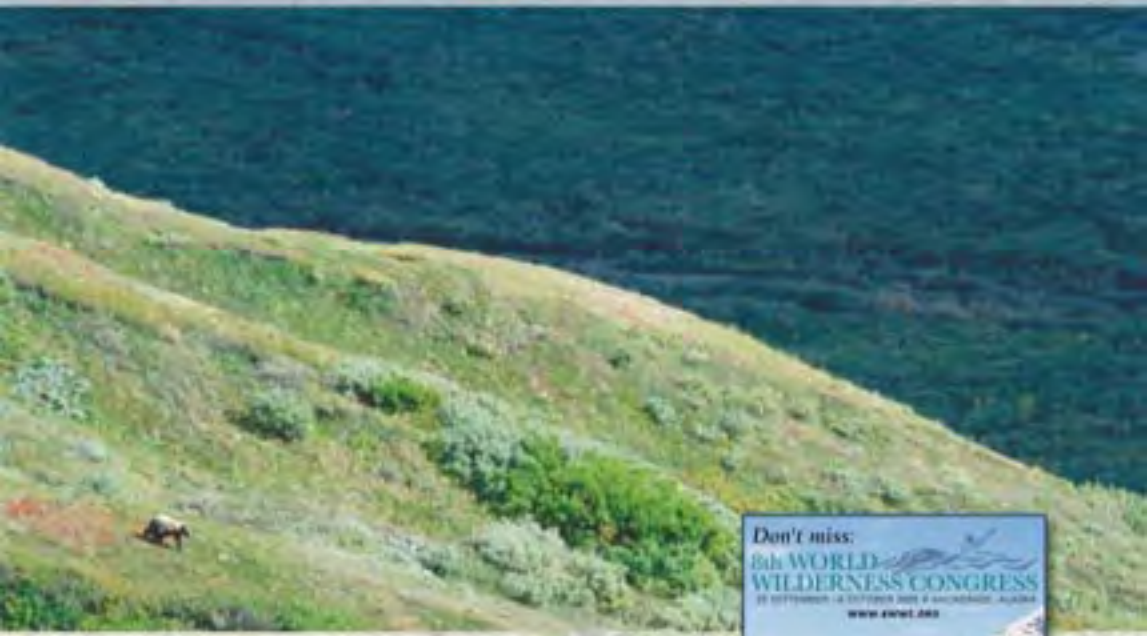
INTERNATIONAL

Journal of Wilderness



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INTERNATIONAL

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FEATURES

STEWARDSHIP

FRONT COVER At home in the wilderness, Alaskan Brown Bear, or grizzly *(Ursus arctos)*. Photo by Cathy Hart.

INSET Glacier viewing in Alaska, up-close. Photo by Cathy Hart.

SCIENCE AND RESEARCH

EDUCATION AND COMMUNICATION

INTERNATIONAL PERSPECTIVES

WILDERNESS DIGEST

International Journal of Wilderness

The *International Journal of Wilderness* links wilderness professionals, scientists, educators, environmentalists, and interested citizens worldwide with a forum for reporting and discussing wilderness ideas and events; inspirational ideas; planning, management, and allocation strategies; education; and research and policy aspects of wilderness stewardship.

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EDITORIAL PERSPECTIVES

The Wilderness and People of Alaska Welcome 8th World Wilderness Congress Delegates in 2005

ALAN E. WATSON

Ten years of dreams, proposals, negotiation, and debate culminated in 1980 with passage of the Alaska National Interest Lands Conservation Act (ANILCA). With over 56 million acres (22.7 million ha) newly designated as wilderness, entire ecosystems were assured protection, a world standard for remote and wild opportunities for recreation visitors was created, and the sustainability of traditional relationships between rural and Native Alaskans and vast wilderness landscapes became more likely. Now, nearly 25 years after this designation, with spectacular wilderness resources legally protected, many issues that block full realization of the lofty intent of ANILCA remain unresolved. This special issue of the *IJW* is intended to provide a snapshot of some of those issues to help delegates to the 8th World Wilderness Congress (WWC), to be held in Anchorage, Alaska, from September 30 through October 6, 2005, understand the setting for this world event.

In this issue, we hear many voices beckoning from the Alaska wilderness. We hear the story of the Qikiktagrugmiut of Kotzebue about the Western Arctic Park lands and the meanings these Inupiaq people attach to places in some of the wildest Alaska landscapes. They also tell us about some of the things that threaten this relationship. We learn about the relationships that students of the Wrangell Mountain Center develop with our nation's largest national park and wilderness and how those relationships affect these students. The Wilderness Society expresses concern over lands and waters not protected as wilderness but that demonstrate outstanding wilderness character. Wilderness Watch, however, demonstrates more focus on the complexities of applying ANILCA to current Wilderness stewardship issues. The landscapes and the cultures of Alaska are constantly evolving. In this issue we also find a proposal for principles to guide us in stewardship of these constantly changing places, people, and relationships between the two.

Article author Alan Watson.

People from many countries and cultures will come together in Anchorage, Alaska, in 2005 to discuss the array of human and wilderness connections. It is appropriate that we begin our analysis at home, with this special issue on Alaska, The Great Land. The wilderness and the people of Alaska have great things to offer. I only hope that WWC delegates find opportunities to come to know both.

ALAN E. WATSON is a Research Social Scientist at the Aldo Leopold Wilderness Research Institute and an *IJW* Editor.

A Taste of the North

Voices from the Wilderness about the Wilderness Character of Alaska

COMPILED BY
ALAN E. WATSON, KATIE KNEESHAW, and BRIAN GLASPELL

These voices from the wilderness were compiled to illustrate some of the values of wilderness in Alaska. Wilderness visitors, non-native Alaska residents, and rural, native people can all have different perceptions of wilderness character, define wilderness differently, go to wilderness for different reasons, see different things when they are there, perceive wildness differently, and attach different importance to feelings of fear while in the wilderness, but they all find challenge in getting there, value wildlife as part of the wilderness, identify strongly with wilderness places, and find wilderness in Alaska to be unique (see Figure 1).

Figure 1—"In the Lower 48, if you can drive there it isn't wilderness. You have to walk. In Alaska, if you can walk there, it isn't wilderness. You have to fly" (student at the University of Alaska, Anchorage). Photo courtesy of U.S. Fish & Wildlife Service.

Unique Alaskan Wilderness

> The Brooks Range is a towering rampart against the north, the Aleutian and Alaskan Ranges a matching bulwark to the south, between them a complex of many other ranges, peaks, and valleys that are still relatively unknown and unnamed. Along its rugged, beetling coasts are fiords, living glaciers, and ice fields which remind one of an age that is past. (Sigurd Olsen, in Hedin and Holthaus 1989, p. 2)

> This is a glacial mountain wilderness, for the most part it's not very hospitable … and there just haven't been people living up here. I don't know the indigenous history, but I can't even imagine there were many indigenous people way up the passes because the glaciers are there and that's not an environment that anybody can live on permanently. (A wilderness visitor's voice)

> Our wilderness here in Alaska is very different from the wilderness elsewhere, because of the use of aircraft, because of the history. An active area of mining in 1980 all of a sudden has been declared a national park. … All of a sudden it becomes wilderness, when in fact it always was wilderness. So the fact that there's other people in there, or there's activities that are historical, fits with the situation. (An Alaska resident's voice)

What Is Wilderness in Alaska?

> We climbed on top of the glacier and stopped for an hour at the center while a pile of rock had fallen from the mountain above. It seemed to be the end of the earth or the heart of another earth as we perched on top of this remnant of a long-vanished age. Everything we looked upon was unknown to human gaze. The nearest humans were a hundred and twenty-five miles away, and the civilization of which they constituted the very fringe … seemed unreal, unbelievable. Our present situation seemed also unreal. … It was the unreality of a remoteness

which made it seem as if we had landed miraculously on another planet which throughout all passage of time had been without life. (Bob Marshall, in Hedin and Holthaus 1989, p. 158)

Very rough terrain, wild. … at first you need to fight against something, but after that you need to, to be humble, and just go with nature, and this was easier. We had the opportunity to see every kind of terrain. We had bad weather, a few sunny days … it was really wild. I mean, for me … it was something that, I won't say that I survived, but it was amazing … pushing yourself every day further and further. (A wilderness visitor's voice)

For me it was an adventure because you never knew what was gonna be around the next corner, or if we'd be able to make it over the next pass, or what it would be like, or … our whole goal initially was to get to the Regal Glacier, in 7 days, and it took us 12 days to get there and we turned the corner and it was totally impassible. (A wilderness visitor's voice)

I can't explain what I've seen or felt over the last six days. It makes you question yourself and learn about yourself, how far can I go, how hard can I push myself, and when I get to that end, what does it take to go on, because nobody can get you out except you. I learned a lot about myself this time. (A wilderness visitor's voice)

Freedom and the ability to get out there as an Alaskan Native … instead of being restricted when I go out. Clean water—unpolluted—so we can get clean water and ice, that is pretty important. (A Native voice from the village of Kotzebue)

Why They Go to Wilderness

A lot of predictions were made that Alaska would go to hell if this much precious land was taken away from the developers and the oil companies. Yet, Alaska's population has grown by fifty per cent and tourism has more than tripled. … Tourists don't come to look at the back of the necks of others pouring off the tour ships into small villages along the coast, nor to see oil wells, nor to hear the constant noise of helicopters and snowmobiles. They come to find a different form of human pleasure and enjoyment, solitude, beauty, and sights that are not available to a Georgian or to a person from New Mexico or Maine or Texas. (Jimmy Carter, in Smith, Anderson, Kendall-Miller, and Van Tuyn 2000, p. 7)

Glaciers, volcanoes, spectacular gorges, big wide rivers, real wildlife, inaccessibility, vast territory. It gives me a greater respect for the wilderness. You come to ... wilderness like this because you realize how feeble and insignificant you are. Four-thousand-foot cliffs, mile-wide glacial valleys, you know? (A wilderness visitor's voice)

I just love being out in the country. I also use it in a reciprocal way—like use the money I get from furs I sell to afford to go out in the country again and again—I enjoy it. (A Native voice from the village of Kotzebue)

It was pleasant to feel so removed from everything. Especially coming from New York. Just two different worlds. (A wilderness visitor's voice)

What They See in Alaska Wilderness

My analytically inclined left brain grappled with the spectacle before me. … At around one thousand kilometers up, the blazing began. The solar wind slammed into atmospheric gases, exciting them, energizing them, igniting them into an auroral display of ionospheric neon. Hydrogen, nitrogen and oxygen glowed red, violet and green. Or they might as easily have glowed green, blue and yellow-green respectively, depending on the collision altitude, the atmospheric temperature, the amount of energy released, and so on and so on. … I blinked hard. … My aesthetically inclined right brain sat up and took notice … the lights danced. Cosmic choreography. (Jamie Bastedo 1998, p. 19)

The highlight for me, being in this mountain range, was being so far removed from any sign of civilization at all. We had incredible views for miles and miles, and after 30 days this is the first time I've seen … a shed, or anything like that. Coming from the Lower 48 and particularly New Jersey, which is a much more populated area, there hasn't been a night in my life where I could look out into the night sky and not see the lights of a distant city, even if I were in a park, somewhere in upstate New York. Last night seeing the northern lights was an incredible experience. You really have to be out there away from civilization it seems in order to experience something like that. (A wilderness visitor's voice)

We have the best country around here, even compared to the rest of Alaska because of the great diversity of animals and landscapes—mountains, rivers, tundra, trees. (A Native voice from the village of Kotzebue)

I mean it was beautiful, just everything was huge, it's typical Alaskan scale, it's, you know, 10 times bigger than even like Montana and Yellowstone, where it's big country for the Lower 48. (A wilderness visitor's voice)

Will You Find Wildness?

The West of which I speak is but another name for the Wild; and … in Wildness is the preservation of the World. Every tree sends its fibres forth in search of the Wild. The cities import it at any price. Men plough and sail for it. From the forest and wilderness come the tonics and barks which brace mankind. (Henry David Thoreau 1950, p. 613)

You know, it's really feeling like you're the only one there. … You may be the first one that's been there; you might not have been, but it feels like it. You can't tell you're not. That's kind of what wild is. (A wilderness visitor's voice)

Everything that happens out here is at a balance and it's doing it on its own, like the glacier functions on its own, the animals function on their own, the landscape functions on its own, and that's what makes this place special is we have no part in what it does. It just does it. (A wilderness visitor's voice)

It's like here you're subject to the wildness. You're subject to natural events, like if the river's too high because it's been a hot day and the meltwater is really swift like okay, so you don't get across the river that day, or if the trail, well the lack of trails, the brush is too thick, you gotta go another way, we're not in control here. (A wilderness visitor's voice)

Wilderness Is Our Identity

But our fight is not just for the caribou. It's for the whole ecosystem of Gwich'in country, which covers northeast Alaska, the northern part of the Yukon Territory, and the McKenzie Delta. And our fight is a human rights struggle—a struggle for our rights to be Gwich'in, to be who we are, a part of this land. (Sarah James, in Lentfer and Servid 2001, p. 5)

It rejuvenates my Inupiaq spirit. Keeps my spirit alive like a vitamin for my inner strength and spirit. Reminds me of how weak and small we are compared to the powers of the land and ocean. (A Native voice from the village of Kotzebue)

My whole life revolves around it. (A Native voice from the village of Kotzebue)

I just really hope that the Park Service really tries to take the local views, the visitors' views also, but especially the local views, because I think it is unique, almost more so than the actual national park, and just remember that there are people living out here that live here for a certain reason and that the Park Service should really try to take those reasons into account and to really remember that it is a special place and that we should try to keep it, have it so it has the same feel that it did for a long time in the past, you know change isn't necessarily bad, but I hope the Park Service doesn't change it so much that I have to change my whole lifestyle and that I have to look at the whole place in a different way than I did in the past. (An Alaska resident's voice)

It sustains all the life that is out there—from the smallest fauna to the whole chain of life that goes up from there. It's beautiful to be a part of that chain. (A Native voice from the village of Kotzebue)

Wildlife Is an Important Aspect of Wilderness in Alaska

The herd occupied the whole length of the big muskeg flat clear to the river, which stretched for at least a mile. Now some were feeding, some even lying down, and the background chorus continued. Calves ran here and there, and we were glad to see them. Small groups split off and came back toward our camp. There were many bulls in dark summer coat, with great antlers looking black against the sunlit green muskeg. Some had black patches of new hair on their backs like saddles, light underneath; some were still in faded winter coats. Every kind and variety was here; something, in some valley west of here, had brought them together into this sixteen-hundred-strong herd of talking, grunting pilgrims—they traveled as though they had a goal and knew the way and were not stopping. (Margaret E. Murie 1997, p. 314)

I mean, on all of my backpacks, I've never seen this much wildlife. I mean, big wildlife, you know. … Grizzly bears were the first time. The wolverine was a first time. The caribou. So, yeah, the wildlife was amazing. (A wilderness visitor's voice)

Seventy-five percent of my life depends on going out and getting caribou, rabbits, ptarmigans and hunting and trapping. It really does mean a lot to me. (A Native voice from the village of Kotzebue)

We saw bears, which of course everybody who goes back there wants to see bears, including me. And it was a mother with two yearlings and they took turns standing up on their rear paws and looking at us and then they'd pop down and one of the others would pop up. We just watched them for hours. (A wilderness visitor's voice)

The Challenge of Getting There

People from outside write and say to friends in Alaska that they want to come stay with them and fish. "Fine," says the return letter, "but you'll have to charter. Air charter." "No," says the next letter. "We just want to

stay at your place and fish from there." Urban Alaskans shake their heads at such foolishness and say, typically, "These people in the Lower Forty-eight, they don't understand. (John McPhee 1979, p. 11)

But getting there is a bit more difficult, you know kind of finding the way, and then you'd run into a river or something, you'd have to backtrack and go a little bit further down and find another river that you couldn't cross and go a little bit further down. Eventually I made it. Went down and then tried to climb Donoho, and then I had some bushwhacking problems, not a whole lot of fun, but you know, like they say, it's part of the experience, makes you appreciate some of the alpine trips or glacier type stuff that you can do, when you have to deal with the alders and the bugs and stuff like that. Builds character. (A wilderness visitor's voice)

I mean when you wander off through the woods and it finally gets so overgrown that you think that 25 feet a minute is the best you can do, and you just keep going, keep going. You finally get out and you sit down on the sandbar and you wait for the airplane and you go, "Ah, I did it." Something right there [pointing to his heart], it clicks, and it makes you feel good about yourself. (A wilderness visitor's voice)

It was a rough trip. We probably hiked 10 to 12 hours a day, a lot of it through brush, bushwhacking, no trail. I guess we probably hiked through 12 miles of brush … but I mean brush where you're just tearing away at it, and it's over your head, that was the worst, but pretty country, high country. No trees, just brush and mountain and rock, a lot of rock, a lot of moraine. (A wilderness visitor's voice)

The Value of Fear

The experience of fear in a wild landscape, even of short duration, leads to a reorientation of mind. It can clear out the clutter of the modern scene and allow one to see life and land in a new context. … My time in Alaska … and on the Mogollon Rim with my father, was a coming of age. (Luna Leopold 2000, p. 6)

It's a very beautiful place. People that don't believe [he pauses as he tears up], people that don't have any fear of life or have experience with making it on their own or being independent, or doing things and making for themselves have no concept of what this is about. Backpacking to me initially was a sport that you went out and you did, and I guess I thought you hiked trails where people had been, maybe like Rocky Mountain National Park. You come up here and there's none of that available, so you realize that you're out in the element, and you can die real quick, so you take that into consideration and what you're doing, where you're going, and why you are out here. We only saw a real small part of this thing, and it's huge, it's huge beyond belief, so to come back and relate it, it's difficult. … I mean we're so oriented to the city and having things. (A wilderness visitor's voice)

He fell, and it was fortunate that one of the guys had put a rope on him, made him take a rope, or he'd a been gone, and that's a hard thing to think about. You know, to be on a trip with somebody that dies. Life is being born and living, and you don't think about the end, and you certainly don't want to end it in a mountain stream, and when you pull that off and get him out of there, and you sit down, and you think about what you're doing, and you make it back, wow, it's pretty neat. (A wilderness visitor's voice)

I guess initially I was afraid that we were gonna go out here and get eaten by a bear, so we came up here with guns and you know, protective things, and I realize at this point the only thing you need to protect yourself from is yourself, 'cause you can get out here and if you don't have confidence in yourself and knowing where you're going, you could hurt yourself easy. (A wilderness visitor's voice)

These wilderness voices are not the only voices for Alaska wilderness. In this compilation, we have failed to represent those distant people who only dream of visiting Alaska wilderness, or those who never plan to visit but take pleasure in knowing it exists. There are also outfitters and guides, pilots, dog mushers, lodge owners, miners, loggers, anglers, skiers, mountain climbers, and hunters that could tell us about their relationships with wilderness, if we only listen (see Figure 2). But, the generations of the future cannot speak to us, so it is our responsibility to try to imagine how important wilderness will be to them in their time.

Figure 2—"In the Lower 48, the wilderness is surrounded by development. In Alaska, the development is surrounded by wilderness, and that is surrounded by wilderness" (student at the University of Alaska, Anchorage). Photo courtesy of Leopold Institute.

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wilderness identified by The Wilderness Society. Often, Alaska's massive conservation system units consist of large areas of rock and ice punctuated by pockets of ecologically rich and valuable habitat. It is imperative that these ecologically rich areas, or biological hearts, retain their wilderness integrity. This action is necessary in order to maintain diverse wildlife populations, Alaskan subsistence cultures, and our natural and wild heritage for generations to come.

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From RELATIONSHIP on page 31

Figure 4—Respondents attach value to opportunities to show children how the land provides what they need to survive. Photo by Siikauraq Whiting.

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Wilderness in a Changing Alaska

Managing for Resilience

BY F. STUART CHAPIN, III, LAURA HENRY, and LA'ONA DEWILDE

Forces Shaping Alaskan Wilderness

Wilderness is popularly viewed as a pristine land without people, a land that changes only by "natural" processes, unaffected by human actions. Wilderness, however, is a dynamic system in which physical, ecological, and cultural processes interact in ways that retain their natural essence and are resilient to perturbations. Alaska is widely recognized as a region that has retained its wilderness character. In this article, we briefly probe the history, dynamics, and possible future of Alaskan wilderness, with an emphasis on the role of people as an integral component of the system.

The topographic diversity of Alaska is a product of its geologic history. Terranes of multiple origin rafted across the Pacific Ocean and collided with the North American Plate, producing mountain ranges that include the highest peaks in North America (Thorson 1986). These mountains also contribute to Alaska's climatic diversity by intercepting the rainfall that generates temperate rain forests in southeastern Alaska. blocking moisture from the continental areas of interior Alaska, and focusing the frontal boundary between the cold air mass of the arctic slope and more moderate climates to the south (Gallant et al. 1995).

These climatic patterns result in a large-scale mosaic of forests, tundra, glaciers, and wetlands that are home to both permanent residents and migratory animals such as tropical songbirds, salmon, and whales. During glacial periods, Alaska was functionally part of the Asian continent and isolated from the rest of North America by glaciers. In warmer periods, Alaska's biological links have been with North America. This biogeographic ambivalence, combined with topographic and climatic diversity, has contributed to unusually high biological diversity for a region of such high latitude (Walker 1995).

Article co-authors (l to r) F. Stuart Chapin, III; Laura Henry; and La'ona DeWilde

People have been an integral component of Alaskan ecosystems for at least 11,000 years (Aigner 1986). However, due to its low productivity and harsh environmental conditions, interior Alaska has always had a relatively low density of human inhabitants. During much of its human history, Alaska has been occupied by multiple cultures, each of which interacted with its environment in substantially different ways. For example, depending on the region, the primary subsistence base has been fish, marine mammals, or terrestrial mammals (Langdon 1986; Burch 1998). During its period of human habitation, Alaska has experienced both gradual and abrupt change. Climate warmed rapidly at the end of the Pleistocene to its thermal maximum about 9,000 years ago. Subsequently, there has been a gradual cooling and climate moistening, a rising sea level that inundated the land bridge to Asia, and melting continental glaciers that had isolated Alaska from the rest of North America.

These trends led to large-scale changes in vegetation. For example, in interior Alaska, which was never glaciated, there were gradual changes from steppe tundra typical of glacial times to poplar forests to white spruce forests to black spruce forests. This last change occurred abruptly 6,000 years ago, when black

In Alaska, wilderness is the matrix that surrounds relatively small areas of more intense human activity.

spruce became widespread in response to the moistening climate. Its high flammability caused a sudden increase in fire frequency, instituting a new disturbance regime that has persisted to the present (Lynch et al. 2003). In northern Alaska, vegetation changed from steppe tundra to poplar forests to the current mosaic of arctic tundra vegetation types. The well-developed megafauna of mammoths, bison, and horses that had been in Alaska for hundreds of thousands of years disappeared during the last several thousand years. Other components of the Pleistocene megafauna such as caribou and moose have persisted. The relative importance of changes in climate, vegetation, and human hunting in triggering the change in megafauna is still actively debated (Zimov et al. 1995; Guthrie 2003). Alaskan ecosystems have continued to change over the last 6,000 years in response to climatic variation, but these changes have been smaller in magnitude and more reversible than those that occurred earlier, indicating substantial resilience to small-scale environmental change.

In summary, prior to white contact, Alaskan ecosystems underwent repeated changes in climate, biota, and culture. None of Alaska's current ecosystems or cultures was present 10,000 years ago, and substantial changes have continued even during the past 5,000 years. Nonetheless, Alaska ecosystems have retained the basic nature of ecosystem processes, including the flow of energy; recycling of nutrients; diversity of plants, animals, and cultures; and the relationships between local people and their environments. These systems have continued to support a diversity of human and nonhuman life, despite large climatic and cultural changes. People have been part of these ecosystems for most of their history and have both responded to and contributed to the changes that have occurred.

Recent Changes in Alaska

If people are an integral component of regional systems, cultural changes in political and economic systems will likely affect regional ecology. Russian and European colonization of Alaska initiated a relationship between people and the land that was qualitatively different from that of its original inhabitants, who were an integral part of the ecosystems that they occupied (Watson et al. 2003). For example, Russian fur traders on the coast of Alaska and Canadian fur traders in interior Alaska used ecosystems as a source of materials to be extracted and exported for profit. Similar motivation launched a fishing industry in coastal Alaska and a gold rush in interior Alaska in the early 20th century (Naske and Slotnick 1987). European diseases reduced the Native population of Alaska substantially and introduced new technologies such as rifles, fishnets, and motorized transport.

When Alaska became a state in 1959, many land ownership issues were unresolved. In 1971, the federal government ostensibly settled the land claims of Alaska's Native people through the Alaska Native Claims Settlement Act (ANCSA), through which Native corporations were established. The Alaska Federation of Natives, as a representative of Native Alaskans, negotiated with the federal government, with the result that the new corporations received title to 45 million acres (18.2 million ha) of land and payment for the remaining approximately 300 million acres (121.5 million ha) of land, which were transferred to state and federal ownership. Through ANCSA, Native Alaskans gave up management of natural resources on government land, including traditional hunting and gathering practices (Ross 2000).

The passage of the Alaska National Interest Lands Conservation Act (ANILCA) in 1980 designated 225 million acres (91.1 million ha) of Alaska land for federal ownership, establishing the status of key areas recognized for their scenic and/or ecological value (Ross 2000). ANICLA also opened the door for designation of federal wilderness areas while concurrently restoring some of the rights of Native Alaskans to practice traditional hunting and gathering on government lands. However, the state of Alaska and the federal government have never agreed on how to manage the subsistence practices on public lands, resulting in different management policies for different types of public lands. In federal wilderness, Native subsistence rights to hunting and gathering remain and are defined as "customary and traditional uses by rural residents of wild, recoverable resources for direct personal or family consumption." (ANILCA 1980 in Watson et al. 2003).

Native Alaskans were not displaced from their original homes to reservations, as in the Lower 48. Thus, in the Lower 48, land unoccupied by white people had almost no inhabitants, but in Alaska, many of the lands remote from the road network continued to be inhabited by both Native and white people, who maintained close cultural and subsistence ties to the land. Thus the Eurocentric concept of wilderness as an area where "man himself is a visitor who does not remain" (The Wilderness Act 1964) has never

Figure 1—The centralization of families into permanent communities such as Fort Yukon changes the relationship with traditional lands. Photo by Qamar Schuyler.

characterized the remote regions of Alaska (Huntington 2002; Watson et al. 2003).

Yet in the continually changing wilderness of Alaska, Native Alaskans' lives differ significantly from those of their ancestors. Whereas most Native groups of Alaska were once seasonally and annually mobile, moving throughout the year to access different types of resources, they are now settled in permanent villages (see Figure 1) that are tied to schools, stores, churches, airports, and opportunities for permanent or seasonal wage jobs, usually with tribal or governmental agencies (Langdon 1986). This reduction in mobility associated with establishment of permanent villages has been compensated to some extent by more efficient transport such as snowmobiles and outboard motors, which are now an integral part of subsistence hunting and allow people to access a larger area. This technology, however, ties people to a wage economy, and the regional ecological effects of these more sedentary subsistence patterns are not yet known (Gerlach et al. in press). In addition, after Native populations were reduced by disease and centralized in permanent villages, children were often raised or taught by missionaries who did not allow them to speak their language or practice their own religion. The resulting loss of native language, legends, and depth of understanding of the relationship to land and animals contributed to the shift toward western energy and food sources. Although Native lifestyles are still changing, there remains a strong cultural and economic dependence on the land—a dependence that today is supported by modern means of transport. The role of such technology in designated wilderness areas is a multifaceted issue that has no simple answer and continues to be debated.

In summary, remote portions of Alaska have been remarkably resilient to the massive changes of the last century. The population density in most of rural Alaska has increased during the last 50 years (Anonymous 1997), although local patterns of distribution are quite different. Most people who live off the road network still maintain strong cultural and subsistence ties to the land, despite radical changes in land tenure, community structure, and technology (see Figure 2). In these areas people still consider themselves part of the same land that visitors view as wilderness (Huntington 2002; Watson et al. 2003). Other impacts or recent change have left a more indelible mark. These include seismic trails and gravel roads associated with oil development, which have thawed the permafrost and altered hydrology. These geomorphic changes will remain imprinted on the land for thousands of years until the natural processes of erosion and deposition gradually reshape the landscape. This relationship between industrial activities and the land is qualitatively different from the cultural and subsistence uses by rural residents (Klein 2002).

Figure 2—The use of motorized boats to access portions of the river distant from communities maintains traditional access of Native Alaskans to the land. Photo by Laura Henry.

Although we cannot predict the precise future of Alaska wilderness, we know that it will be different from what characterizes it today. The climate of Alaska is now warming as rapidly as any place on Earth (Serreze et al. 2000; Krupnik and Jolly 2002). This region, whose climate has long resisted invasions of exotic species, is now being colonized by new plants and animals. Salmon populations are changing in response to climate, commercial fishing, and potentially the introduction of escaped farm salmon. The culture of rural Alaska and the institutions that manage Alaskan lands are undergoing change. There is growing pressure from tourism, as an expanding world population increasingly values and seeks to experience Alaskan wilderness. Although we cannot predict the precise nature of the future Alaskan wilderness, we can be absolutely certain that it will differ in important respects from the landscape of today.

Conceptual Framework for Wilderness Stewardship

The challenge of wilderness stewardship is to manage the inevitable changes that will occur in ways that maintain the key cultural and ecological qualities of Alaska wilderness. This goal requires that we manage not for a set of uniform physical attributes but for protection of a wilderness character that is difficult to define but which acknowledges the integral nature of the dynamic relationship between people and the land. There is a growing literature on managing social-ecological systems (i.e., systems in which people are an integral component) for resilience in the face of uncertain but inevitable change rather than managing to prevent change (Folke et al. 2002; Gunderson and Holling 2002; Berkes et

al. 2003). In this context, resilience is the capacity of a system to absorb shocks and still maintain its essential characteristics. This framework seems particularly appropriate for Alaska wilderness, where there are still strong cultural ties of local residents to the land and where there is a growing interest among nonresidents in nonconsumptive use of Alaskan wilderness. Managing for resilience would have the following attributes:

1. Sustaining diversity, including:
   a. Maintaining large management units with a wide range of ecological and topographic diversity so organisms can migrate in response to future climate changes rather than being trapped in a local preserve that becomes gradually less suitable as habitat (Elmqvist et al. 2003).
   b. Facilitating institutional diversity, including multiple types of co-management arrangements with local residents who have extensive experience in managing local resources (Berkes and Folke 1998). By treating management as an experiment rather than a single monolithic entity, it is more likely that novel effective solutions will emerge that mesh well with local conditions. However, institutional changes can either strengthen or degrade wilderness character and must be approached cautiously.
   c. Allowing for cultural diversity in which people with different cultural ties to the land (e.g., subsistence users and backpackers) may interact with the land in different, but equally appropriate, ways.
   d. Recognizing that diversity increases the range of surprises with which a system can cope without danger of radical change in essential properties.
2. Recognizing change as a natural feature of social-ecological systems, thus
   a, Creating conditions that allow modest change rather than seeking to prevent change, which may create conditions that make catastrophic change more likely (Holling 1986). For example, fire suppression, which reduces the probability of wildfire in the short term, increases the probability of future larger fires. However, carefully designed prescribed fires near communities can enhance wildlife habitat and reduce the probability of large fires that destroy property; these fires might otherwise become more likely in a warming climate.
   b. Treating crises as an opportunity for change (Gunderson and Holling 2002). When institutional, economic, and other crises occur, it becomes easier to initiate change, because it is clear that the current system no longer functions effectively. Such crises should be used as opportunities to think outside the box for novel solutions that address future needs.
   c. Treating changes that do occur as opportunities to learn. Many of the changes that occur outside a wilderness context (e.g., industrial development, predator control, commercial salmon harvest) provide opportunities to learn about the vulnerability of social-ecological systems to radical change.
3. Focusing on the variables that regulate long-term change (Carpenter and Turner 2000). Crisis management that focuses on issues of most immediate public concern (e.g., a road, fire, or particular regulation) is often less effective over the long term than stewardship focused on the important underlying controls, such as the economic viability of rural communities, patterns of fuel buildup, or the development of effective institutions for co-management of resources. Wilderness planning will fail if it focuses only on immediate crises without studying ways in which appropriate relationships between people and the land can be protected or restored.
4. Anticipating variability and change, including:
   a. Anticipating predictable change. These include warming effects on permafrost and infrastructure, increased visitor impact on Alaskan wilderness, and an ice-free Arctic Ocean that increases the economic feasibility of arctic oil development (Chapin et al. 2004). Planning in the context of these anticipated changes provides a context exploring long-term solutions that are more likely to be viable.
   b. Expecting surprises. We can never predict everything that will happen, so planning that fosters diversity, learning, and flexibility provides an environment that is more likely to cope effectively with unanticipated changes.

Conclusions

Alaskan wilderness has a different character than small reserves, which remain in more populated regions of the world. In Alaska, wilderness is the matrix that surrounds relatively small areas of more intense human activity. Planning for the long-term integrity of this wilderness in the face of certain changes in climate, culture, and economy is a serious challenge, but it represents an opportunity to think creatively about the deepest values that underlie the human need to be a part of wilderness in an enduring fashion.

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Wilderness, however, is a dynamic system in which physical, ecological, and cultural processes interact in ways that retain their natural essence and are resilient to perturbations.

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Alaska's Big Five

Significant Threats to Wilderness Resources

BY NICOLE WHITTINGTON-EVANS

The Big Five Threats

In 1980, the Alaska National Interest Lands Conservation Act (ANILCA) established 56.5 million acres (22.8 million ha) of federally designated wilderness land and 26 wild and scenic rivers in Alaska. These wilderness areas are in Alaska's national parks, refuges, and forests. The Tongass Timber Reform Act designated close to an additional 300,000 acres (121,458 ha) of wilderness on the Tongass National Forest in 1990. In addition to this legally protected wilderness resource, inventories suggest that over 100 million additional acres (40.5 million ha) of Alaska's federal land qualifies for future wilderness consideration. However, there are five major threats to the wilderness resources of Alaska, identified by The Wilderness Society, that are not defended against by wilderness designation.

Oil and Gas Development on Alaska's North Slope

Perhaps the area of Alaska most threatened from oil and gas development is our only piece of the Arctic—Alaska's north slope. Alaska's north slope includes a vast block of land bound by the spine of the Brooks Range to the south, and slopes northward to the Arctic Ocean. Federal lands on the north slope encompass portions of the Arctic National Wildlife Refuge, including the coastal plain, which is not protected under The Wilderness Act, and approximately 23 million acres (9.3 million ha) of public lands in the Western Arctic.

In a recent congressionally mandated report entitled *Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope,* the National Academy of Sciences National Research Council documented significant environmental and cultural effects resulting from three decades of oil development on Alaska's north slope. There is little doubt that the integrity of wilderness lands in America's Arctic, and subsequently the subsistence cultures that depend on these lands, are threatened by oil and gas development.

Article author Nicole Whittington-Evans with daughter, Rya, hiking in Denali National Park. Photo by Chris Whittington-Evans.

Arctic National Wildlife Refuge

At 19.5 million acres (7.9 million ha), the Arctic Refuge is the largest in the nation. It protects a full range of North American Arctic ecosystems. Incomparably rich in wildlife diversity, the refuge supports the three species of bear found in North America (polar, grizzly, and black), caribou, muskoxen, moose, Dall sheep, wolves, wolverines, and about 180 bird species (USFWS 2001). The coastal plain of the refuge is a summer haven for much of this wildlife. It provides birthing grounds for the Porcupine caribou herd, numbering approximately 130,000, which travels hundreds of miles annually from its wintering grounds to reach this unique habitat. The coastal plain also contains the most important onshore denning habitat for the Beaufort Sea polar bear population in the United States (Amstrup and Gardner 1994).

When ANILCA was passed, the U.S. Congress doubled the size of the originally established Arctic National Wildlife Range to 19 million acres (7.7 million ha), designating 8 million acres (3.2 million ha) as wilderness, and renamed it the Arctic National Wildlife Refuge. However, the coastal plain, often referred to as the biological heart of the refuge, was not included in the wilderness designations.

Developing the biological heart of the Arctic Refuge will not only significantly impact the wilderness and wildlife

values of the area, but will also undermine the spiritual and cultural center of an indigenous peoples—the Gwich'in Athabaskan peoples of Alaska and Canada. The Arctic Refuge coastal plain is considered a sacred place by the Gwich'in, who refer to themselves as the "caribou people." They depend on the Porcupine caribou herd for their subsistence way of life—their food, culture, and spiritual identity. Invading this narrow stretch of ecologically rich habitat with oil and gas development is a direct threat to the caribou and the Gwich'in people.

Western Arctic

Among the public lands in the western Arctic is the 23.5-million-acre (9.5-million-ha) National Petroleum Reserve, which contains valuable habitat for polar bears, caribou, and millions of migratory birds. Made up of lakes, wetlands, coastal lagoons, rivers, upland foothills, and mountains, it is America's single largest block of undeveloped wildlands. The reserve supports the primary calving grounds for Alaska's largest caribou herd, the Western Arctic caribou herd, which totals more than 430,000 animals. In addition, it contains important marine mammal habitat for beluga whales and spotted seals and habitat for anadromous fish and nesting peregrine falcons. The Inupiaq and other Alaska Natives there depend on these resources for their subsistence culture.

Established in 1923, the reserve was set aside as an emergency oil supply for defense needs. Although there is no question that oil and gas development will proceed in the reserve, such development should not occur prior to protection of critical wildlife, wilderness, and subsistence resources.

Current oil and gas leasing plans are the most aggressive this nation has seen for U.S. Arctic. A recent decision offers leases on 100% of the northwest planning area of the reserve, and we anticipate the Teshekpuk Lake area in the northeast planning area will be offered next—an important wildlife and subsistence area that historically has been protected. Furthermore, there are plans for offshore oil and gas leasing across the entire arctic coastline to the Canadian border, and the state of Alaska just announced its intention to offer leases, that had previously been deferred, offshore of the coastal plain of the Arctic Refuge and the NPRA (see Figure 1).

Logging in Alaska's Rain Forest

Alaska's old-growth, temperate rain forest encompasses over 1,000 miles (1,613 kilometers) of coastline and is one of the largest remaining in the world. Composed primarily of the nearly 22 million acres (8.9 million ha) of the Tongass and Chugach National Forests, Alaska's rain forest is a unique and globally significant natural resource.

Tongass National Forest

At nearly 17 million acres (6.9 million ha), the Tongass National Forest is America's largest national forest. An extraordinary collage of fjords, glaciers, forested islands, and mountains, the Tongass makes up a majority of the Alexander Archipelago creating southeast Alaska. Towering groves of Sitka spruce and western hemlock grow to be more than 200 feet tall and live as long as 1,000 years in this lush forest. Home to healthy populations of brown and black bears, wolves, bald eagles, northern goshawks, and five species of Pacific salmon, the dense old-growth forest of the Tongass provides vital fish and wildlife habitat.

More than 6 million acres (2.4 million ha) of the Tongass are protected either by wilderness designation or by a special congressional designation that does not allow road building. In addition, inventoried roadless areas comprise more than 9 million acres (3.6 million ha) of the forest.

Since the 1950s, the Tongass has experienced significant levels and effects of clear-cut logging (see Figure 2). For example, more than 5,000 miles (8,065 kilometers) of roads exist on the Tongass, which have fragmented wildlife habitat, impaired spawning streams, and otherwise significantly damaged ecosystem values on the forest. The Alaska Department of Fish and Game issued a report indicating that two-thirds of the culverts across anadromous streams on the Tongass are not adequate for fish passage (ADF&G 2000).

Nevertheless, roadless area protections put in place by the Roadless Area Conservation Rule (2001) were removed from the Tongass National Forest in December 2003. We anticipate the

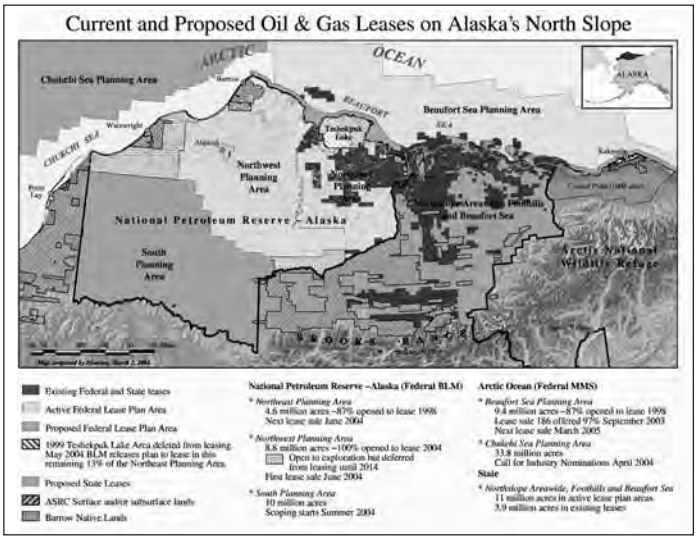

Figure 1—Current and proposed north slope oil and gas leases on Alaska's north slope. Courtesy of Ecotrust.

Figure 2—Clear-cut logging in the Tongass National Forest. Photo by Southeast Alaska Conservation Council.

Chugach National Forest will be exempt from Roadless Rule protections in the near future. Meanwhile, plans are in the works for approximately 50 timber projects in roadless areas of the Tongass over the next 10 years.

Recreational Off-road Vehicle Use and RS2477 Right-of-Ways

Motorized recreational use and RS2477 Right-of-Ways pose some of the most pervasive and growing threats to wilderness areas in Alaska. A 1996 study by the state of Alaska's Department of Natural Resources indicates that in their south-central Alaska study area (a 34 million acre (13.8 million ha) area defined by the Alaska Range on the west and north, the Richardson Highway through Valdez on the east, and inclusive of the Kenai Peninsula), 95% of the total acreage is currently managed as open to snowmachine access. Wilderness values, such as wildlife, solitude, scenic landscapes, natural soundscapes, air quality, and natural odors, among others, are threatened by motorized intrusions. Documented impacts to wildife from motorized activities include harassment, displacement from important habitats, disruption of feeding activities, alteration in habitat use, and depletion of critical energy supplies in individual animals.

Motorized Use

Congress created limited exceptions in ANILCA to the restrictions normally implemented for motorized uses in conservation system units, including designated wilderness. These were important exceptions necessary to accommodate and maintain opportunities for legitimate subsistence uses, which honor Alaska Natives and other rural Alaskans and their subsistence way of life. Specifically, ANILCA allows snow machines, motorboats, and fixed-wing aircraft to be used in designated wilderness and other conservation system units for traditional subsistence activities.

As outlined in the *ANILCA Report of the Senate Committee on Energy and Natural Resources,* "customary and traditional uses" include travel to and from homesites, travel to and from villages, and taking resources for subsistence purposes, such as subsistence and sport hunting, fishing, and berry picking (Senate Report 1980). However, some agencies, such as the U.S. Forest Service (USFS) (2002), as well as individuals, have interpreted traditional uses to include recreational activities. Others, including The Wilderness Society, assert that Congress never intended to include recreational activities as customary and traditional. Cross-country, recreational motorized uses in Alaska's conservation system units are increasingly degrading wilderness lands.

Chugach National Forest

Alaska's Chugach National Forest—encompassing 5.5 million acres (2.2 million ha)—includes the northernmost temperate rain forest in the nation. Home to wolves, grizzly bears, sea otters, orcas, and other sensitive wildlife species, the Chugach includes tidewater glaciers, towering mountain peaks, alpine tundra, and some of the richest wild salmon spawning streams in America. Although 99% of the Chugach is classified as roadless and qualifies for wilderness designation, there is no designated wilderness on the forest.

The USFS recently revised the Chugach National Forest Land Management Plan, in which they reduced wilderness recommendations from 1.6 million acres (0.6 million ha) recommended in 1984 to 1.4 million acres (0.5 million ha) and opened up close to 87% of the forest to cross-country winter motorized use. This area includes the approximately 2 million acre (0.8 million ha) congressionally designated Nellie-Juan/College Fiord Wilderness Study Area. Allowing this level of winter motorized use on the Chugach, with little area for nonmotorized refugia, may prove very damaging to wildlife, given that the winter environment often creates the greatest levels of stress in wildlife due to environmental factors.

Wrangell-St. Elias National Park

Wrangell St. Elias National Park and Preserve, which at 13.2 million acres (5.3 million ha) is America's largest national park and contains the biggest block of designated wilderness land (>9 million acres; 3.6 million ha) in the nation, is experiencing all-terrain-vehicle (ATV) use that is damaging this scenic and ecological jewel. Six times the size of Yellowstone National Park, Wrangell-St. Elias is unmatched by any other unit in the park system. It includes the largest concentration of glaciers, the largest subpolar ice cap, and 9 of the 16 highest mountains in the United States.

Although the park is massive, much of it is rock and ice, making the biologically rich lower elevations critical habitat for Dall sheep, brown and black bears, moose, mountain goats, caribou, bison, wolves, and nesting trumpeter swans, among other wildlife species. It is these lower elevations that receive ATV use. In 1998, the National Park System (NPS) estimated that nearly 600 miles (968 kilometers) of ATV routes affected approximately 2 million acres (0.8 million ha) of Wrangell-St. Elias Park and Preserve.

To protect national parks, Congress has consistently reaffirmed the core mission contained in the National Park Service Organic Act that activities within our national parks "shall not be exercised in derogation of the values and purposes for which these various areas have been established." Clearly, this is an example of an activity that is impairing national park values, and the Park Service must strive to properly manage ATV use (see Figure 3).

Figure 3—ATV damage on the north side of the Nabesna road, Wrangell-St. Elias Park and Preserve. Photo by National Park Service.

Although Alaska is a land with extraordinary and vast wilderness values, it is experiencing widespread and multifaceted threats to its wilderness resources.

RS2477 Highway Right-of-Way Claims

In 1866, a statute was passed in part to allow highway construction for the benefit of commerce to move from settlement to settlement across federal lands. It stated, "The right-of-way for the construction of highways over public lands, not reserved for public uses, is hereby granted." In 1976, the Federal Land Policy and Management Act repealed this obsolete statute, although it did not invalidate claims that could be proven established prior to 1976.

Recently, the Department of the Interior (DOI) has eased the approval process for RS2477 claims by issuing new "disclaimer regulations," and has stated that this process can be used by states, counties, and individuals to obtain rights-of-way under the repealed RS2477 law. The state of Alaska has a blueprint to develop a web of hundreds of highways, roads, and even railroads across thousands of miles of Alaska's national parks, refuges, forests, and other protected lands. Granting these claims would open federal and other public lands to extensive damage caused by off-road vehicles and other development, and it would effectively disqualify these special places for wilderness protection. These RS2477 highway right-of-way claims pose one of the most significant threats to wilderness today.

Planning Efforts without Wilderness Reviews

The DOI is embarking on wide-scale planning efforts for refuges, parks, and Bureau of Land Management (BLM) lands in Alaska. Six Refuge Comprehensive Conservation Plans are currently being revised, and DOI intends to revise all 16 Refuge Plans by the year 2010. The refuge system in Alaska includes more than 70 million acres (28.3 million ha) of public land with outstanding wilderness values. Moreover, a series of backcountry planning efforts for the Park Service and BLM lands are underway. DOI has directed that wilderness reviews will not be considered in most of these planning efforts, and management decisions are being made that may preclude future wilderness designations. By refusing to complete wilderness reviews across these vast areas of public lands, DOI has launched a silent assault on wilderness lands.

Conclusion

Although Alaska is a land with extraordinary and vast wilderness values, it is experiencing widespread and multifaceted threats to its wilderness resources. Oil and gas leasing, logging, motorized uses, RS2477 highway rights-of-way, and planning without wilderness reviews comprise five of the most significant threats to Alaska's

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Subsistence, Inholdings, and ANILCA

The Complexity of Wilderness Stewardship in Alaska

BY RANDY J. TANNER

Article author Randy J. Tanner.

Introduction

For many, Alaska exemplifies the characteristics that make wilderness one of the United States' most valued natural resources. Not only does Alaska contain some of the country's most pristine wilderness, it also contains more of the National Wilderness Preservation System than the Lower 48 combined (Landres and Meyer 2000).

Not all of the unique wilderness qualities of Alaska are desirable. Perhaps one negative aspect is the legal ambiguity and controversy associated with the Alaska National Interest Lands Conservation Act of 1980 (ANILCA) (Public Law 96-487). Two intertwined issues at the heart of legal controversies and ambiguities are subsistence and access to Native (a citizen of the United States and a minimum one-fourth degree Alaska Indian, Inuit, Aleut, or combination thereof) allotments and other wilderness inholdings (see Figure 1). The fact that more than 800,000 acres (323,886 ha) of inholdings are within Alaska's wilderness provides managers with an extremely challenging task: preserving wilderness while recognizing the importance of these inholdings for the subsistence lifestyles of many Native Alaskans (National Park Service [NPS] 1999). Given the large number and size of inholdings within Alaska's Wilderness, access for subsistence purposes will inevitably be a contentious issue. Nevertheless, through informed discussion of the legal ambiguities surrounding access and subsistence, a better understanding of the issues could lead to fewer disputes and conflicts concerning some of our nation's most precious wilderness.

The origins of the Alaska National Interest Lands Conservation Act

When the Alaska Statehood Act (Public Law 85-508) passed in 1958, the state of Alaska was permitted to select for withdrawal 104 million acres (42.1 million ha) of public domain. Alaska proclaimed that "all right and title to any lands or other property not granted or confirmed to the State … may be held by any … Natives, or held by the U.S. in trust for said Natives" (Public Law 85-508).

Contention arose when the state began to make selections that intruded on Native settlements and hunting grounds. This encroachment, in turn, spawned several lawsuits by Natives. As a result, Congress sought to resolve the issue through the Alaska Native Claims Settlement Act (ANCSA) of 1971 (Public Law 92-203), which disposed of 44 million acres (17.8 million ha) and dispensed nearly $1 billion to Natives. In addition to this disbursement, Natives were also entitled to a perpetual 2% royalty on mineral leases

Figure 1—The community of Anaktuvuk is within the boundaries of Gates of the Arctic National Park and Preserve. Photo courtesy of NPS.

owned by the federal government at the time of statehood (Zaslowsky and Watkins 1994). However, ANCSA was conditional—Native Alaskans had to agree to absolve all land claim suits against the state and agree not to file any more.

Not only did ANCSA provide a mechanism for granting Native allotments, it also contained a particularly important provision—§17(d)(2)—which allowed for the future establishment of up to 80 million acres (32.4 million ha) of National Interest Lands. These lands would eventually contain national forests, national parks, wildlife refuges, and designated wilderness. The implementation of this provision was ANILCA.

Passed in 1980, ANILCA is a significant piece of wilderness legislation. After a decade of legislative debate, more than 104 million acres (42.1 million ha) of federal lands in Alaska were preserved as national parks, wildlife refuges, and conservation areas, with 56.5 million acres (22.9 million ha) designated as wilderness. At 449 pages, ANILCA is as complicated as it is long. Unfortunately, ANILCA has engendered a great deal of controversy involving subsistence rights and access to wilderness inholdings, and much of this controversy can be attributed to ambiguous language found within the act.

Subsistence and ANILCA

One clear purpose of ANILCA is to "preserve Wilderness resource values" (§101[a] Public Law 96-487); however, another is "to provide the opportunity for rural residents engaged in a subsistence way of life to continue to do so" (§101[c[Public Law 96-487). *Subsistence* is defined in ANILCA as

> the customary and traditional uses by rural Alaska residents of wild renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of non-edible byproducts of fish and wildlife resources taken for personal or family consumption; and for customary trade. (§ 803 Public Law 96-487)

Considering the above purposes, conflicting views about the relationship between wilderness preservation and subsistence are inevitable. For example, unlike designated wilderness in the Lower 48, snowmobile use, motorboats, and airplanes are allowed in Alaskan wilderness for subsistence, traditional activities, and travel to and from villages and homesites (§811[a] and §1110 Public Law 96-487).

The phrase "traditional uses," found within ANILCA's definition of subsistence, has incited a conflict reflected in a U.S. Senate report addressing ANILCA. The report states that restriction of subsistence to customary and traditional uses shall "in no way impede the use of new technology for subsistence purposes" (Senate Report 96-413). This controversy has heightened with rapid changes in technology. For example, it is not clear whether or not all-terrain vehicles (ATVs) are permitted under ANILCA for subsistence purposes. The legislative history suggests that the only special modes of transportation permitted within wilderness designated under ANILCA are airplanes, snowmobiles, motorboats, and dogsleds (Senate Report 96-413). Rather than new, technologically advanced modes of transportation being permitted, Senate Report 96-413 suggests that as the technology of the allowed special modes of transportation advances, access via these modes will still be permitted. In either case, the mode of transportation permitted for subsistence purposes is a significant factor in determining acceptable modes and routes of access to wilderness inholdings and Native allotments when the purpose of that access is to engage in subsistence activities.

Wilderness Inholding Access Provisions of ANILCA

There are two primary sections of ANILCA related to inholding access: §1110 and §1323 (see Table 1). Subsection 1110(b) states that

> in any case in which State owned or privately owned land … is effectively surrounded by one or more conservation system units … such rights shall be given by the Secretary … to assure adequate and feasible access for economic and other purposes … subject to the reasonable regulations issued by the Secretary to protect the natural and other values of such lands.

Should an inholder desire access, ANILCA stipulates that it *must* be granted. Although this is generally accepted as factual, the type of access to be granted to the inholder is certainly not guaranteed. To illustrate, suppose an inholder requests ATV access to an inholding within a designated wilderness in Alaska. Three issues should be considered when deciding whether or not this mode of access should be granted:

1. "Adequate" access: Could the route be reasonably traversed by foot, dog sled, snowmobile, or airplane? If so, then either of these modes are "adequate" and ATV access may not be appropriate (§ 1110(a) Public Law 96-487).
2. "Feasible" access: Common law doctrine has shown that potential actions are considered "feasible" if those actions are possible and consistent with the purposes of the Act (Friends *of the Boundary Waters*

Wilderness v. *F. Dale Robertson* 1992).

3. "Economical" access: Although the phrase "economic purposes" in §1110(b) has traditionally been interpreted as applying to the *purpose* of the access, the legislative history suggests that economic aspects of the *mode* and *route* of access should also be considered. Senate Report 96-413 asserts that "we do not believe that the access route which is chosen must be, in all instances, the most economically feasible alternative." For instance, can the owner afford to charter a flight to the inholding? If so, access via airplane may be a possibility.

Although the ambiguity of §1110 has certainly imbued ANILCA with a degree of uncertainty, §1323 is perhaps the most infamous section concerning wilderness inholdings in Alaska, and arguably nationwide. Section 1323 is divided into two subsections: (a) addresses inholdings found within national forests, whereas subsection (b) addresses inholdings surrounded by Bureau of Land Management (BLM) administered lands (see Table 1).

Table 1—Legislative Statutes about Landowner Inholdings in Wilderness as Stated within ANILCA.

ANILCA Section	Statute
§1110(b)	"Notwithstanding any other provisions of this Act or other law, in any case in which State owned or privately owned land … is effectively surrounded by one or more conservation system units, … the State or private owner shall be given by the Secretary such rights as may be necessary to assure adequate and feasible access for economic and other purposes … subject to the to reasonable regulations issued by the Secretary to protect the natural and other values of such lands"
§1111	"(a) Notwithstanding any other provision of this Act or other law, the Secretary shall authorize and permit temporary access by the State or a private landowner to or across any conservation system unit … (b) In providing temporary access pursuant to subsection (a), the Secretary may include such stipulations and conditions he deems necessary to insure that the private use of public lands is accomplished in a manner that is not inconsistent with the purposes for which the public lands are reserved and which insures that no permanent harm will result to the resources of the unit"
§1323(a)	"Notwithstanding any other provision of law, … the Secretary [of Agriculture] shall provide such access to nonfederally owned land within the boundaries of the National Forest System as the Secretary deems adequate to secure to the owner the reasonable use and enjoyment thereof."
§1323(b)	"Notwithstanding any other provision of law, … the Secretary [of the Interior] shall provide such access to nonfederally owned land surrounded by public lands managed by the Secretary under the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701-82) as the Secretary deems adequate to secure to the owner the reasonable use and enjoyment thereof."

Section (a) directs the secretary of agriculture to provide adequate access to inholdings located within the national forest *system* that will secure to the owner reasonable use and enjoyment of the inholding. In 1981, the Ninth Circuit Court for the U.S. Court of Appeals interpreted §1323(a) to apply to the entire nationwide national forest system. This section has been the only section of ANILCA interpreted as having nationwide scope. Following the Ninth Circuit opinion, the U.S. Forest Service adopted §1323(a) as its policy governing access to wilderness inholdings nationwide (USFS 1990). In implementing this decision as policy, though, there has been a failure to acknowledge that ANILCA directs managers to implement a different statute, namely ANILCA's §1110(b), when addressing wilderness inholdings in Alaska. Essentially, the legislative history of §1323(a) suggests that the subsection is intended to apply to Alaska national forest lands as a whole, but when such a national forest happens to also be a designated Wilderness, §1110(b) is to be applied.

There is a parallel controversy associated with §1323(b) that directs the secretary of the interior to provide adequate access to "public lands managed by the Secretary under the Federal Land Policy and Management Act of 1976" (FLPMA) (Public Law 94 -579) that will secure to the owner the reasonable use and enjoyment of the inholding. The

FLPMA dealt exclusively with management direction for all BLM lands, and BLM has determined that §1323(b) of ANILCA has nationwide scope (see Interior Board of Land Appeals 83-356, 1984). However, ANILCA clearly states that when the phrase "public lands" is used within ANILCA, it is defined as public lands in Alaska and suggests that §1323(b) should only be applied to inholdings within BLM-administered lands in Alaska (§102[3] PL 96-487). There are currently no BLM-administered Wildernesses within Alaska, however.

Mitigating the competing demands of wilderness preservation, subsistence, and inholding access is among the most fundamental challenges to wilderness stewardship in Alaska. A case study is presented here for Gates of the Arctic Wilderness.

Figure 3—There are more than 800,000 acres of inholdings within Alaska's designated Wilderness lands. Photo courtesy of U.S. Fish and Wildlife Service.

Gates of the Arctic Wilderness: A Case Study

In July 2002, the NPS issued an Environmental Assessment (EA) (required by the National Environmental Policy Act for any significant action that possibly affects the integrity of the resource) that brought to the forefront the intertwined nature of the controversies surrounding subsistence and access to wilderness inholdings in Alaska. The EA was in response to an application for temporary summer access, via an eight-wheeled amphibious ATV, to a Native allotment located approximately 10 miles within Gates of the Arctic Wilderness. The allotment has been historically accessed by airplane and snowmobile. The applicant requested ATV access for the purposes of repairing a tent, removing trash, and subsistence. Three alternatives were considered: a no-action alternative and two alternatives that would permit ATV access, each along a different route through the wilderness and each approximately 11 to 14 miles long (NPS 2002).

The concerns of wilderness advocates centered on the likelihood of a permanent scar across the wilderness and damage to wilderness character that would be incurred in an otherwise trail-less wilderness. This concern was strengthened by a study conducted in Gates of the Arctic National Park that concluded,

> Passage of but one ATV through some landscapes can leave an indelible imprint. … Continued use of ATVs over the same path will result in disturbance that is irreversible in terms of the human life span. Recovery in some cases will be impossible to achieve and only a functional recovery can be expected for much of the remaining trail network within the park and preserve if the trails are abandoned." (Alstrand 1988)

Accessing the inholding by airplane, snowmobile, or dogsled may be the only legal way the inholder can carry out subsistence activities and then transport the harvested or collected goods back across the wilderness. The NPS has interpreted the Anaktuvuk Land Exchange of 1996 (Public Law 104-333) to imply that ATVs cannot be used for subsistence purposes within the vast portion of wilderness where the access was requested (NPS 2002). Since transporting the harvested and collected goods back to the residence in Anaktuvuk Pass is part of subsistence, transporting goods across Wilderness via ATV may not be legally permissible.

The organization Wilderness Watch alerted other conservation groups to the access proposal, and, as a result, the NPS received several comments concerning the potentially damaging impacts to wilderness. Besides comments about the physical scarring of the wilderness, several challenges were raised regarding the lack of alternatives considered and the legal provisions for ATV access.

The NPS posited that access to the inholding was subject to §1110(b) of ANILCA. Whereas in most cases access to NPS administered wilderness inholdings is governed by §1110(b), in this instance the access requested was temporary and could be interpreted as being subject to §1111 of

ANILCA, which speaks directly to temporary access to wilderness inholdings. This clarification is essential since §1111 is more conservative with the nature of permitted modes and routes of access. For example, §1111 states that the secretary may include stipulations to the temporary access such that the access is "accomplished in a manner that is not inconsistent with the purposes for which the public lands are reserved and which insures that no permanent harm will result to the resources of the unit." Subsection 1110(b), on the other hand, makes no explicit mention of protecting wilderness from permanent harm and not permitting access that is inconsistent with the purposes of wilderness. The only protective language found within §1110(b) is that reasonable regulations must be applied to protect the natural and other values of such lands.

In the end, the NPS did not implement any of these provisions. At present, other solutions, such as land exchange, are being explored in lieu of granting access. Nevertheless, not all access requests will or should necessarily result in such solutions. Wilderness managers, advocates, and those living in and around wilderness must come to terms with the undeniable truth that humans are a part of the wilderness landscape in Alaska. Determining the appropriate context within which this relationship exists, however, remains to be determined.

Conclusions

Clearly, there is no easy and straightforward answer to inholding access requests that are linked to subsistence activities (see Figure 3). In Alaska, wilderness and the cultural landscape are inseparable. Given this close linkage, managers have been charged with the extremely challenging task of weighing statutory obligations of preservation with the demands of those who depend upon the landscape and its resources for their livelihood. Managing both protection and use will require shared learning and understanding among managers, surrounding communities, and wilderness advocates, as well as a thorough understanding of the intent of relevant laws. In the end, what is desired most is a harmonious coexistence of wilderness and cultural lifestyles found within Alaska.

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Users of the WSRS need to be aware of what it does not provide. First, the WSRS does not provide full text documents. For example, it contains excerpts from House Reports that are relevant to the issues, but it does not contain the full text of these House Reports. Second, it does not cover nonwilderness legislation such as the Endangered Species Act or the Multiple Use Sustained Yield Act, although these laws may affect wilderness stewardship. Third, much of the information on the WSRS, and legislative history information in particular, is subject to interpretation. Most importantly, the 1964 Wilderness Act frames all uses of the WSRS, and this website should not be used as a substitute for seeking legal counsel.

The WSRS also has links to the Wilderness.net Law Library that contains all U.S. wilderness laws in a downloadable format, and to the Policies and Regulations page that contains links to the full text documents of all U.S. federal agency wilderness regulations and policies. Pending funding and support, and feedback on its functionality, the WSRS will be updated annually.

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Zoos Behind the Wild Facade

BY JON KOHL

The histories of zoos and wilderness in America have been intertwined for 150 years. According to the World Zoo Conservation Strategy (WZCS) (World Zoo Organization 1993), their evolution is unfolding in three stages. Menageries marked the 19th century, when simple taxonomic animal collections were exhibited to the public. In the 20th century, zoos became zoological parks, where single-species cages give way to multispecies dioramas that look something like the natural homes of their animals. Last, the WZCS hopes that zoos continue to the final stage, where 21st-century conservation centers focus on the whole natural system, including interactions between soil, water, plants, animals, and people.

This evolution has been driven by environmental, wilderness, and social movements that increasingly feed the public's demand that zoos justify themselves. For many people, keeping animals like proboscis monkeys captive no longer suffices as adequate justification for zoo existence.

Roderick Nash notes in his classic book *Wilderness and the American Mind*, "Clearly it is not wilderness but people who need management" (Nash 1982, p. 320). Contemporary conservation thinking extols the necessity of understanding human activity at least as much as animal activity. Zoos focus almost exclusively on wildlife, despite humanity's central role in habitat destruction and conservation. Zoos' systematic ignorance of the impact that human behavior has on environmental problems *and* solutions has blocked their continued evolution.

The blockage proves ironic, since zoos' insistence on displays without people is squandering the immense potential to promote conservation. This potential of zoos, as well as of botanical gardens and aquariums, to be conservation centers can be counted in the thousands of institutions worldwide, the billions of dollars in investment, and the more than 115 million in visitors in the United States and 600 million in the world every year—equivalent to 10% of the total human population (World Zoo Organization 1993).

No other type of conservation organization comes close to reaching so many people. With conservation issues evermore pressing, zoos find themselves not only trying to save wildlife, but also trying to save their own kind from becoming lost in irrelevance.

Article author Jon Kohl in a cave in Costa Rica. Photo by Marisol Mayorga.

Zoos' Wilderness Roots

In order to better design an exhibit mimicking natural habitat, a team of biologists and designers from Woodland Park Zoo in Seattle, Washington, traveled in 1985 to Tanzania to discover what savannah habitat really looked like. Jon Charles Coe, a landscape architect specializing in zoo design, however, did not see the terrain as the others did.

While the biologists catalogued the biophysical character of the African savannah, Coe began analyzing aspects of wilderness that he could re-create in an exhibit experience. "One aspect of wilderness in the zoo is to make people feel that sense of anticipation and anxiety" (personal communication, Coe 1997). Whereas many exhibit designers may go no further than using rocks and plants from the place they want to re-create, Coe goes beyond. He designs unfamiliar space that breaks down visitors' sense of security and brushes them with a feeling of wilderness. By building landscapes where people encounter animals, separated by invisible barriers, for a split second their survival instincts are turned on. They forget they are in a zoo. According to Coe, that feeling of lacking control is one important aspect of wilderness.

Figure 1—The Khao Kheow Open Zoo aviary mixes zoo with natural habitat. Photo by Marisol Mayorga.

Coe's search for this wilderness feeling in zoo design may sound novel, but the influence of wilderness on how zoos conceive themselves is hardly new. The modern zoo, in fact, was born during the first wilderness movement. The Philadelphia Zoological Garden, which opened in 1874, was the first animal collection to call itself a "zoological garden," an attempt to differentiate itself from earlier menageries. At that time American pioneers were finishing up their grand sweeping aside of not just forests and grasslands, but wild animals like bison and wild places like the Great Plains. After the Civil War, however, many Americans grew increasingly concerned about the vanishing character of wild America.

Figure 2—The Khao Kheow Open Zoo in Thailand breeds clouded leopards for increasing the genetic stock of zoo-based clouded leopards. Photo by Karen Povey.

Easterners and European immigrants left the vestiges of civilization behind as they marched onward into the wilderness. In the words of William Cronon, they "gained an energy, an independence, and a creativity that were the sources of American democracy and national character. Seen this way, wilderness became a place of religious redemption and national renewal, the quintessential location for experiencing what it meant to be an American" (Cronon 1995, p. 42). "It is no accident," Cronon continues in a piece adapted from his 1995 book, *Uncommon Ground: Toward Reinventing Nature*, "that the movement to set aside national parks and wilderness areas gained real momentum just as laments about the vanishing frontier reached their peak. To protect wilderness was to protect the nation's most sacred myth of origin" (p. 42).

In 1872, protected areas like Yellowstone National Park were set aside. Inside the cities, people were already building another institution that would preserve the concept of wilderness. By 1891, when the National Zoological Park in Washington, D.C., opened, many zoos had already been established. In 1889, Congress passed a bill to establish a national zoological garden as part of the Smithsonian Institution "for the advancement of science and the instruction and recreation of the people." Indeed, science, education, and recreation are three of the four principal missions of modern zoos. The fourth, conservation, soon followed when Smithsonian secretary S. P. Langley championed the idea of the National Zoo as "a home and a city of refuge for the vanishing races of the continent" (Lefkowitz 1996).

In the 1960s, many zoos had become run-down, and the public did not approve. Several bills floated in Congress to ban zoos, although none passed. Zoos came under heavy pressure to get their act in line. In general, the zoo community reacted to public outcries in two ways, according to Vernon Kisling (personal communication 1997), the American representative of the Bartlett Society, an international association of zoo historians. First, the national organization, the American Zoo and Aquarium Association (AZA), developed professional standards and a code of ethics for individuals and accreditation for zoos. Second, "they began a major effort at lobbying and became pretty good at it," Kisling adds.

In the late 1960s, zoos started to do what they wanted to do: get rid of barred cages. Several forces combined to bring wilderness to zoo design. The wilderness movement instilled designers with the values, the historical moment provided them with the opportunity, and animal husbandry science (vaccinations, for example) allowed them to escape enclosures of bathroom tiles and operating room decor necessary for preventing infections—designers could now build naturalistic exhibits with plants, rocks, streams, and other animals.

Coe, an active outdoorsperson, was only one of several to launch the modern conception of immersion exhibits, in which visitors are immersed in the natural landscape alongside animals of the exhibited region. In the early 1970s at Woodland Park Zoo, Coe worked with Grant Jones, Dennis Paulson, and architect David Hancocks, who was the zoo director. Hancocks wanted to create a new kind of zoo, one with exhibits based on bioclimatic zones, ecological habitats, and animal social behavior.

Together, they created the gorilla exhibit that is still considered one of the best immersion exhibits ever built.

But even as designers like Coe, Jones, and others strive to include every detail necessary—each rock and leaf—to convince the visitor that, just for a second, he or she was in the heart of Africa. The myth of wild or wilderness may impede the path of zoos trying to become conservation centers.

Erecting the Wild Facade

Flashing the big-eyed fuzzy face of a baby cheetah or gorilla, zoos frequently promote themselves as saviors of wilderness and of animal species. The wild myth gives zoos a frame in which they can romanticize their missions as ones that do not require human considerations. Even while other sectors of the conservation community, such as the World Wildlife Fund and World Conservation Union, have long since devised strategies attending to human social problems that endanger wildlife, zoos lag far behind.

Hancocks (personal communication 1997), former director of the Arizona-Sonora Desert Museum, asserts that certain tactics, such as the wild facade in Ndoki, belie the truth about the success of zoo conservation. Promotion of conservation successes abroad reinforces a facade that hides zoos' true passion: conservation driven by science and technology. To become conservation centers, zoos want to carry out conservation through technological approaches. In the 1980s, zoos conceded they should not be the Ark (still a very popular metaphor for captive breeding) that carries captive species across a 50- or 100-year span necessary for the subsidence of human destruction, after which, the idea goes, new habitat for reintroductions will be created or discovered. They now declare that captive breeding was just one tool for conserving wilderness. Yet technological capacity for breeding has only been increasing. Zoos do not just hire veterinarians anymore—now the modern zoo staff includes specialists in animal reproductive physiology, genetics, molecular and small population biology, endocrinology, animal behavior, nutrition, and animal infectious diseases (Eisner 1991). And their technology is impressive: in vitro fertilization, cryogenic preservation, implantation surgery, and video microscopy (Stevens 1993).

Zoos promote these high-tech images in their research mission as well, despite captive breeding's many problems. It is, for example, very expensive; it can draw funds away from cheaper and more effective wilderness conservation projects; it generates surplus animals that must be disposed of; it presupposes that reintroduction is the solution to endangerment when reintroduction cannot address habitat loss, a prime cause of endangerment; it is biased toward large, charismatic mammals cherished by marketing and public relations departments; it draws attention away from the social and policy side of conservation; and, most of all, it can boast little success—only 13% of reintroductions have succeeded (Beck 1995).

Zoos often declare that the principal means of effecting conservation of species and wilderness is through education. Yet looking behind the wild facade, one can see that education is the highest priority only insofar as it serves zoos' interest in promoting scientific research. Here in the United States, for example, zoos argue that making Americans more knowledgeable and conscious of biology and extinction will ultimately help to conserve places like Ndoki. When pushed to explain a direct link between conservation there and education here, money to fund international projects

Figure 3—The Tiger Farm in Thailand claims that nursing newborn tigers on pigs rather than real tigers avoids their acquiring wild habits of the mother. Photo by Marisol Mayorga.

is that link. The most famous example of fund-raising in the name of education is the panda renting of the late 1980s and early 1990s, when zoos competed for pandas from China. It was estimated that Toledo earned about $60 million through tourism from a panda rented to the Toledo Zoo in 1988 (Cohn 1992). In 1990, a consortium of organizations, including the AZA, the World Wildlife Fund, the World Conservation Union, and International Union of Directors of Zoological Gardens voted for a worldwide moratorium on all panda loans.

Educational strategies such as exhibit graphics have been criticized on numerous fronts. Kellert reviewed the literature, which has shown very limited results in the educational effectiveness of zoos (Kellert and Dunlap 1989). There is little evidence that visitors' attitudes become more favorable toward nature and conservation or that they have learned much at all. Yet zoos claim that education will ultimately make citizens more aware of environmental issues, resulting in better conservation-related behaviors.

Figure 4—The Tiger Farm in Thailand sponsors an aggressive crocodile breeding project; here a newborn croc can be seen just cracking the egg. Photo by Marisol Mayorga.

Taking Down the Wild Facade

Many have argued that by exerting dominion over nature, humanity has attempted to separate itself from the natural context. This fundamental belief of separation underlies the wild myth. "Nature appreciation is a 'full stomach' phenomenon, that is confined to the rich, urban, and sophisticated. A society must become technological, urban, and crowded before a need for wild nature makes economic and intellectual sense," writes Nash (1983, p. 343). Zoos are built in highly populated areas, far from rural reality. The wild myth has emerged in part to deal with the stresses and artificiality of urban life. As Nash noted, city folk derive satisfaction—intellectual, recreational, historical, and spiritual—when they temporarily cross that divide into wilderness.

Despite the myth's perseverance in cities, people have always lived in wilderness. The Amazon rain forest, the last great wilderness of tropical America, has been home to native groups for thousands of years, no matter how uninhabited the interior may seem to outsiders. Their agroforestry manipulations partially account for the existence of some communities of trees botanists today regard as virgin wilderness. Many cultures also use technologies that do not destroy nature, and some have even been credited for increasing biological diversity through their agricultural and forest management practices (Fairhead and Leach 1996). People not only live in wilderness, but shape it as well.

Figure 5—Boy feeding giraffes at the Khao Kheow Open Zoo in Thailand. Photo by Marisol Mayorga.

Becoming a conservation center requires a redefinition of wilderness to include local perspectives and traditions. Gómez-Pompa and Kaus (1992) note that most policy agendas and education curricula of conservation organizations neglect rural perceptions of the environment and traditional systems of resource management.

Many conservation organizations have already decided that lasting conservation involves cooperation with local communities, who have the right and experience to live where they do. Once again zoos lag behind in not integrating these people's perspectives. They also do not realize that much of what they advocate, in fact, is to manage humans: posting guards, pursuing poachers, and setting up national parks. If zoos would only peek around the wild facade, they may find the path to becoming conservation centers.

Evolving into Conservation Centers

What would a conservation center look like? First the reader must throw out contemporary perceptions of a zoo. A few conservation centers have gone into the wilderness to work with people. The zoo in Chiapas, Mexico manages several large wilderness areas. All have people in them. Instead of pretending they do not exist, the zoo has engaged in teacher training, literacy programs, agricultural improvement programs, alternatives to hunting wild game, and integrating best practices of local communities into forest protection strategies. Each example represents a human management tactic for conservation. The Chiapas zoo recognizes that its audience is not just those who visit the zoo,

but all those who will never visit a traditional zoo (Kaufman 1990).

Zoos that work with people understand the need for specialists in other fields. The Roger Williams Park Zoo, Providence, RI, is going through this transition now. Anne Savage is director of research and a biologist. Yet when she finds herself managing the zoo's cotton-top tamarin project in Colombia, she clips on her social sciences badge. She worked to reduce firewood consumption by promoting a better clay stove called a *binde* (personal communication, Savage 1997). Savage presages a time when conservation centers will hire anthropologists who study traditional conservation systems among forest-based people, sociologists interested in group function, psychologists in education, and economists to discuss economic alternatives to deforestation.

The WZCS clearly states that education is conservation centers' principal tool for conservation. Instead of talking about setting up national parks, conservation centers could be educators in the variety of cutting-edge conservation techniques. They include joint forest implementation plans, community-based conservation, high diversity agroforestry systems, and extractive reserves. They would also be involved in strategies such as conservation easements, land trusts, and ecotourism.

Conservation centers could design exhibits to include people. Jon Coe's colleague, Grant Jones, has designed an exhibit that includes a rich understanding of the interplay between forest peoples, wildlife, and wilderness. At Woodland Park Zoo, his firm designed an exhibit that simulates a partly deciduous tropical forest. The visitor starts in the highlands of Thailand where they encounter elephants in the wilderness. But later in the exhibit, the scene changes to a logging camp with small buildings and elephants to drag logs through the forest. The exhibit portrays the elephant in its various roles as wild creature, cultural part of the landscape, and deity, all intertwined in this story.

The histories of zoos and wilderness in America have been intertwined for 150 years.

Above all, conservation centers cannot be managed only by biologists and businesspeople. Conservation centers must diversify their income, collaborate with other kinds of institutions, and refocus on conservation, rather than animal exhibition. Although they will certainly remain involved in captive breeding and exhibition, the public may come to regard them as serious interdisciplinary institutions working with people for conservation and wilderness.

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JON KOHL wrote a research paper on this topic in 1997 and won the Gloria Barron Wilderness Essay Contest sponsored by The Wilderness Society and Yale School of Forestry and Environmental Studies. Jon's writings focus on conservation, sustainability, and other environmental issues (www.jonkohl.com). E-mail: writer@jonkohl.com.

The Relationship between Qikiktagrugmiut (Kotzebue Tribal Members) and the Western Arctic Parklands, Alaska, United States

BY ALEX WHITING

Article author Alex Whiting. Photo by Siikauraq Whiting.

Introduction

Stadel, Taniton, and Heder (2002) suggest that educating the public about the diversity of values associated with wilderness is critical for reaching an understanding of how wilderness areas are defined, used, and managed in the future. Studies of attitudes, opinions, and values of visitors to wilderness and national park areas, however, have typically focused on people visiting these areas for recreation, the embodiment of the definition included in the U.S. Wilderness Act is humans as visitors who do not remain. One group missing from this research are those people for whom wilderness areas are homelands, which they rely on for their nutritional, spiritual, and cultural needs (Watson, Alessa, and Glaspell 2003). While there are non-Natives in this category, Native peoples with cultural ties going back generations are the focus of this investigation.

At European contact, northwestern Alaska was composed of several Inupiaq national homelands (Burch, Jr. 2003). The Qikiktagrugmiut were and are one of these nations (see Figure 1). The area they call home is from central Kotzebue Sound north and now includes portions of the Noatak National Preserve/Wilderness, and the Cape Krusenstern National Monument. Unlike most Native Americans, the Qikiktagrugmiut's relationship with the land and associated cultural activities have remained essentially the same, and the Qikiktagrugmiut continue to utilize their homeland to meet many of their basic needs.

In 1980, the Alaska National Interest Lands Conservation Act (ANILCA) was enacted as part of the implementation of the Alaska Native Claims Settlement Act (ANCSA). The purpose of section d (2) of ANCSA was to set aside large areas in Alaska to be federally protected from development and other deleterious impacts. In northwestern Alaska, four National Park Service (NPS)–managed National Conservation Units were created. They include the Noatak National Preserve, Cape Krusenstern National Monument, Kobuk Valley National Park, and the Bering Land Bridge National Preserve (see Figure 2). These are collectively managed as the Western Arctic National Parklands (WEAR) by the NPS offices located in Kotzebue, Nome, and Fairbanks. Of these units, two have official wilderness classifications, the Noatak Wilderness and the Kobuk Valley Wilderness areas.

(PEER REVIEWED)

Although the designations are the same as "traditional" parks (e.g., Park, monument, preserve), people living in or near WEAR are allowed to use the land in a manner representative of historical practices, a variance from traditional park policy. In order to better articulate the values and threats their members associate with WEAR, the Native village of Kotzebue decided to explore the issue with tribal members.

Methods

Thirty users of the park units in the 30-something age bracket, out of 77 households that fall into a heavy harvest category from the tribes' harvest-monitoring program, were interviewed. This group will be using the parklands for the next few decades and their children are likely to comprise the most active future user group. Although arguably they have the most to lose, this group has had very little participation in park public meetings. In addition, most were too young during the passage of ANILCA to have played an active role in shaping that legislation. All participants, except one, were male. Open-ended interviews were conducted using a predetermined set of questions about values, park management, and threats associated with WEAR. The author, a tribal employee, conducted all 30 interviews during September 2003.

Results

The average number of years' experience on the land during the participants' lifetimes was 36. The average maximum time spent out on the land during any single year was 9.3 months, with a few having spent their entire lives living out on the land. From September 2002 to September 2003, the average time spent on the land was 4.7 months.

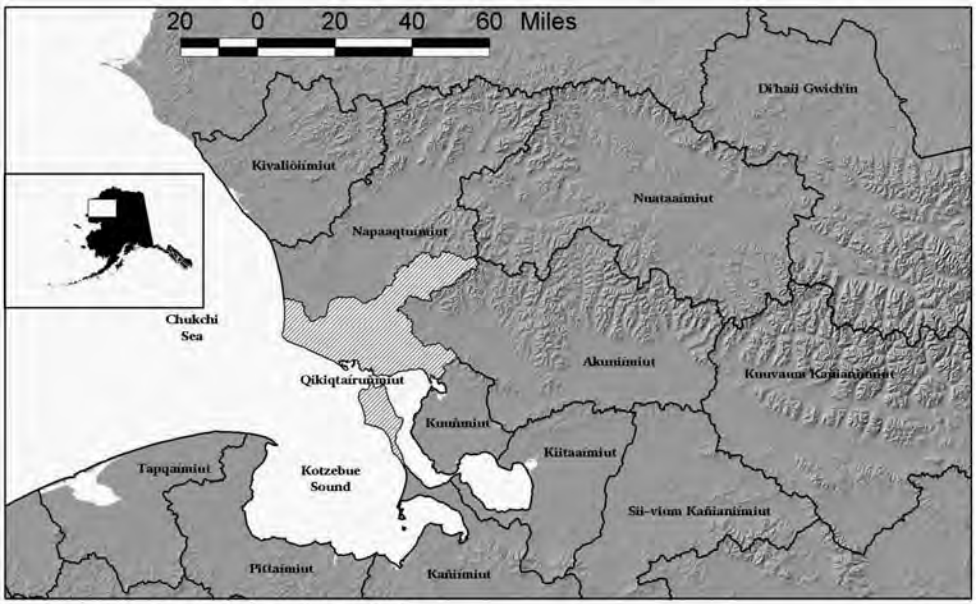

Figure 1—Illustration of Qikiktagrugmiut homelands in the western Arctic. Courtesy of Chris Young, archaeologist, WEAR.

Uses and Values Associated with the Land

When asked how they use the land, responses included hunting, trapping, fishing, gathering firewood, and traveling. Some responses were more philosophical, focusing on relaxation, enjoyment, survival, and "my way of life."

When asked what the land means to them, respondents provided answers that identify a range of values not commonly articulated within the purpose of federally protected wilderness:

- Identity (personal and community): "[The country] defines who I am and who we are as a people, very important to me."
- Traditional way of life: "[This is] a way of life—just the way I was brought up to live off the country."
- Survival of individuals and families: "Being able to get out there

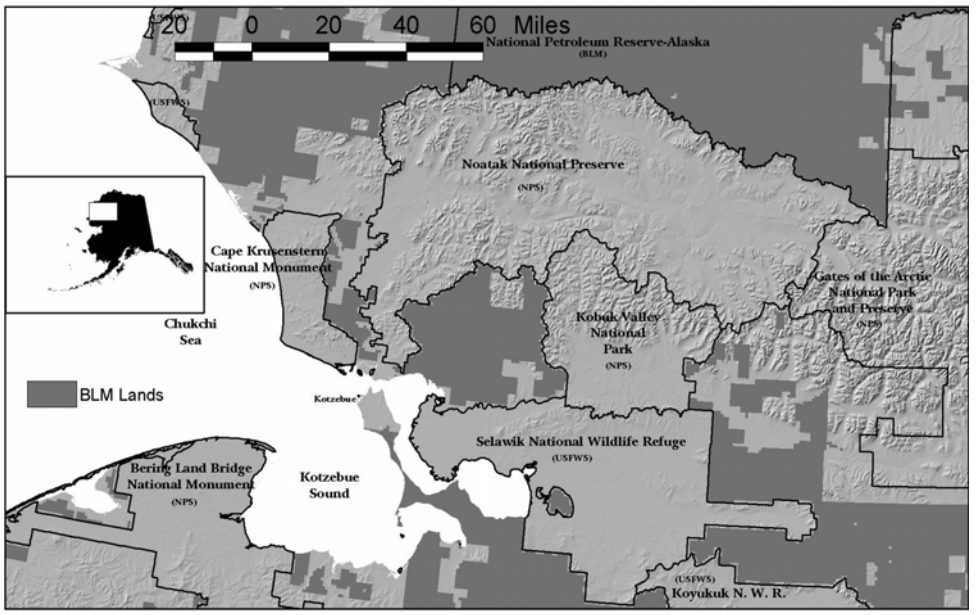

Figure 2—Illustration of the location of Western Arctic Parklands. Courtesy of Chris Young, archaeologist, WEAR.

Figure 3—Self-sufficiency is one value Qikiktagrugmiut realize from obtaining food in the Western Arctic wilderness. Photo by Siikauraq Whiting.

and show my kids how they can use the land to provide what they need to survive."

- Opportunities for personal growth: "[When in the country, I am] practicing traditional arts."
- Expression of humility: "[Spending time in the country] reminds me of how weak and small we are compared to the powers of the land and ocean."
- Maintain mental and physical health: "[Being in the country] keeps my spirit alive like a vitamin for my inner strength and spirit." and
- Expression of independence associated with self-sufficiency: "[The country provides] my own source of food, camping, firewood, ice, water—just living."

Most (23) of the respondents reported that their land relationship has remained largely the same over time. One commented on how his relationship with the land has become more important to counter western influences and keep the traditions of living off the land alive. Along these same lines, another said his relationship with the land has become more spiritual. Unlike traditional park visitors, his appreciation includes not only the grandeur of nature that nurtures the soul, but also the spiritual connection to past generations for whom the land provided the necessary nutritional and cultural elements that continue to sustain his family. One respondent, however, mentioned that using the land has become more recreational for him.

When asked what land attributes provide these values, half mentioned the presence of wild animals for food and fur and another half mentioned a clean, healthy country. Open space and no development also ranked high, and about half the respondents mentioned freedom to travel anywhere to carry on traditional activities. Respondents emphasized the importance of being left alone and the desire to leave the land the way it is.

Threats to Values Attached to the Land

Participants were asked to identify threats to the values they had identified for these lands. They included agency restrictions and regulations, the NPS not understanding the Qikiktagrugmiut "way of life," modern technology, global warming, competition with NPS for land inholdings, passage of time, globalization, development pressure, trash, lack of respect by outsiders, lack of teaching land ethics to the young people, the NPS camping nearby when Native people are on the land, airplanes, sport hunting (i.e., for trophies), and the increasing number of visitors.

When probed about land use regulations, half were aware of many of the regulations, while the rest had no knowledge of any regulations. The majority of respondents cited "restrictions in general" on hunting as a widespread concern, including the need for licensing, enforcement of "unnecessary" rules, and fears of closing park areas to subsistence hunting. A few mentioned that they would like to learn about regulations and that regulations were needed to keep out development and control nonlocals in the parklands, but they should not unreasonably restrict local use. Respondents emphasized that Qikiktagrugmiut have been brought up to use common sense in taking care of the land (see Figure 3).

Most of the respondents reported that they do not recognize boundaries, treating the land as all green, brown, or white, as the season dictates. Only one said he thinks about boundaries, and that this sometimes affects his actions. Another respondent admitted that he is aware of the boundaries, but that this does not influence his actions. During the discussion of boundaries, many respondents stated a belief that park managers view the country as place-names on a map or GPS coordinates, removed from human activity and the intricate knowledge of the nuances of place. However, the respondents' intergenerational and lifelong familiarity with the land allows for the development of detailed mental maps of the country, organized on the basis of a history of known places to camp, travel, harvest plants, and find animals.

When questioned about the relationship between themselves and WEAR staff, the influences respondents reported included professional relationships, running into park rangers out in the country, enforcement, and lack of trust. When asked about improving the relationship, slightly more than half said it's good the way it is. The remaining suggested more involvement of Inupiaq people in management and policy roles, and relationship and trust building with WEAR managers. Others focused on the need for rangers to use more common sense and get away from a by-the-book mentality. A few would like to see increased enforcement, especially for outside hunters. At least one mentioned the need for stronger enforcement all around, including for locals.

Discussion

Although wilderness protection provides some benefits to users, the threat of an ongoing land use relationship being destroyed through dependence on legislative, administrative, and legal decision making is a source of anxiety in the Alaska Native community. ANILCA could have addressed this, in part, by developing new park designations and management regimes specifically for protecting traditional relationships, with other park objectives being equal or subordinate. This approach was proposed for the Nunamiut Wildlands in what is now Gates of the Arctic National Park, but was rejected (Norris 2002). Furthermore, the predominantly nonlocal, and in many ways transient, nature of WEAR staff makes it difficult for them to build relationships needed to establish trust with local users.

The mistrust and hostilities revealed by many respondents in these interviews can, in part, be explained by the natural reaction of a colonized people subject to regulation by a dominant society. There are also historical examples of regulators in northwestern Alaska acting in ways that are interpreted by locals as being overly oppressive, perpetuating opinions that enforcement efforts are unreasonable, that there is an "occupying army," or that the people are being babysat while on the land—all of which were mentioned by one or more respondents. Currently, perceptions of agency personnel carry the baggage of past injustices, real or perceived, perpetuated by representatives of their kind.

Aldo Leopold explained this dynamic, in regard to plants, like this:

> It is evident that our plant biases are in part traditional. If your grandfather liked hickory nuts, you will like the hickory tree because your father told you to. If on the other hand, your grandfather burned a log carrying a poison ivy vine and recklessly stood in the smoke, you will dislike the species no matter with what crimson glories it warms your eyes each fall" (Leopold 1949, p. 72).

This observation of human nature is relevant to the discussion in that many Qikiktagrugmiut view as beneficial much of what the managers do in conserving resources, controlling nonlocals, and other management activities. Yet at the same time, the history of past conflicts feeds the flames of mistrust and animosity that still exist. Building on the former while reducing the latter is a major challenge for the relationship between the region's land managers and the Qikiktagrugmiut.

Many Qikiktagrugmiut view as beneficial much of what the managers do in conserving resources, controlling non locals, and other management activities.

Conclusions

It must be remembered that the NPS management of traditional lands occurs in the midst of a landslide of threats to Alaska Natives and the future of their cultures. These threats combine to exert incredible pressure and influence over the shape of Qikiktagrugmiut society. Unfortunately, the Qikiktagrugmiut have little control over many, and no control over some, of the potentially most harmful, such as global warming and contamination of traditional foods.

Many respondents reported a belief that the long-term goal of the NPS is for them to relate to their homelands more as parklands, with a similar relationship to that of any other American to national parklands (i.e., as visitors who do not remain). This attitude does not mean that all managers and politicians are unsympathetic toward the relationship of Inupiaq to the land (e.g., the Alaska congressional delegation has introduced legislation over recent years to increase the role of Alaska Natives in managing WEAR), or that the importance of WEAR to the Inupiaq of northwestern Alaska cannot play a more prominent role in developing long-term protection of that land relationship (see Figure 4). It does mean, however, that the Qikiktagrugmiut have lost substantial control over whether that future relationship will resemble the one they have historically enjoyed and continues to define who they are now.

Acknowledgments

Thanks to the tribal members who participated and the Aldo Leopold

Continued on page 8

Montane Lake Research Program

BY ROLAND A. KNAPP

Editor's note: *The Excellence in Wilderness Stewardship Research Award was given to Kathleen Matthews (U.S. Forest Service Research) and Roland Knapp (UCSB, Sierra Nevada Aquatic Research Laboratory) by IJW and the U.S. Forest Service. This collabrative High Mountain Lake Project assessed the impacts of fish stocking, in part, by surveying over 2000 lakes in the John Muir Wilderness (where fish stocking continues) and the adjacent Kings Canyon National Park (where fish stocking was terminated). Dale N. Bosworth, Chief, USFS, said this on June 23, 2004 when presenting the award: "Since 1995, the US Forest Service Pacific Southwest Research Station Sierra Nevada Research Center has been involved in studying the effects of the widespread introduction of non-native trout on the native high elevation lake fauna in the Sierra Nevada. The results of the studies indicated a strong negative effect of introduced trout on the distribution and abundance of the mountain yellow-legged frog, Rana muscosa, and the Pacific tree frog, Hyla regilla, and these results are published in Conservation Biology, and International Journal of Wilderness, and Copeia." Roland Knapp summarized some of this research over the last ten years at the request of* IJW.

My research began on mountain lakes in 1995, in collaboration with Dr. Kathleen Matthews (U.S. Forest Service, Pacific Southwest Research Station). This research focused on historically fishless alpine lakes in the John Muir Wilderness and Kings Canyon National Park of California's Sierra Nevada, and was designed to describe the distribution of non-native trout, their impacts on native amphibians, reptiles, zooplankton, and benthic macroinvertebrates, and the extent to which native species could recover following fish removal. This project concluded in 1997 with the survey of more than 1,700 water bodies. Papers published based on this comparative study have provided compelling evidence that non-native trout dramatically alter the faunal composition of alpine lakes. These impacts include the extirpation of amphibian populations and the elimination of large-bodied, conspicuous zooplankton and benthic macro-invertebrate species. In addition to these direct impacts caused by trout predation, indirect impacts of these changes in faunal composition include the extirpation of garter snakes from the most heavily stocked lake basins following the elimination of their amphibian prey by trout. Despite the magnitude of trout-induced changes to faunal composition, comparisons of the fauna in lakes that were stocked in the past but had since reverted to a fishless condition, with lakes that were never stocked, indicated that the native fauna showed considerable ability to recover following trout disappearance.

Author and award winner Roland A. Knapp in the California's Sierra Nevada Mountains.

In 1996, I began a research project with Dr. Orlando Sarnelle (Michigan State University) that used a replicated whole lake experiment in the John Muir Wilderness to describe the recovery of alpine lake ecosystem structure and function following the removal of non-native trout. After two years of data

collection to describe invertebrate and vertebrate species composition, algal biomass and production, and nutrient dynamics in the seven trout-containing study lakes, trout populations were removed from four of the lakes in 1998 using gill nets. Data collected from 1998 through 2003 indicated that the mountain yellow-legged frog *(Rana muscosa)* increased more than 100-fold in some fish removal lakes and most benthic macroinvertebrate and zooplankton species, characteristic of never-stocked lakes, reappeared in the fish removal lakes within five years. However, *R. muscosa* has been unable to recolonize those study lakes that are separated by several kilometers from frog source populations, and at least one species of zooplankton has failed to recover in any of the study lakes following fish removal. Changes in ecosystem function following trout removal were more subtle and suggested that trout have little direct effect on nutrient cycling, algal biomass, and primary productivity.

Together, these comparative and experimental studies provided critical evidence that the practice of introducing trout into naturally fishless lakes was causing considerable alteration of these high-elevation wilderness ecosystems. In addition, results from both studies suggested that these effects were largely reversible if trout could be removed. But, the question remained: Did these results apply directly to lower elevation aquatic ecosystems? To find out, between 2000 and 2002, my field crews and I visited all lakes and ponds (3,000) in Yosemite National Park and described the consequences of trout introductions to these lower-elevation systems. Results from this study again indicated that faunal composition is substantially changed by trout introductions and that the native fauna does recover following trout disappearance. However, it was also found that high-elevation lakes were more sensitive to trout impacts than were those at low elevations. During this same period, we completed faunal surveys in all lakes and ponds (3,500) in Sequoia-Kings Canyon National Park.

Papers published based on this comparative study have provided compelling evidence that non-native trout dramatically alter the faunal composition of alpine lakes.

My research team is now conducting resurveys of amphibian populations in the John Muir Wilderness, Sequoia-Kings Canyon National Park, and Yosemite National Park to describe population trajectories and the role of disease in causing amphibian declines. In addition, a recently completed study in collaboration with Mr. Trip Armstrong, a graduate student at the University of California–Davis, provided experimental evidence that the majority of non-native trout populations in currently stocked lakes of the John Muir Wilderness are self-sustaining and will persist without any further stocking. Research is now beginning on a study of the effects of introduced trout on alpine-nesting birds, effects that may result from competition between trout and birds for shared invertebrate prey.

Over the past several years, I have worked closely with biologists in the National Park Service and the California Department of Fish and Game (CDFG) to design and implement programs to restore some wilderness lakes to their natural fishless condition. In addition, study results have prompted the CDFG to dramatically curtail trout stocking in wilderness areas of the Sierra Nevada.

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PERSPECTIVES FROM THE
ALDO LEOPOLD WILDERNESS RESEARCH INSTITUTE

The Wilderness Stewardship Reference System

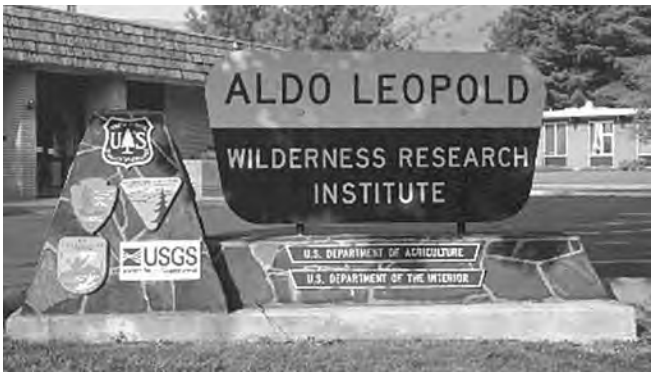
BY PETER LANDRES

Wilderness stewardship faces increasingly complex challenges from myriad internal and external threats to wilderness, along with increasing demands for the use of wilderness for all manner of different purposes. Wilderness managers are looking for information to help them answer difficult questions, for example, about whether competitive recreational events should be allowed, if herbicides should be used to control weeds, if non-native fish should be removed, or if fuels accumulated from fire suppression should be removed.

The new Wilderness Stewardship Reference System (WSRS) was designed to provide quick and easy access over the Internet (www.wilderness.net/WSRS) to U.S. legislative, administrative, judicial, and scientific information on more than 60 difficult wilderness stewardship issues. The primary purpose of the WSRS is to provide information that will help managers make decisions consistent with the letter and spirit of the 1964 Wilderness Act, subsequent wilderness legislation, and agency policies. The WSRS applies to all four U.S. federal agencies responsible for managing wilderness and may be useful to a variety of other people interested in wilderness and its stewardship. Collaboratively developed between the Leopold Institute and the Arthur Carhart National Wilderness Training Center, the WSRS is hosted on Wilderness.net, a website that provides a variety of resources for wilderness stewardship.

The WSRS is organized around specific issues such as mining, access, inholdings, commercial services, and fire and provides excerpts, as appropriate, from the following types of information:

- Special provisions language in wilderness legislation
- Legislative history of congressional discussion before a wilderness law was passed



- Code of Federal Regulations pursuant to wilderness legislation
- Agency policies on wilderness
- Judicial decisions of major cases affecting wilderness stewardship
- Annotated scientific publications relevant to wilderness stewardship.

The WSRS provides easy access to this information, and should be especially useful for people who are not familiar with how to search for legislative, policy, and judicial information. The WSRS offers three different methods of searching for this information:

1. One issue—the information is organized into six general categories which are then further divided into specific issues
2. All issues—all the types of information that are available for all issues are displayed in a single, large table
3. Keyword—any word or combination of words is used to search for all of the information that is available based on the keyword(s).

Continued on page 22

"A Minor Accomplishment"

Roald Amundsen's Classic Alaskan Trek

BY JIM GLOVER

To send a telegraph, Roald Amundsen, in the winter of 1904–05, traveled over a thousand miles across Alaska's Brooks Range by dogsled, skis, toboggan, and snowshoe. Amundsen's biographer, Roland Huntford, called this trip "in itself a minor accomplishment" (Huntford, 1979, p. 110). It was only minor because it came at the end of a four-year expedition during which a six-member team of Norwegian sailors discovered the elusive "Northwest Passage"—they found a water route from the Atlantic to the Pacific Oceans, ending several centuries of search. Amundsen needed to send his telegraph to announce the news and to let his crew's relatives back home know that they were still alive.

Amundsen later received more fame as the "discoverer" of the South Pole. So, his little jaunt across the Brooks Range and back has never been given much attention. But for students of land-based wilderness travel, it might be educational—and fun—to examine this thousand-mile journey undertaken by one of the true masters of wilderness travel.

On October 24, 1905, Amundsen left Herschel Island, off the north coast of Canada, near the Alaska-Yukon border. With him were three others. One was Captain William Mogg, the 60-year-old commander of a whaling ship that had broken down near Herschel. The others were a middle-aged Eskimo couple, known as Jimmy and Kappa, who acted more or less as guides for the first Brooks Range crossing.

Amundsen was absolutely broke, so he traveled as Captain Mogg's "guest." This meant Mogg was in charge, and Amundsen found this challenging. He had naturally developed certain ideas about wilderness travel, some of which were then novel but later proved sound. His ideas about food and nutrition are an excellent example, and sure enough, these clashed with those of Captain Mogg.

"I had brought several things," Amundsen later wrote, "that Captain Mogg did not see the desirability of taking. … There was [for instance], a tin of about 14 pounds of pemmican, which I was rather annoyed at having to send back because Captain Mogg would not admit that pemmican was the best provision for sledge trips" (Amundsen, 1927, p. 213). Pemmican was a sort of high-fat and protein precursor of the powerbar; it usually featured dried meat, animal fat, salt, and other nutrients.

Article author Jim Glover.

Throughout the journey, in fact, Amundsen was frequently reminded of the contrast between his own notions of nutrition and Mogg's. For one thing, Amundsen understood that food is fuel, and that we burn a lot of it on expedition, especially in cold weather. "From the beginning of my career as a sailor," he wrote in his book on the Northwest Passage, "I had noticed that the rations dealt out to us were much too small for a man to do any real hard work on, so I always utilized every opportunity … to make up for the shortage in the days to come" (1927, p. 227). He had several such opportunities on this trip, when his foursome ran into Eskimo and Indian hunting parties. When this happened, he would sometimes spend whole days "feasting on the fresh meat we purchased," and packing more away for the days ahead. The medium of exchange was often tea, for which, said Amundsen, "the Eskimos here would sell their immortal souls" (1927, p. 228).

Captain Mogg placed much less emphasis on food. On one occasion the party met an Eskimo family that had just harvested 60 caribou. Recalled Amundsen: "Jimmy and I winked at each other behind our leader's back, happy at the chance of having another good meal" (1927, p. 228).

Shelter, of course, is a key element of wilderness travel. The tent for this trip consisted of a large, bowl-shaped

Figure 1—The Firth River in the Arctic Refuge. Photo courtesy of U.S. Fish and Wildlife Service.

canvas and 18 long willow poles. The poles would somehow be secured to the ground, one opposite another, then bent over to form arches, and lashed together at the top. The canvas was then stretched over, and the shelter was ready. It worked adequately, but Amundsen, the perfectionist, found several faults with it. Compared to the simpler system he'd used when finding the Passage, it took too long to set up. Also, "all the necessary lashings had to be done with the bare hands"—a critical concern in the extremely cold temperatures in which Amundsen traveled. What annoyed him more was the awkward way this tent packed up for travel. The long poles, when packed on a sled, "made it look like a hedgehog, and were constantly getting caught in something or other on the way." He concluded "an ordinary three-pole triangular tent is far preferable" (1927, p. 221).

The tent did have a chimney hole so that a wood-burning stove could be installed inside, for both cooking and warmth. Being the "guest," Amundsen was assigned the "pleasant chore of cook in the morning." This was "fortunate," Amundsen wrote, since he seemed to be the only one who could get up in the morning. The heat from the wood stove "seemed to act like a narcotic" on his three companions (1927, p. 223).

Clothing, too, was of great interest to Amundsen. Indeed, he pioneered the use of Eskimo clothing technology by European wilderness travelers. While finding the Northwest Passage, he started to "go around dressed completely as a [Netsilik] Eskimo" (Amundsen, 1987, p. 22). This included two layers of caribou-fur anoraks, which, he observed:

> Hang loosely outside the trousers and the air has free access all the way up the body. Inner and outer trousers are held up round the waist with a cord and hang free over the *kamikks* [boots], so that the air can circulate freely. I find it excellent, and the only way to wear fur clothes, if one is to avoid sweating. (Huntford, 1979, p. 98)

Clothing, too, was of great interest to Amundsen. Indeed, he pioneered the use of Eskimo clothing technology by European wilderness travelers.

As for the traveling conditions, these varied, depending on elevation. When they first left Herschel Island and were crossing the coastal plain, the snow was patchy, which made dog sledding difficult. Amundsen's sledge runners scraped so much bare ground that their iron coating wore through and the wood underneath splintered. His dogs, consequently, had to work extra hard to pull their load. Also, the rivers were not completely frozen yet, so they sometimes had to slosh through water. Other stretches were simply icy, and in such stretches gusts of wind sometimes overturned dogs, sledges, and humans.

This was all "very tiring," but Amundsen was overjoyed. The reason: He saw trees and rocks for the first time in two years. His first tree was a little fir hanging out of a rock crevice. "At the moment I could have abandoned everything … and scrambled up the rock to catch hold of that crooked stem and draw in the scent of the fir trees and the woods" (Amundsen, 1927, p. 224).

They were following what Amundsen called the Herschel Island River. Today it is called the Firth River. It begins in the eastern Brooks Range (the Davidson Mountains), flows north and east through Canada's Avvavik National Park, and finally drains into the Beaufort Sea near Herschel Island. For many centuries

it had been a route of trade between Native American groups on the Arctic coast and those in the interior.

Amundsen reached the Arctic divide on November 3rd, ten days after leaving Herschel Island. At this point they were on the eastern edge of today's Arctic National Wildlife Refuge. A day or two earlier they had switched from sleds with runners to toboggans because the snow in the mountains was deeper and softer. Amundsen described the toboggan as "made like a ski, twelve feet long, and six times as broad as an ordinary ski, but with a considerable curve" (1927, p. 219). Just like sleds, the toboggans were pulled by dogs. Their big disadvantage was that they were harder to pack, being smaller and having no side rails.

The procedure now was for three people to break trail in the loose snow, by snowshoeing ahead. Then Amundsen, already the best dog driver, followed with two dog teams, each pulling a toboggan.

They soon dropped into the upper reaches of Porcupine River, which is on modern maps. On this descent, Amundsen played the clown. He seems to have been a serious man with a playful streak. Anyway, he decided to toboggan down the hill without the dogs. So he unharnessed them, jumped, on and "let her go." But when the dogs saw the toboggan take off, they ran to get in front. Amundsen, dogs, and toboggan somersaulted down the hill, while Mogg nearly "split his sides" and the two Eskimos "screamed with delight" (Amundsen, 1927, p. 233).

Once the Porcupine Valley widened, the rest of the journey to civilization was relatively easy. Mogg rode the whole second half of the trip, while Amundsen glided along on skis. He had grown up skiing and was very partial to it, but he had been unable to convince the others how efficient a mode of travel it could be. Now he would show them. One day, while Jimmy was breaking trail in snowshoes, Amundsen glided effortlessly past him. He says he called out, "Well, Jimmy, what do you think of skis now?" and was soon a long way in front (1927, p. 234). A few years later, when he led the first-ever party to the South Pole, world-class skiing would be a major factor in his success.

He seems to have made this entire return trip, in the dead of winter, with very little sunlight each day and 40- to 60-below temperatures, by himself!

It still took until December 5 to reach Eagle, where Amundsen finally got to send his telegraph. The day he arrived, the temperature outside was –62° F. Shortly after he sent his message, the intense cold disabled the telegraph wires.

Amundsen spent most of the next two months in Eagle, waiting for some mail to come through from Norway for his companions so he could deliver it to them. It finally did, and on February 3, 1906, Amundsen got back on his beloved skis behind his dogsled and headed north, back across the Brooks Range to Herschel Island 500 miles away.

The exceptional thing about this return trip is that Amundsen found it so *un*exceptional. He says nothing of it in his book on the Northwest Passage except that he had some "liberal hospitality along the way" at a few roadhouses and frontier cabins.

And yet, he seems to have made this entire return trip, in the dead of winter, with very little sunlight each day and 40- to 60-below temperatures, by himself! At least that's the impression from his book, and from Huntford, who says of Amundsen's return trip, "The snow was better, there was no passenger and the journey was easier than the outward one" (Huntford, 1979, p.113).

There may be many more details about this casual winter trip of

Figure 2—The Porcupine River in the Arctic Refuge. Photo courtesy of U.S. Fish and Wildlife Service.

Amundsen's that would be of great interest to present-day wilderness travelers. The best source would be Amundsen's diary, which Huntford quotes from extensively. The diary is at a library in Oslo, Norway. It is written in Norwegian (of course) and, as far as I have been able to tell, has never been translated into other languages, including English. If it ever is, I'll be the first in line for a copy.

For now we'll just have to watch Amundsen in our imaginations as he makes his return trip. I see a lone skier with a dog team and a sack of mail, traveling for a month by himself, living on pemmican and caribou, entering the present-day Arctic National Wildlife Refuge, re-crossing the Arctic Divide, perhaps tobogganing down in what is now Ivvavik National Park, crossing the coastal plain, and finally rejoining his countrymen on March 12, 1906. Naturally, they were happy to see him, and especially elated by the mail from home.

As already mentioned, Amundsen would later, in 1911, win a dramatic race for the South Pole with a small, fast team of expert dog mushers and skiers (Glover, 1998). His thousand-mile journey in Alaska to send a telegram was an important piece of training for his masterpiece expedition. It was indeed "by itself a minor accomplishment."

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From BOOK REVIEWS on page 48

contend that what Schindler previously refered to as "wicked problems" shift according to their level of divisiveness, intensity, pervasiveness, and complexity. Stakeholders are polarized differently by the conflict and the levels at which they become emotionally involved in the relevant issues. In addition, these conflicts may permeate the public and private lives of individuals, affecting various strata of a community.

Lewicki, Gray, and Elliott assert that intractable environmental conflicts are often shaped and maintained by *how* individuals frame an issue (i.e., how we interpret what is going on during a conflict and formulate ideas about the roles of stakeholders). According to the editors, frames are used to define the nature of a conflict, identify a mechanism for conflict resolution, justify actions, protect oneself in case of litigation, and mobilize others to take action. *Making Sense of Intractable Environmental Conflicts* focuses on three frames: (1) identity frames focus on how one views oneself and the group to which one claims kinship; (2) characterization frames mirror identity frames in that they reflect how individuals perceive others and the groups to which others belong; and (3) conflict management frames focus on how individuals believe the conflict should be resolved. The reframing of a conflict may occur when an alternate perspective is presented, but this is unlikely without external intervention.

The book is divided into subsections focusing on natural resources, water, toxic pollutants, and growth-related management. Each subsection presents two detailed case studies that highlight contemporary environmental conflicts in the United States. The fourth chapter, which relates to the creation and subsequent management of Voyageurs National Park, perhaps holds the greatest interest for wilderness proponents.

The idea for a national park in northern Minnesota was originally proposed in 1891, one month after the passage of the Forest Reserve Act. Focusing on Minnesota's northern border with Canada and including areas surrounding Crane Lake, Ash River, and Kabetogama, this park concept was opposed by political and timber interests. In 1925, the Minnesota and Ontario Paper Company announced plans to build a series of dams that would dramatically alter water levels in the area. Conservationists opposed these plans, and conflict between factions developed. Over the next several decades, the positions of forestry companies, politicians, wilderness preservationists, and community members became entrenched. Despite this opposition, the Voyageurs National Park was created in 1971. Since that time, contentious issues, including proposing the designation of the Kabetogama Peninsula as a wilderness area and restricting deer and duck hunting, have resulted in a firestorm of controversy. Lewicki, Gray, and Elliott demonstrate how stakeholders framed these issues, thereby contributing to adversarial postures.

Making Sense of Intractable Environmental Conflicts provides an insightful analysis of how social conflicts develop and become entrenched. It is not the intention of the editors to delve deeply into the solutions for these conflicts, as that is left to others. This volume provides an important extension of the academic literature by focusing on the most messy and, thus, challenging environmental conflicts in the United States.

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The Wrangell Mountains Center's College Field Program

Student-Faculty Groups Engage Alaska Wilderness Issues in Rugged Terrain

BY BENJAMIN A. SHAINE

Introduction

Education that combines fieldwork with collaborative, applied research and writing can be done anywhere. But in the wild Wrangell Mountains, enormous scale and rapid rates of change make the experience especially vivid. Students in the Wrangell Mountains Center's college program find themselves in trailless terrain, both physically and for many wilderness issues, where alternatives remain unexplored and policies are yet unresolved. This setting rewards creativity and initiative. It also demands respect for its challenging realities.

The educational benefits of this program include, but go beyond, interdisciplinary study of natural history and land-use policy. Both the routes traveled and the projects undertaken create challenges that build community within the program. Because they have experienced it, participants come away knowing that cooperative living is possible in this world. The focus on hands-on fieldwork gives them an opportunity to integrate abstract thought with personal experiences. Through field journal entries, including drawing and creative writing as well as scientific observation and policy analysis, participants practice an attentiveness that serves them well in other situations. Above all, the land itself is the teacher, inescapably demonstrating the beauty and inevitability of natural processes and the necessity of adapting to them.

About half of the program occurs while backpacking. During the other half, students are based out of the center's historic headquarters, which was the McCarthy Hardware Store during the copper mining days of almost a century ago, a short walk from the Kennicott Glacier. Students, who come from campuses across the country (and sometimes from other countries), earn academic credit through a partnership with University of California-Santa Barbara Extension's Wildlands Studies. Most are undergraduates ranging in age from 19 to 22, although graduate students and people in their 40s have enrolled. Research topics are developed in partnership with National Park Service staff and with the assistance of local scientists, writers, artists, and guides.

Article author Ben Shaine lecturing at Kennicott Glacier in the Wrangell-St. Elias National Park and Preserve. Photo by Wrangell Mountains Center.

In 2003, the program went to the Chitistone-Skolai area of the park. Students inventoried significant attributes of the area, proposed interpretive themes, and described current and desired conditions and management issues for this most-visited part of the park backcountry. With Park Service support, students replicated an earlier inventory of trail and campsite conditions. Previous studies have inventoried and suggested criteria for evaluating backcountry conditions in the Kennicott Basin closer to McCarthy. Students and staff have also worked on a guide to the natural and cultural history of the Wrangell Mountains. This will be a multiyear project to which local residents and successive generations of students can contribute, resulting in a book published annually in revised editions. Partial funding has come through a cooperative agreement with the

Figure 1—Both the routes traveled and the projects undertaken create challenges that build community within the program. Photo by Wrangell Mountains Center.

Park Service, which, it is hoped, will be supplemented with foundation grants.

Administratively, the biggest challenge is maintaining the staff such a program requires. For safety as well as academics, in the field a student-staff ratio of 4:1 is preferred. It takes at least a year of experience in the place to prepare even a skilled person for a teaching position. Priority is placed on retaining staff, who often stay with the program for many years in varying roles. As a result, the staff consists of a combination of core faculty, who live together throughout the program, and guests, including those doing residencies at the center, along with local scientists, artists, guides, and park staff, who participate for shorter periods, often on a volunteer basis.

The year 2004 marks the center's 22nd annual summer season. All of the Center's programs share features developed in the college course: emphasis on hands-on experience with the place, community living, and empowering participants to take an active role in public life.

The Program Structure

The first part of the program is a structured introduction to the place, to living and travel skills, and to an array of academic disciplines. We introduce natural history journaling techniques with staff presentations, field exercises, and ensuing discussions. Using their journals as a primary tool, students develop their abilities in drawing, essay writing, poetry (especially the short forms of haiku and renga), Grinnell entries, and the hypothesis-testing scientific experimental method.

Days are devoted to studying topics such as ecological succession, rock identification, plate tectonics, and park history. These sessions are done on short walks from our McCarthy headquarters and on an initial backcountry trip to a base camp, usually one or two days' walk up the glacier from town. Teams of students are each assigned a question to study through observations during this trip and to report on to the group. Such questions might include, for example, "What evidence do we find on the land of previous glacial advances and what was their extent?" We also focus on hiking and camping skills. For some students, this trip is their first time camping, and likely none of them has dealt with terrain like the Wrangell Mountains before.

During the second part of the program, the students conduct field research. The itinerary for a two- to three-week wilderness trip is set to meet specific data-gathering and observation needs. We divide into backpacking groups of six to eight students and two staff, which may rendezvous near an airstrip in the backcountry for resupply, academic discussion, storytelling, and an opportunity to meet with guest faculty and park staff.

We return to McCarthy for a week of project completion. Students first write up drafts, then give an oral presentation before an audience that includes center resident fellows, park staff, and local scientists. Using comments received in the presentation, students and faculty then together make revisions and create the final report, including text and illustrations, laid out and ready for printing. The learning curve during this period can be near-vertical; a student who starts the evening never having seen an executive summary may have written one for publication by midnight.

This schedule is intense. Over two months, students have only a couple of unscheduled days. We are still learning how to conduct the program so everyone, students and staff, stays within their comfort limits and maintains a sense of spaciousness in their lives. Each year, we do better.

The choice of project is critical. Although we have often had students do individual or small team projects, we find that they are most motivated when they work together as a group on a topic that is important to a large audience. Over time, we have discovered that the best topics call for extensive field work, are amenable to being broken down into tasks doable by subgroups of two to four, are simple enough to be completed with quality by inexperienced students in a few weeks, involve learning new skills, and have the potential to make an original contribution. In the Wrangell Mountains, there are many options that meet these criteria.

The program reflects a set of underlying principles that guide our agenda:

- *Embodiment:* Learning involves all the senses in direct contact with the

The land itself is the teacher, inescapably demonstrating the beauty and inevitability of natural processes and the necessity of adapting to them.

place. Concepts provided by academic disciplines help enable this experience but are incomplete without it. Practical skills, including keeping warm in the rain, fording streams, and route finding, are also important. We learn through our muscles as well as our minds.

- *Community:* We explicitly value community living, including the joys of cooking, cleaning, and the daily maintenance required to live comfortably away from the support of modern utilities and urban infrastructure. While living and learning communities can exist on a college campus, the challenges of the Wrangell Mountains make it a much more intense experience, affecting how the members of the group experience not only their human relationships, but the place itself.
- *Collaboration:* We undertake projects that call for the efforts and talents of people working together toward a common objective. In this way, we prepare participants for civic and professional involvement with complex environmental and public policy issues, for working in interdisciplinary teams, and for functioning well with people of diverse viewpoints.
- *Cooperation:* The emphasis on cooperation, empathy, and compassion extends throughout the program, from mutual assistance in writing and rewriting report drafts to helping each other move through the country. When stronger participants reach a high pass, they are encouraged to drop their packs, go back down, and take loads from people still heading up from below. Slower hikers are encouraged to do their best, while seeing the yielding of their loads positively, as a gift to the group.
- *Discipline:* Taking on demanding projects in an unforgiving wilderness land makes it necessary to do things well. For our seminars, we pick a limited number of readings, mostly from primary sources, which exemplify scholarly rigor and lucid presentation. Because they write for an outside audience that cares about the product, participants are motivated to achieve quality, even if it means editing 10 sloppy pages down to 1 tight paragraph. Camping in grizzly country and fording bridgeless glacial rivers makes an equivalent demand.
- *Engagement:* In both research projects and wilderness living, our practices demonstrate that individual and collective actions can make a difference in the outcome of events. Going into topics and places where few have tread before, our students discover that not only are they capable of taking care of themselves, but that they can make original, creative contributions that affect the future of a place they care about. Our intent is to empower them personally and as citizens to take responsibility for their actions. Doing so as an academic program, we approach policy questions in the spirit of inquiry, rather than as participants in political battles. While recognizing the importance of adversarial politics, we show that there are many ways to participate in public and community life.
- *Joy:* All of the above, done in the magnificence of the Wrangell Mountains, is cause for celebration. Our groups carry banjos into the wilds and sing while walking with Dall sheep and mountain goats through sun, rain, and mosquitoes.

While recognizing the value of solitude and leisure in the wilds, we acknowledge that our program does not provide much opportunity for it. However, our graduates can come away with skills and experiences that enable them to venture to similar places on their own, with the freedom to choose their agenda.

Figure 2—The focus on hands-on fieldwork gives students an opportunity to integrate abstract thought with personal experiences. Photo by Wrangell Mountains Center.

The Challenge of the Wrangell Mountains

Together with the adjacent parks that comprise a World Heritage Site extending through parts of Canada and down to Glacier Bay, Wrangell-St. Elias National Park and Preserve is the continent's preeminent example of a dynamic natural landscape. Far from equilibrium, its landforms and their biota often undergo change visible in the span of a human lifetime, or even a single season. Glaciers melt, rivers change course, mountains slide. Change over longer time periods is starkly visible in contorted rock layers exposed in mountain cliffs. As the Grand Canyon is known for its monumental static geology, the Wrangell Mountains similarly demonstrate a land in transformation.

The protected area's size—13 million acres (5.3 million ha) in Wrangell-St. Elias and 24 million overall, including the contiguous areas of the World

Heritage Site—enables maintenance of natural habitat, species populations, and predator-prey relationships not possible in smaller parklands. Wilderness can be experienced on a scale not available elsewhere. Most overland travel is cross-country without trails; rivers and ridges are often impassable obstacles. Grizzly bears, rather than people, are often the top predators.

Paradoxically, the Wrangell Mountains are also a place where people not only visit, but live. Unlike most parks in the lower states, Wrangell-St. Elias has human residents with the experiences and perspectives that come from knowing a place as home. That home encompasses not only private lands within park boundaries, but the public lands as well. Whole small towns, such as McCarthy, are within park boundaries. Predating the park, they continue to grow and change. Other private holdings, outside Park Service jurisdiction, most originally patented as mining claims, are scattered throughout the public lands.

Even in the backcountry of the nation's most rugged and largest designated wilderness, access is easier than in much smaller parks elsewhere. Park rules provide for motorized access. Air taxis land anywhere physically possible in the park, dropping visitors off at remote sites. Snow machines and motorboats are currently unregulated.

Two decades after Congress designated the park, many complexities arising from this paradox remain unresolved. The Park Service is just now making tentative steps toward its first backcountry plan. It has embarked on its first interpretive plan, which explicitly recognizes ongoing human residence along with natural and wilderness values. With a small staff responsible for management of an area the size of Switzerland, the agency is but one player among many, including the state of Alaska, Native-owned corporations, and private individuals, who participate in defining its future.

Similar to the legal and regulatory situation, the expectations, images, and understandings people have about the park remain fluid and subject to change. Accessible sources of information are few, especially given the huge size and diversity of the area. As a result, a vision that would provide a foundation for the direction of park management remains relatively unformed. Over time, understanding of park values and purposes will become clearer. Meanwhile, there is great opportunity to influence the ways that the park is perceived and, thus, how it is treated. These conditions provide the context for our field program. The opportunities are as great as the challenges.

Quite a few alumni have returned to the Wrangell Mountains in subsequent years. Some have returned to complete fieldwork for undergraduate and graduate theses in landscape architecture, anthropology, and natural sciences. Others have moved to Alaska after finishing college. Some have established homes in the McCarthy area, worked as backcountry guides, or joined our staff. Whether or not they return to the Alaska wilderness, participants leave the Wrangell Mountains seeing their own home place in a different light. We hope they return home to discover that the natural wildness so obvious in the Wrangell Mountains in reality exists everywhere, even if obscured by civilization's overlay.

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Conservation International Joins *IJW* Sponsors

We are pleased to announce that Conservation International (CI) will be a lead sponsor of the *IJW*, joining the existing group of distinguished NGOs and government agencies that underwrite the *Journal* financially or in-kind.

Founded in 1987, CI has offices in more than 40 countries on four continents. CI applies innovations in science, economics, policy, and community participation to protect the Earth's richest regions of plant and animal diversity in the hot spots, high-biodiversity wilderness areas, and key marine ecosystems.

CI has a long-standing commitment to wilderness conservation, in particular in the high-biodiversity wilderness areas. As evidenced by its leadership in a number of large-scale wilderness protection initiatives in Amazonia, New Guinea, and Congo, not to mention a comprehensive survey of the planet's wilderness areas ("Wilderness: Earth's Last Wild Places"—see article in *IJW*'s August 2003 issue, and book review by John Shultis, *IJW*, April, 2004), CI's commitment to wilderness conservation continues to grow.

"CI is very pleased to be part of the *IJW* and its constituency," said Dr. Russell Mittermeier, CI's president. "The organizations responsible for this high-quality and timely journal are key players in an active and critically important wildlands debate in international conservation."

IJW readers will learn more of CI in the coming year, with a one-page report in each issue on CI's wilderness and wilderness-related activities and perspectives. *IJW*'s all-volunteer editorial staff gives its sincere thanks to CI and all of *IJW*'s sponsors, whose support keeps the *IJW* in production with the best possible content and distribution.

South Africa's uKhahlamba Drakensberg Park World Heritage Site Celebrates 30 Years of Wilderness

BY SONJA KRÜGER and JOHN CROWSON

Introduction

While the United States of America celebrates 40 years of its Wilderness Act during 2004, South Africa is currently celebrating 30 years of its first wilderness proclamation in the uKhahlamba Drakensberg Park World Heritage Site (UDP WHS).

Proclamation of wilderness in South Africa was modeled after the United States of America's Wilderness Act of 1964. The South African Department of Forestry managed the majority of the catchment areas in the Drakensberg mountains of the KwaZulu-Natal province. During the 1970s, Secretary Ackerman for the Department of Forestry encouraged the designation of wilderness areas in South Africa. Since most of the land managed by the Department of Forestry still retained much of its original character, he was determined to ensure the long-term protection of these wild areas for the benefit of all South Africans.

The National Forests Act (No. 84 of 1998) protects state forests, forest nature reserves, and wilderness areas and the plant and animal life contained therein. In addition, the act allows for management programs to be established in order to prevent soil erosion and fire, maintain the natural genetic and species diversity, and control plants and animals that are harmful to a particular area. The act provides for the control and reasonable access to state forests for the purposes of recreation, education, culture, or spiritual fulfillment. Also, people are prohibited from damaging state forests or contributing to the threat of fire. Forest officers are empowered to arrest any person who has contravened this act and may seize such person's property.

Article co-authors (from l to r) Sonja Krüger and John Crowson. Photo by Henry Hibbet.

During 1973, the first three wilderness areas were proclaimed in South Africa under the provisions of the National Forests Act. The first two wilderness areas to be proclaimed were Mdedelelo (27,000 ha; 66,690 acres) and Mkhomazi (48,000 ha; 118,560 acres) (Government Notice 791 of 1973) in the UDP WHS. Next came the proclamation of the Cedarberg wilderness in the mountains of the Western Cape province.

The uKhahlamba Drakensberg Park World Heritage Site

The uKhahlamba Drakensberg Park is an inland mountain range in southeastern Africa (see Figure 1) that received World Heritage status in 1999 for both its natural and cultural values. The UDP WHS comprises 12 component protected areas (referred to as reserves), totaling 242,813 ha (599,748 acres)

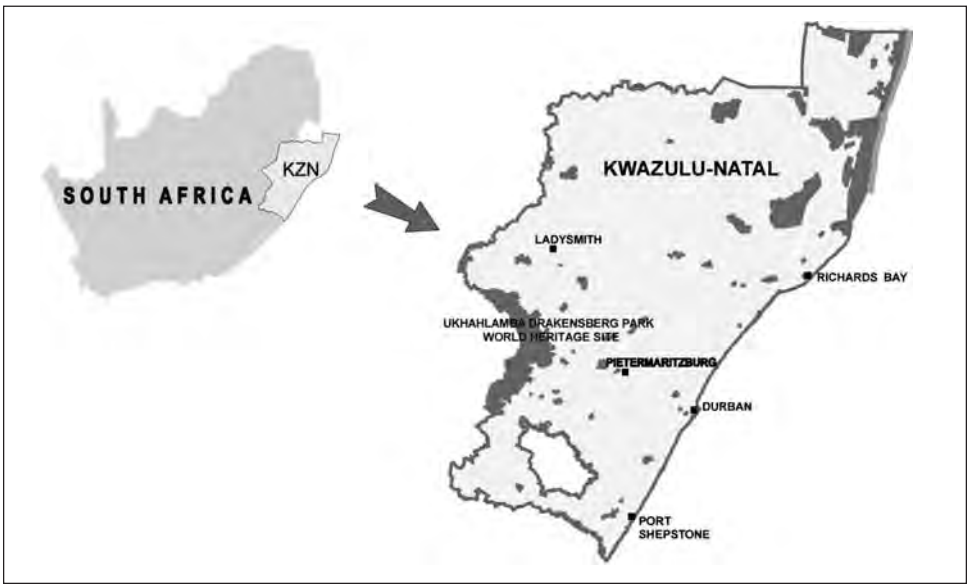

Figure 1—The location of the uKhahlamba Drakensberg Park World Heritage Site within KwaZulu-Natal, South Africa.

that is state owned. The land is managed by a provincial conservation body, Ezemvelo KwaZulu-Natal Wildlife, which is also the proposed management authority of the World Heritage Site. The UDP WHS also forms part of the Maloti-Drakensberg Transfrontier Conservation and Development Area, and shares its borders with three provinces of South Africa and an international border with Lesotho.

The mean annual temperature of the Drakensberg is about 16°C (61°F), and the annual precipitation totals vary between about 1,000 mm (40 inches) in the foothills to 1,800 mm (72 inches) at the escarpment. Precipitation occurs predominantly (70%) in the summer months (November to March). Snowfalls, with an average frequency of about eight days of snowfall per year, occur in winter, predominantly at high elevations. With altitudes varying from 1,280 meters (4,200 feet) to nearly 3,500 meters (11,483 feet), a range of 2,200 meters (7,218 feet), the Drakensberg has a great variation in its topography, with summit plateaux and peaks, vast basalt and sandstone cliffs, deep valleys, and intervening spurs.

The UDP WHS is the largest protected area established on the Great Escarpment of the southern African subcontinent (KZN NCS 2000). This escarpment formation, which includes the Drakensberg Escarpment component, is intimately linked to the geomorphic history of the subcontinent and the fragmentation of the Gondwana supercontinent. The Great Escarpment reaches its greatest and most spectacular expression in the Drakensberg Mountains that lie within the UDP WHS and contain landscapes and features of exceptional natural beauty. The geomorphological processes by which they were formed are of universal importance.

Biological Values

Also of outstanding universal importance are the mountain and wetland ecosystems (the UDP WHS was proclaimed a Ramsar Site in 1997) with their full complement of plants and animals, including many endemic and internationally recognized threatened species. The UDP WHS is an outstanding example of one of the few high mountain grassland areas within the African Grassland Biome sufficiently large enough for the existing and original ecological and biological processes to operate without interference (KZN NCS 2000).

The habitat within the UDP WHS ranges in diversity from the high-altitude mountain peaks and summit plateaux with their diverse vegetation communities and unique alpine tundra (fynbos types), to steep slopes in midaltitude areas supporting a wide variety of grassland, fynbos scrubland, and woodland vegetation communities, to lower lying areas in river valleys that contain various grassland and forest vegetation communities. Found within these habitats is a remarkable richness of plant and animal species.

The UDP WHS is located within the Drakensberg Alpine Region, a center of plant diversity and endemism. A total of 2,153 species of plants have been recorded for the UDP WHS with an endemism percentage of 29.5%, and 109 listed threatened species per *Red Data List* category (Hilton-Taylor 1996: Walter and Gillett 1998).

The UDP WHS is considered to be one of the eight major centers of herpetofauna diversity in southern Africa (Branch 1998) and contains four local endemics and 40 South African endemic species. A total of 296 bird species have been recorded for the UDP WHS (Johnson, personal communication, 2004) of which 43 are southern African endemics, and 32 species are endemic to South Africa. Some 18 species recorded for the UDP WHS are listed in the South African *Red Data List* as threatened species, such as the endangered bearded vulture, *Gypaetus barbatus* (see Figure 2). There are 48 species of mammals occurring in the UDP WHS. Although the invertebrate fauna are poorly known, studies that have been undertaken on several taxa have found Paleogenic insects unique to South Africa and particularly to the Drakensberg mountain region, as well as many species endemic to the region.

Cultural Values

In addition to its natural values, the UDP WHS is globally significant from

Figure 2—The Bearded Vulture, *Gypaetus barbatus*, an endangered species whose breeding range is limited to the Drakensberg escarpment in South Africa. Photo by S. Krüger.

a cultural perspective, in particular the rock art painted by the San hunter-gatherers who have inhabited the area from about 8,000 years ago (KZN NCS 2000). The uniqueness of the San rock art is evidenced by the diverse subject matter, the minute detail portrayed, the art techniques, and the animation and variety of positions depicted, as well as the remarkable state of preservation. The number of sites is estimated at 600, and the number of individual images in those sites probably exceeds 35,000.

Numerous historic sites, living cultural sites, and sites of archaeological importance are located within the UDP WHS. These sites include old grave sites, painted shelters, and various artifacts. The Drakensberg region ranks as one of the most important archaeological areas in southern Africa. Archaeological sites from the Early, Middle, and Late Stone Ages and the Late Iron Age are present, indicating that the period of human occupation in this mountainous region possibly extends over the last million years.

Recreational Values

There are 15 entrance gates to the UDP WHS, where members of the public enter either as day or overnight visitors. Overnight visitors can use camping facilities, or camp in caves, and mountain and other huts. The UDP WHS can accommodate approximately 2,000 persons per night.

World Heritage Site Wilderness Resource

Almost the entire area of the UDP WHS is in unmodified, near-pristine condition. The UDP WHS, although used by humans for a long time, has never been occupied by significantly large human settlements, nor has the area been subjected to significant human-induced land disturbances.

It is estimated that the total area of the UDP WHS transformed by both alien plant infestation and infrastructural development is approximately 1.4% of the area (3,452 ha; 8,526 acres). The natural ecological and geomorphological processes function with little or no significant detrimental interference from human activities. Where there have been impacts, the UDP WHS management approach is to restore such areas to their former status (Ezemvelo KwaZulu-Natal Wildlife 2003).

Apart from the 30-year-old Mdedelelo and Mkhomazi wilderness areas, the UDP WHS also contains the Mzimkulu, 28,340 ha (70,000 acres) (1979) and Mlambonja, 6,270 ha (15,487 acres) (1989) wilderness areas (see Figure 3). In addition, the Mkhomazi wilderness area was extended by another 8,155 ha (20,143 acres) in 1989. The proclaimed wilderness areas comprise 48.5% of the UDP WHS and were one of the primary factors contributing to the World Heritage Site designation.

The focus and vision of the UDP WHS management team is wilderness; valuing and managing existing areas to a higher state, and identifying candidate wilderness areas within the Maloti-Drakensberg Transfrontier Conservation area. A comprehensive management plan has been drafted for the effective management and sustainable utilization of the wilderness areas in the UDP WHS. The management

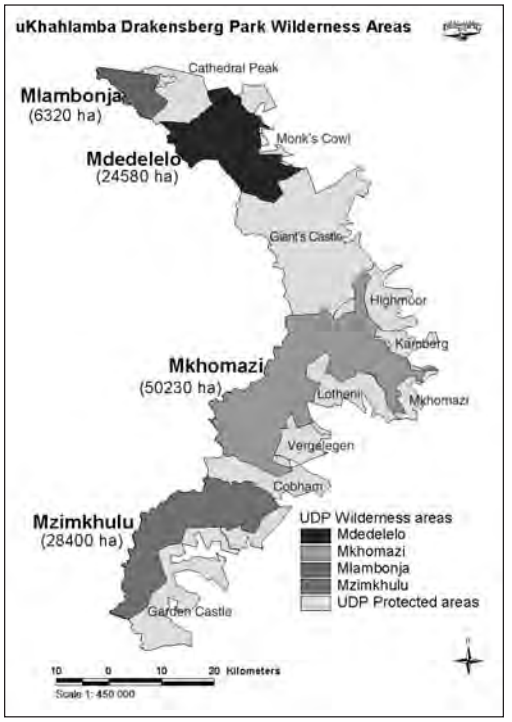

Figure 3—The location of the four proclaimed wilderness areas within the uKhahlamba Drakensberg Park World Heritage Site.

policy for the UDP WHS wilderness areas is to "leave no trace" so as to retain the wild character of these areas by prohibiting all forms of human-made developments. Although people may gain access by foot, recreational opportunities within wilderness areas are managed to allow for an experience of solitude within an intrinsically unaltered natural environment, and, thus, to provide opportunities for inspiration, enrichment, self-reliance, and physical adventure.

Thirty years of Wilderness

The wilderness philosophy is one of the pillars of Ezemvelo KwaZulu-Natal Wildlife's corporate identity, embracing a deep respect for the natural world, restoring it as far as possible to what it once was, and preserving it in as whole and natural a state as possible. For the past 30 years, the UDP WHS wilderness areas have been managed according to stringent wilderness principles in an attempt to preserve wilderness for future generations to visit, and to ensure that there will always be places where people

Figure 4—Members of the southern Drakensberg management team looking at a plant fossil site (left) in the Mkhomazi wilderness area (right). Photo by S. Krüeger.

will be able to absorb wilderness firsthand and be changed by it.

The Mkhomazi Wilderness

The Mkhomazi Wilderness is part of and managed by four major reserves within the UDP WHS: Mkhomazi, Lotheni, Cobham, and Vergelegen. In celebration of the 30 years of nationally proclaimed wilderness, the southern Drakensberg management team visited a plant fossil site in the Mkhomazi wilderness in the Vergelegen Reserve (see Figure 4). These plant fossils are 60 million years old and represent South Africa's best site for plant fossils in the Molteno Formation.

Several commemorative activities are planned throughout 2004 aimed at increasing wilderness awareness among the youth that live in communities nearby the UDP WHS wilderness areas. The primary event celebrating 30 years of the Mkhomazi wilderness will take place in September 2004, coinciding with the celebrations of The Wilderness Act in the United States. Various celebrity speakers will be present, and educational materials in the form of wilderness pamphlets, posters, and T-shirts will be available.

The Mdedelelo Wilderness

The Mdedelelo Wilderness is managed by the Cathedral Peak and Monk's Cowl Reserves within the UDP WHS. Participants of the Mountain Protected Areas Workshop of the World Parks Congress 2004 undertook a commemorative walk to the Mdedelelo wilderness area in the Cathedral Peak Reserve (see Figure 5). This section of the wilderness area encompasses the Didima Special Conservation Area, an area set aside to conserve the wealth and diversity of the San rock art.

Figure 5—Participants of the Mountain Protected Areas Workshop of the World Parks Congress standing in front of the Mdedelelo wilderness area. Photo by S. Krüger.

Conclusion

UDP WHS wilderness managers face many challenges, the most obvious of which is defending a philosophy that is little understood in the country as a whole. Other threats to the wilderness include deproclamation, invasive and alien plants and animals, arson fires, reduced budgets, and law enforcement issues such as poaching, illegal hunting with dogs, cross-border drug trafficking, and cattle rustling. These challenges must be met and the threats managed to ensure that the UDP WHS's natural and cultural values and the wilderness resource are managed for the benefit of current and future generations.

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Announcements and Wilderness Calendar

COMPILED BY STEVE HOLLENHORST

National Wilderness Conference

The National Wilderness Conference, scheduled for October 10–13, 2004, will celebrate the 40th anniversary of The Wilderness Act. To be held in New York's Adirondack Park at the Fort William Henry Resort and Conference Center located on scenic Lake George, this historic conference will focus on the history, present-day realities, and future of the U.S. National Wilderness Preservation System. The venue is located one hour's drive from the Albany International Airport and just a short distance from some historic, scenic, and highly accessible Wilderness locations within the "Forever Wild" Adirondack Forest Preserve. The first day of the conference is dedicated to field trips, with the next three days dedicated to speakers, panelists, and workshops addressing a diversity of perspectives on the value and meaning of wilderness, the challenges and opportunities wilderness faces today, and the future of America's National Wilderness Preservation System. The event is organized by national and Adirondack regional organizations, including the Association for the Protection of the Adirondacks, State University of New York College of Environmental Science and Forestry, Friends of the Clearwater, the *IJW,* The Wilderness Society, Natural Resources Defense Council, the Sierra Club, and Wilderness Watch. This is the Save the Date announcement for this conference. Mark your calendar and join us! For more information, check out the website at www.Wilderness40th.org.

TWA 40th Anniversary Celebration Activities

The U.S. Wilderness Act was signed into law by President Lyndon B. Johnson on September 3, 1964. As the 40th anniversary approaches, many organizations and communities around the world are organizing commemorative events and activities. Learn about the activities and events associated with the celebrations in the United States at http://www.wilderness.net.

The 8th World Wilderness Congress

Anchorage, Alaska, will be the venue for the 8th World Wilderness Congress (WWC). Situated between boreal forests and the Arctic interior, Anchorage also serves as gateway to the Russian Far East and associated 8th WWC events in Kamchatka. Organized by The WILD Foundation (USA), and hosted by many Alaskan and international organizations, the theme for the 2005 Congress is Wilderness, Wildlands, and People—A Partnership for the Planet. Within the conference there will be a symposium on Science and Stewardship to Protect and Sustain Wilderness Values. The symposium will be structured to enhance international and intercultural communication and will integrate poster presentations into oral presentation sessions to increase one-on-one dialogue. The symposium coordinators are seeking presenters for both oral presentations and for a "panel of posters" for each topic. They also invite proposals for chairing sessions on the above topics. The symposium themes include (1) Living with Nature: The Human/Wilderness Connection; (2) Northern Wilderness Issues; (3) Economics and Wilderness; (4) The Role of Wilderness in Terrestrial, Marine, and Freshwater Biodiversity Protection, and; (5) Stewardship of Existing Wilderness. Abstracts (500 words or less, via fax, e-mail, or regular mail) or interest in chairing sessions should be sent to the symposium cochairs: Alan Watson (awatson@fs.fed.us), Aldo Leopold Wilderness Research Institute, Box 8089, Missoula, MT 59807, USA; phone 406-542-4197, fax: 406-542-4196; and Liese Dean (ldean@fs.fed.us), Sawtooth National Recreation Area, USDA Forest

Submit announcements and short news articles to STEVE HOLLENHORST, *IJW* Wilderness Digest editor. E-mail: stevenh@uidaho.edu.

Service, HC64 Box 9900, Stanley, ID 83278, USA; phone 208-774-3017, fax: 208-774-3003. For information on the preliminary announcement, registration material, and sponsorship information, visit http://www.8wwc.org/.

2003 National Wilderness Award Recipients Announced

U.S. Forest Service chief Dale Bosworth recently announced the individuals and groups who are recipients of the 2003 National Wilderness Awards. The awards honor individuals and groups for excellence in wilderness stewardship, education, and research, and leadership in use of traditional skills and minimum tools. The awards and recipients are

- Aldo Leopold Award for Overall Wilderness Stewardship Program: Sylvester Creek Dam Removal Team, St. Ignace Ranger District, Hiawatha National Forest—In recognition of their outstanding efforts in removal of the Sylvester Creek Dam, site restoration, and protection of the Delirium Wilderness.
- Bob Marshall Award for Champion of Wilderness Stewardship, Individual Award: Rebecca Oreskes, Androscoggin Ranger District, White Mountain National Forest—In recognition of her outstanding leadership in wilderness stewardship as the former chair of the National Wilderness Advisory Group, service on the editorial board of *IJW,* and work with diverse groups and individuals to assure preservation of the wilderness resource. Group Award: National Wilderness Advisory Group—In recognition of their outstanding efforts to frame up a vision for the Forest Service's wilderness program for the next 10 years.
- Wilderness Education Leadership Award: Wilderness Kayak Ranger Interpretive Program, Ketchikan and Misty Fiords Ranger District, Tongass National Forest—In recognition of their outstanding efforts in developing a unique and innovative wilderness educational program over the years, which has served as a role model for others to follow.
- Traditional Skills and Minimum Tool Leadership Award: Ian Barlow, Elk City Ranger District, Nez Perce National Forest, and Steve Romero, Northern Region Regional Office, with assistance from Elizabeth Ballard and Terri Anderson, Bitterroot National Forest; Hydrometrics, Inc., Helena, Montana; Montana Conservation Corps, Missoula Division; and David Jones, Consulting Engineer—For their demonstration of traditional skills and innovative use of minimum tools and techniques to breach the high hazard Canyon Lake Dam in the Selway-Bitterroot Wilderness to facilitate needed repairs.
- Excellence in Wilderness Stewardship Research Award: Roland Knapp (University of California Santa Barbara, Sierra Nevada Aquatic Research Laboratory) and Kathleen Matthews (U.S. Forest Service Research) conducted the High Mountain Lake Project where the impacts of fish stocking were assessed by surveying over 2000 lakes in the John Muir Wilderness (where fish stocking continues) and the adjacent Kings Canyon National Park (where fish stocking was terminated).
- Line Officer Wilderness Leadership Award: Deb Mucklow, Spotted Bear Ranger District, Flathead National Forest—in recognition of her outstanding leadership in wilderness stewardship. This includes serving as leader of the Bob Marshall Wilderness Complex Managers Group, demonstrating leadership in promoting Wildland Fire Use to enhance wilderness values, and building positive and productive relations with external partners.

Book Reviews

Making Sense of Intractable Environmental Conflicts: Concepts and Cases.

Edited by R. J. Lewicki, B. Gray, and M. Elliott, 2003. Island Press, *Washington, DC, and Covelo, CA.* 469 pages. $27.50 (paperback).

From damming the Hetch Hetchy Valley, to overvisitation in Banff National Park, to the reintroduction of the gray wolf in Yellowstone and oil development in the Arctic National Wildlife Refuge, conflict is a ubiquitous aspect of wilderness preservation and resource management. Although some disputes are resolved relatively painlessly, many situations are increasingly bitter and prolonged, with precious resources wasted on political wrangling. In this volume, editors Lewicki, Gray, and Elliott grapple with "intractable" environmental conflicts—those messy, seemingly irreconcilable problems that are "riddled with long-standing tensions that defy resolution." The editors

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