns forest residues, known as "biomass" or "hog fuel," to generate electricity. He says the "overstocked forest is not sustainable. It'll look like a desert. But you can manage a forest through thinning, and it'll keep producing healthy trees *and* fuel for power

plants."

Wheelabrator has been operating the Shasta biomass plant since it was completed in 1987, selling the plant's 49-megawatt output to Pacific Gas and Electric Company in San Francisco. The Shasta plant burns 50 tons of bone-dry biomass every hour, including mill wastes, sawdust, bark, forest thinnings, nut shells, Christmas trees, pallets, and general yard and forest debris.

Fifty people are employed at the plant, with another 165 people employed in services that support it, including loggers, haulers and others who help provide the fuels.

Biomass in the Blues

Wheelabrator is proposing a smaller version of its Shasta plant to demonstrate how forest thinning and biomass burning could help restore the forest ecosystems of the Blue Mountains, create jobs and provide electricity. The company would lease a presently shut-down, 5-to-10-megawatt biomass-burning power plant — there are at least four of these plants in the Blues — for the three-to-five year demonstration. Duffy hopes to sell the electricity to the Bonneville Power Administration. Given conditions in the Northwest, Duffy figures there's enough forest thinning material to generate 3,500 megawatts of electricity here, on a sustained basis, using a fuel that is essentially free and renewable.

The Blue Mountain Natural Resources Institute would monitor the project and evaluate its impacts on soils, water quality and quantity, tree growth and wildlife. "The demonstration project would show how materials coming primarily from National Forests could be used in energy production, with a variety of environmental benefits," says the Institute's John Tanaka.

Tanaka and Duffy also think the demonstration project could help restore salmon runs in the Grande Ronde watershed, one of the Northwest Power Planning Council's model watershed projects, where local landowners are working to repair habitat for salmon.



Blue Mountain forester Steve Fletcher holds a tree he estimates is 30 to 50 years old. Overcrowding and drought stunted the tree's growth. In a thinned forest, trees grow faster because they have less competition for water and soil nutrients.

"Overcrowded forests don't allow as much snow to hit the ground," explains Lyle Kuchenbacker, the Forest Service's representative on the Grande Ronde Model Watershed Committee. "Moisture from the snow evaporates in the treetops. If we can thin out some of the trees, more of the water gets through to the ground. It could help extend the season when we have sufficient flows in the river for salmon."

The Power Council is looking at Wheelabrator's proposal and other estimates of biomass potential from forest thinning as part of the development of its 1996 Northwest Power Plan. Jeff King, the Council's senior generating resources analyst, thinks the Wheelabrator megawatt estimate is probably high, "but there's at least 300 and perhaps as much as 1,000 megawatts of potential there," he says. "The economic cost appears to be high, but if it also benefits the ecosystem, especially the salmon runs, and improves air quality, then it looks better."

But there are two major hurdles facing the Wheelabrator proposal: costs and environmental concerns. The electricity generated at a commercial scale version of the Wheelabrator demonstration plant would cost between 5 and 5.5 cents per kilowatt-hour, assuming the fuel is free. That might be reasonable by California standards, where power rates are among the highest in the nation (see related story). Here in the Northwest, however, new resources have to be close to 3 cents a kilowatt-hour to be considered competitively priced.

Even if given special consideration as a demonstration project (Wheelabrator has applied for a

"The need to thin is always there, whether it's carrots or trees, but just like with carrots, the emphasis is on what you're leaving, not on what you take."

federal grant to help underwrite the project) the company couldn't afford to pay others to thin and deliver the least valuable materials to the plant for burning. The arrangement would have to be such that whoever thins the forests makes enough profit from selling the larger wood and clean chips for lumber, veneers and paper that they would be willing to give Wheelabrator the biomass. The power plant would need to be near the forest so hauling costs would be minimal.

That limitation fits fine with Wheelabrator's proposal, says Bill Carlson, vice president and general manager of Wheelabrator Environmental Systems, Inc., Wheelabrator Shasta's parent company. "Part of the design of this project would be to scale the power plants to fit the forests," he says. "Each would be scaled to fit a Forest Service ranger district, so future fuel requirements wouldn't be unmanageable." Ranger districts typically span 300,000 to 400,000 acres.

Wheelabrator also would like to gain access to a federal renewable energy production tax credit of 1.5 cents per kilowatt-hour, which is currently available for plants that burn only those materials that are grown specifically for biomass power generation. The tax credit would help the project's economics, considerably. But there's still the question of who will pay to do the tree thinning.

In general, the ability to glean some marketable forest products as part of the thinning process helps subsidize the supply of burnable waste. This is especially true these days, when tight restrictions on logging in the Northwest's national forests have pushed up the price paid for wood products.

But the Forest Service's expert, Steve Fletcher, says there's little value in the trees in the Blues because they are so badly damaged. His agency estimates that it could cost about \$191 million to restore the ecosystems in the four forests, but that money is not forthcoming. Fletcher and some of his coworkers complain that there's little money available to help forests become more fire resistant, but fairly vast amounts to try to put out the fires once they light.

It cost U.S. taxpayers an estimated \$900 million to fight forest fires nationwide in 1994. That doesn't include the value of the lost trees, homes, lives and other destruction. "This fire fighting is costing society a lot of money," Fletcher argues. "If we could hog fuel some of this and cut down on some of the fires, we'd be a lot better off."

John Tanaka agrees. "What could we accomplish with the seemingly unlimited amount of money available to fight forest fires?"

That was the opinion in California, too, where state forestry officials, with the blessings of local environmental groups, encourage timber harvesters to practice forest thinning as a means of sustaining wood products industries while protecting the forests from fires.

“The only thing we can do to reduce the threat of forest fires is reduce fuels,” explains Ralph Minnick, from the California Department of Forestry. “Timber harvesting can be a good tool as long as it’s based on silviculture practices.” Not all logging practices have had that silvicultural rationale, he noted.

That brings up the second hurdle blocking biomass power production from forest thinning — environmental concerns. It took a good deal of convincing to gain environmentalists’ support for the tree thinning practices in Northern California, but the support is coming. Melinda Brown, a member of the Shasta-Tehama Bioregional Group, says she is comfortable with what Wheelabrator is doing in her neighborhood. “We’re in a crisis. This is a catastrophic fire area. There’s so much work to be done that we need to move on the things we can agree to now. If everybody’s at the table — that’s the key — we can help make sure it’s done in a way we think is appropriate. We still need to have constant vigilance,” she adds.

Other environmentalists cautiously agree. Felice Pace, an economist with the Klamath Forest Alliance, says, “Biomass is a tool. Thinning is a tool. These should be in the forest management mix. But you have to look at each forest to determine whether that’s the best treatment for that forest. As a general rule, better utilization of material in a forest is a good idea — if it’s in an area you can and should actively manage. Clearly, the top priority for thinning are the millions of acres of forests already damaged by past logging,” he adds.

That’s the distinction most environmentalists make. Forest thinning is good if done carefully, paying attention not just to the trees, but also to the soil, water and other creatures inhabiting the forests, and it is only appropriate in places that already have road access and are already managed forests — not in old growth, not in unlogged areas.

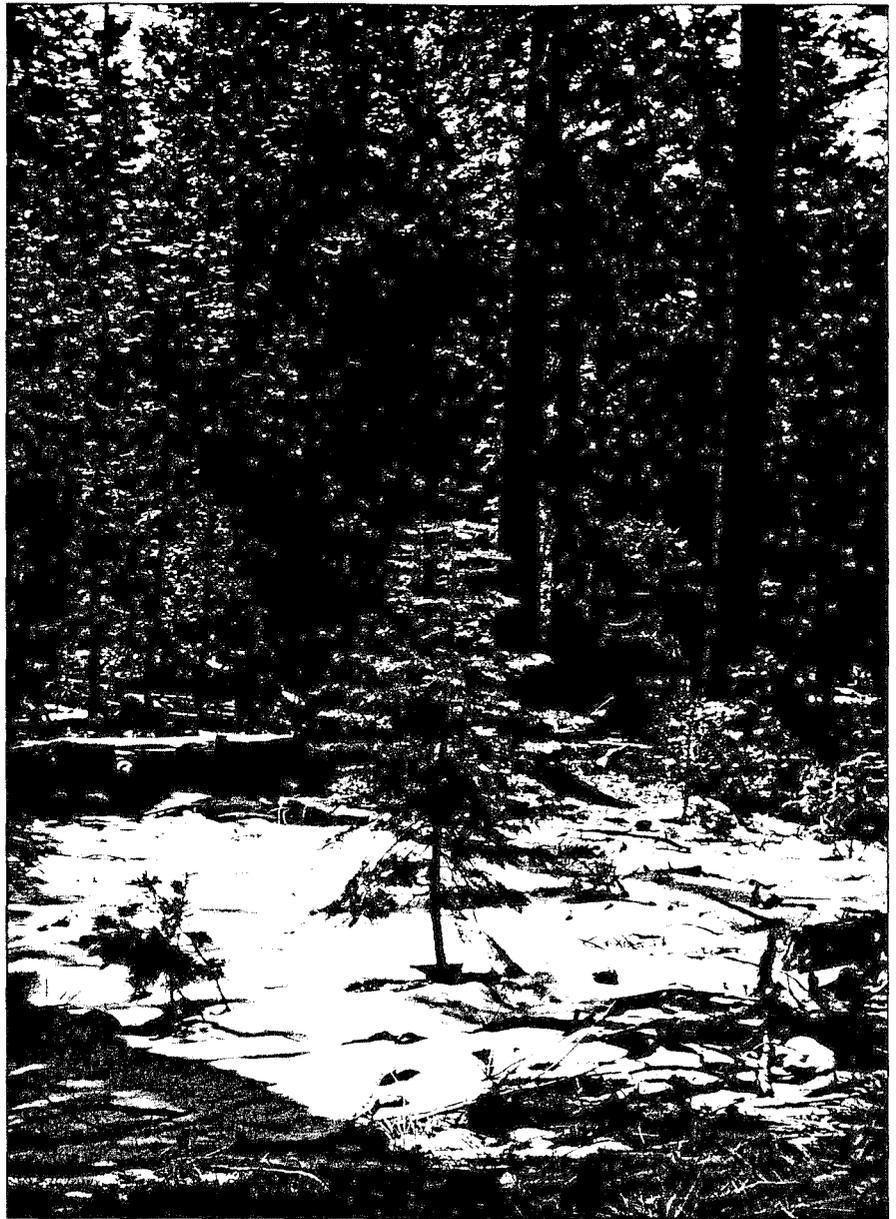


Forest thinning requires smaller equipment that causes less harm to surrounding woodlands. Some forest thinning debris is left on the ground as a cushion to help protect the soil from the heavy equipment. Too much debris could become a fire hazard itself; too little could deplete soil nutrients and reduce habitat for forest floor creatures.

Most of the Northern California environmentalists point to Sierra Pacific Industries (SPI) as one company that generally practices good forest management, thinning in ways that work for the sustainability of the forests. Sierra Pacific is California's biggest private landowner and one of the nation's largest lumber companies. "Sierra Pacific is here for the long haul. They take care of their roads. As far as industrial foresters go, SPI is the best," says Pace.

Maybe that's because the company encourages its employees to think about the forest as products for the future as well as the present. Mike Mitzel, one of Sierra Pacific's foresters, is a good example. Mitzel likes to experiment with different types of thinning, leaving more or less biomass on the forest floor depending on what sort of plants and wildlife he wants to encourage there, what sort of forest he wants to nurture. He talks about SPI's owner, a folk hero of sorts who wants his woods to "still be there when his sons take over."

"The goal is not just a 'garden' where trees grow," says Mitzel. "The goal is a variety of forest ecosystems, a mosaic, where different kinds of wildlife can live. Old-style logging practices reduced the forest's potential for a long time. Thinning provides sustainable forest commodities. Because we have to use smaller equipment, there's less destruction on the ground in the woods. The 'leave trees' grow faster. We save the best genetic stock so they'll be healthier. Sure we're going to harvest the big trees eventually," he offers, "But by then there'll be healthier young stock growing up to replace them."



In a thinned forest, a mix of large and small trees are left. These can grow into healthy ecosystems that provide future forestry jobs as well as habitat for fish and wildlife.

Ironically, these sustainable forestry practices are carried out more on private land than in national forests. In the past, the national forests were managed more for commodities, explains John Tanaka. "That's changing. They're looking more at whole forest ecosystems now. It's a slow cultural shift."

Felice Pace and other environmentalists argue that it's a shift that needs to be made, not just to

preserve the forests for future generations of harvest, but also for multiple uses and multiple jobs now. "We have to be more preservation-oriented on public lands because we have lots of other purposes for the land's use," he says.

Back in the Blue Mountains of Oregon, Asante Riverwind concurs. Riverwind's primary concern is maintaining the whole forest ecology, but he believes that doesn't preclude job creation.

“There are definitely some harvest scenarios that could be done. We could employ a lot of people if we did real forest protection.”

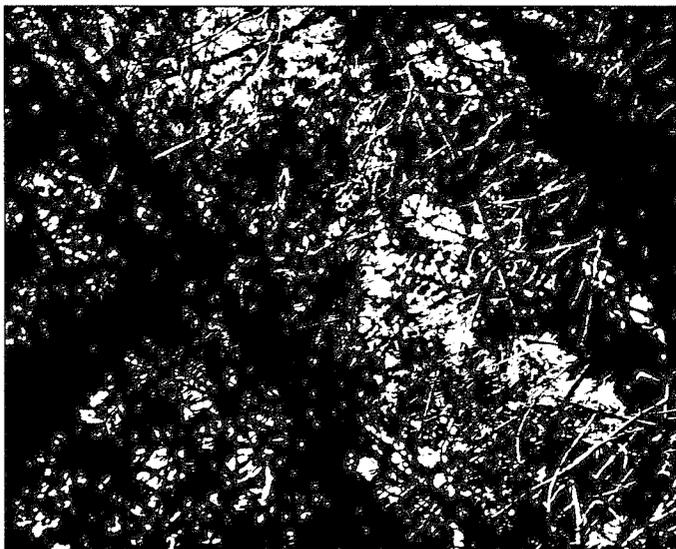
Dr. Joy Belsky, plant ecologist with the Oregon Natural Resources Council, says her organization has been advocating the thinning of small trees as part of a whole approach to managing forests better. The problem she notes, and people on all sides concur, is that, “We really need to start building trust.”

A major purpose of the Blue Mountain demonstration would be to start building that trust, say the project’s supporters. A lot will depend on how the demonstration is designed, what factors are monitored and how involved the local community becomes. John Tanaka is encouraging broad participation to make sure his organization looks at the right things and answers as many questions as possible. “That’s the challenge,” he says, “To figure out the best mix of approaches for all the different kinds of concerns we want

There's little money available to help forests become more fire resistant, but fairly vast amounts to try to put out the fires once they light.

to address — the different kinds of wildlife we want to support, the different sorts of forests we want to create. We’ll have to deal with as many of the issues as we can. That’s why this is a demonstration project. We want to see what works in eastside forests, in the Blues.”

In Tanaka’s report from a field trip to the Shasta Wheelabrator plant, he wrote: “I believe the pluses outweigh the minuses. This could create jobs in both the [power] plant and in the woods, create a market for unmerchanted materials, could serve as a catalyst to accomplish land management objectives, potentially improve air quality [burning biomass in plants cuts out most of the pollution present in open-air burning or forest fires] and do so at minimal cost to government. ... It may be one key that allows economically viable and ecologically sensitive management of natural resources in the Blue Mountains.” ■



Dense forest, left, creates a thicket overhead where forest fires can race. Thinned forest, right, is less likely to support a wild fire in the treetops.

Northwest water users are looking for ways to share their resources.

WATER marketing PROMISE OR PERIL?

by Jim Middaugh

On a late spring day, the bawl of a cow being branded echoed in the canyon that contains Buck Hollow Creek. Depending on your perspective, the cow's cry was either an audible admonition about the potential advantages, or a raucous reminder of the relative risks, inherent in a new approach to protecting the economy and the environment.

The approach is water marketing; the permanent purchase or temporary transfer of water rights from irrigators for use in streams instead of on crops.

Both the Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program and the National Marine Fisheries Service's draft salmon recovery plan call for water marketing to help restore the region's salmon runs. But, as with virtually all policies that seek to change the status quo, water marketing is not without controversy.

At Buck Hollow, however, the cacophony of cows and creek form a harmonious confluence of conservation and quality of life.

It's a soothing sound not often heard in the debate over two of the region's most precious natural resources — water and fish. A deal between a conservation group and a cattleman caused it. Rocky Webb, a Sherman County rancher, and the Oregon Water Trust, a conservation group, created common ground that is currently keeping cows on the range and water in a river.

The Oregon Water Trust leased Webb's two water rights to increase flows in Buck Hollow Creek, a tributary of the Deschutes River that provides critical summer steelhead habitat. Traditionally, Webb used his water rights to grow hay and provide pasture. Now, the Water Trust pays for the hay Webb needs to feed his cattle. In exchange, Webb leaves his water in the creek for summer steelhead and other aquatic life. The agreement, originally reached a year ago, recently was renewed for another year.

"I'm committed to seeing steelhead thrive again in Buck Hollow Creek, but I also have a bottom

line to worry about," Webb said. "By working with the Oregon Water Trust, I can protect a stream I care a lot about and continue to raise cattle and make a living here like my family has for years."

Webb manages a cattle ranch founded by his father near the confluence of Buck Hollow Creek and the Deschutes River, downstream from Maupin, Oregon. The Oregon Department of Fish and Wildlife estimates that 30 pairs of summer steelhead currently use Buck Hollow Creek for spawning and rearing. Converting Webb's water right to instream use and restoring uplands habitat throughout the watershed could increase the number of steelhead to about 500 pairs, the department said.

"Water users are no different than anyone else," according to Andrew Purkey, the Water Trust's executive director. "Virtually all of them care about the health of the region's rivers and watersheds. And some are willing to use market-based approaches to help

them enhance stream flows while maintaining their livelihood and lifestyle.”

But where some see promise, others see problems with market-based policies. Sherl Chapman, the executive director of the Idaho Water Users Association, said water marketing makes sense in some places, but not in others.

“Rocky’s approach makes a lot of sense. He’s the only water-rights holder on a small tributary. But what we’ve seen in Idaho is the federal government coming in seeking extremely large amounts of water,” Chapman said. “It is clear to us that if the government is able to acquire large amounts of water, particularly in dry years, a major amount of land will have to come out of production. If you’re talking about a million acre-feet from the upper Snake, you’re not going to find many people buying into it. There’s just not that much water available without putting a lot of farmers out of business,” he added.

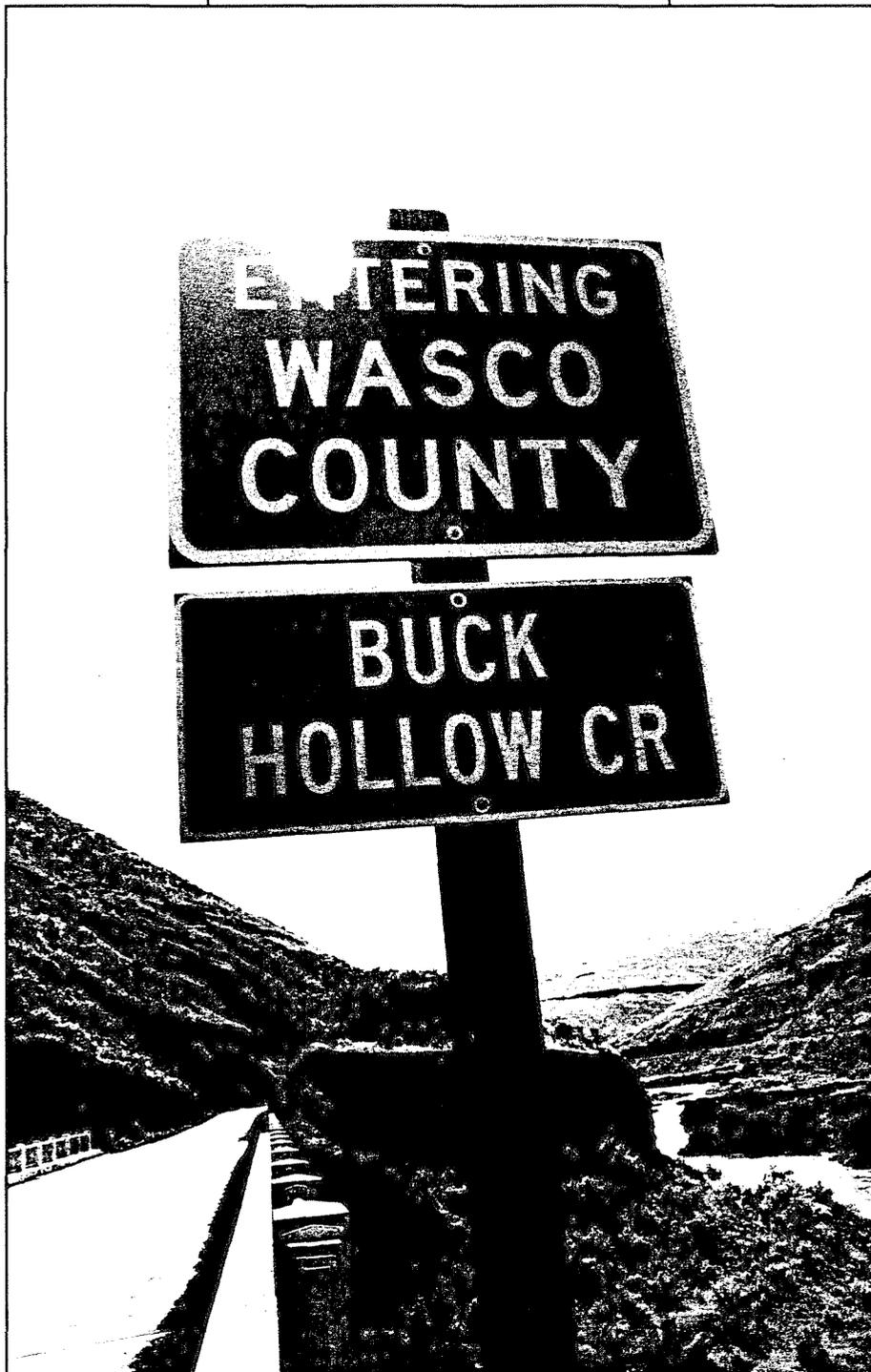
The Council’s program calls on the Bureau of

Reclamation to acquire 1 million acre-feet of water from willing sellers in the upper Snake River Basin to improve flows in the mainstem Columbia and Snake rivers. The water would be in addition to the Fisheries Service’s draft recovery plan, which seeks slightly more than 400,000 acre feet from willing sellers, if possible, or from existing storage if necessary.

Chapman acknowledged that water marketing schemes compensate individual farmers for the use of their water. Nonetheless, “No one is compensated for the lack of an adequate tax base, loss of the mom and pop store, et cetera. It’s a major concern in Idaho,” he said.

It’s a major concern in other parts of the region as well.

Jan Boettcher, executive director of the Oregon Water Congress, an organization that works with irrigation districts throughout the state, said she sees promise in some water leases. In fact, the Water Congress is working with conservationists and the Bureau of Reclamation on a leasing project on Tumalo Creek, another tributary of the Deschutes. The Bureau is financing conservation measures for irrigators in the hope that the water that’s saved can be returned to the river. But, Boettcher is opposed to permanent water transfers unless the water transferred is obtained from new sources — conservation improvements, for example.



“Permanent transfers take land completely out of irrigation districts,” Boettcher said. “You not only destroy the district’s revenue base, but also the local economy.”

In Oregon, the fear of water marketing’s potential impacts led State Representative Denny Jones, a Republican from Ontario, to introduce legislation that would have prohibited water allocated for agricultural use from ever being used for any other purpose. If the bill had become law, farmers and irrigation districts could no longer have leased their water rights to groups like the Oregon Water Trust to leave in streams for fish or other purposes.

“Once they’re gone, they’re gone forever,” Jones said of water rights and farm land. “Then what will we raise food with? It’s that simple.”

Jones’ bill passed the Oregon House by a slim margin, but failed to move its way through the Senate. Nonetheless, the bill’s introduction and passage by one branch of the Oregon Legislature shows how much many farmers fear losing their water.

Another person associated with an irrigation organization said many of his members are afraid of water marketing’s “economic externalities.” Water marketing is so controversial in his organization that he asked not to be identified.

“Water marketing has the potential to separate water from the land. Not irrigating has an impact on the tax base, especially in rural areas that are highly dependent on the property taxes they receive from agriculture. A lot of these communities have already been affected by the timber issue.

There’s just not a lot of other money available,” he said.

But water marketing’s proponents, like rancher Rocky Webb, have a different outlook on the is-

“I’m committed to seeing steelhead thrive again in Buck Hollow Creek, but I also have a bottom line to worry about.”

sue of money. “Everyone talks about money,” Webb said. “But what is the value of a native spawn of steelhead in a creek like Buck Hollow? Let’s just say that tomorrow all the spawning fish were gone out of the creek. What cost do you put on that? Or, if the fish are in the creek and their numbers are increasing because of water marketing, what value do you put on that?” he said.

Other proponents, like Zach Willey, a senior economist with the Environmental Defense Fund, a national group known for brokering several water marketing deals and for promoting other market-based solutions to environmental problems, say the issue is less about money and more about fear of the unknown.

“People have had an inaccurate picture of water marketing painted for them. They think in terms of ‘takings’ or ‘confiscations.’ What they are hearing about is taking a million acres of prime agricultural land out of production forever. That’s the bogeyman presented to them. But no one in his right mind would even have that as a goal. That’s productive, high-value land. The capital costs would be too high,” Willey said.

Instead, water marketers target troubled, marginal operations, Willey said. “Operations that are at risk of bankruptcy. Lands that are at risk of going into fallowing

without compensation for financial reasons. Those are the best prospects for water marketing. We’re talking about less than 10 percent of the land,” Willey said.

A prime example of water marketing’s potential value to marginal operations is a pilot project the Environmental Defense Fund helped the Bonneville Power Administration set up. In 1993, Bonneville entered into a one-to-three year lease-option agreement with the owners of Skyline Farms in Ontario, Oregon. Under the terms of the agreement, Bonneville leased the farm’s water right — a minimum 16,000 acre-foot — for instream use.

The farm is located near the head of Brownlee Reservoir. Bonneville’s plans have been to store the water in the reservoir and shape it for both hydropower and fish. By increasing the amount of water in the river, Bonneville hoped to meet its obligation to attempt to restore fish runs in the region. By selling the electricity the additional water generated, Bonneville hoped to offset the cost of acquiring the water.

According to Bonneville’s Dan Daley, the intent of the project is to show irrigators “there is value to their water outside of its irrigation potential on marginal farms.” Skyline is marginal in part because it pumps its water 300 feet up from the mainstem Snake.

“If Bonneville didn’t step in, it’s doubtful that anyone else would have. As a result, the farm could have gone into receivership,” Daley said. But the test of whether or not the Skyline pilot project or other agreements make sense is not simply whether they make money for the hydropower system or not.

“You have to ask whether there are environmental benefits as well as power benefits. You have

to ask if the lease is locally and regionally acceptable. You have to ask if the water can be shaped to provide the maximum benefit for fish and power," Daley said.

In the case of the Skyline Farm deal in 1993, the answer to all of these questions was yes, Daley said. But circumstances can change. And with Skyline, they have.

For a number of reasons, the price of electricity is falling, reducing the amount of revenue Bonneville can generate with the farm's water. In addition, Idaho Power has expressed concerns about the cost of shaping the water for fish. "It costs Idaho Power money because they have to store the water over the course of the entire irrigation season and release it only when it's needed to achieve mainstem flow objectives for salmon," Daley said. The timing factor reduces the company's flexibility and increases its costs. It is also difficult for the company to monitor how much additional water is flowing into the reservoir based on Bonneville's lease.

These and other issues complicate vir-

tually every water marketing deal. A prime concern involves return flows.

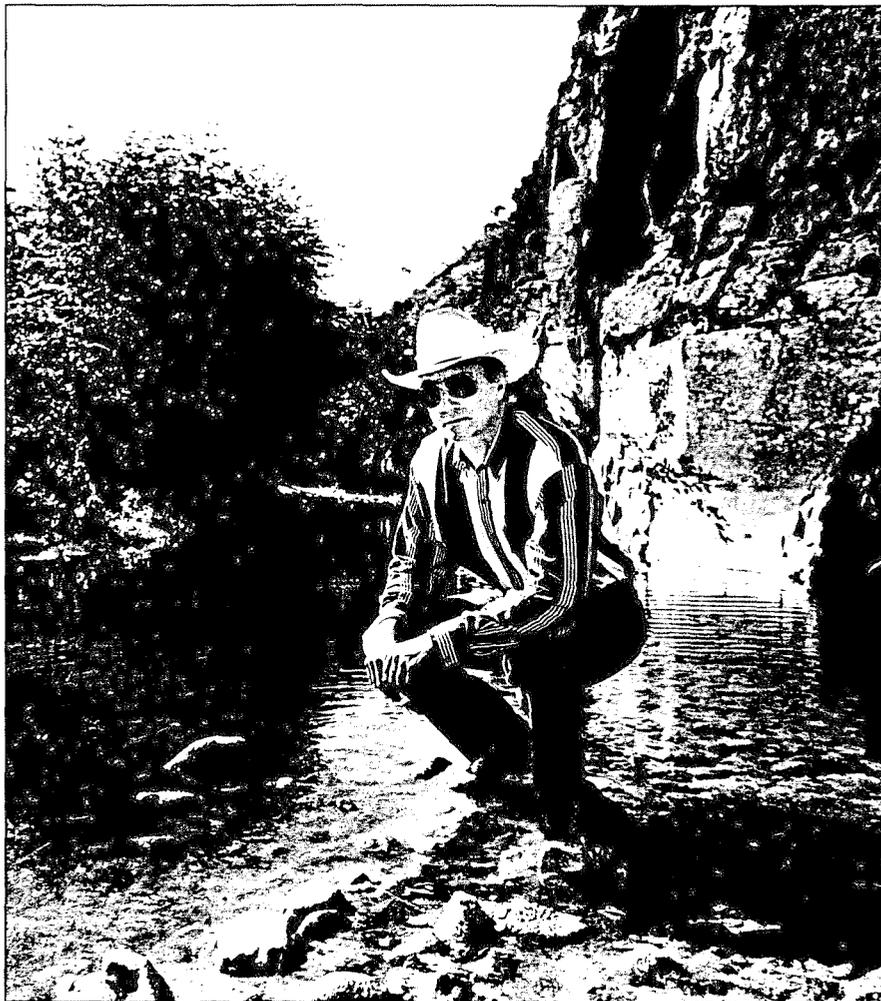
The problem, according to Wallowa County Commissioner Pat Wortman, is that irrigators downstream depend on the water that returns to the river through the aquifer after it's applied to land upstream. If the upstream acreage is not irrigated, that return flow can be diminished or it can occur during different times of the year, requiring down-river users to remove more water from the river to compensate.

"What happens when someone at the top of an irrigation district leases his water?" Wortman asked. "When someone up the slope doesn't use water, the people down the slope will have to pull more from the river to compensate for the diminished return flow," he said.

The anonymous irrigation executive said leases could cause operational problems for some irrigation districts. "When you have numerous people using an irrigation ditch, with 'X' amount of water needed to operate that ditch, leasing could make the en-

tire system ineffective, even for those who can't lease or don't want to lease," he said.

Some environmentalists also worry about the complex details involved in water marketing. "I'm concerned about how public funds will be used to implement some of these projects," said Katherine Ransel, an attorney with American Rivers. "There's a huge potential that even water bought with taxpayers' money may not go back to the fish because many rivers are over-appropriated. Any



Oregon rancher Rocky Webb is leaving his water right from Buck Hollow Creek in the stream, thanks to an agreement he reached with the Oregon Water Trust, an organization that works cooperatively to benefit Oregon's streamflows and water rights holders. Prior to the agreement, the creek, a tributary of the Deschutes River, often went dry during the summer, harming critical habitat for steelhead.

water saved by conservation or leasing will simply be soaked up by junior water rights holders," she said.

Nonetheless, even people with concerns see water marketing as a potentially important tool. Chapman points to Idaho's three water banks, which give farmers the flexibility to trade water within irrigation districts. In Idaho, "If a company or a district is interested in releasing part of its water it can put it in a water bank," Chapman said. "Agricultural interests in the immediate area then have the opportunity to lease the water. After July 1, the water can be used outside the area for farming, hydropower or for other purposes."

Chapman also recognizes the flexibility water marketing provides. "Down the road, we will need to have some flexibility to transfer water, whether for municipalities, industries or for other purposes. But the general concept people need to understand is that we want to remain a rural state and maintain the quality of life we've come to enjoy. That's why indications of a permanent shift of water uses is going to draw a lot of fire," he said.

Others in the irrigation and agriculture industries agree.

"The Farm Bureau is against permanent transfers out of agricultural use," said Pete Test, assistant director of government affairs for the Oregon Farm Bureau Federation. Test is joined by Chapman, Boettcher, Wortman and many others in his opposition to permanent transfers.

But according to the Environmental Defense Fund's Willey, "There's been a lot of smoke, but not much fire. The reason water marketing is subject to complaints is all the uncertainty. The fact is, Washington has never had a water

transfer. Oregon has just begun. The thing people are reacting to is the prospect of retiring prime agricultural land, which would be a very expensive thing to do, so expensive that it's not cost-effective for improving instream flows," he said.

"What we're really talking about is leases on marginal lands during dry years or taking some acreage out of production under some circumstances. These approaches bring new resources to farmers and allow them to get payments they wouldn't otherwise receive. Water marketing might actually increase tax revenues and keep more operations going. The little guys out there sitting on property like to have choices. Who wouldn't? It's just absurd to think they wouldn't," Willey said.

Rocky Webb agrees. "If you own property, if you pay the tax, and you're the one who applied for and developed the irrigated land and were accepted for the water rights, then why should anyone come in and tell you what you can and can't do with your water?"

The property rights issue is perhaps the stickiest one for irrigators to address. On the one hand, most farmers and their organizations support private property rights. On the other hand, how do you balance an individual's property rights with the potential impacts exercising those rights could have on others?

Fortunately, there appears to be broad agreement about the best way to approach this seemingly impossible problem — go slow. "What I'm concerned about is that if we go too fast we'll make people panic. They'll see the devil around every tree stump," said Pete Test, the Oregon Farm Bureau staffer. "We need to watch it carefully and make absolutely sure

we can make other users whole before we move forward," he said.

"I wanted to see it tried last year," Wortman said. "to see what the process would be. But we had some people who were really uncomfortable with how it might affect people downstream. The only way to truth it out is by taking one step at a time," he said.

Willey concurs. "Most irrigators will want to lease first so they can see how it works. They are worried about losing their water rights and about all the other perceived risks," he said. "But the fact is, water marketing for the environment is a transition mechanism that allows us to respect the culture, the economy and the values of the communities that have been using the water for a century or more. What we really need is to have some people try it out on a modest scale. We need to substitute some modest action for all the immodest rhetoric," Willey said.

Boettcher said it all could come down to people's attitudes and approaches. "The whole success of the Deschutes project is based on the attitude Zach Willey has taken with the irrigation managers," she said. "They like and respect him, and they know he comes from a scientific background and that he's not just an environmentalist who is out to get them."

If that attitude prevails, water marketing's promise will overcome its peril.

As the Oregon Water Trust's Executive Director Andrew Purkey said, "We believe that acquiring water for critical habitat will not only benefit fish, but also the economies of rural communities that depend on healthy ecosystems for agricultural production, quality of life and recreational opportunities." ■

The Northwest and the nation
are watching California's
electricity industry.

California: What's Up Down There?

by Carlotta Collette



Some leaders of California's biggest manufacturing industries like to take credit for shaking up the electricity business in that state. In explaining "why we started it," at a recent utility conference in San Francisco, Glen Sheeren of the Inland Container Corp., pulled out a map of the United States showing relative industrial and residential power rates coast to coast. California's rates — both industrial and residential — are second only to New England's, and considerably higher than the rates of the states around them.

Manufacturers in California saw their competitors paying little more than half what they were paying and balked. When they learned that newly generated electricity was available at even lower prices, they simply rebelled. They wanted rates that were at least closer to the national average, rates they knew they could get if they had direct access to some of the new power producers.

William Booth, an attorney representing the California Large Energy Consumers Association, explained that for his clients, mainly cement, mining and steel companies, "electricity represents 10 percent to 20 percent of their cost of doing business. Electricity costs are second only to labor costs," he said.

Nonetheless, when Booth looked at California's rates relative to those elsewhere in the country, it was the 10.5 cent per kilowatt-hour *average* residential rate that struck him as really out of line. "I'm surprised it's been industrial customers leading this instead of some city council person defending residential customers who are paying 12 to 13 cents. Utilities should be advocates for their customers, searching out the best deals," he said.

The battle shouldn't be between industries and residential customers over who was hurting the most, industrial users figured. The high cost of service was hurting them all. "The regulatory process is broken," Booth said. "There's no longer any incentives for efficient utility management."

The problem is that California's high electric rates are not the result of huge utility profits in that state. Profit levels for the state's investor-owned utilities are controlled in the regulatory process. In fact, industrial rates at California's investor-owned utilities actually declined more than 15 percent over the past decade, while residential rates went up more than a third.

California's high power prices stem more from what were once considered prudent investments in nuclear and other generating plants. Many of California's power supplies were developed during the 1970s and 1980s, when utilities were compelled by federal legislation to purchase alternative sources of energy to reduce their dependence on imported oil. This legislation, the Public Utility Regulatory Policies Act of 1978, opened up the generating side of the electricity world by requiring utilities to purchase power from independent suppliers at a cost equal to what the utility would otherwise pay for power from a new conventional plant — the so-called "avoided cost."

Anticipating continuing population growth in the Golden State, utilities built up their reserves of generating capability. When energy use peaked, as during hot summer days that required air conditioning, the utilities had to be able to power up to meet the demand.

But several things changed in California, confounding the plans

of the planners. First came the state's recession. For various reasons, including federal cutbacks in defense spending and the nation's strictest statewide pollution-control requirements, many industries went under or moved out. That left utilities with excess power and fewer customers to pay off the debts.

Then came lower prices and abundant supplies of natural gas, coupled with newer, smaller-scale, gas-fired power plants. These power plants could be brought into service in under two years, providing electricity with expected prices around 3 to 4 cents per kilowatt-hour. Utilities, whose cost of doing business included paying off the debt on older, more expensive power plants, couldn't come close to the selling price of power from the new plants.

In the old electricity world, this sort of competition wouldn't be a problem for utilities because for the most part, they had the monopoly on power sales. No one got access to transmission and distribution lines except the utilities and their paying customers.

But that old model is disintegrating. The National Energy Policy Act of 1992 promoted the deregulating of the electric industry, much as earlier legislation had deregulated both the gas and telecommunications industries. Among other things, the 1992 legislation enabled the Federal Energy Regulatory Commission to require utilities to open their transmission systems to other utilities, so transactions could occur across service territory boundaries. The legislation also addressed the question of whether retail customers — businesses and households — should be able to get on the power lines and shop around for bargain power. Federal legislators

left that decision to individual states. A few states are considering opening power markets. Several are running experimental test cases where individual industries have made special arrangements with utilities. But California was the first state to attempt to reorganize its whole electric utility world.

Yellow Book, Blue Book

California utility regulators started to review the federal changes and how they might affect the state soon after the legislation passed in 1992. In February 1993, the state Public Utilities Commission published a report on the history and possible futures of the electricity industry in California. Generally referred to as the "Yellow Book," this first effort concluded that maybe the industries were right in saying California's regulatory structure was outmoded. "Reform is required in order to ensure that California is well positioned to benefit from a competitive future," the Yellow Book stated. That opened a year-long debate about what form "reform" should take.

On April 20, 1994, the California Commission released its "Blue Book," outlining a proposed way for the state's industrial, and eventually residential, utility customers to gain direct access to power distribution systems so they could choose their power providers. The state's investor-owned utilities (the only utilities regulated by the state Utilities Commission) would be forced to compete openly with other utilities as well as with independent developers, brokers and others, to keep their customers.

Within a week, Wall Street responded. Stock values for the state's utilities dropped by \$4 billion. Over the next several months, about 140 other entities

and individuals also responded, submitting thousands of pages of comments on the proposal, in what eventually amounted to at least four rounds of public review and response.

*I*ndustrial users generally favored the proposal, but residential users and their advocates worried that they wouldn't have the ability to shift to new power providers as readily as big industries. Open access would be phased in, starting with industrial customers. Residential customers could be stuck at high-cost utilities whose rates would actually have to climb to cover the loss of the industrial revenues and the still-to-be-paid debt for existing power resources — the so-called stranded investments.

Advocates of energy efficiency and resource diversity also questioned whether treating electricity solely as a commodity, which the degree of competition envisioned in the Blue Book would do, wouldn't put short-term rates ahead of all other considerations — including California's environment. It is safe to say that virtually the entire U.S. electric utility world has turned to California to see how and if these issues could be resolved.

A final decision by the Commission was postponed from autumn to winter, then to spring and now, it could be autumn again or later before anything is finalized. Instead, the Commission voted to release more ideas and take more comment.

A "Preferred Industry Structure"

On May 23, 1995, the Commission took "a 180-degree jibe," observed G. Mitchell Wilk, himself a former commissioner. It released its "preferred industry structure" proposal.

"I'm surprised it's been industrial customers leading this instead of some city council person defending residential customers."

The preferred structure represents a three-to-one vote of the Commission (a fifth commissioner has yet to be appointed by California Governor Pete Wilson). Along with the majority report, the Commission released a minority proposal submitted by the one commissioner who voted against the preferred structure. Neither proposal looks exactly like the original Blue Book's, and neither answers all the questions raised in the Blue Book. Instead, California's future electric industry could reflect some aspects of each, plus other innovations.

The two Commission proposals can most easily be characterized as: 1) the wholesale pool proposal and 2) the direct access proposal.

*U*nder the wholesale pool proposal, (the majority view), anyone wanting to buy or sell electricity through investor-owned utilities in the state would bid into a pool. Municipal utilities are exempted, but their participa-

tion is invited ("inevitable" is the word used by most observers). An independent system operator would run the pool, distributing power and ensuring reliability. The daily price of power would be published, and customers — eventually in all classes would be provided with "real-time" meters that showed their current power use and what it was costing, so they could use more or less at that rate. Utilities would still be the delivery system for retail power sales over their distribution lines. They would separate out their generation, transmission and distribution functions, with different regulatory structures for each. Utilities could retain ownership of their generating resources, as well as their transmission and distribution systems.

The majority proposal has several complex mechanisms to address utilities' stranded investments, those power plant debts that push up rates. For example, electricity from the expensive plants would be combined with low-cost hydropower to serve as the base of the power pool — the power used first. The plan is that these resources, which could meet about 60 percent of California's power needs, would average out to lower-priced power.

*T*he minority proposal calls for direct access now. It is more akin to the proposals contained in the Blue Book, including the requirement that utilities sell off all their power plants. The industry would be divided into generating companies, transmission companies, an independent grid operator (with a narrower role than the independent system operator in the majority proposal) and distribution companies. All customers would be able to shop for the lowest cost electricity or the best package of services they could find.

What Happens Next?

The issues raised by the Commission are so central to California's economy and its environment that it could require a vote of the legislature to deliver either of the proposed transformations with the kinds of protections for consumers that the state wants to ensure.

Bill Julian, a consultant to the California Assembly Utilities and Commerce Committee, which will address the issue in the Legislature, outlined the issues the state has asked the Commission to resolve. These include how low-income consumers will be affected, what the proposals will mean for the state's energy-efficiency efforts, how they will affect economic development in California and whether they will set back the development of renewable resources. Working groups have been convened to help answer these questions and provide assurances that efficiency, equity and the environment will all be protected.

John White, director of California's Center for Energy Efficient and Renewable Technologies, shares those concerns with the Legislature. "Both the new proposals are improvements on the Blue Book," he says, "but both need changes. The worst possible world for us is the way things are now because residential customers aren't getting anything. With the majority proposal, utilities are going to keep running those old power plants instead of investing in new cleaner resources. Neither the environment nor residential consumers are likely to benefit," he adds. White would like to see a "system benefits charge" that could be used for conservation, renewable resources or other environmental protections. He would also like

residential customers, possibly through their city councils, to have more direct access similar to that in the Blue Book, so they could bargain for better power rates, too.

With such a complex issue, what's the schedule for resolution?

Californians and other interested parties have 60 days from the date of issuance to comment on the proposal and another 30 days to reply to comments. That moves the Commission's decision to no earlier than August 23. The Legislature has until September 15 to act on its part of the restructuring. Odds are good, say nearly all observers, the government will be the last to act.

Former Commissioner Wilk, in his comments at the utility conference, maintained that "transitions are longer and messier than anyone likes to imagine." For the Commission and the Legislature to really change the electric industry, Wilk suggested they'll both have to be "more efficient and effective than they have been in the past."

In the meantime, many of the state's investor-owned utilities are already making changes. Wall Street's warning — some call it a trouncing — and the certainty of competition in some form have been motivation enough at Southern California Edison, where rates are already coming down. John Fielder, vice president for regulatory policy at the utility that serves the area surrounding Los Angeles, said his company is on track to get residential rates below 10 cents a kilowatt-hour. The plan is to reduce rates overall by 25 percent by the year 2000.

Pacific Gas and Electric, the nation's largest investor-owned utility, is also acting as though many of the changes are already

here. "We're on a glide path to get out of generation anyway," said Jackalyne Pfannenstiel, vice president of corporate planning. Her utility, which serves San Francisco, is also working hard to cut rates.

Bill Reed, manager of strategic plans and projects at San Diego Gas and Electric, compared the Commission's proposal to the book "Zen and the Art of Motorcycle Maintenance," which explores the romantic and classic points of view about life in general and motorcycles in particular. "The romantic thinks the free market will provide and evolve to accomplish goals," Reed said. "The person with a classic point of view believes it's critical to know *how* things work." The California proposal is just too complex, all the details about how it will actually work have not been sorted out, was Reed's conclusion.

Sorting out the details could take years, or be accomplished by the New Year, depending on who's doing the guessing. If the Commission is able to make a final decision this fall, and the Legislature also votes before the end of session in September, it could still be about the turn of the century before the power pool, new marketing structure and new regulations are instituted. By that time, some of the other states may have experience from their smaller test cases to help guide the industry. ■

Many of the comments in this article were delivered at a conference sponsored by Infocast, "Preparing for Retail Competition in Electric Power." For more information about that event or future Infocast conferences, call 1-818-609-9145.

What's In It For Us?

With all the shake-up going on just south of the Northwest, how are Idaho, Montana, Oregon and Washington reacting? Very cautiously.

Power rates, the major force behind the changes in California, are less of a problem here. The Northwest is in the enviable position of having some of the lowest rates in the nation. Industrial customers here pay about 3 cents a kilowatt-hour, and residential consumers pay, on average, 4.6 cents. Nonetheless, this region is watching the Southwest to see how circumstances might evolve.

One Northwest concern about the California shifting is that this region's utilities sell their power south for more than they sell it here. Will that raise rates here? Will Northwest utilities sell more power south, justifying development of new resources here that could affect not only rates but the region's environment? Will their interest in staying competitive mean they stop helping their customers cut electricity use?

Most Northwest utilities are already saying they are cutting back on their investments in renewables and conservation, or finding innovative ways to finance the resources.

Washington Water Power, for example, has had a tariff approved by the state Utilities and Transportation Commission to add a small charge to customers' bills to cover the utility's conservation programs. Washington state also leads the region in its exploration of how utilities and the regulators themselves might address the industry's restructuring. The Utilities Commission has issued a "notice of inquiry" to open a dialogue in that state. The book of responses to the Commission's inquiry is about 400 pages long, with no consensus on direction.

Washington doesn't expect to act precipitously, preferring instead to wait for analysis to support any action, said Jeffrey Showman, a policy specialist with the Commission. As with the Washington Water Power special tariff to support conservation, the state's Commission is working out special arrangements on a case-by-case basis. Puget Sound Power and Light, for example, was threatened with the loss of one of its major indus-

trial customers. The Commission enabled Puget to offer the company a special low industrial rate to keep its important customer.

Oregon seems even less interested in taking action in response to California or the industry changes as a whole than is Washington. Lee Sparling, program manager for the Oregon Public Utility Commission's rates and planning group, said Oregon won't move much because "the current system works. We haven't seen the kind of pressure you see in California to fix our rates because they're not so bad," he added. As pressures arise, which they are likely to, Oregon's regulators may be compelled to look more closely at ways to accommodate industrial changes.

Montana and Idaho are following similar paths. Both are watching California and Washington to see what evolves in those states before taking any substantial action on their own.

At a recent meeting of state utility regulators with Northwest Power Planning Council members, the regulators asked the Council to help them explore the consequences of various approaches to the new industry structure. The regulators voiced concern that the reliability of the Northwest's power supply could be threatened if the region's long-held commitment to energy efficiency, a diverse resource base and regionwide long-term utility planning is lost in the race to compete.

In its coming power plan, the Council intends to analyze several alternative ways the utility industry might be restructured and their consequences. These alternative structures include ones that are similar to both of California's proposals (see related story), adapted to Northwest conditions. Other structures the Council is analyzing bracket the possibilities. There is one that looks considerably like today's "adapt as need be" approach, and another that considers what might happen if customers abandon utilities almost entirely, moving to self-generation and home power systems.

— C.C.

Letters TO THE COUNCIL

Energy News encourages letters on subjects discussed in this magazine. Letters reflect the opinions of their authors only. They do not reflect Council policy. Please keep letters under 200 words, refer only to topics covered in Energy News and address them to LETTERS when you send them to our office. We reserve the right to cut letters to fit the space available.

Dear Mr. Duncan,

I read your interview in the Winter 1995 issue of *Northwest Energy News* and must say your views give me hope. I especially appreciated your comments regarding looking past prices, to values. It is about time someone in a responsible position stressed the obvious truth that we are more than just "prices" and "bottom line figures." We are a culture and you are absolutely right when you say we are trying to save ourselves when we try to save the fish.

It was a real breath of fresh air to read your comments and realize you have a reach that exceeds the grasp of many of those involved in this controversy.

Thanks for all that you are trying to accomplish.
**Gene & Marilyn Derig
Anacortes, Washington**

**Dear Mr.
Duncan,**

I liked your piece in *Northwest Energy News* ("New Council Chair Faces New Northwest Reality"). The only thing you left out was

the part about how IT is now rigged to ensure that the region never evolves cooperation out of the chaos. There are a few exceptions, but the dominant strategy that virtually all the players in the region have used in attempting to protect their own interests is to secure an advantageous future for themselves by making some other group's future less secure.

Cooperation can only evolve if the expected cost of not cooperating exceeds the expected payoff from defection. It's not that fish matter more than people. It's that some people matter more than other people. I hope that sometime soon we will start thinking (as you said) "analytically and intellectually rather than rhetorically" about uncertain science and risk assessment. This seems to me to be a prerequisite

if we ever hope to approach risk management as something other than assigning the greatest burdens to the people who are least effective in protecting themselves against raids.

I think it's really about how we choose to live our lives. As e.e. cummings wrote, "I'd rather learn from one bird how to sing than to teach ten thousand stars how not to dance." Good luck!

**Charles Pace
Executive Director,
Regional Services Inc.
Challis, Idaho**

Dear Energy News,

Let me take this opportunity to commend you for your lead article, "Campus Conservation," in the Spring issue of *Northwest Energy News*. It is excellent! The article, particularly the segment on Carroll College, should be mandatory reading for anyone responsible for educational facilities.

I have sent copies to Bob Bennett, president of North Idaho College, and Doug Cresswell, superintendent of School District 271. Perhaps others will do the same thing in their areas.

Keep up the good work.

**Robert T. Nelson
Hayden Lake, Idaho**

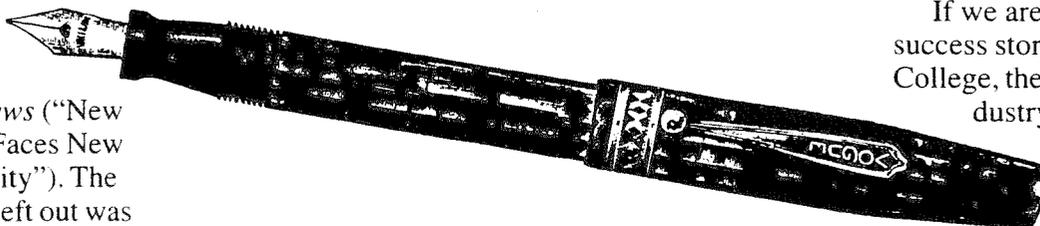
Dear Energy News,

In your article on energy efficiency in higher education, the point was made that over time, things remain relatively constant in the university setting. Unfortunately, the rest of the commercial sector is not so lucky: change is the only thing that stays constant.

In a large office building, if the controls cannot be easily modified for new tenants, they will often be bypassed or replaced with another control device that does not communicate with the first. In addition, the building operators are often completely in the dark about how the controls were designed or how they are intended to operate.

In my view, one of the reasons for this problem has been that the controls industry insists on proprietary or closed system designs — one manufacturer's damper controller cannot be accessed by another manufacturer's computer, and neither can be successfully reprogrammed by the building operator. To achieve lasting energy savings, the controls industry will need to design open systems, where one vendor's device can be accessed or controlled by another vendor's computer, and both can be easily reprogrammed by the building operator.

If we are to repeat the success story at Carroll College, the controls industry will need to change the way it ap-



proaches control system design.

Alan H. Boner, PE
Energy Analyst,
Oregon Dept. of Energy

Response:

Dear Energy News,

Thank you for the opportunity to respond to the letter from the Oregon Department of Energy. I would like to address a couple of issues.

The first issue is performance contracting, and how we (Johnson Controls) view this offering. By definition, performance contracting is a method where facility improvements that meet our customer's needs are financed by the energy and verifiable operational savings generated. Only improvements that are self-funding and/or pay for another improvement, are included in our performance contracts.

Energy management systems, such as our METASYS system will not be included in our projects if the savings generated through their installation will not pay for the installation. This was very true of the Carroll College project.

There are a total of 10 buildings included in this project and only one of these buildings includes any digital controls. The majority of the controls work performed at Carroll College was the repair and upgrading of existing pneumatic controls that were in dire need of attention. The savings were simply not enough to pay

for a campus-wide METASYS system, and we felt the pneumatic upgrade and repair would meet the needs of Carroll College.

My second issue is "closed system" design, defined as the inability of control manufacturer's devices to communicate with each other. It is correct to state that there is presently not a standard communication protocol for the controls industry. ASHRAE is currently working on developing this protocol, called BACNET, to be used within our industry. Johnson Controls is an active member of this ASHRAE committee and fully agree with your belief that this protocol will assist end-users in realizing energy savings more readily.

Until the BACNET protocol is fully developed and released, we are providing our customers with "seamless" integration to other manufacturer's HVAC devices by providing our protocol to all manufacturers (including competitive control companies) who request it.

We presently have agreements with 40

manufacturers to communicate with over 120 devices, making us the industry leader. Therefore, we believe we already offer open protocol to our customers.

While this is obviously not the solution to the issue of open protocol, it is a nice step in the correct direction. We are confident that through mutual hard work, the control industry can reach the goal of open BACNET protocol to the satisfaction of our customers.

Once again, thank you for the opportunity to communicate our thoughts on these issues.

Timothy O. Tolman
Account Executive,
Performance Contracting
Johnson Controls, Inc.

Dear Energy News,

I noted with special interest your item in "Shorts" [Spring Issue] on Japan's plans for increasing its generating capacity. While I am unfamiliar with the publication *The Energy Newsbrief*, I suspect its editors may be reporting, shall we say, just a bit selectively. (This, assuming as I do, that your reference to this item is complete.)

"You are absolutely right when you say we are trying to save ourselves when we try to save the fish."

No doubt government and industry in Japan are making at least token gestures to the advocates of windmills, mirrors and all of the other "renewable" toys so sacred to the "environmentalists" of whom I understand that nation has its share. However, I too have been reading and hearing about Japan's urgent need for energy and of its plans for meeting that need and, so far as I have been able to learn, the majority of that 30,000-plus megawatts will be nuclear-powered. As of late 1994, Japan stood third in the world, behind these United States and France, in nuclear-powered capacity, with 48 reactors producing (at nameplate capacity, I believe) 38,029 megawatts. It also had six reactors under construction, rated at a total of 5,645 megawatts. (Source: *IAEA Bulletin*, Vol. 36, No. 4, 1994.)

The 30,070 megawatts you report as being planned of course will be equivalent to the output of 30 fairly large reactors. To suggest that renewables, with their notoriously low capacity factors, could meet more than a minor fraction of this requirement is preposterous. Again assuming you repeated this report as it was published, suggest you check the reliability of this source.

Sincerely,
Earl E. Eigabroadt
Port Orchard, Wash.
Retired Captain of the Army of the U.S.

Reviews

It was inevitable that the political and ecological turmoil over the decline of Columbia River Basin salmon would prompt in-depth investigations by Northwest authors, and in 1995 several new books tackle the complex subject from different and interesting perspectives. Here is a look at two of them. We will review others, as well as power-related books, in coming editions of Northwest Energy News.

***A Common Fate: Endangered Salmon and the People of the Pacific Northwest*, by Joseph Cone, 1995, 340 pages, \$25 from: Henry Holt, New York.**

***Northwest Passage: The Great Columbia River*, by William Dietrich, 1995, 448 pages, \$26 from: Simon & Schuster, New York.**

In *A Common Fate: Endangered Salmon and the People of the Pacific Northwest*, Joseph Cone, a writer for the Sea Grant program at Oregon State University, tells the recent history of efforts to rebuild salmon runs. Following a brief history of salmon and the Columbia River Basin, Cone focuses on the 1989 Salmon Summit, endangered species listings of Snake River salmon, resulting recovery plans developed by the Northwest Power Planning Council and the National Marine Fisheries Service, and the development of President Clinton's forest ecosystem protection plan.

It's a lot to include in a single book, and at times Cone focuses too narrowly on people and events in the state where he lives. But he also does a superb job of weaving the various political processes and intrigues with thoughtful portraits of the key players. In this, he is fair to all sides, profiling environmentalists, scientists, policy-makers, fishers, farmers and

representatives of industrial interests who are affected by salmon recovery actions in rivers, forests and fields.

He suggests that in recent years the salmon dilemma, and efforts to help other declining populations of Northwest wildlife including spotted owls and marbled murrelets, have caused Northwesterners to think about their place in the web of life — as a part of nature rather than dominating it. This is a tough ideological challenge. Cone writes, "It was hard to make progress on protecting nature in an economy founded on the exploitation of nature ... It was hard to think about some local fish when confronted by the demands of an incessantly growing human population, which seemed doomed to compromise the life of the entire planet."

Some Northwesterners have made the change — a paradigm shift, Cone calls it. Others have not, and still others are thinking about it. Cone writes hopefully about the results of successful paradigm shifts in watersheds in California, Oregon and Washington.

In *Northwest Passage*, William Dietrich, a reporter for *The Seattle Times*, takes a different approach to the same story. Rather than a history of recent efforts to save salmon, Dietrich weaves the salmon story into a broader history of the Columbia River. He divides the story into three themes. These he calls the Aboriginal River, the Pioneer River, and the Developed River. He returns to these themes throughout the book as he describes the Columbia from the viewpoints of its earliest explorers to its modern entrepreneurs, environmentalists, Indian tribes and others who use, abuse and revere the river.

Like Cone, Dietrich's treatment of river issues and interested parties is eminently fair. Dietrich's account, however, more often leans away from a pragmatic tone to one more contemplative. Recounting a discussion

about the river with one of his college professors, Dietrich notes that the professor, who teaches history, asked an economist to list the various river interests that define the values we place on the Columbia. The economist ticked off the usual list — farmers, Indian tribes, aluminum companies, electric utilities, environmentalists, barge lines, and so on. Then the historian added another — the river itself.

Dietrich writes: "All of the other values were based on humans and our competing needs. None suggested that nature — the natural Columbia — might have a value outside the immediate interests of our own species. Or that such a value was perhaps as important, even more important, than the others."

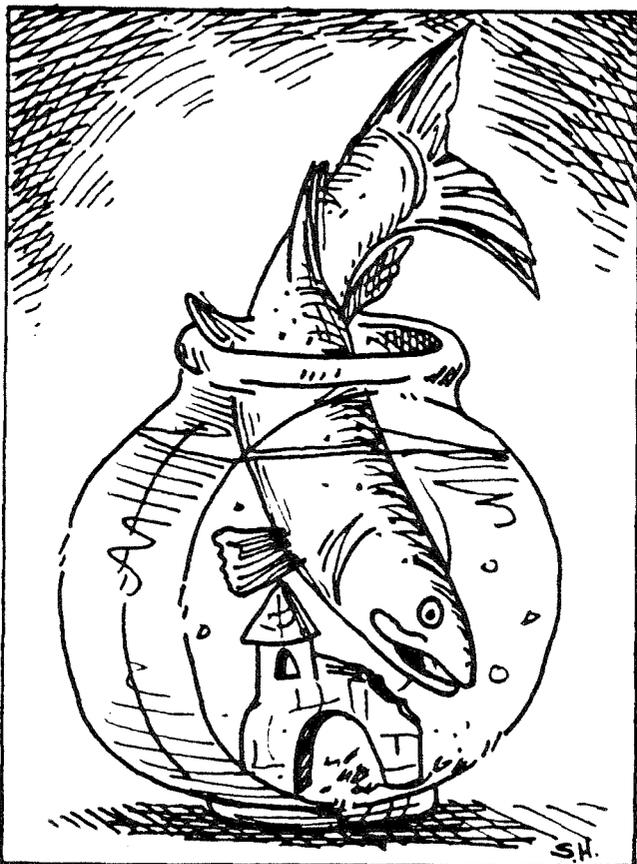
It's a central argument to our understanding of the Columbia, and Dietrich subtly weaves it throughout his book — the river as lifegiver in its aboriginal state, the river as economic workhorse today. But what about the river as a river? "What truly intrigues us about the Great River of the West?" Dietrich asks. "It is the dream of the Columbia once again as a river, bucking and roaring and steaming with muscle, thrashing salmon leaping against its foaming tide."

Northwest Passage is enjoyable for more than Dietrich's thoughtful analysis. It's enjoyable because it was written by Dietrich, one of the best journalists in the Northwest. He has a remarkable eye for detail. Windsurfers near Hood River, for example, "...skip across the swells like colored stones, breathless and drugged from the sun and the water, their hard bodies braced like a strut of their craft."

Each of these new books is an impressive addition to the literature about the river that defines our corner of the nation.

— John Harrison

SHORTS



Oregon and Washington utilities sponsor training on statewide commercial building efficiency codes. To ensure maximum implementation of new energy-saving commercial building codes, gas and electric utilities in both Oregon and Washington are funding training programs for builders, architects, engineers and others in the commercial building trades. The innovative approach was developed in Washington, where training opportunities have been available for more than a year.

Oregon's

Northwest

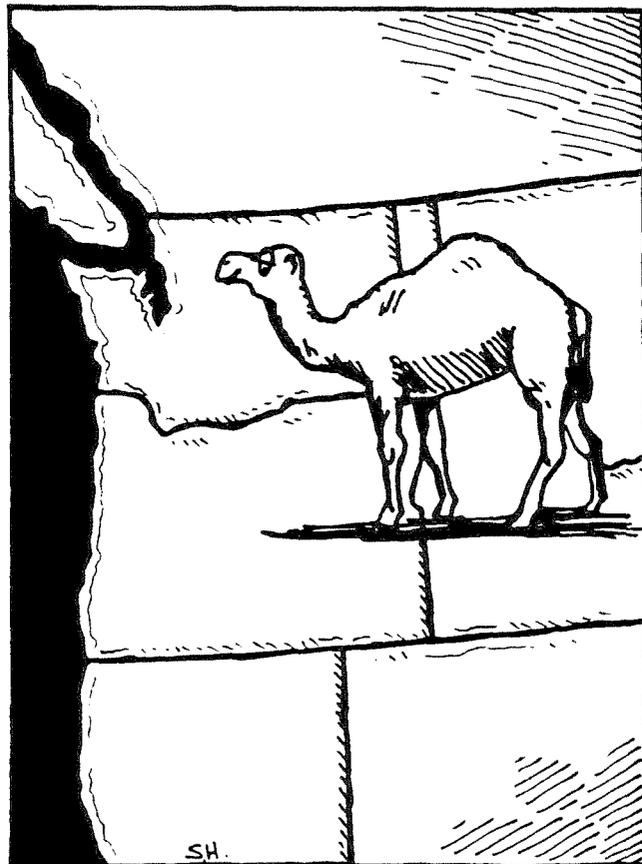
Are salmon shrinking? Researchers studying returning salmon runs in the Pacific Ocean from California to Japan have concluded that 45 of the 47 runs they looked at had smaller fish. Other researchers working with Washington runs found average salmon weights have dropped by as much as 27 percent over the past 30 years. Returning female salmon also have fewer eggs per fish. Their conclusion: hatchery fish are "overgrazing" the North Pacific. Since smaller fish have lower migration survival rates, there will likely be fewer salmon returning to their home streams to spawn. In addition, the offspring of those that do spawn are likely to be smaller still, putting future salmon runs at further risk. [Source: *National Fisherman*, May 1995.]

workshops are expected to begin this fall. For more information and schedules, contact: Linda Gustafson at 1-503-233-1224 or John Perry at 1-503-373-7803 in Oregon, or Building and Design 2000 at 206-682-2800 for Washington classes.

Oregon researchers turn waste silicon to solar cells. Scientists at Oregon State University have patented a means of converting waste silicon from electronics equipment into a silicon-impregnated concrete that can be used in solar energy cells. The concrete-sili-

con solar cells could be installed on cement roofing tiles, concrete bridges, concrete railroad ties and other applications. The research is being funded by the Komatsu corporation, but lead researcher, Professor James VanVechten, says he is also seeking funding from the U.S. Department of Energy. "We're about three years away from production," VanVechten says. "But we have sample cells now." [Source: *Environmental News Briefing*, March 1995, plus a conversation with Dr. VanVechten.]

Trend: the Northwest is getting drier. Using Weather Service data from 1960 to the present, Steve Aos, writing in *Clearing Up* magazine, figured that the 30 years from 1966 to 1995 were 10 percent drier than the 30 years ending in 1976, which were the wettest on record. Average



runoff during the wet period was 113.9 million acre feet. During the past three decades, runoff averaged only 103 million acre feet. [Source: *Clearing Up*, April 10, 1995.]

Oregon to replace utility-sponsored manufactured home program with industry-sponsored certification of efficient homes. When it was announced that the Northwest's very successful Manufactured Housing Acquisition Program was about to be terminated, Oregon housing manufacturers met with the Oregon Department of Energy to draft another approach to ensuring the efficiency of new factory-built homes. The original program used utility payments to manufacturers for each efficient home they sited in any Northwest state. That program was in some ways too successful. Too many homes were built, costing utilities too much money. The new program will certify homes that are built to Oregon's rigorous energy codes. The program was developed by the manufacturers, working with the Oregon Department of Energy. Manufacturers contend their customers want efficient homes and the assurance of quality. [Source: *Oregon Energy Report*, May 1995.]

National

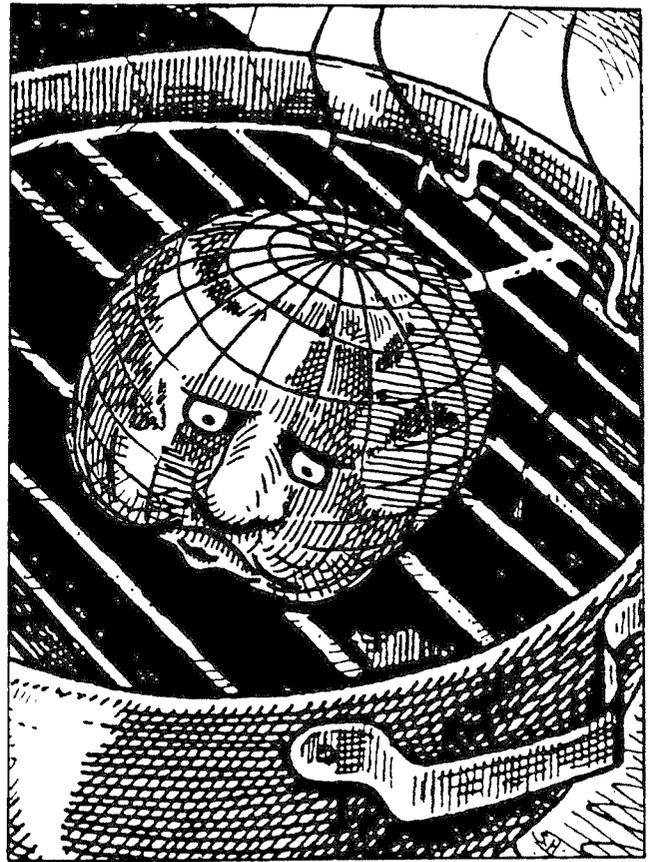
Living in a hot house? A new publication by the Energy Efficiency and Renewable Energy Clearinghouse offers suggestions on passive cooling and low-cost ways to save energy during the summer. For a copy of "Cooling Your Home Naturally," call 800-363-3732 or write to the Clearinghouse at P.O. Box 3048, Merrifield, Virginia, 22116. The publication also is available by computer modem from the Clearinghouse's electronic bulletin board, at 800-273-2955.

International

More evidence on global warming.

Dr. David J. Thomson of AT&T Bell Laboratories has reported that previous global warming predictions were based on calendar year historic weather data. Recalculating the data based on the earth's actual solar cycle, using its closest approach to the sun, produces results that indicate that the temperature increase has been more steady than previously thought. The new analysis also shows that since 1940, the annual seasonal changes have come significantly earlier than in previous years. In fact, in England, recorded seasonal changes in the past 50 years have been greater than in the previous 300 years. [Source: *Science*, April 7, 1995.]

Even more evidence on global warming. Another improvement in computer modeling technologies that can help with global warming predictions was announced in Great Britain. The new approach presents more accurate data on past weather patterns, which by comparison, helps refine future predictions. The model, developed by the Hadley Centre for Climate Prediction and Research at the Meteorological Office in Bracknell, England, accounts for atmospheric conditions that screen out about 30 percent of the greenhouse gas effects. Nonetheless, the new



model still predicts a net warming of about 4 degrees Fahrenheit over the next century if gas emissions continue at their current rates. Global temperatures rose 1 degree Fahrenheit over the past century. [Source: *World Watch*, May/June 1995.]

CALENDAR

August 15-16 Northwest Power Planning Council. The Ashland Hills Inn, Ashland, Oregon. For more information, contact the Council's central office at 800-222-3355.

August 20-22 Oregon Summit on Environmental and Natural Resource Education, Newport, sponsored by the Environmental Education Clearinghouse. For more information, contact the Clearinghouse at 800-424-4372.

August 20-23 Second Biomass Conference of the Americas, Portland, Oregon, sponsored by the National Renewable Energy Laboratory and the U.S. Department of Energy. This is a national and international conference on energy production using biomass and wastes. For more information, contact Dori Nielsen, 303-275-4350.

September 12-14 Northwest Power Planning Council. Twin Falls, Idaho. For more information, contact the Council's central office at 800-222-3355.

September 18-20 Transmission Access and Pricing: Responding to the FERC Mega NOPR, at The Madison Hotel, Washington, D.C. This conference, sponsored by the Institute for International Research, invites utility industry leaders to explore issues and responses to the Federal Energy Regulatory Commission's proposed rulemaking on restructuring in the electric industry. For more information, call the conference coordinator toll free at 800-345-8016 or FAX 212-661-6677.

September 28-30 Fish Expo Seattle, at the Washington State Convention and Trade Center, sponsored by National Fisherman magazine. This is a trade show for fishing industries of Pacific Rim countries. For more information, contact Diversified Expositions, 800-454-3005.

October 2-3 New Directions in Energy Conservation, conference and tradeshow, at the Delta Bessborough Hotel, Saskatoon, Saskatchewan, Canada. Hosted by the Saskatchewan Energy Conservation and Development Authority. For more information, contact Sherlyn Semenchuck, 306-933-5352 or FAX 306-933-5616.

October 13 Transmission West: FERC on Access & The New Electric Marketplace, at the San Francisco Airport Marriott Hotel. This is the fifth annual Flightline Forum sponsored by NewsData Corporation. Conference will explore what FERC means by competition and how western utilities, power brokers, marketers and consumers may respond. For more information, call 206-285-4848 or FAX 206-281-8035.



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The Northwest Power Planning Council is required by an Act of Congress to develop a program to protect, mitigate and enhance the Columbia Basin's fisheries and a regional electric energy plan that provides a reliable electricity supply at the lowest cost. For further information, see Pacific Northwest Electric Power and Conservation Act—Public Law 96-501.



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COUNCIL PUBLICATIONS ORDER FORM

Please send me a copy of the following publications of the Northwest Power Planning Council. (Note: not all publications are available immediately, but they will be sent to you as soon as possible.)

Publications

- (95-12) *Fiscal Year 1997 Budget and Fiscal Year 1996 Revisions (final)*
- (95-11) *Draft 1995 Annual Report*
- (95-10) *Columbia River Basin Research Report*
- (95-9) *Transcript of Panel on Bonneville Competitiveness and Ways to Cut Bonneville's Costs (Seattle, Washington, Council meeting, June 14, 1995)*
- (95-8) *Fiscal Year 1997 Budget and Fiscal Year 1996 Revisions (draft)*
- (95-7) *Directory of Organizations*
- (95-5) *The Get Guide: Resident Fish and Wildlife*
- (95-4) *Proposed Resident Fish and Wildlife Amendments to the Columbia River Basin Fish and Wildlife Program*
- (95-3) *Discussion Paper and Summary of Resident Fish and Wildlife Amendments.*
- (95-2) *Synopsis of February 14, 1995 Northwest Renewable Forum (includes list of participants)*
- (95-1) *Recommendations to Amend the Resident Fish and Wildlife Sections of the 1994 Columbia River Basin Fish and Wildlife Program (approximately 700 pages)*
- (94-55) *1994 Columbia River Basin Fish and Wildlife Program (includes response to comments: approximately 300 pages)*
- (94-54) *Market Transformation: What is It and How do we Get There?*

Mailing Lists

Please **add** my name to the mailing lists for the following publications. (Note: please do not check if you already are receiving them.)

- Northwest Energy News** (this bimonthly magazine)
- Update** (monthly public involvement newsletter that contains the Council meeting agenda, deadlines for public comment and a more detailed publications list)

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From the **CHAIR**

I'd like to make a pitch here for expanding recovery efforts for Columbia River Basin salmon to the entire watershed of the river — including those reaches in Canada and other states. This is an idea being discussed by several members of Congress, especially Oregon Senator Mark O. Hatfield. The goal would be more regional, rather than federal, ownership of the recovery effort and broader local participation in the development of recovery measures. The proposal would add authority and responsibility to our Council, as the entity that could coordinate the broadened effort. This is neither a reach for more power, nor an attempt to diminish the power and authority of any federal entity. It is instead a formal recognition that the river's waters run downhill, fish inhabit



them, flora and fauna rely on them, and all of these are indifferent to state and national borders. In fact, the conflicting policies from one side of borders to the other can be profoundly destructive to the health of the ecosystem. A regional entity dedicated to conserving the watershed by enlisting the people of the region has the best, perhaps ultimately the only, real chance to restore the health of the Columbia Basin. The only true protection for our watershed's resources will not come from federal rulebooks. It will come from commitments by those of us who live here to nurture a living Columbia River, one that is useful to us all and full of fish.

A handwritten signature in black ink, appearing to be 'A. J. ...' with a long horizontal stroke extending to the right.