

THE ECOTONE

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LOCAL STRUGGLES

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ECOTONE: A transition zone between two adjacent ecological communities, such as forest and grassland. It has some of the characteristics of each bordering community and often contains species not found in the overlapping communities. An ecotone may exist along a broad belt or in a small pocket, such as a forest clearing, where two local communities blend together. The influence of the two bordering communities on each other is known as the edge effect. An ecotonal area often has a higher density of organisms and a greater number of species than are found in either flanking community.

EDITORS' NOTE

The theme of the Winter 2001 issue of *The Ecotone* is "Local Struggles." While the articles included cover topics ranging from restoration efforts in Eugene to education initiatives in South Florida, each addresses the struggle of an individual or group to deal with an environmental issue. Such struggles can take place in the natural world or the political realm, but many also represent struggles over opposing or changing ideologies. The articles in "Local Struggles" are meant to draw your attention to the wide range of environmental issues being dealt with on a local level, the different viewpoints involved, and the breadth of solutions that exist. We hope you enjoy this issue of *The Ecotone*.

You may notice the addition of a "Letters to *The Ecotone*" section. We welcome your feedback and correspondence and look forward to continuing to print letters from readers.

THE ECOTONE

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Cover image credit

"Two is One" painting by Alan Kapuler

Kudos!

Thank you for publishing *The Ecotone*. It's a fantastic, informative publication that I've enjoyed thoroughly. I was in the first class to graduate with Environmental Studies as a major instead of a minor at the University of Oregon. The Environmental Studies program at this time, as with any new program, was haphazardly thrown together. Guidelines and expectations were gray and the program lacked a strong base from which to grow. *The Ecotone* gives me hope that the Environmental Studies program has solidified. My best classes at the U of O were in this program. Keeping strength in Environmental Studies, by publications such as yours, will mean a continuation of quality education in this subject area. This means more people participating in better-informed decisions within that web we live.

On a recent bike trip along the Oregon coast a few questions entered my mind about the ecology of this region. I was quite satisfied to find my answers in *The Ecotone* [Spring 2001].

One observation was that there was an overwhelming amount of Scot's Broom present in this area. I knew it was an invasive species but was unaware of its origin and purpose. Your article, *Exotic Infiltration* [by Melynda Coble], answered all my curiosities. Now I am better informed when I complain about its suffocating presence to those who enjoy its delicate yellow flower.

Another observation I had was what seemed to be more clear-cutting with less sustainable logging practices. I remembered your satellite image projection of what Oregon forests will look like in the year 2050 and what they were 50 years ago. With this in mind, I took into account that a lot of these areas were new to me. It is very possible they were more forested than in previous years. I hope your projection is correct and that Oregon is gaining more forested land through sustainable logging practices.

Finally, I was grateful for the information surrounding the Arctic National Wildlife Refuge and its residents in *A Contested Place* [by Jeremy Zhe-Heimerman]. I

was not very well informed on this issue, especially from the Inupiat stand point. I had momentarily forgotten how important it is to look at an issue from all sides. With this in mind, I hope a wider variety of information is published and made easy access on this issue. A well-informed public can aid in achieving a balance in social, economic, and environmental justice.

Congratulations on an excellent journal! I look forward to the next issue. Thank you for broadening my horizons on the issues you address. Good luck in the future.

Brooke Jeffery
Truckee, California

Oregon spotted frog article spotty?

I feel compelled to point out some problems in T. Miller's article (*Unsound Dams, High Explosives, and Rare Frogs, Spring 2001*). I am an ecologist for the USGS, and am the lead researcher on this project [*the relocation of a population of Oregon spotted frogs at Wickiup Reservoir—eds.*]. We (the USGS) were the ones that relocated the habitat restoration to avoid the originally planned site, which likely would have failed. The following is a list of corrections for the author's and readers' information.

- There are four main ponds and two smaller ponds in the new habitat (not three). [*Blasting of the holes for ponds was ongoing at the time the article was written. However, the blasting was completed by the time of publication.—eds.*]

- We assume "fish tend to prey on tadpoles," but this is pure assumption.

- There is no evidence the frog ever "thrived" in the Puget Trough or Willamette Valley. We know of scattered sites (around five in each the Willamette Valley and the Puget Trough) where they existed. The Deschutes is almost certainly the historical stronghold of the species.

- Bullfrogs are indeed voracious; this does not mean they caused the decline of the Oregon spotted frog; that is purely speculation, and the decline is likely much more closely tied to hydrological modifications and outright wetland loss. With such alterations come bullfrogs. They may be correlated, but this does not indicate causation. USGS is researching bullfrog diet where they co-occur with the Oregon spotted frog – best to talk to the primary source, not take secondary speculation as fact. [*The article*

implicates wetland loss as the primary reason of the frog's decline, with bullfrogs, among many other factors, adding to the challenges the frogs face in remaining habitat. The author notes that of the several agency representatives and researchers that he interviewed (many of them mentioned in the article) the USGS was not pointed to as the prime source of information.—eds.]

- 4300 feet [elevation] is near average for remaining populations in Oregon, possibly below average. All Klamath basin populations exceed this elevation (half of which are greater than 5000 feet) and my study populations along the Cascade crest are all over 4800!

- "Endangered"... connotes listing under the [Endangered Species Act]. This species is not listed under the ESA yet. This is misleading and wrong... Each state has given the frog its own 'status.' [*The listing of the frogs as 'endangered' in Washington, Oregon, and British Columbia, Canada, was not meant to imply a US federal designation.—eds.*]

- USGS made the Dilman site a reality. Blasting or impounding water was always going to be required, at Dilman or the previously selected translocation site, which would have been pursued had we not gotten involved.

- While it is true that the same areas of sites are generally used for breeding between years, we do not know that "the homing instinct is very strong..." That is the objective of the USGS research to occur over the next three years.

I would be glad to fill additional details on the project and species status if further information is needed, and hope that these remarks will be taken to constructively point out problems in incomplete reporting.

Christopher Pearl
US Geological Survey

RESTORING ORDER

WHEN REGULATION MISSES THE FOREST FOR THE TREES: A PROFILE ON A LANDOWNER-ACTIVIST'S PLIGHT TO DO THE RIGHT THING

BY TODD MILLER

"This old ponderosa pine and Doug-fir must have a lot of stories to tell," quips Adam Novick, gesturing with a well-used machete to two towering, side-by-side trees on his family's property in the South Eugene Hills. "Look at them, they must be over 300 years old – maybe 400. I don't know for certain why they didn't get cut, but one thing's sure – this landscape has changed around them." Adam's words hint at a condensed history of the site. Evidence on the ground indicates about half the property was, at one time, oak savanna – an ecosystem that has been described as "critically imperiled."



PATRICK HURLEY

In the post Euro-American settlement age of fire-suppression, the property's oak savanna and other native habitats are being lost to invading conifers (predominantly Douglas-fir) and exotic plant species. But with his machete, Adam is on a one-man crusade to protect and restore what's left of this historic landscape. Besides yanking out weedy plants in the understory, Adam has been hacking out the invading Douglas-firs. This action should improve the ecological function of the over 250-acre Novick property and make the acreage an asset for the City of Eugene and the greater Willamette Valley.

Unfortunately, the painstaking work and countless hours of labor, although rewarded by handshakes and accolades, has ultimately resulted in Adam battling City Hall to preserve the market value of his real estate. In this post-Measure 7 era – one in which we are accustomed to property owners claiming losses in their coerced compliance with environmental regulations – Adam's case puts an entirely different spin on such regulatory conflicts. Laws meant to protect endangered habitat may present daunting market-value losses to landowners like Adam who toil not to develop, but to restore.

Ground zero in this battle is another property under Adam's stewardship in Eugene: a two-acre parcel adjacent to a city park. A colleague and I met with Adam late last spring at his home in preparation for his upcoming guest lecture to a class exploring Willamette Valley environmental change. Adam portrayed an image of outdoorsman and intellectual on his lean frame; a five-o'clock shadow and the lined face of a man entering middle age were augmented with a pair of bookish frames. After being welcomed in for a beer, we soon found ourselves being led by Adam from beneath a wide-brimmed hat (to fend off a drizzle) on a tour of the park-side property. We danced

over the terrain, following Adam's quick pace through the rare remnant of native bunchgrass and avoiding the native plants he pointed out with one hand while pulling out invasives with the other. He confessed a sort of Socratic knowledge, knowing just enough to realize he doesn't know nearly enough. However, he is a virtual library on the subject of preserving local habitats.

"That little property has been my laboratory for trying to figure out how to save the big one," explained Adam over a pitcher of beer at a pub up the street from the contentious lot. The lot appeared to be a great opportunity for Adam after he had sold his Seattle home to return to Eugene to help care for a family member. That opportunity, as Adam described it, was a place to park his money while simultaneously protecting remnant oak savanna from development. The undeveloped parcel was not a tempting enough acquisition for the City of Eugene, with whom Adam broached the idea when he discovered the lot was up for sale. So, he bought it himself.

The purchase ensured two things: 1) the land wouldn't be developed in the short term and the City could potentially buy it at a later date, and 2) his home-sale

receipts were invested in real estate until the time he needed to buy a house again. In the meantime, Adam became more interested in the land than just fending off would-be developers; he decided to take action to help ensure that eventually the city or another buyer would be willing to preserve it. Eventually, with the aid of local experts in botany and native landscapes, he started to read the landscape and see its ecological history. Adam began pulling out English ivy and hand-weeding other exotic species that were smothering much of the understory. Thanks largely to Adam's labor and willingness to engage local experts, the site is helping researchers to reconstruct the floral components of oak habitats and has become a seed source for the Bureau of Land Management's local restoration projects.

The site is more than a botanical laboratory; it is a policy experiment. "Since buying the property," Adam says, "I've been trying to find answers for questions like, 'Who should own the site? How hard should we try to protect it from invasive species? Who should pay for that work? What access should the public have to the site?'" Enter Goal 5, a member of Oregon's famed and much-lauded statewide Land Use Planning system. The goal directs local governments (amongst myriad and loosely connected objectives) to identify valuable natural landscapes and to protect them. In the act of applying for Goal 5 protection for his property, Adam opened a can of worms that has turned his odyssey into something of a nightmare.

Eugene city planners have recognized the "Goal 5" value of the parcel and included it (initially as "proposed" but recently as a formality) in the inventory being compiled for the Metropolitan Natural Resources Study, the first step in the Goal 5 planning process. Making the list would be an honor for those who value the protection of native habitats. Indeed, unlike other landowners whose property has been identified by the study, Adam welcomes the designation. However, present inclusion in the inventory exposes land owners to the risk of financial harm from rezoning, one of a number of options local governments have for protecting habitat under Goal 5.

The problem lies in the practical

result of rezoning, what Adam compares to condemnation without compensation. In instances like this, rezoning is a handy tool for local governments to protect property from development without having to buy property or conservation easements. From a budget standpoint, this is an attractive option. For the landowner, it is purely a regulatory disincentive. Adam estimates that his property's market value will fall 76% (for rezoning part of the site) to 96% (for rezoning all of it).

Incentives do exist to assist landowners predisposed to protecting native habitats, including land conservation and financial assistance programs. Unfortunately, for his urban property, Adam found most of them limited for protecting wildlife habitat. In 2000, Adam was successful in enrolling his property in Oregon's Open Space program. It offered him a property tax deferral of 30% but which accrues about 8% annual interest. "That's deferral, not reduction," emphasizes Adam. Furthermore, it is not only Goal 5 that has been an obstacle. In 1999, Adam challenged the state forest district's requirement that he replant conifers after he removed Douglas-fir from oak habitat on his larger parcel. He eventually received an exemption from the law, winning the first alternate forest practice for replanting the district ever awarded.

Adam is *not* Ted Turner (the television mogul has purchased vast acreages of wilderness in Montana). "That's my house!" bemoans Adam, shaking his head. "I can't afford to lose that. Why would anyone do what I'm doing? They'd have to be crazy. They'd have to be nuts. They'd have to be me!" he finally says with a laugh. It still hasn't stopped him from his labors. It's clearly a passion, what some may describe as an obsession. But it's clear that the endless work must continue for his efforts to be fruitful at all.



PATRICK HURLEY

It's not only the machete that has blistered Adam's hands –it's also the typewriter and the phone dial. "See what my life is like?" challenges Adam, brandishing a thick fistful of envelopes stuffed with letters to regulators, administrators, environmental groups, and educators. The tenor of his correspondence is instructive and convincing. So much so that he has earned

the support of the Oregon Department of Fish and Wildlife, the U.S. Fish and Wildlife Service, the USDA Natural Resource Conservation Service, and others in his plea that a positive approach be taken to protect the property.

But a burning question underlies the empathy of many of those indoctrinated in his saga: if Adam doesn't wish to see the land developed but instead maintained as native habitat, what then is his beef with the loss in real estate value he contends such regulation would cause? Here we may find the most salient point of Adam's struggle: he can't risk suffering a guaranteed loss on his investment, nor does he believe anyone else would be willing to. He seeks to do the right thing for the land and for Eugene's ecosystems, but financially he cannot afford to lose the value of his asset. We can rue the market for not recognizing the ecological value added to the property in monetary terms, but uncompensated regulation of habitat goes even further: it assigns negative value. "I got that land for a fair price," he notes, "not a bargain, but a fair price. I just want to be able to get a fair price in return."

Adam is firmly anti-Measure 7. The so called "takings" initiative passed by Oregon voters last year (and currently undergoing legal challenges) requires state compensation to property owners whose land is perceived as devalued because of use restrictions. The foremost disaster of this law is the expected undermining it poses to Oregon's land use planning and environmental protections. In fact, Adam agrees with the need for regulation – even when uncompensated. "Otherwise, what's to keep a neighbor from starting a pig farm?" But the potential rezoning of the Eugene property has exposed a paradox in a regulatory scheme that is neither economically nor ecologically friendly.

Add up Adam's dilemma over the landscape of private property owners, who hold 98% of the oak habitat left in the Willamette Valley, and it is not difficult to envision a policy which literally misses the forest for the trees. Not only are few land holders willing to make the sacrifices of time and effort that Adam has, but many are likely to actually eradicate the native species that may prove to be a regulatory liability. "The current result is a regulation which drives people to destroy the very habitat it attempts to save."

Adam suggests that rather than targeting habitat with uncompensated regulation, Oregon needs to eliminate landowners' fears that native vegetation will bring them financial harm. He also suggests that Oregon make a concerted effort to find incentives for landowners to protect and restore habitat. "But whether or not we succeed at finding better incentives," he adds, "I believe it is in the public interest at least to avoid creating disincentives."

While this struggle has yet to reach its conclusion, there have been positive outcomes along the way. One of these came earlier this year when the Oregon state legislature passed Conservation Incentives Bill HB 3564. The bill directs state agencies to identify conservation disincentives and suggest reforms. Adam thinks the passage of HB 3564 reflects a "sea change in consensus" for how Oregon should protect habitat on private land. He also points to statements by conservation leaders calling for Oregon's conservation policies to work with, and not against, market forces. He is the first to underscore the importance of Goal 5 to protect habitat, but his efforts clearly demonstrate the inadvertent consequences of trying to implement the goal via uncompensated regulation of habitat on private land.

Whatever the outcome, the lessons for environmental policy wonks is apparent in this example: prohibitive regulation as a tool may not only be politically unwelcome, but it may be counter-productive. "If I win," notes Adam in closing, "it just means I won't lose."

Acknowledgements: Many thanks to Patrick Hurley for introducing me to Adam Novick, for providing me valuable background knowledge on land use regulation and oak savanna habitats, and for the review of, and many editorial suggestions to, this article.

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PROPERTY RIGHTS AND CONSERVATION: NATURAL HERITAGE AND COMMUNITY PLANNING IN CALIFORNIA

BY PATRICK HURLEY

Reflecting a wider movement to deal with the impacts of habitat loss and fragmentation on biodiversity, Nevada County in California has undertaken a two-year long study to develop a biotic inventory of their county. Known as Natural Heritage 2020, the planning process seeks to address deficiencies in the county's 1995 General Plan that deal with the environmental impacts of development (housing subdivisions and road construction). While the effort is certainly welcomed by the growing number of conservation biologists, conservationists, and even local citizens who have increasingly drawn their attention to the issue of habitat protection in the rural United States, it is not universally heralded by all of the county's residents. In fact, the efforts of the planning department and the group of citizen volunteers who make up the Citizens Advisory Council and are heading up the initiative has created a backlash among many who see the work as a means for appropriating private property.

Protect Your Private Property Rights is just one of the groups that see a fundamental problem with the approach. They believe the county's attempts to inventory lands represent a violation of their rights, invoking the words of Thomas Jefferson on their website: "The right to procure property and to use it for one's own enjoyment is essential to the freedom of every person, and our other rights would mean little without these rights of property ownership." Beyond a fear that any inventory could lead to the discovery of endangered plants and

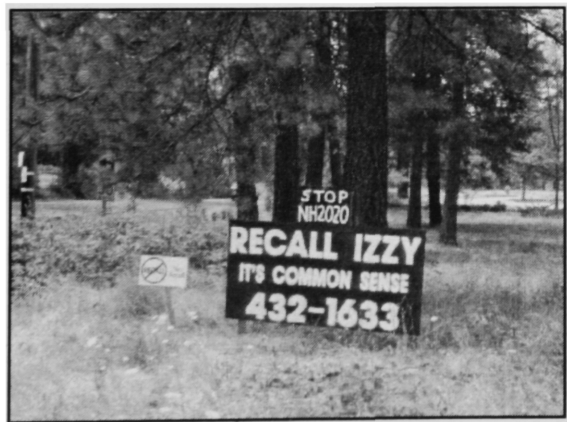
animal and possible takings, the issue is also a battle over who controls the future of the county and its landscape. That battle has already led to an attempt to recall Izzy Martin, a supervisor on the county's governing board.

At present, Natural Heritage 2020 is still in the 'discovery' phase, as members of the Citizen Advisory Committee work with various sub-groups to put together information and develop a series of recommendations. The ensuing battle over what happens with the final recommendations made by the Citizens Advisory Board is still several months off. While the Board of Supervisors recently voted to delay any non-binding referendum on the subject, the possibility still looms once final recommendations are made. The outcome of either decision is likely to have important implications for what Nevada County's environment will look like in the future. More importantly, the process may portend how similar planning efforts across the country deal with the same types of development issues and how they are resolved.

*For a full description of Natural Heritage 2020, see <http://www.nh2020.org/>. You can follow the progress of NH2020 in *The Union's* (Nevada County's local newspaper) special feature section on the project located at <http://www.theunion.com/nh2020/nh2020section.html>. Information about the group *Protect Your Private Property Rights* is available at <http://www.protectyourpropertyrights.com/index.shtml>.*

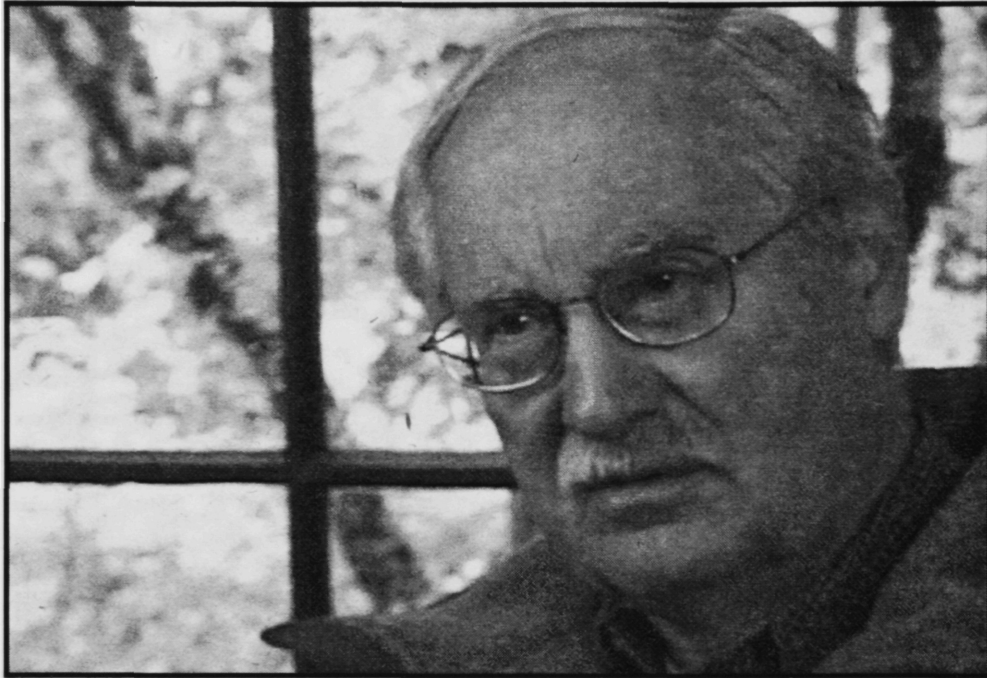
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Nevada County residents voted in July to decide whether to recall Supervisor Elizabeth "Izzy" Martin. The measure was defeated.



**REFLECTIONS OF A FOREST SCIENTIST:
AN INTERVIEW WITH DR. JERRY FRANKLIN
BY STEVE MITAL**

Dr. Jerry Franklin has been studying forest ecosystems for over 35 years. His work has had a tremendous impact on the understanding and management of forest ecosystems in the Pacific Northwest. Under his leadership, Option 9 of the FEMAT (Federal Ecosystem Management Assessment Team) report was created and became the Northwest Forest Plan. Steve Mital interviewed Dr. Franklin on June 11, 2001 at the Wind River Canopy Crane Research Facility in Washington for his documentary video on the sustainability of Pacific Northwest forests. Edited excerpts from the interview are below.



Steve Mital: *Can you describe what sustainability means in the context of forests?*

Dr. Jerry Franklin: My definition of sustainability has to do with maintaining the option to return to any previous state in an ecosystem. In order to do that, you have to do two things. One, you have to maintain the productive capacity of the site. By that I mean you have to keep the soil on the slopes; you have to keep the water clean and well regulated. So, goal one is no net loss of the productive capacity of the site, which is represented by the soils and by the waters. The second part is no accelerated loss of biological diversity. It is the organisms that have the capacity to take the potential represented in the soils and waters and turn that into the kinds of systems we want, that can provide the services and produce the commodities that we want. So, no net loss of productive potential, no accelerated loss of biological diversity; those are the two principles. You do that, and you have the capacity to restore any particular combinations of conditions that you want.

SM: *Approaches like new forestry and ecosystem management are basically an attempt to manage for long term sustainability. Can you explain the meaning and development of ecosystem management?*

JF: Our whole approach to the national forests, from the 50s through the 80s, has been one of simplifying systems, simplifying them in all aspects from the genetics to the structure of the stands to the landscapes. That was the whole goal: to simplify systems in order to focus the productivity of those systems entirely on [timber] production, a high level of production of a standard commodity.

In eco-system management, that's not what you're attempting to do. The most fundamental goals of ecosystem management are to sustain systems and species, sustain their productivity, and sustain the diversity of organisms that are present. So, the first thing you do is you attend to that. You don't do what we previously did, which is do your intensive management thing and try to

mitigate the impacts. Rather, you start by being sure that you keep your impacts on system processes and species within an acceptable limit, one that's going to provide for sustaining them. So, the whole emphasis in ecosystem management is (a) worry about sustaining processes of species, and then (b) worry about production of commodities insofar as it's consistent with the previous. So, what you do instead of managing the systems to simplify them, is manage them to maintain the complexity.

SM: *What does the academic community have to say about ecosystem management as a strategy to sustain forests?*

JF: There's a tremendous polarization in the academic community about the emphasis on ecosystems versus an emphasis on species, and I have consistently taken the position that if you try to do conservation on a species-by-species basis, you'll fail. I continue to believe that we really have to take a systems-based approach. There are just way too many organisms to deal with, and we'll be exhausted in terms of knowledge, money, and our patience very quickly if we try to do this on a species-by-species basis.

One of my disappointments with the Northwest Forest Plan is that the environmentalists have been able to use species to leverage the system, leverage the plan away from an ecosystem based approach to one where we're being forced to take account of a lot of individual species. It may be a great political strategy, but it's not a good strategy for considering biodiversity.

SM: *The Northwest Forest Plan regulates activities on publicly owned forests. Many environmentalists are now shifting their focus to private forest lands. How should the burden of forest sustainability be distributed between public and privately held forest lands?*

JF: I think all owners should have basic requirements to maintain the soils and the waters, over the lands in which they have responsibility or ownership. So, I don't think anyone can escape fundamental responsibilities to maintain the productive capacity of their lands and waters. That's just basic stewardship, and as a citizen, I'm not willing to let anybody off the hook on that.

Now with regards to management of the lands for specific species, I think it's very appropriate to have different levels of requirement. We see in the Northwest, for example, that the federal lands can and have taken on a massive obligation for old-growth related organisms, and I don't think it's appropriate, nor possible, to ask the private sector to accept a comparable level of responsibility. So, I'm quite prepared to see differences between the emphasis in federal lands and the emphasis in private lands.

SM: *What do you have to say to environmentalists who are trying to increase regulation of private forest lands?*

JF: First of all, with regards to federal lands, I think the Northwest Forest Plan was an incredible victory. It went way beyond anything the environmental community ever imagined would happen. But some of the environmental groups are not satisfied with that plan, even though it was scientifically based and provides a very good outlook for old growth and old-growth related organisms. Their goal is really to stop all timber harvest on federal lands. They don't want trees cut on federal lands. That wasn't part of the plan. But rather than abide by the plan and work with it, I think a number of environmental organizations have done everything they can to see that it doesn't work and to move the goalposts from where they were defined in the plan to a zero harvest alternative.

In regards to private land, I think what the environmentalists need to think about are the consequences. What's going to happen if we become so stringent in our regulations on private lands that they can no longer profitably manage those forests for timber production? What's Weyerhaeuser Company going to do with its millions of acres, for example? Are they just going to end up being subdivided into one acre or ten acre or hundred acre lots? Is that what we want to happen? Is that going to be good for the forests and for the streams? I think that's a very real concern that we're facing. If we do not reach some accommodations with private land owners, small and large, then what's the future for those lands? And the notion that somehow we're going to go out and spend billions of dollars to buy those forest lands . . . I don't think so.

So, I think environmentalists need to have both a

broader perspective and a longer perspective on what they're doing. They tend to be very much focused on today – sort of a belly button kind of focus, you know? "What is happening today that I don't like? What's happening today that I want to change?" And that's not good strategic thinking. It's not really looking at the forest and what's good for the forest and our forest landscapes, nor is it really looking at what's good for society.

SM: *What have we learned from 20 years of conflict over the Pacific Northwest forests?*

JF: I think what we probably should have learned better is perhaps the complexity of the systems and the potential of a variety of successful outcomes. We're still playing a hard core kind of clear cut it or preserve it game, when we really need to be developing a much

broader spectrum of responses to forests, finding middle grounds between those.

In other words, if you look at the global debate over forests, one of the primary propositions by many of the major stakeholders - industry and environmentalists - is let's divide up the forest estate into fiber farms and preserves, and we don't have to deal with each other, and we both can be very happy. That's probably not an optimal solution, not for a major society like ours here in the United States, and probably not a good solution for the world as a whole. So I'm not at all sure we've developed an appreciation for the need to work with each other, and to work with nature, and try to develop good solutions.

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LIVING ON BORROWED SPACE

BY JULIE POLHEMUS

Sergeant Michael Bianca's headlights ousted the shadows from the depths of the scraggly black oak and arthritic madrone. It was three days before Thanksgiving, and Bianca was a month and a half into three months of graveyard shifts for the Ashland Police Department. He finished up a midnight noise complaint and continued, under a nearly full moon, into a quiet, residential neighborhood on the city's edge. A car – its lights on, cockeyed in the road – blocked his path. The wide-eyed inhabitants spoke of a cougar: it crossed the road in front of them and was sitting on that porch. They pointed. Bianca couldn't even see the house through the trees.

He drove down the long driveway and sat in his car, waiting, watching. The cougar sauntered through the headlights, "like a pedestrian in a crosswalk," Bianca would later say, "an armspan long." He would have been ready for a burglar; the cougar threw him. He froze: "I've seen this thing before, but where are the bars?" The cat launched itself, a graceful arc, onto the



"THE KISS" BY ALAN KAPULAR

loose wires of a deer fence, where it swayed momentarily before scrambling over the top. Sergeant Bianca regained his reactions and shone his spotlight at the cougar, who leapt into the upper branches of a leafless apple tree. The cougar then jumped from treetop to treetop, down the row of apple trees, out of sight.

The following morning, Bianca informed the homeowners of his encounter. They said they had been finding deer remains on their property for two months. And the neighbors were missing a cat. And their other cat had returned home with a skinned tail.

Ashland sits in the Bear Creek valley, stuck between the interstate and a hard place, southern Oregon's Klamath Mountains. Ranchettes and mansions spring from the hills that straddle the city – big, expensive houses, outside the city limits. Some Ashland residents think that the houses are encroaching on the cougars' space, so the cats are coming into town, looking for food. Annie Hoy – known in Ashland as the "cougar

lady” – knows they are.

At four o'clock one warm spring morning, Hoy and her husband were jarred awake by pounding on the house underneath their open bedroom window. Raccoons, they rationalized. But they lay awake for an hour, listening. Silence. The next afternoon, Hoy ventured into the backyard and stopped, startled by a deer carcass lying in the narrowest section of her yard, between a shed and the fence – *parts* of a deer carcass, actually: the head, legs, some gnawed-off ribs, and a bloated organ that she thought might explode. She recalls the remains as “steam-cleaned; there were no blood or guts anywhere.” She was reminded of UFO stories about cattle, stripped of their flesh, in the southwestern deserts: “It was like the X-Files in my own backyard.”

Uncertain what to do, Hoy called the Department of Fish and Wildlife for help. They told her that they could not have a warden there until the next day. They also mentioned that whatever had killed the deer would be back to finish it. Annie Hoy told her husband they would be spending the night in a hotel. To discourage the predator from returning, they also suggested that she could “drag it to her car, drive it up into the woods, and drop it off a cliff.” But a game warden visited that night and treated her husband to an impromptu autopsy on the deer. The killing bite to the deer's vulnerable sacral vertebrae and spinal column at the base of the neck suggested a cougar kill. The warden noted that the distended organ was the deer's uterus; she had been pregnant with twins.

Hoy's initial reaction was sympathy. Then she realized that she would now have four deer, rather than seven, munching her garden. She also recognized the intelligence and cunning of the cougar, who had culled a weak deer by boxing her into the narrowest section of the backyard. The deer died quickly; the pounding the Hoys heard that morning was probably her hooves against the house. After that, it was “deadly silent.” They heard no sounds of eating – no crunching, tearing, or slurping under the open window. The cougar, they later found out, spent the morning lounging on a neighbor's patio, digesting his meal in the sun.

The Hoys do not live on the outskirts of Ashland; they live well within the city, three blocks from the

elementary school and a block from Southern Oregon University. The proximity of this cougar to children and such a density of people makes many Ashland residents nervous, among them Ron Tracy, who lives just outside of town. “I don't think all of our mountain lions are worth a child,” he declares, “it's just a matter of time before I pick up a newspaper and a cat will have killed a kid. It's just a matter of time.”

Tracy lives with his two children and two dogs south of town. He regularly comes across cougar kills on his property and won't let his children roam the woods without a dog. Dogs terrify cougars, probably a vestige of living with large canids like the dire wolf during their evolutionary history in the Americas. Cougars drop their noble mien and scamper up trees like scared kittens to the barking of dogs.

“Cats are reproducing and the environment can't handle it.” Ron Tracy cites the “idiot law” Oregon voters passed in 1994 as the cause of what he calls the “mountain lion problem.” Measure 18 banned the use of hounds for “harvesting” cougars and bears in Oregon. Hunting cougars is still allowed with a license, but only human against cat; dogs may not assist. Hounds may be used, however, on a landowner's own property if a cougar has caused damage, like killing livestock or a pet. After his experience with the cougar in the orchard, Sergeant Michael Bianca learned from the Department of Fish and Wildlife that, in his words, “if it's chewin' on a dog, you can shoot it; but, if it stops chewin' on the dog, you can't.”

Ron Tracy argues that the introduction of Measure 18 has allowed the cougar population to expand beyond what he considers to be safe. Now, he says, “it is the obligation of *Homo sapiens* on this planet to manage wildlife.” He admits that our development into rural and wooded areas has upset a balance, and now we need to control the growth of the cougar population. Cougar population numbers, though, are intangible and unclear. Based on a formula of potential suitable cougar habitat and estimated cougar densities, cougar population numbers are barely more than guesses; and the cougars' elusiveness makes counting them impossible. But everyone agrees that cougar populations have grown throughout the West since bounty hunting ceased in the 60s; the Department of Fish and Wildlife estimates that, in Oregon, their

numbers have risen from 200 to about 4200 since 1960. Before Measure 18 was introduced, Tracy alleges that 75 cougars were harvested each year in Oregon, and that was enough to maintain a balance between humans and the cats. Now, he declares, the kill number is closer to two or three per year – cats that have either damaged livestock or just happened to be spotted by hunters with licenses. The Oregon Department of Fish and Wildlife's data, however, does not confirm Ron Tracy's assertions. Before the hound hunting ban, Oregon's total cougar harvest rose steadily from 1970, when ten cats were taken, to 1992, when the harvest peaked at 187. The year the ban was put into practice, 1995, hunters killed 31 cougars in Oregon. Within four hunting seasons, though, that number had risen to 153, almost equaling pre-ban numbers.

At first glance, it seems that hunters must be figuring out effective methods of hunting cougars without dogs, or there must be a glut of cougars roaming the woods. But all things are not equal: The Oregon Department of Fish and Wildlife lowered the price of cougar hunting licenses from \$50 to \$10 in 1998, increasing the number of licensed cougar hunters from 935 to 9930 in just one year. The sheer number of hunters walking around with cougar licenses quickly increased the cougar harvest. Contrary to Ron Tracy's claim that only a few cougars have been killed in recent years, hunters took 153 cougars in 1998; that number does not include animals destroyed for damaging private property.

Tracy maintains that the only sensible way to control the flourishing cougar population is to hunt the cats with hounds. But Ken Logan, cougar researcher in Wyoming and New Mexico for fifteen years, explains that we just can't be sure of the effects of hunting on cougar populations. Few long-term studies of cougar population dynamics have been conducted, and none have followed the cougars' prey for a complete cycle – matching cougar populations to peaks and troughs in deer populations, for instance. Hunted cougar populations do not seem to simply decline with more hunting, either. Cougar population dynamics are complex; killing more cougars may not mean fewer cougars in the long run or even fewer encounters with humans.

According to Ron Tracy, one indicator of cougar

overpopulation in Oregon is that when one cougar dies, another will take its place immediately. Researcher Ken Logan argues against this simplistic declaration. Adult cougars inhabit home ranges, which male cougars may defend to the death. Young adults claim ranges either opportunistically when an adult cat dies or combatively to retire a resident cat, fatally. The survival of these young adults depends on establishing home ranges. Without a range, a young cougar will starve. Cougars cannot survive without food, so they cannot "overpopulate," if that means outnumbering their prey. If hunters kill older, established cats, young upstarts who may be unfamiliar with the range will take up residence. Nearly all cougars killed for attacking people, livestock, or domestic animals are under three years old. This suggests that young cats, still unsure of their ranges and food choices, are more likely to take unusual prey than are older cats. Females in decimated cougar populations may produce more offspring than usual, too, effectively increasing the overall population. Hunting could actually intensify cougar encounters if it encourages the production of more young cougars, those more likely to have difficulties with people.

Sergeant Michael Bianca's wife, Jeannie, plants tulips in their backyard, outside the city limits. "Deer dessert," she says, so she fences them off, inaccessible to the deer. Her neighbor counts 18 deer in her yard every night, and she's sure there would be 35 without the cougars. This neighbor has heard a cougar scream at night, but she thinks her horses could outrun or outkick anything that tried to attack. Their neighbor, Ron Tracy, leaves apples on his back porch for the deer, the cougar's favorite prey. He uses a predator call ("the squeal of a dying rabbit: cougars can't resist it") to see how close he can lure the cougars to his house.

More and more cities and towns, with their luscious lawns and yummy flowers, support herds of backyard deer, deer that are tame and unafraid, and, by some accounts, stupid. Stupid deer are easy prey. Cougars know this. Cougars, especially those who are young and inexperienced, and who might be starving for lack of a home range, follow deer into the hearts of cities. They even find hedges they can use as cover for stalking their prey. Deer in the backyard are charming. They might be a bit bothersome if they munch the marigolds, but still charming. Cougars in the backyard, though, might eye a toddler as easy prey.

Yet, Sergeant Bianca points out that, in the past one hundred years, only one cougar has attacked a human in Oregon. This fact alleviates few fears, however, when cougars are in the backyard. Bianca admits that big cats bring out people's "primal instincts," their instinctual fear responses. And the fact remains: while cougar encounters are rare, and attacks even rarer, they *are* on the rise throughout the West. More people are seeing the cats and more of those cats are exhibiting aggressive behavior, following people and crouching as if to pounce.

Jeannie Bianca shrugs, "You take precautions if you live in cougar territory, like looking both ways before you cross the street." Her boys don't walk home from their friends' houses at dusk, the dogs and cats come in at night, and they have chosen not to keep livestock, because they don't want to battle the cougars. "I consider myself to be invading *their* space," she says. And she's not blasé because she believes she is not at risk. Jeannie Bianca has had her own encounter with a cat.

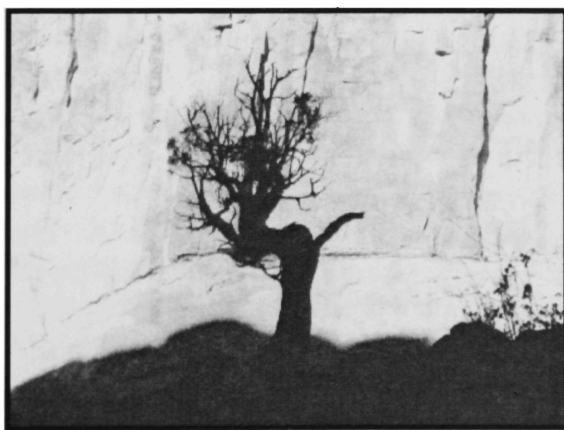
Before Jeannie and Michael built their house, she and her two little boys, ages three and five, camped on the new property. They were jolted from their nylon-covered sleep when a cougar scream sliced through their slumber and echoed off the canyon walls. In her terror, she stumbled outside and found a hammer. Now, she says, laughing, "Sure, I'll save my kids with a hammer."

Many people in Ashland do feel that they need to defend themselves and their children, though. Annie Hoy says, "It's near hysteria now; many people want to shoot the cougar." She continues, "We should be happy that we can co-exist."

But the question, of course, is whether we can, indeed, co-exist. Throughout the West, humans and cougars struggle to occupy the same spaces, sometimes with tragic results. In Ashland, Oregon and other western cities, cougar encroachment may reflect human encroachment into the hills and forests. As both cougar and human populations increase, the stakes spiral upwards.

We can co-exist, cougars and humans, since, in a contorted, confused way, filled with fear, we already do. Ron Tracy contends that it is our responsibility as human beings to manage other species' growth. The truth is, though, that we need to manage our own growth. By building mansions in the hills, replete with grass and deer, we invite the cougars to feast at our tables. If we expect cougars to remain in the forests, we must respect the places that they consider home. We shouldn't expect any less from ourselves.

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LOREN McCLENACHAN

FLORIDA BEGINNING TO SEE IN COLOR

ENVIRONMENTAL OUTREACH INCORPORATES CULTURAL DIVERSITY

By ALISHA DEEN

In South Florida, cultural norms such as materialism and glamour make environmentalists a rare and endangered species. Shade-providing native oak trees are removed and replaced with exotic tropical palms simply because they look better. Many South Floridians would rather spend money leasing a sports utility vehicle than pay a fraction of the cost to ride public transportation, or be inconvenienced with carpooling. It is a place where strip-malls and affordable housing developments persistently creep toward the buffer zones surrounding Everglades National Park.

In the past, environmental non-profit organizations and governmental agencies have unsuccessfully tried to engage the public, using outreach methods meant for a homogenous, white, middle-class audience. However, an increasing percentage of residents living in South Florida are non-white, culturally diverse, and foreign-born. National Audubon's Florida chapter, Audubon of Florida, is one of the first environmental non-profit organizations to begin to address the social and cultural sources of environmental *unconsciousness* plaguing South Florida, by looking at specific minority communities in their public outreach approach.

Audubon of Florida has recently hired Alison Austin as the new community outreach coordinator. Using her identity as an African-Caribbean-American, Austin has been able to pay special attention to minority communities who have historically been overlooked. Austin is devoted to "those communities that are least served," like the Haitian-American community in North Miami. Austin explains that many minority communities do not feel any sense of ownership or connection to environmental organizations like Audubon of Florida because "Audubon has been historically perceived as a high-end, white-folks organization." When Austin introduces herself as a representative of Audubon at community meetings like the African American Leadership Council, she is told point-blank, "You don't look like what I expect from Audubon."

She began her appointment with a bang this summer carrying out a grant project for low-income African-American youth, 90% of whom were Haitian-Ameri-

can. In the course of a few weeks, 14 to 21 year-olds who swore they would never plant a tree were transformed into Urban Everglades Outreach Specialists who, according to Austin, understood the issues and sincerely wanted to make a difference. In addition to learning about various local environmental issues, the students spent several hours a week in computer labs learning how to design their own presentations using computer projection technology and taking workshops on public speaking, two valuable skills they had not been exposed to in their public schools. After giving individualized presentations on specific environmental problems, they emerged from the program with previously unimagined career possibilities and a newfound passion for educating others. These young Haitian-American graduates of the program have an amazing capacity to influence others in their community - more power, in fact, than a non-Haitian environmentalist from outside the community could dream of having.

Austin has spent years wondering, "If I'm [a person] in the lower poverty level, why do I care less about the environment than a middle-class, educated person?" After her experience this summer she has finally found the answer. "I don't care less, I know less. The more I am educated, the more I understand, and the more concerned I am."

Alison Austin and Audubon of Florida are a great match for one another because of their individualized outreach approach to culturally diverse communities. In the seemingly inhospitable habitat of South Florida, environmentalists like Austin have found a way to survive. In fact, Austin thrives specifically because her philosophy addresses the deep-rooted and cultural sources of South Florida's environmental *unconsciousness*. Both Audubon of Florida and Alison Austin know that to put a dent in South Florida's environmental problems, they must first understand who the residents are, where they are coming from, and how their culture connects them to the environment.

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**LESSONS FROM THE DESCHUTES BASIN:
INSIGHTS INTO COMMUNITY, COLLABORATION, AND THE FUTURE OF WESTERN WATER USE
BY STEPHANIE TUXILL**

In the early 1990s, communities along Central Oregon's Deschutes River reached a critical juncture related to water rights, water uses, and watershed health. They faced an increasingly contentious situation common to many regions of the western United States—longstanding water rights for irrigation, booming development, a shift from a land-based to a service economy, negotiation of tribal water rights, and a growing concern for ecological and environmental health. In the Deschutes Basin, however, these trends and conflicts played out in a unique way, giving rise in 1996 to an innovative public-private partnership: the nonprofit Deschutes Resources Conservancy (DRC). While the DRC is still evolving as an institution, its accomplishments over the past five years demonstrate its success. Both internal and external factors have contributed to this success, and an examination of these in more detail provides insights that may prove useful to other communities across the West.

A community-based organization cannot be considered outside of its local geographic context. The Deschutes River and its tributaries drain the eastern side of the Cascade mountains and the high plateaus of Central Oregon, flowing north to meet the Columbia River. Most of the land in the basin was historically used by the tribes that are now known collectively as the Confederated Tribes of the Warm Springs Reservation. An 1855 treaty established the Warm Springs Reservation in the lower Deschutes Basin and allowed the Warm Springs Tribes to retain traditional rights for fishing, hunting, and gathering throughout the basin. Today, half of the land is federally owned as National Forest and Bureau of Land Management lands, forty-two percent is private, seven percent is tribal, and the remaining one percent belongs to the state of Oregon. The Pelton-Round Butte dam complex separates the lower basin from the middle and upper basins and is a barrier to fish migration. The middle basin is dominated by irrigated agriculture, and numerous canals managed by irrigation districts divert water out of the Deschutes River and its main tributary, the Crooked River. Bend, the basin's largest city, roughly separates the middle and upper basins. Bend is a fast growing city dominated by recreation and tourism, and the Deschutes River flows through the middle of town.

In its institutional structure, the DRC has much in common with other collaborative organizations. What is most unique about the DRC is its mission to improve both water quantity and water quality in the Deschutes Basin through the use of voluntary, economic-based incentives. Douglas Kenney, one of the primary researchers of western watershed-based collaborative groups, has stated that there is a "dearth of groups actively dealing with issues such as water supply." In part this is because water is a public resource with private rights, and the "prior appropriation" doctrine that governs western water rights established permanent water rights for consumptive uses on a first come, first served basis beginning about a hundred years ago. Priority is based on the date a water right was issued, and in many areas water rights have been overallocated—this means that extra water in the stream simply goes to the next user instead of staying instream. The situation in the Deschutes Basin was that legally, in dry summers, the entire flow of the Deschutes River could be diverted for irrigation below the city of Bend. These laws were enacted in a time when instream values of water were unrecognized or ignored.

The ability to improve minimum streamflows depends largely on the degree to which states have reformed their water laws. The growing recognition of the instream values of water for fish and wildlife, recreation, and scenic views has led to modifications across many western states. Oregon's 1987 Instream Water Rights Act was one of the first state laws to give instream water rights the same legal standing as consumptive rights. More significantly, the act allowed the voluntary transfer from one use to another through purchase, leasing, or donation. Transferring senior water rights to instream rights is the easiest means to establish permanent improvements in streamflows, yet not all states allow this.

While Oregon's progressive legislation opened the door for improvements in water quantity within the state, transfers of water rights were voluntary, not mandated. It took several years and a lot of hard work to develop strategies and facilitate the first transfer. The biggest obstacle has been the fear of water users that their private rights to water will be taken away, or

that water rights will be severed from the land, affecting future uses and the value of the land. This was heightened in general by the threat of takings under the Endangered Species Act. In the beginning, there was a great deal of mistrust between agricultural and environmental interests, and in some parts of Oregon these sentiments are still quite strong.

In the Deschutes Basin, an additional player in the water rights game was the Warm Springs Tribes. Since the 1970s, the Tribes had been in negotiations with the federal government regarding settlement of their reserved water rights. Supreme Court decisions in 1908 and 1963 ruled that Indian reservations had been established with an unstated but “reserved” water right associated with that land, a right that in most cases would be senior to all existing water uses. Establishing these water rights across the west has not been an easy task—some have been adjudicated by the courts and some have yet to be settled. In the Deschutes Basin, the Tribes were in a position of considerable power, for the reservation is located downstream of the major agricultural withdrawals of the Deschutes and Crooked Rivers. If the Tribes demanded a specific amount of water be available to them, this could negatively affect major upstream water users.

This was the situation in the early 1990s. What actually evolved is that the Tribes first initiated an alliance with a national environmental organization, the Environmental Defense Fund (now Environmental Defense), to explore connections between watershed health and economic activities on the reservation and subsequently within the entire Deschutes basin. Second, the Tribes hosted several open meetings and invited other stakeholders within the basin to come together and discuss concerns about present and future conditions related to water use, the economy, and the environment. In short, the Tribes made an effort to diffuse the traditional lines of conflict and identify common concerns of community sustainability. This outreach was motivated by their traditional beliefs—the spiritual connections between humans and the land, water, and animals as well as the importance of being good neighbors.

An ad-hoc working group comprised of stakeholders emerged from this community dialogue, and following further research and discussion the collaboration was formalized in 1996 as the Deschutes Resources Conser-

vancy. Under the 1996 Oregon Natural Resources Act Congress authorized the DRC as a public-private partnership with budget appropriations of up to \$1 million per year. In the past five years, the primary accomplishments of the DRC include measurable improvements in streamflows in the middle basin, a four-to-one leverage of the federal funds from state and private sources, and reauthorization from Congress through 2007 at \$2 million per year.

While numerous other factors played a role in the DRC’s evolution (including access to political and financial resources and interaction with local interest groups and resource managers), the key ingredient to its success has been the trust built among the basin’s stakeholders. Participants in the early dialogues established a sense of community, identified common goals and solutions, and allowed local initiative to drive the process. Unlike some collaborations where the organizational structure precedes the trust-building, by the time the DRC was established the participants knew what they wanted to accomplish and were able to get down to business without getting bogged down in the consensus-based decision-making process.

Can the work of the Deschutes Resources Conservancy be duplicated in other river basins? Maybe not directly, as the DRC itself has evolved out of a complex set of social, political, and ecological circumstances, and other basins have their own unique variables. The overall goals of improving water quantity and quality might be similar, but the means by which these are accomplished will vary according to local circumstances. Nevertheless, important insights can be gleaned from the experience of the DRC. The innovative, economic-based incentives that the DRC has developed as solutions can serve as models for programs and projects in other river basins. More broadly, the DRC’s example offers everyone an understanding of the importance of trust-building and local initiative in developing successful community-based collaborations.

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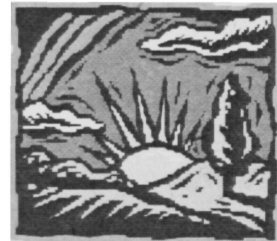
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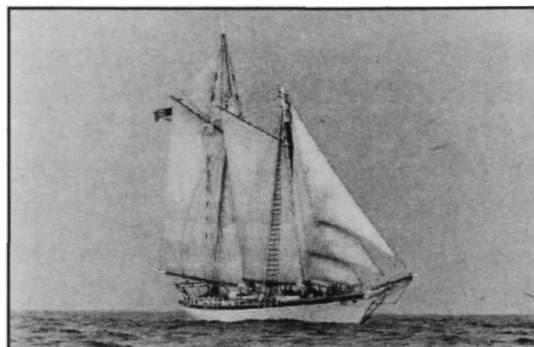
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THE BIRTH OF THE PACIFIC MARINE EDUCATION ASSOCIATION

By KAREN BARROWS

The Pacific Marine Education Association is a non-profit organization whose mission is to provide a floating community and classroom dedicated to studying the complex ecology of the near-coastal and ocean waters of the Pacific Northwest. The inter-disciplinary curriculum focuses on oceanography, sea education, local ecology, and sail training. The primary intent underlying the learning process is to foster the development of mutually enhancing relationships between and among humans and more-than-human species. Such a commitment will help to develop the leadership skills, ethic of care, and understanding essential to long-term stewardship of marine ecosystems.

My work at the University of Oregon as a Graduate Teaching Fellow in the Environmental Studies Department has led to my conviction that excellent environmental education will lead ultimately to the most practical steps taken to reverse and re-vision the overwhelming tide of planetary environmental losses,



degradation, and destruction. As a teacher or discussion leader I attempt first to imbue in my students an awareness of the larger context in which life exists, using principles of modern cosmology to illustrate the meticulous care and brilliance with which our universe came into being and is sustained. In my classes we reflect on the possible purpose(s) of the human species: what kind of "phase transition" might humans represent on a cosmic scale? We then analyze from an interdisciplinary perspective the nature and extent of environmental problems created and/or exacerbated by humans. Finally, we explore ways in which a greater human potential might be realized, and envision ways in which such realization might occur in synchrony with the restoration and renewal of Earth's life systems.

I find that most classrooms, housed in conventional buildings, inevitably limit and restrict students' abilities to connect with the natural world, and that such restriction necessarily impedes the learning process. Indeed, consistent relationship with the more-than-human world is for the most part missing from the modern Western human experience. For that reason my energies are directed toward the development of a new kind of school: a floating community and classroom aboard a traditionally-rigged, two-masted schooner, to

sail in the waterways of the Puget Sound, Washington area.

I remember a day aboard a "schoolship" in Michigan that graphically illustrates the changes, at once both subtle and profound, that I think this program can engender. We were on Lake Michigan on a brisk, clear, late-spring

day, and our class for the afternoon sail was from a Detroit inner-city boy's middle school. The children came aboard very boisterous and talkative, and we immediately had to tell them to stop wrestling and running to protect them from possibly falling over the side of the vessel. I was surprised to see that, when a flock of swans flew over (always a dramatic sight at close range), the children pretended to be holding machine guns and shooting the birds.

It occurred to me then and in the moments that followed that these children seemed rather blind, unable to perceive their surroundings. It dawned on me that they may never have seen blue, clear water in their lives, nor a flock of wild swans. During the trip the scientific collection and examination of specimens proceeded. The children helped to drop and drag the nets, to raise and lower the sails, to observe other birds such as cormorants and sea gulls. They gradually got quieter and quieter, and by the end of the trip, they looked around at the surroundings in near silence, with wide eyes and a gentleness we never would have imagined only a couple of hours before. By the time they disembarked, they were a completely different group of children than the "gang" that had boarded: they were attentive to each other and the teachers, and

were obviously engaged completely with the water, the wind, the shore, and the ship. Experiences such as this convinced me that this approach to learning works precisely because it is not the teachers who do the *real* work: it is direct exposure to the environment itself that changes us.

My brother and business partner is a schooner captain who shares my vision. We are in the process of registering our embryonic organization as a non-profit called the Pacific Marine Education Association (PMEA), and the schooner we want to build will be named the *John Griffith Ames*, after our maternal great-grandfather. Our initial clientele will be junior high and high school students from the Seattle area; studies aboard ship will be tailored to complement and reinforce ongoing biology and marine science studies at their schools. Eventually we hope the program can be expanded to include undergraduate and graduate students, as well as professional marine biologists, conducting formal research. We are interested specifically in researching the decline of the resident Orca population in Puget Sound, and more generally in assessing the ecological impacts of changing ocean conditions over a wider swath of the Pacific.

The program has been much easier to envision than to launch. The major obstacle, as in any non-profit venture, is the cost of implementation, especially for the start-up phase. Estimates of initial costs range up to a quarter of a million dollars; the yearly operating budget may well amount to a half-million dollars. Obtaining that kind of funding from grants and loans will be no easy proposition, and it is quite difficult to determine with any degree of certainty how much funding can reasonably be expected to come from tuition and fees in the future.

Hope is nevertheless indicated through the success of other similar operations of which we are aware, both in Puget Sound and in freshwater seas such as the Great Lakes; however, those established operations have already received considerable funding, and thus have better access to more. It may be difficult to convince grant-makers that our fledgling organization is also deserving of funds. We are therefore approaching "competitors" with the idea that each operation should clearly define its niche in ecosystem education, and thus develop complementary rather than competi-

tive business relationships. In any case, the "catch-22" inherent in our situation at this point is that we do not have the experience and track record to warrant funding organizations' trust in our operation; and yet we cannot gain that experience and track record without start-up funding.

My purpose in designing this program is to bring to life in young people's science education and adult's scientific research the overarching concept of developing mutually enhancing relationships between humans and more-than-human species. This philosophy will guide all learning, experimentation, and research aboard the *John Griffith Ames*. In spite of the obstacles besetting the start-up of this organization, I have hope and confidence that answers and sources of help will emerge as needed. This is because of my passionate conviction that within the educational approach I have outlined lies the answer to the vast majority of environmental dilemmas facing humans in this momentous era.

KAREN BARROWS IS A MASTERS STUDENT IN ENVIRONMENTAL STUDIES AT THE UNIVERSITY OF OREGON.

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