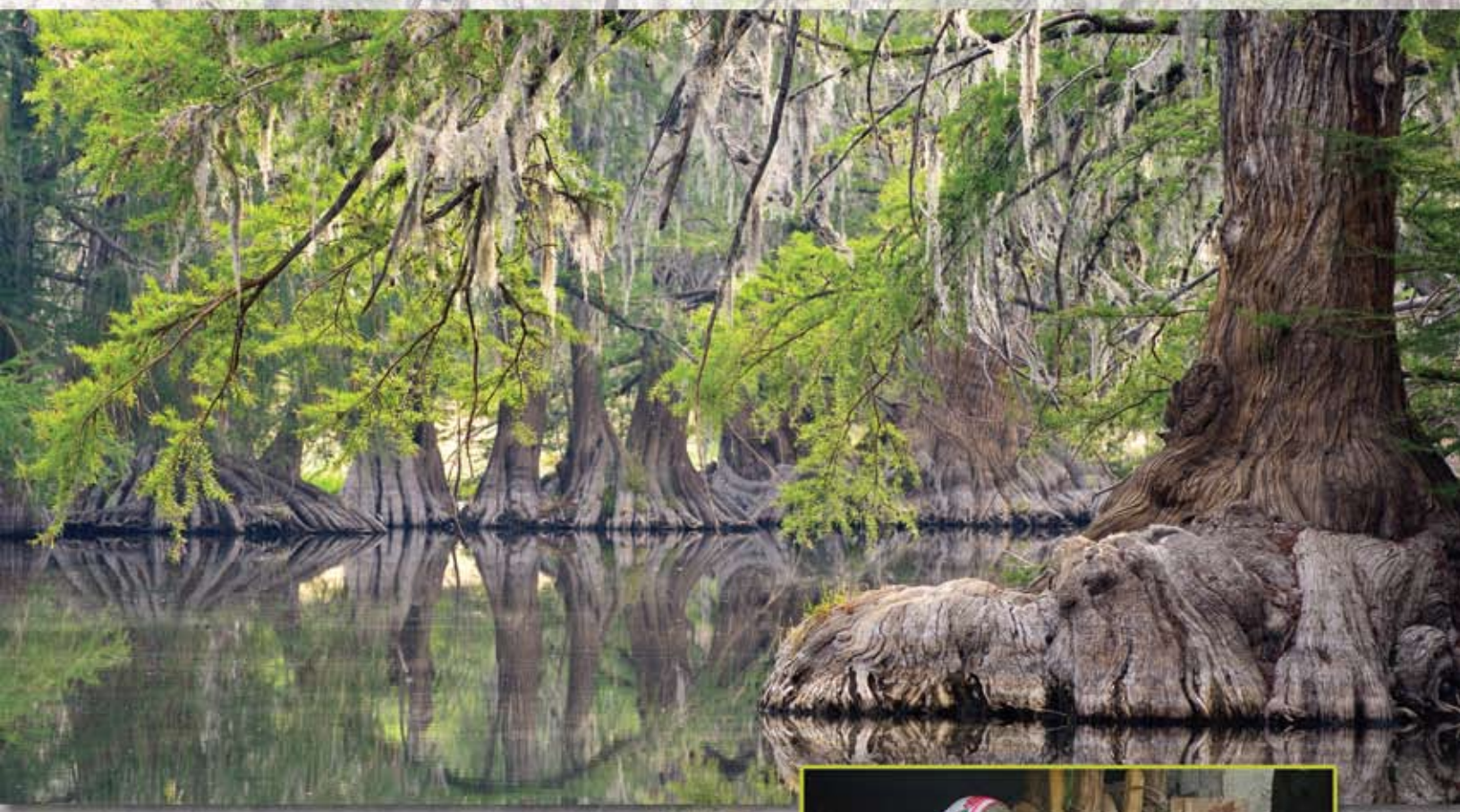
INTERNATIONAL

Journal of Wilderness



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- Nature Needs Half
- Marine Wilderness
- San Pedro Mezquital River
- New Zealand, Mexico

DECEMBER 2011 VOLUME 17, NUMBER 3

Books for the professional and nature lover alike

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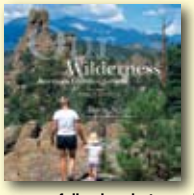

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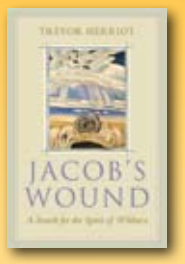

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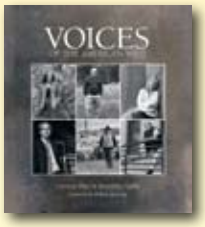

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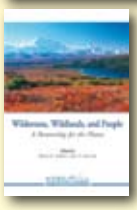

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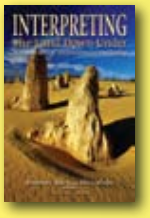

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Main image: The ahuehuete or Moctezuma Cypress (*Taxodium mucronatum*) is an emblematic tree species in the upper basin of the San Pedro Mezquital river in Durango, México. Courtesy of and © Jaime Rojo/WWF

Inset: Huichol woman in her traditional attire in the community of El Naranjo, at the shore of one of the tributaries of the San Pedro Mezquital river. Courtesy of and © Santiago Gibert/WWF

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—John C. Hendee, *IJW* Editor-in-Chief Emeritus

International Journal of Wilderness

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EDITORIAL PERSPECTIVES

WILD10 and Nature Needs Half

BY VANCE G. MARTIN

How much space does nature really need? This question has increasingly been the focus of conservation biologists and many others as the natural sciences have scaled up to consider nature from a landscape and seascape perspective, and in the process gaining a much better understanding of ecological services. Professor E. O. Wilson adroitly alluded to this in his seminal work *The Future of Life* (2002) when he said, "Half the world for humanity, half for the rest of life, to create a planet both self-sustaining and pleasant."

As a result of this growing scientific consensus, an initiative called Nature Needs Half was launched at WILD9, the 9th World Wilderness Congress (WWC) at Meridá, Mexico, in 2009. It is now being explored in different ways by numerous experts, groups, and communities around the world, and we present in this issue a European perspective from Dr. Magnus Sylven. As a member of the Executive Committee making initial plans for the 10th World Wilderness Congress, and on behalf of The WILD Foundation and our many collaborators, Magnus also gives us a preliminary insight into one of the core agendas for WILD10, proposed for Europe in late 2013. A formal announcement on the date and venue is expected shortly.

Why Europe? When considering wild nature globally today, Europe is one of the most exciting places on the planet. Wildness has been returning at an accelerated rate to Europe which is one of the most densely populated continents. Through a combination of factors – land abandonment in rural areas, evolving social patterns, changing economies, a resolution on wilderness by the European Parliament – more large wildland areas and connecting corridors are appearing throughout the continent. The presence of free-ranging carnivores is a seminal aspect of true wildness, and the European wolf is now almost ubiquitous, and is found in the most unexpected places. Spanish scientists estimate a population of 3,000 animals in their country. In the first week of September 2011, the first wild wolf was spotted in Holland, likely a young male from thriving populations in adjacent Germany, in search of new territory. Hence, from the convergence of these and many factors, Europe is an ideal location for the next WWC. Watch *IJW* for new announcements!

Nature Needs Half is a science-based statement, yet it is more than that. I invite you to understand it also as a call for a new relationship between humankind and nature, the two partners in the fundamental relationship on Earth. Few people would disagree that this relationship is dysfunctional, and we surely don't want it to become a failed relationship. It is common knowledge that successful relationships are based on an ability of each partner to "go at least half way" to understand and support the needs of the other. Nature certainly does that, and more. In our human quest to develop and live from the materials, processes, and other forms of life support freely provided by wild nature, it is time that we learn to ask a new question – what does nature need? That will surely put us on a path toward a "planet both self-sustaining and pleasant."

Nature Needs Half addresses all of nature, not just land. Much attention is given to terrestrial wildness, so we will expand our exploration of "wild oceans" in this and succeeding issues of *IJW*. See Cyril Kormos's perspective on scaling up global initiatives in this regard. A good, wide range of other articles explore topics of insights from wilderness experiences, training wilderness managers, the benefits of wilderness to local communities, and river stewardship issues in Mexico.

VANCE G. MARTIN is president of The WILD Foundation, based in Boulder, Colorado, USA, and one of the founding editors of the *IJW*. Email: vance@wild.org.

SOUL OF THE WILDERNESS

Epiphany as the Last Best Wilderness Adventure

BY HOWARD L. SMITH

Prelude to Epiphany

In an often-repeated story, Aldo Leopold (1949, pp. 137–39) experienced a riveting epiphany as a young man when he shot a gray wolf in the vicinity of what would become the Gila Wilderness (see figure 1). Leopold reached the dying wolf as her fierce green eyes glassed over; he deeply regretted his actions that snuffed out a vital life. It was a moment that changed how he viewed the natural world and a moment that would forever alter how we all look at wilderness. This tale captures the power of an epiphany.

More than six decades later, Leopold's revelation in the Gila watershed continues to shape how we think about wilderness. However, the tables have turned in very significant ways. During young Leopold's day, wildlands were relatively abundant. Today, many would argue that there is an insufficient amount of wilderness, and it appears that opportunities for wilderness adventure are sliding toward an inevitable endgame.

Figure 1 – Central core of Aldo Leopold's beloved Gila Wilderness. Looking down into the meadows and the middle fork of the Gila River. Photo by Howard L. Smith.

Howard L. Smith and Valerie, his wife, in Katmai National Park observing brown bears. Photo by Howard L. Smith.

The purposes of this article are to examine the concept of epiphany as a redeeming wilderness characteristic as well as to explore the implications of epiphany for wilderness management and for the appreciation of wildness.

The Changing Wilderness Context

Few places on this magnificent planet have escaped explorers' snowboards, rafts, footsteps, parachutes, paddles, skis, or knobby bike tires. Supremely remote enclaves that have not been touched are squarely in the sights of determined adventurers armed with satellite maps, GPS, and assorted technological accoutrements. They are on a mad rush to chalk up remaining "firsts" – the last exploration trophies left to conquer – because intrepid explorers are recognizing that we are running out of wilderness.

Wilderness aficionados the world over have their work cut out for them. Although all 8,000-plus meter (26,247-plus ft.) peaks have fallen, there remain plenty of virgin 7,000-plus meter (22,966-plus ft.) peaks. Untold tributaries spilling into the world's major rivers remain inviolate for that courageous first run. Multitudes of backcountry cliffs call to the BASE-jumping community. Mountain bikers, skiers, and

snowboarders can forge new tracks down slopes previously considered not "run-able"; possibilities are limited only by imagination. Countless acres of jungle, tundra, and forest have never known the weight of a human being. In this sense, wilderness adventure isn't dead, but it has entered a definitive phase of twilight years.

Insights on Wilderness Epiphanies

One of adventure's most respected multisport prodigies, Mark Jenkins (2007), couches the end of an era this way: "Striving for superlatives is part of human nature – the highest, the longest, and the deepest. But now that many of these goals have been reached, the future of wilderness adventure lies in more subtle, more discriminating endeavors. … *Adventure will be less about simply surviving and more about performing with grace and virtuosity. More personal, more internal, just you and your dream*" [Italics added] (pp. 82–90).

Jenkins reached this revelation after a failed summit attempt with his partner on 20,059-foot (6,114 m) Nyambo Konka in the far eastern edge of the Tibetan Plateau. Back at base camp he searches in vain for another option up this impressive unclimbed peak – another "first" to be notched on his ice tools, this time one where he will solo. Unfortunately, no probable line surfaces that's even remotely safe; all have risks outweighing the value of reaching the summit. Jenkins retreats, confident in his decision but wondering what it all means.

Another legendary mountaineer getting old? Perhaps. This time something deep within Jenkins, an awakening, argues vehemently to forego the insanity of a summit bid. Jenkins's introspective weighing of odds for achieving the summit versus risk of not making it back to his wife and daughters illustrate both his maturation as an adventurer and attainment of another elusive level in mountaineering. He realizes that adventure is more than chalking up another superficial "first"; it is about intensifying one's personal understanding through discovery. Jenkins's moment is akin to that plaguing countless explorers before him when they discern something vitally mental, emotional, or spiritual beyond the joy of being first or exceeding the bliss of having survived physically.

Startling parallels are evident between Jenkins's reflection and that of another renowned wilderness adventurer, Richard Bangs. A former Colorado River guide gone ballistic on worldwide adventure, Bangs can be credited with commoditizing life-challenging experiences through his firm Sobek Expeditions. Bangs launched commercial adventure travel bereft of fundamental hardship. Sobek clients could do it all: smell the stink of high-tech petrochemical gear after multiday trekking, taste fear's brittle metallic flavor, listen as potentially deadly conditions closed in on them, feel the shiver of danger, and see big-time adventure unfold on a personal plasma full-screen, while at the same time being pampered by cushy support, sumptuous lodging, gourmet meals and customer-centered service.

Thirty years after launching Sobek, Bangs (2002) observes that commoditized adventure often approximates authentic experiences, but it seldom leads to "the epiphany that came with a special effort, time and place" (pp. 212–21). Like Jenkins, Bangs is referring to that unique moment when adventure attains a higher level of meaning because someone has a gripping revelation, discovery, epiphany, paradigm shift, or other soul-altering realization.

Yvon Chouinard, founder of Chouinard Equipment (later reinvented as Black Diamond Ltd.) and Patagonia, Inc., experienced a similar transformation as Jenkins and Bangs. However, Chouinard's moment didn't happen in the field on some distant mountain or in a raging river, but rather on the business side of outdoor equipment. In his book *Let My People Go Surfing*, Chouinard (2005) recounts the crisis Patagonia reached on July 31, 1991, when recession fueled a 20% shortfall in sales. Chouinard terminated 20% of Patagonia's workforce in order to save his business. It was a watershed moment.

Terminating 120 employees who had grown into family members sparked an epiphany for Chouinard: Patagonia, Inc., was irrevocably addicted to growth. From that moment forward Patagonia assumed more responsibility for living within resources and constraints. This epiphany moment spun off a continuing search for goals and strategies that fit consistently with an earth-friendly philosophy of sustainability rather than economic growth for the sake of monetary gain.

As these illustrations suggest, the future of wilderness adventure is not solely about being there first, achieving a gigantic goal, or physically surviving extreme conditions. Also, it's about cultivating personal discoveries that lead to uniquely insightful epiphanies or revelations – *the last best wilderness adventure*.

For many wilderness enthusiasts, the testaments of Jenkins, Bangs, and Chouinard may seem a bit heretical. After all, the common metrics outdoor devotees use to assess adventure typically are peaks bagged, thousands of vertical feet skied, number of fish caught, trail miles covered, pounds carried, hours of air time, or any of the hundreds of superhuman goals

associated with ragged-edge physical exertion. However, from the new perspective of Jenkins, Bangs, and Chouinard, conquering some near-8,000-meter (26,247 ft.) peak in the Himalayas, kayaking a narrow Peruvian defile sloshing with wildly agitated whitewater, or paragliding over Kabul (and living to tell about it) are passé.

Times have changed. For that reason, the last best wilderness adventure is as much if not more about mental, emotional, and spiritual discovery when journeying through wildlands as it is physically surviving an outing. It's not exclusively the goal of being first in the world, but also taking self to a new level (a different kind of "first") in mental, spiritual, and emotional development. Wilde–ness adventure's next frontier will be found in essentially subtle, discriminating discovery rather than physical one-upmanship.

An Illustration of Personal Epiphany

A day hike that I took to the backcountry of Mt. Rainier in the state of Washington illustrates the epiphany phenomenon. Mount Rainier is pretty high up there on the adventure cachet scale. This is a world-class mountain by virtually any criterion, whether vertical rise from a near sea-level base, amount of precipitation, or diversity of topography and geology. Mt. Rainier's vagaries drew me to one of the planet's ultimate visual feasts – Moraine Park.

Admittedly my day hike up and back to a remote wilderness corner of Mt. Rainier National Park did not forge a new path. I did not go where no one has ever gone before. Many people routinely backpack the Wonderland Trail and in so doing pass through Moraine Park (see figure 2). A very few encounter more than they anticipated – extreme weather, falling rocks, washed-out trails, snow-covered scree, run-ins with black bears, and unexpected swims in powerful mountain streams. Disasters like these happen.

The real discovery of the day was not Moraine Park. In fact, my epiphany came after I returned to the trailhead. I was still aglow with the good fortune of a fantastic day. Despite covering 15 or so miles (24.2 km) and gaining some 3,500 feet (1,067 m) in elevation, I was not the least bit physically tired. Consequently, as I walked by a nondescript trail to Green Lake, a thought occurred – here is an opportunity that should not be passed up. Green Lake beckoned with an alluring song about wild waters I had never seen.

Two miles (3.2 km) seemed a small price to pay so I emptied trash from my pack, reloaded with water, and headed up a precipitous trail through old-

Figure 2 – Mt. Rainier and Moraine Park below the gigantic face of Willis Wall. Photo by Howard L. Smith.

growth Douglas fir and hemlock. Green Lake's trail was smothered in duff and needles floating off huge trees towering 150 feet-plus (45.7 m) overhead, giving a spongy spring to my step after the long trek to Moraine Park. It was refreshingly cool; a dark forest was precisely what I needed since the day was growing warm. It was also a perfect counterpoint to Moraine Park's wide-open alpine vistas.

Only a few folks were returning down the trail and by the time I broached Green Lake's outlet, the entire bowl into which it was tucked became mine, and mine alone. I wandered over gnarly burnt-brown roots toward the southwestern shore and nestled in a sharp shoreline cleft. Satisfied that I was hidden from view, I made myself comfortable and slipped off daypack followed by boots.

There was no unexpected physical challenge in reaching Green Lake, nor did the lake possess extraordinary beauty. It was fundamentally a little forest lake surrounded by steep tree-covered mountainsides radiating an inordinate measure of peace. However, I was having difficulty delineating where the lake began and I ended while sitting quietly on the shore innocently looking, listening, and emptying my mind of any thoughts. This hour was perhaps one of the most refreshing I have ever enjoyed on any wilderness foray.

It was the epitome of a wild epiphany.

I marveled at how sunlight played on the lake's surface and a thousand shades of green swirled across the water. Insects flitted above the water doing their dance of life while silver-black trout cruised just below, waiting for the unwary. The little drama unfolded at my feet. Sunlight's softness filtering through fir boughs was exquisite, a gauzy mix of light and shade. It seemed as though time had decided to stand absolutely still and with it a command was ushered for no human intrusion. Silence was beyond deafening except for the tiniest of trickles to the west where snowmelt was finding a way to the sea.

Wilderness adventure's next frontier will be found in essentially subtle, discriminating discovery rather than physical one-upmanship.

What a surprise. What sheer unadulterated wildness. I had planned a full day of backcountry exploration to arguably one of the Pacific Northwest's ultimate wilderness destinations. My expectations were entirely fulfilled as I ventured to a remote ridge over which Mt. Rainier's enormous summit towered. Rewards from trekking to Moraine Park were plentiful, but they could not match an unforeseen side trip to a diminutive forest lake.

By the end of a dozen hours at Mt. Rainier, my biggest adventure was not a physical rush due to slogging long miles. Instead, it was an unexpected *revelation* about wildness, and how easily accessible wilderness is if I only change my mind-set. That's a life-altering shift in thinking, but an important perceptual shift that others might benefit from contemplating. In a world of radically changing realities I, we, need such transformations in order to keep alive a spirit of adventure and love for wildness.

Implications for the Appreciation of Wilderness

There is inestimable value to be gained from wilderness adventure beyond mere physical accomplishments. Physical challenges are very important in shaping informed understanding. However, when looking over the totality of wilderness explorations I've enjoyed, those of greatest value are soul-altering experiences rather than heroic physical conquests. As Jenkins, Bangs, Chouinard, and other savvy experts have discovered, this personal-epiphany side is the future. We simply have to get past glorifying physical accomplishments that exclude more visceral, spiritual, and emotional realms.

By opening our minds to a broader, more full-bodied definition of wilderness, the possibilities seem virtually endless. In the course of traveling through wilderness it is rather intriguing to see what revelations wait around the next grotto, over a stunning alpine pass, or through a patch of old growth. This is all part and parcel of living a vibrantly vital life outdoors; something certainly worth striving to achieve.

Undoubtedly some will continue clinging to traditional one-dimensional images. It is not really a wilderness experience unless they vicariously brave the Sahara by camel, sleep close to alpha predators in the Rift Valley, or nearly freeze to death in the Arctic. Sadly this myopic view fails to do justice to the more robust spiritual, emotional, and intuitive sides of wilderness. And, it fails to acknowledge what is becoming widely recognized worldwide. Our pervasive human footprint has penetrated so deeply that few places are able to maintain pristine wildness. Animal species that are not yet extinct are either depleted or habituated; they only mimic their former wild selves.

These new realities argue vehemently for an enlightened wilderness ethos. If everyone flocks in a big panic to see the last polar bear or gorilla, we cer-

Figure 3 – Backcountry campfires offer one of the best mediums for cultivating personal reflection and epiphanies. Photo by Howard L. Smith.

tainly won't save those species. Consider the environmental degradation that has resulted from commoditizing Everest Base Camp, Patagonia, Bhutan, or any other popular destination made famous in trendy media such as *Outside* or the defunct *National Geographic Adventure*. There are simply too many people and too little wilderness with precious little indigenous flora and fauna.

Those who are so obsessed with a one-dimensional love for wilderness that they can't contemplate a more robust notion replete with mental, emotional, spiritual, and intuitive overtones are encouraged to pause and reconsider why and how they appreciate wilderness. Such questioning may in and of itself stimulate a revelation (or revelations) that leads to a more progressive, and sustainable, passion.

Implications for Wilderness Management

Transition to a full-bodied appreciation of wilderness by a broad cross section of society – one where opportunities for epiphanies are cultivated – will remain problematic until those who oversee wilderness provide support through changes in public education and resource management.

Wilderness leaders have very powerful tools at their disposal – many of them technologically based – to better inform the public about robust ways for celebrating wildness. Most of the public information disseminated by agencies responsible for managing wilderness can be fruitfully employed to help citizens open their minds, hearts, and spirits to the concept of wild epiphanies. Website content, brochures and pamphlets, posters, various forms of video, books, reports, billboards, and the entire panoply of communication strategies currently used by organizations with a compelling stake in wilderness can be utilized to introduce and embellish the concept of diverse approaches for appreciating wilderness.

Resource management offers substantial opportunities for nurturing conditions conducive to epiphany. Just one example is the design of camping areas. Although progress has been made in recent years, campground design in our national parks and forests still tends to herd many visitors into hyperconcentrated areas. This increases the efficiency of campground management, but it diminishes opportunities for privacy and solitude commensurate with reflections essential to pathbreaking personal revelations. It is patently difficult for people to raise their level of introspection when crammed cheek-by-jowl into a massive campground. Admittedly these sites do not aspire to provide a wilderness experience, but they do offer the most tangible launchpad for people to begin their wilderness quest.

Another example of using resource management to predispose people to epiphany involves disconnecting them from their vehicles. In non- and near-wilderness areas, walk-in campsites offer an excellent case in point. Those who make the effort to carry their equipment to a walk-in site and to spend a night disengaged from their vehicle may just experience a revelation about taking that next step in exploring wilderness (see figure 3).

In the final analysis, those involved in wilderness management and policy formation have many strategies available that encourage the public to adopt a new mind-set about valuing wilderness. Perhaps no other means is as effective as simply being available and open to frank discussions with colleagues, staff at other agencies, and citizens served.

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Nature Needs Half

A New Spatial Perspective for a Healthy Planet

BY MAGNUS SYLVEN

Half the world for humanity, half for the rest of life, to create a planet both self-sustaining and pleasant.

– Edward O. Wilson, *The Future of Life*, 2002

Human impact on the world since the Industrial Revolution has been so comprehensive that it has ushered in a new geological epoch, which scientists have called the Anthropocene (Smith 2008). Impacts on the Earth's physical, chemical, and biological environment, from rapidly increasing rates of extinctions of plants and animals to ocean acidification to global temperature increases, are so profound that they are now altering the geological record. We are bringing an end to the Holocene epoch, which began around 12,000 years ago.

The signature of the Anthropocene epoch is the destruction of the life-support systems that human populations everywhere depend on. Here are some further facts:

1. "At least half of earth's terrestrial environment has been degraded or completely transformed to support the human enterprise" (Groom et al. 2005).
2. "At the moment, roughly half the excess carbon dioxide in the atmosphere comes from destruction and degradation of ecosystems over the past three centuries" (Lovejoy 2011).
3. "Over much of the world the biomass of fish targeted in fisheries has been reduced by 90% relative to levels prior to the onset of industrial fishing" (Convention on Biological Diversity 2010).

In a recent, preliminary analysis of the safe operating space for humanity with respect to nine essential biophysical subsystems of the Earth, it was concluded that the planetary boundaries have already been exceeded for biodiversity, nitrogen cycle, and climate change, with biodiversity providing by far the biggest challenge (Rockström et al. 2009).

Magnus Sylven traveling in Armenia. Photo courtesy of Magnus Sylven.

Humans Living in Harmony with Nature?

How can we create a planet where humans can live in harmony with nature? This existential question has been asked by generations, but maybe more often during the last 20 years since the Earth Summit in Rio de Janeiro in 1992 – the United Nations Conference on Environment and Development. This unprecedented milestone in United Nations history generated two of the world's most important conventions in the environmental field addressing climate change and biological diversity, and set in motion a process – Agenda 21 – with the aim of creating a more sustainable world.

However, after the failure of the December 2009 Climate Summit in Copenhagen, the United Nations Framework Convention on Climate Change is at stake, and the subject of climate threat has dropped from the world's headlines. What is the situation for the biodiversity convention?

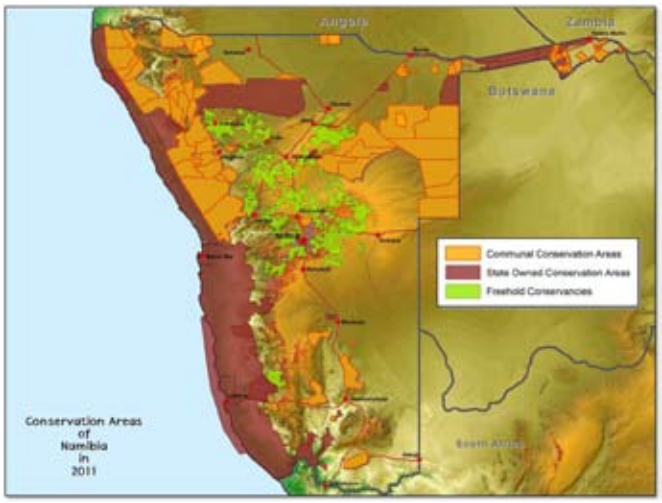
At the World Summit on Sustainable Development in Johannesburg in 2002, world leaders agreed to achieve a significant reduction by 2010 in the rate of biodiversity loss. However, this target has not been met, and the principle pressures leading to biodiversity loss are not just constant

Figure 1 – Nature Needs Half is a worldwide environmental movement.

but are, in some cases, intensifying (Convention on Biological Diversity 2010). Current trends are bringing us closer to a number of potential tipping points that would catastrophically reduce the capacity of the Earth's ecosystems to provide their essential services. The poor, who tend to be most immediately dependent on them, would suffer first and most severely.

In the latest strategy for the Convention on Biological Diversity for the period 2011 to 2020, called Living in Harmony with Nature, the world's nations have agreed on a number of concrete targets to be reached within the coming 10 years to reverse this negative trend. Within a very comprehensive agenda, the need for improving the status of biodiversity by safeguarding ecosystems, species, and genetic diversity has been identified. After extensive political negotiations, Parties to the Convention agreed "to protect 17 per cent of terrestrial and inland waters and 10 per cent of coastal and marine areas." A system of well-connected protected areas and "other effective area-based conservation measures" should be integrated into "wider landscapes and seascapes" (Convention on Biological Diversity 2010).

Since the 1990s, parallel to these international conventions, independent scientists and researchers have been considering what types of areas should be protected and their optimal size. They concluded that the reality-based targets (i.e., science-based) are considerably higher than the politically expedient targets. Assessing how large these natural landscapes need to be, a scientific consensus has emerged since the mid-1990s that "on average 50% of an area/region" will need conservation management, according to the principles below, "to maintain biodiversity and ecological processes" (Noss 1996; Schmiegelow et al. 2006).



Namibia, in Southwest Africa, has a coherent and well-managed mosaic of well-connected public, private and communal areas managed with nature conservation priority, totaling some 42% of their territory, plus some marine area. www.nature needshalf.org. (Courtesy WWF Namibia)

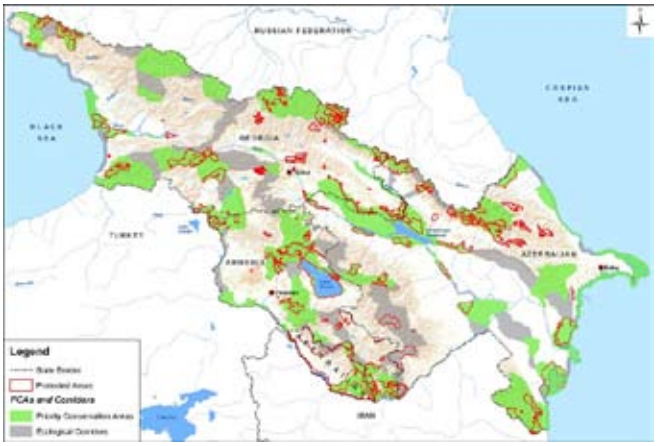
What should these wider landscapes and seascapes look like? Scientists have pointed at four important factors: (1) all the native ecosystems should be represented in a protected areas system, (2) viable populations of all native species should be maintained and allowed to fluctuate in a natural way, (3) ecological and evolutionary processes such as free-flowing rivers, wind, fire, herbivory, and carnivory must be ensured, and (4) the system should be designed and managed so that it is resilient to both short-term and longer-term change such as climate. Recent findings show that "large apex consumers" at the top of the food chain are of particular importance (Estes et al., 2011). The disappearance of big predators – such as wolves and lions on land, whales and sharks in the oceans, and large fish in freshwater ecosystems – as well as large herbivores – such as elephants and bison – can generate extensive cascading effects in marine, terrestrial, and freshwater ecosystems. This "trophic downgrading" affects processes, functions, and resilience of global ecosystems and can in turn increase the impacts of infectious diseases, wildfires, carbon sequestration, invasive species, and changes in biochemical cycles.

As a result of this new scientific consensus, The WILD Foundation launched a new initiative – Nature Needs Half – at the 9th World Wilderness Congress (Wild9) in Meridá, Mexico, 2009. The conservation community and policy makers are invited to embrace a new global goal of protecting at least half of the planet's lands and water in an interconnected way, which goes well beyond current political considerations. It is no less than a new, bold vision for Planet Earth.

Why More Space for Nature?

Besides the moral obligation of caring for all other living beings we share the Earth with, there is a very strong reason why we should care about nature: we wouldn't survive without all the life-supporting systems it provides – drinking water, food, medicines, raw material such as timber/fiber, genetic resources, pollination, regulation of climate, water, erosion, natural hazards and pests, water purification, and clean air. Not to mention the cultural services, such as spirituality, religion, education and aesthetic values, knowledge systems, social relations, and recreation and tourism.

The annual value of these services has been estimated at $US33 trillion (about one-third terrestrial, two-thirds marine), which is almost twice the gross national product worldwide ($US18 trillion; 1994 market value) (Costanza et al. 1997). With less than 15% of the Earth's land surface legally protected, the protected areas are estimated to produce every year benefits from goods and ecosystem services worth between $US4.4 and 5.2 trillion (Markandya et al. 2008) and provide a significant percentage of the livelihood for around 1 billion people (ten Brink 2009). This should be compared with between $US8 and 10 billion spent annually on biodiversity conservation worldwide, with protected areas taking up a significant portion of these resources (Markandya et al. 2008). Disregarding the marine environment, the annual loss in ecosystem services resulting from the cumulative loss of biodiversity is estimated at nearly €14 trillion ($US20 trillion) by 2050 (Braat and ten Brink 2008) – with the brunt of costs to be borne by local communities (Markandya et al. 2008).



The Southern Caucasus Region, globally recognized as an endangered biodiversity hotspot (Conservation International), recently completed an assessment of priority areas for bio-diversity conservation and established a target of over 43% of its territory (among three sovereign states) as priority conservation areas and corridors. www.natureneedshalf.org (Contact Dr. Giorgi Sanadiradze, Director, WWF Caucasus Programme, gsanadiradze@wwfcaucasus.ge)

How Do We Achieve a Wilder World?

Nature Needs Half is not a utopia. In many parts of the world, it is already a reality, such as the Canadian boreal forests, Bhutan, the Dominican Republic, and Namibia. Even in the more densely populated parts of the world it has a fair chance to become reality in a not-too-distant future. Recently countries such as Spain and Slovenia have set aside more than one-third of their territory for nature conservation, and with the recent approval of European Union member states to link up the Natura 2000 areas with a "green infrastructure" and to restore 15% of "degraded ecosystems," Nature Needs Half is just around the corner. An additional opportunity is provided by the large-scale abandonment of remotely situated farmlands – especially in the biodiversity-valuable mountain areas – which affects more than 10% of the land surface in many European countries (Keenleyside and Tucker 2010). One of the most important aspects will be to ensure that the new conservation landscape in Europe

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Botswana, in Southern Africa, has protected areas totaling some 40% of its territory, including desert systems such as Nxai Pan (shown here with the historic "Baines' Baobabs), and the world-class, Okavango Delta region, the inland river delta that disappears into the Kalahari Desert (shown here with a herd of Cape Buffalo). www.natureneedshalf.org (photos courtesy Vance G. Martin and Karen Ross)

We Need to Scale Up Marine Wilderness Protection

A Global Perspective

BY CYRIL F. KORMOS

News reports of the declining health of our planet's oceans have become sadly routine: from dwindling blue fin tuna stocks to the deepwater oil spills, and from reports of retreating sea ice in the Arctic to large jellyfish outbreaks. A bleak picture of our marine environments has been emerging for some time. The United Nation's World Oceans Day in June 2010, and the release of the preliminary version of the State of the Oceans report a few weeks later (Rodgers and Laffoley 2011), recently provided an opportunity for a more holistic view of the health of our marine ecosystems, and the result was as discouraging as it was largely predictable.

Threats to and Benefits from Marine Environments

Carbon emissions are leading to increasing ocean acidification, which is preventing some plants and animals from secreting calcium carbonate (which they need to make their shells or exoskeletons), which in turn could threaten entire marine food chains. Pollution, from agricultural runoff and from oil spills, regularly causes large dead marine zones around the world's oceans. Bottom trawling, which involves dragging massive nets across fragile seabed environments – roughly the equivalent of bulldozing a terrestrial ecosystem – is causing enormous destruction. Invasive species, either transported via ship ballast water or sometimes drawn into new environments by warming sea temperatures, often wreak havoc on the populations of native species. Coral bleaching is occurring regularly throughout the tropics, and more than a quarter of reef-building corals are now threatened (Hoegh-Guldberg and Bruno 2010; Veron et al. 2009). Heavy subsidies and ineffectual fisheries management are causing overfishing and depleted fish stocks. Coastal environments such as mangroves, sea grasses, and salt marshes are being lost four times faster than tropical forests. As a result of these threats, and others such as ship strikes and entanglements in fishing nets, about a quarter of all marine mammals are threatened (Rodgers and Laffoley 2011; Lubchenko and Petes 2010; Toropova et al. 2010; International Union for the Conservation of Nature-Species Survival Commission 2008; Halpern et al. 2008; Worm et al. 2006).

Cyril F. Kormos. Photo by Jaime Rojo.

The massive deterioration of our marine environments is occurring despite the fact that marine and coastal environments generate enormous benefits. They produce most of the oxygen if the air we breathe and provide essential sources of protein for billions of people (Rodgers and Laffoley 2011, Lubchenko and Petes 2010, Worm et al. 2006). The oceans absorb enormous amounts of carbon emissions, and intact coastal ecosystems provide essential buffers against extreme weather events and rising sea levels (Nellemann et al. 2009). The oceans contain a higher abundance and diversity of species than terrestrial environments and could yield critically important scientific and medical breakthroughs. It is not an exaggeration to say that to a large extent life on land depends upon the health of our oceans.

The degradation of our oceans is also occurring in spite of the fact that solutions are available. For example, we know that overcapacity in the world's fishing fleets is exacerbated by government subsidies, and that catch shares for fishermen can in some cases be an effective means to prevent overfishing. We

know that bottom trawling is causing massive devastation and should be better regulated, and that improved technology on fishing boats could greatly reduce catching nontargeted species (Pew Environment Group 2011).

Marine Reserves

We know that providing strong protections for marine environments is effective. Creating a marine reserve, in essence a no-take zone, in most countries, provides immediate benefits by protecting habitat, while also allowing fisheries to rebuild, often quite rapidly. Marine reserves consistently have higher diversity, more individuals within species, as well as larger individuals, than areas outside the reserve. Reserves can also have a beneficial spillover effect, increasing fish stocks at the margins of the reserve benefiting the overall fishing industry. Networks of marine reserves and other marine protected areas can also increase our oceans' resiliency in the face of environmental stress, improving their chances of resisting or recovering from outside pressures (Lubchenko and Petes 2010; Laffoley 2008).

Unfortunately, we have protected less than 1.5% of our planet's marine environments (compared to more than 13% for terrestrial environments), and only a tiny fraction of these are strictly protected no-take zones (Toropova et al. 2010). We are a very long way from achieving adequate protection of our oceans – we have to scale up our marine conservation efforts dramatically, and we have to do it quickly.

How much protection is necessary to ensure healthy marine ecosystems? The 2012 target for marine protection under the Convention on Biological Diversity (CBD) was 10% of the world's oceans. As the global community will likely fail to meet this target, or even come close to meeting it, the parties at the 10th conference of the CBD in Nagoya, Japan, in October 2010, opted to keep the target at 10% until 2020 rather than raise it further (www.cbd.int/sp/targets/). Maintaining the target at 10% was, in essence, a political decision reflecting what parties thought was realistically feasible over the next 10 years, rather than an assessment of what was actually needed from a biological standpoint.

Figure 1 – Porpoises are some of the charismatic megafauna of the ocean. Photo by Jaime Rojo.

In fact, many marine biologists believe the 10% target is far too low, especially as it only calls for marine protected areas generically, which are often managed more as multiple-use zones and do not always clearly prioritize biodiversity conservation. The target also does not require creation of any strictly protected marine reserves. Thus, many nongovernmental Organi–zations (NGOs) and foundations called for higher 2020 marine targets at the 2010 conference in Nagoya; most called for 15 to 20% marine area protection.

Some NGOs have pointed out that much higher levels of protection are ultimately needed to ensure the protection of our oceans. In 2006, Greenpeace called for setting aside 40% of the planet's oceans in large-scale reserves where extractive and dumping activities would be prohibited. The WILD Foundation's Nature Needs Half initiative (www.natureneedshalf.org), launched in 2009 at WILD9 (the 9th World Wilderness Congress), suggests a 50% target for marine area protection. This would include a mix of strictly protected reserves and other forms of marine protected areas that allow for fishing, recreational, and indigenous uses.

Types of Marine Protection

Beyond the question of how much we need to protect, another critical issue is what type of protection should be applied. The WILD Foundation has long advocated that making use of wilderness protected areas in marine environments would add a very useful dimension to marine conservation efforts. One important reason for using marine wilderness designations is that it allows for large-scale protection of areas with wilderness characteristics (i.e., allowing natural processes to predominate and shape the environment) in such a way as to maintain and improve those qualities, while at the same time allowing some degree of appropriate human use. Although marine wilderness protected areas should not replace marine reserves where marine reserves are necessary for ecosystem health, they could provide an additional and flexible tool.

Promoting the wilderness concept in marine conservation discussions has been a long road. The WILD Foundation's examination of marine wilderness began at the 2nd WWC, held in Cairns, Australia, in 1980 (Kormos 2008), and has continued through subsequent World Wilderness

Building a global movement for marine wilderness conservation has been difficult.

Congresses, as well as via publications in the *IJW*. In anticipation of the 8th WWC in Anchorage, Alaska, in 2005, The WILD Foundation convened a workshop in 2004 entitled the "Roundtable on International Wilderness Law and Policy." Held on the occasion of the 40th anniversary of the U.S. Wilderness Act of 1964 and cosponsored by U.S. federal agencies, this workshop included a marine group, which assessed the characteristics of a wilderness Marine Protection Area (MPA), the extent of existing marine wilderness MPA designations, and developed a draft *ocean wilderness* definition. The 8th WWC followed up on the roundtable with a workshop reviewing the different global biological assessments of intactness in marine habitats.

Most recently, delegates at WILD9, the 9th World Wilderness Congress in 2009 held in Mérida, Mexico, began building consensus in defining marine wilderness, and discussions continue through a Marine Wilderness Collaborative, a group of NGO and government representatives coordinated by The WILD Foundation. Following the signing of a memorandum of understanding at WILD9, the governments of the United States, Canada, and Mexico have begun to collaborate to define *marine wilderness* and consider common management objectives for conserving wilderness characteristics in marine protected areas across North America. Marine wilderness will once again be an important topic at the 10th World Wilderness Congress and will continue to build on progress from earlier conferences and congresses.

There are a number of reasons why marine wilderness conservation (and marine conservation generally) has lagged behind terrestrial wilderness conservation efforts. Most of the oceans are beyond any country's jurisdiction and have traditionally formed part of the global commons. The fact that they are remote, and that fewer people travel in wild marine areas makes the complex problems facing our oceans are difficult to see and understand, and the perception that oceans are an infinite and inexhaustible resource is also difficult to reverse. Research is vastly more expensive in marine environments than on land, which complicates the process of acquiring the data necessary for decision making.

It is critically important to continue building a systematic approach to marine wilderness conservation if we are to overcome these challenges and generate large-scale marine conservation. At the 8th WWC, a three-pronged approach for promoting wilderness conservation (including marine wilderness) globally was proposed. This approach included continuing to develop the case for wilderness conservation by highlighting its full range of benefits (e.g., biological, economic, social, and spiritual), developing a consensus definition of *wilderness*, and setting priorities for decision making regarding MPAs and overall marine conservation.

As mentioned above, the focus has been primarily on the definition of *wilderness* in the marine context. This definition already exists in the sense that the International Union for the Conservation of Nature's (IUCN's) classification system for protected areas (Category 1b-Wilderness) mentions both terrestrial and marine environments (Dudley 2008). Nonetheless, the IUCN definition was initially drafted with terrestrial ecosystems in mind, and adapted to include references to marine environments. It does not take into account the many special characteristics of marine protected areas, such as the fact that they are constantly moving environments, or that a definition of *marine wilderness* would need to consider atmospheric conditions from the air above to the surface, and interactions with the seabed. In addition, there is less consensus on the management objectives for marine wilderness than

Figure 2 – Aquatic life on the Abrolhos reef. Photo by Paul Nicklen/SeaChange.

there is for terrestrial wilderness. Thus, generating a consensus on a marine wilderness protected area definition is a critical first step.

Marine Protection Efforts

Despite continuing bad news on the conditions of our oceans, an increase in large-scale marine conservation around the world provides some hope for ocean conservation. Until the last 10 to 15 years, the Great Barrier Reef Marine Park and Antarctica stood out as the most prominent examples of large-scale marine conservation. But that has begun to change. Australia has since declared several large marine reserves and has undertaken a national process that will add hundreds of thousands of square kilometers to their national network, including providing interim protection for the Coral Sea, an area more than 900,000 square kilometers (2.3 million sq. miles) east of the Great Barrier Reef. The Republic of Kiribati's Phoenix Islands Protected Area covers more than 400,000 square kilometers (1 million sq. miles) in the Pacific. The Federated States of Micronesia has committed to protect 30% of their near-shore marine resources, which includes about 5% of the entire Pacific Ocean. Protection of the Chagos Archipelago in the Indian Ocean, although not without substantial controversy, has made it the largest marine protected area in the world at 544,000 square kilometers (1.4 million sq. miles). The Sala y Gómez Marine Park in Chile recently added 150,000 square kilometers (388,500 sq. miles). The government of Bermuda is leading an initiative to generate protections under international law for the Sargasso Sea, an area extending over approximately 5 million square kilometers (12.9 million sq. miles).

The United States has recently established several very large-scale marine protected areas, including the Papahānaumokuākea, Marianas Trench, Rose Atoll, and Pacific Remote Islands Marine National Monuments in the Pacific Ocean. The United States has also included a number of marine areas in wilderness designations made pursuant to the Wilderness Act of 1964, although the wilderness characteristics of these marine areas are yet to be specifically addressed in formal management guidelines. At the 9th World Wilderness Congress in 2009, the U.S. Fish and Wildlife Service also announced its intent to study the potential for marine wilderness designations.

Figure 3 – Colorful finfish are sought out by aquatic visitors to the Abrolhos reef. Photo by Paul Nicklen/SeaChange.

In addition to maintaining this momentum, a critical challenge will be to extend this progress to the high seas beyond national boundaries, where governance mechanisms remain weak and fragmented and where numerous plans and agreements, both at the regional and at the global level, remain unimplemented. Some organizations have called for a new agreement under the United Nations Convention on the Law of the Sea focused on conservation to provide an overarching framework for global oceans protection, including on the high seas. Proposals for such an agreement are being advanced in the lead up to the United Nations Conference on Sustainable Development in Brazil in June 2012.

Building a global movement for marine wilderness conservation has been difficult. However, the 10th World Wilderness Congress proposed for October 2013, the 50th anniversary of the Wilderness Act of 1964 in the United States, and the World Parks Congress in 2014 all provide excellent national and international venues to raise substantially the profile of marine wilderness – both in the United States and internationally. Given the extreme threat to the health of our oceans, and the limited time to act, taking advantage of these landmark events to develop a stronger marine wilderness movement is an opportunity we cannot afford to miss.

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will adhere to the four core conservation principles. However, to make the Nature Needs Half vision a reality, "society must recognize, measure, manage and economically reward responsible stewardship of its natural capital" (The Economics of Ecosystems and Biodiversity 2010).

Together with an increasing number of local, regional, national, and international organizations, The WILD Foundation is promoting Nature Needs Half. Since its launch at WILD9 in Meridá, Mexico, in November 2009, a strategy is under preparation to promote this perspective across different parts of the world. The efforts will converge when Wild10 convenes, proposed for Europe in 2013.

Please join this global effort to protect more space for nature and to develop a wilder planet that is more stable and safer for all humans and living beings on Earth.

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The Evolution of a Wilderness Conservationist

BY M. RUPERT CUTLER

I am a disciple of the late Howard Zahniser, primary author of the Wilderness Act. I regarded my staff positions with The Wilderness Society in the 1960s and with the U.S. Department of Agriculture in the 1970s as opportunities to implement Howard Zahniser's vision and to translate it into action on the ground.

My philosophy regarding wilderness is simple: the more, the better. The task was, and still is, to create a continental wilderness system that protects multiple good examples of our nation's geological and biological diversity for future generations. The means to this end is passage by Congress of additional new wilderness area designation laws to form a more complete National Wilderness Preservation System (NWPS).

The fact that more than a dozen wilderness bills have been introduced in the 112th Congress should make it clear that wilderness preservation continues to be a widely supported U.S. public policy. I think it's interesting that the first three wilderness bills introduced on the first day of the current Congress were by conservative Republicans advocating designation of areas in their own districts. That should remind us that the Wilderness Act of 1964 (P.L. 88-577) had bipartisan sponsorship from the beginning, and that its primary advocate in the House of Representatives was Republican John Saylor of Johnstown, Pennsylvania, known among wilderness cognoscenti as "St. John."

Passage of the Wilderness Act came in the nick of time, not so much with respect to national forest high country in the West, as the Forest Service had set a lot of that aside administratively, but rather because wilderness was the last thing on the minds of administrators back then on the eastern national forests, parks, and wildlife refuges.

The Wilderness Act required that every roadless area in those federal land management systems be reviewed for its wilderness suitability – everywhere in the country. This requirement brought statutory wilderness east. This farsighted requirement and initiatives taken by grassroots citizens' groups to push for wilderness protection of lands not required to be reviewed, have contributed to the quality of life for eastern outdoor folks and to the protection of wildlife, watersheds, and viewsheds in the eastern United States. Today there are dozens of wilderness areas within a few hours' drive of my home in Roanoke, Virginia. Most of them are in national forests – two wilderness areas in Pennsylvania, six in West Virginia, 15 in Virginia, 11 in North Carolina, and 11 in Tennessee – plus Shenandoah National Park on the Blue Ridge and Brigantine and Swanquarter National Wildlife Refuges on the Atlantic coast.

M. Rupert Cutler.

I'm sure wilderness areas will continue to be designated in the southern Appalachians in the future, as local and regional conservation groups such as the Southern Environmental Law Center scour eastern federal public lands, using the Roadless Area Review and Evaluation II (RARE II) roadless inventory as a guide, and win support from local members of Congress for introduction of the necessary legislation. Complementary protection from adverse development of private land located near wilderness areas is being afforded by an aggressive program of conservation easement-acquisition by a network of land trusts in the southern Appalachians.

My Life Has Come Full Circle

I was a kitchen boy in 1951, at the National Audubon Society's summer camp on the coast of Maine, and I'm a kitchen boy again in 2011, 60 years later, as all husbands should be, particularly in retirement. Between stints on KP,

I've had some interesting opportunities and experiences that happened while I was taking a hand in the shaping of American wilderness policy.

I am a good example of Virgil's axiom, "As the twig is bent the tree inclines." My parents were college-educated, but far from wealthy. My dad was a Ford Motor Company Rouge Plant chemical engineer his entire career. My mother was a music teacher who never worked after they were married, never drove, was hard of hearing, but was an accomplished pianist, vocalist, photographer, writer, and poet. They consciously bent their two twigs of boys, my younger brother Ed and me, in the direction of nature conservation.

The Boone and Crockett Club published a beautifully illustrated coffee table book written by R. L. Wilson in 2009 called *Theodore Roosevelt: Hunter–Conservationist*. It opens with a preface by T. R.'s son Archibald that begins: "I was one of those fortunate ones who had a father who took the time and made the effort to instill in his sons a love of the great outdoors." My dad was no T. R., but he did his best in this regard, so my brother Ed and I were similarly blessed, with our early years spent out-of-doors.

Our parents saw to it that we were exposed to wilderness parks on camping trips, including a trip in 1950 to the national forests and parks in Colorado and Wyoming. My brother and I were active for years in a Scout troop that offered frequent overnight camping and hiking trips. We took advantage of the nature education programs and birding field trips offered by the Audubon Youth division of the large and active Detroit Audubon Society.

Our family camping trips took place mainly in the 1940s. There was a war on, and gasoline was rationed. Park campgrounds were understaffed and overgrown. We had the campgrounds, and the fish in their streams and ponds, practically to ourselves. They were wildlands, and I loved being there. I was a gung ho member of the Detroit Audubon Society's Bird Survey Committee and found the first known nest of a piping plover in Michigan while on the prowl for birds near Detroit. So, why was my dad so surprised when I announced that I had decided to become a wildlife biologist? He said he had hoped that I would become a chemist, like him. But off I went, into the wild.

During the summer of 1951, after graduating from high school, I worked at the Audubon Camp of Maine. Camp director Carl Buchheister and others on the camp staff showed us how to band birds. I ended up, with a buddy, stranded on a tiny island in the Bay of Maine where we'd gone to band Wilson's petrels. The lobsterman who dropped us there failed to return. We had to be rescued by the Coast Guard.

The next summer, between college terms, I hitchhiked from Detroit to Spokane. My route was through the waterfowl-filled North Dakota prairie country, and ducks and geese filled the sky. This was before interstate highways and pothole drainage projects. I spent the summer of 1952 as a Forest Service lookout on a remote peak on the Kaniksu National Forest in northern Idaho. I lived on Little Snowy Top for two months by myself, among the pikas, mountain goats, great gray owls, and gray-crowned rosy finches of the Upper Priest River drainage. I visited my lookout again 30 years later, with a National Audubon Society party that had just seen Selkirk caribou in nearby British Columbia. The cabin was the worse for wear, but it has been repaired and is used now as a hiker shelter. The view from that cabin to the west, in Washington State, is now of the Salmo-Priest Wilderness. The Idaho portion of that lookout's viewshed to the south, the Upper Priest River country, should be wilderness, too.

In 1953, I hitchhiked to Seattle and flew to Kodiak in the Alaska Territory to be a Fish and Wildlife Service stream guard (see figure 1). My job, in Katmai National Monument, was to protect the salmon run there from being overfished. I spent two months by myself in a tent camp on the coast, with no radio, telephone, or rifle, enjoying the company of brown bears, wolverines, Harlequin ducks, black oyster-catchers, and willow ptarmigan. Is it any wonder why, when I had the chance to be paid to work for the protection of wilderness, I jumped at it?

In 1956, having graduated from college with a wildlife management degree but unable to find a job as a wildlife biologist, I fell back on my minor in journalism. I became editor of the newspaper in Winslow, Arizona. I batted .500 against the bad guys in Arizona. My editorials against the Bureau of Reclamation construction of Glen Canyon Dam had absolutely no

Figure 1 – M. Rupert Cutler as a Fish and Wildlife Service stream guard in Katmai National Monument in 1953. Photo courtesy of M. Rupert Cutler.

effect. But my exposé of the pollution of the Little Colorado River by sewage from Winslow's inadequate municipal septic tank convinced the Public Health Service to give Winslow top priority for newly available federal funds to build an adequate wastewater treatment plant.

When my undergraduate advisor in Ann Arbor became aware that I was out on the Arizona desert wasting the wildlife management expertise he'd tried to pound into my head, he found me a job with a sportsmen's club in Boston called Wildlife Conservation, Inc. It led, within a year, to a position with the Virginia Commission of Game and Inland Fisheries in Richmond. This was 1958, and I was finally squared away in the wildlife conservation business, as planned.

As editor of *Virginia Wildlife* magazine and education division chief, I became the game commission's point person to oppose construction by the Army Corps of Engineers of a high dam in western Virginia on the Jackson River, a tributary of the James River. The dam would flood a state wildlife management area and a great bass fishery, but its releases of water in midsummer could dilute the stinky waste coming from the WESTVACO paper mill at Covington. It was me versus the Corps, the City of Covington, and WESTVACO. Guess who won? The reservoir created by Gathright Dam is named after the then-executive director of the Covington Chamber of Commerce. A positive result of that high-profile role in debating the Covington Chamber spokesman all over Virginia about Gathright Dam was that National Wildlife Federation (NWF) executive vice president Tom Kimball caught my performance and offered me a job in Washington editing NWF publications.

No sooner had we moved from Richmond to D.C., early in 1962, than the National Wildlife Federation board decided to publish a new magazine, *National Wildlife*. Tom Kimball wanted me on the new magazine's editorial staff. The magazine was edited and printed in Milwaukee. We moved there, but not before I had the chance to hear President John F. Kennedy advocate prompt passage of a wilderness bill, at his May 25, 1962, White House Conference on Conservation.

You and I cannot live without wild things; thus, we are doing something about it, to see to it that we, and our descendants, do not have to live without wild things.

I was the first managing editor of *National Wildlife*. Highlights of that rung on my career ladder were opportunities to canoe and camp along the rivers of northern Wisconsin and to become acquainted with Wilderness Society board member and distinguished author Sigurd Olson of Ely, Minnesota. Together, Sig and I readied his article on the need for passage of the Wilderness Act for publication in *National Wildlife*.

That was the beginning of a relationship with Sigurd Olson that included working together when I was USDA assistant secretary to win congressional passage of the Boundary Waters Canoe Area Wilderness Act of 1978 (P.L. 95-495) a decade later, and having Sig introduce me in 1982 as speaker at the Sigurd Olson Environmental Institute of Northland College at Ashland, Wisconsin. Only a few months later, he died of a heart attack while snowshoeing near his home. When I heard what had happened, I immediately drove to Ely to see his wife Elizabeth and his son Sig Jr. Sig Jr. showed me the newsprint copy paper in Sig's typewriter on which he had typed, just before going on his last snowshoe hike: "I am about to begin a new adventure and I am sure it will be a good one."

Howard Zahniser, longtime executive secretary of The Wilderness Society and author of the Wilderness Act, died on May 5, 1964. I had met him and his family at his home in Maryland when I was with the National Wildlife Federation and immediately took a liking to this gentle soul with an unrestrained passion for books. Every horizontal surface of his home was stacked with books of all kinds. On his death, his two assistants divided "Zahnie's" duties. Stewart Brandborg became executive director of The Wilderness Society and Michael Nadel became editor of *The Living Wilderness*.

I was pleased to receive a telephone call from Brandborg early in 1965, asking me to move back to Washington to be his assistant, now that he had been promoted to chief executive officer (see figure 2). John Strohm, the publisher of *National Wildlife*, and my boss in Milwaukee, had treated me well, but duty called. The Wilderness Act had been passed and signed into law by President Lyndon B. Johnson, but the hard work of fleshing out the wilderness system, in accordance with its "review" requirements and through citizen initiatives, lay ahead. That challenge appealed to me.

Wilderness Advocacy

A key to Stewart Brandborg's success as the staff director of The Wilderness Society was his unshakable belief that the first step in every campaign to add an area to the NWPS was the creation of a supportive wilderness committee made up of citizens who lived near and

Figure 2 – Stewart Brandborg and M. Rupert Cutler worked together at The Wilderness Society when Brandborg was the chief executive officer. Photo courtesy of M. Rupert Cutler.

were familiar with the candidate area. They also had to be constituents of the member of Congress in whose district the area was located. The local congressperson's sponsorship of the requisite legislation was needed about 99% of the time.

"Brandy" pounded the importance of this process into his field staff, Clif Merritt from Denver, Ernie Dickerman from Knoxville, and me. We used it time after time, in all parts of the country, to round up local supporters of particular wilderness opportunities, weld them into a temporary local wilderness committee, get them to agree on recommended boundaries, and help them communicate with their members of Congress and urge them to pass the necessary legislation for each new wilderness area. You could call this "retail politics, wilderness style" – one newly recruited wilderness conservationist at a time, one new wilderness area at a time. The result, in addition to passage of the legislation, was the creation of a group who took ownership of and responsibility for each new wilderness area.

During the five years I worked for The Wilderness Society, I organized wilderness committees for candidate wilderness areas all over the East, from the woodcock marshes of Moosehorn National Wildlife Refuge in Maine, sandy beaches of Monomoy Island National Wildlife Refuge off Cape Cod, and bogs of Seney National Wildlife Refuge in Michigan's Upper Peninsula, to the alligator-filled Okeechobee National Wildlife Refuge in Georgia and rugged roadless tracts on the Ozark and Ouachita National Forests in Missouri. The fact that there are now 13 wilderness areas in the national forests in Missouri is due, in large measure, to the effective work of the Ozark Society on whom I depended for help there.

In the Appalachian Mountains, I helped found the West Virginia Highlands Conservancy to protect the wild backcountry and free-flowing rivers of the Monongahela National Forest (see figure 3). With the help of Ernie Dickerman and Doug Scott, the Highlands Conservancy won statutory wilderness status for several backcountry tracts on the Monongahela National Forest.

One project I enjoyed was creation by Congress of the Great Swamp National Wildlife Refuge Wilderness in northern New Jersey, within sight of the skyscrapers of Manhattan. The fact that the Great Swamp Refuge was smaller than 5,000 acres (2,024 ha) and still qualified for consideration as wilderness can be explained by Stewart Brandborg's ability at administrative lobbying.

I was with Brandy when we visited the solicitor of the Department of the Interior early in 1965, when USDI regulations to implement the Wilderness Act on Interior Department lands were in draft form and open to amendment. All Brandy asked for was a change of one little word. Instead of stating that candidate wilderness areas on parks and refuges had to be of 5,000 acres (2,024 ha) *and* practicable to be managed as wilderness, Brandy asked – and was granted – the change to "must be at least 5,000 acres in size *or* practicable to be managed as wilderness [italics added]." This change opened many small park and refuge system units for wilderness consideration, including Great Swamp. They would not have been considered had

Figure 3 – M. Rupert Cutler shaking hands with President Lyndon B. Johnson following his signing of the Wild and Scenic Rivers Act. Photo courtesy of M. Rupert Cutler.

the regulation requiring a minimum size of 5,000 acres (2,024 ha) in one block not been changed.

Under Stewart Brandborg's supervision, Clif Merritt, Ernie Dickerman, and I "broke new ground" in the late 1960s. As foot soldiers in the campaign initiated and inspired by Howard Zahniser, we carried the day on two fronts. We won enthusiastic local citizen interest in saving as statutory wilderness their nearby, unprotected backcountry. Additionally, with the help of those local people, we also won the support of the U.S. Congress for our so-called "citizens' proposals" to classify as statutory wilderness a vast diversity of tracts of land and water never before thought of as qualifying for inclusion in the NWPS.

We knew it was important to have wilderness near large cities for their harried citizens, "yearning to breathe free." We were community organizers and lobbyists, and we were good at it. Clif Merritt led the fight to create the Scapegoat Wilderness in Montana, the first purely local citizen-backed wilderness proposal that did not come through an agency to Congress.

My wilderness classification projects ranged from tiny island refuges and Isle Royale National Park in the Great Lakes to a half-million-acre (202,429 ha) proposal for Great Smoky Mountains National Park in North Carolina and Tennessee.

Most of the attention of The Wilderness Society in the late 1960s was focused on the Forest Service and its primitive area review process. As the Forest Service began its required review of its 5.5 million acres (2.2 million ha) of primitive areas and brought to the public its wilderness area boundary recommendations for each of them, it was our job to respond with our best shot in terms of what we considered ideal wilderness boundaries.

The first primitive area to be reviewed after the passage of the Wilderness Act was the San Rafael area near Santa Barbara, California. When Stewart Brandborg and I, after consultation with conservationists in Santa Barbara and my visit to the site, came up with a plan to double the size of the primitive area by including contiguous wildlands and went to see Forest Service wilderness staff specialist Bill Worf about it, Worf called our plan "as phony as a three dollar bill." Our "citizens'" plan was adopted by Congress, however, thanks to support from the California congressional delegation. Time marches on and Bill Worf, the founder of Wilderness Watch in Missoula, Brandy, and I are the best of friends now.

I enjoyed attending The Wilderness Society board meetings in the 1960s. They always included field trips into prospective wilderness areas and included meetings in 1965, into what was then the proposed Canyonlands National Park in Utah as well as what was then called the San Juan-Rio Grande Primitive Area in Colorado; in 1966, into the proposed wilderness portion of Yellowstone National Park in Wyoming (see figure 4); in 1967, through Organ Pipe Cactus National Monument and adjoining Cabeza Prieta National Wildlife Refuge on the Mexican border in Arizona; and in 1968, in Baxter State Park in northern Maine and in Everglades National Park and "Ding" Darling National Wildlife Refuge in Florida. In December of 1968, The Wilderness Society governing council met on Sanibel Island, Florida, to reconnoiter Everglades National Park, a prospective wilderness area. Ten years later, during the Carter administration, most of the Everglades Park was classified as wilderness by Congress.

Graduate School

I decided to "pull the pin" on The Wilderness Society in 1969 and pursue graduate degrees in the resource development department of Michigan State University. I felt I'd gone as far as I could go careerwise with a BS degree. That decision turned out to be a good one. It led to the opportunity to investigate why the Forest Service was being successfully sued by wilderness protection groups (the topic of my doctoral dissertation), to a PhD degree, and to a tenure track assistant professorship at Michigan State.

Figure 4 – The Wilderness Society Board traveling to view a proposed wilderness area in Yellowstone National Park. Photo by M. Rupert Cutler.

Ultimately it led to being chosen by President Jimmy Carter to provide policy direction to the Forest Service, the Soil Conservation Service, and the Department of Agriculture's research and extension agencies as assistant secretary of agriculture for conservation, research and education, under the genial supervision of Secretary of Agriculture Bob Bergland, who had been a congressman from Minnesota.

We lived in the East Lansing, Michigan, area from 1969 until 1977. While a graduate student, I served on the board of the Mackinac Chapter of the Sierra Club and participated in the campaign led by the late U.S. senator Phil Hart to win national lakeshore status for the Sleeping Bear Dunes on Lake Michigan. My doctoral research was to look into the phenomenon of the Forest Service losing one lawsuit after another in federal court and to find out what was going on. All of the cases I studied had been initiated in 1969.

What I found was the Forest Service had "turned a blind eye" to the passage of the Wilderness Act. In one instance after another, forest officers had ignored the clear message in that act that Congress was now in charge of wilderness boundary decisions, and that roadless areas adjoining national forest primitive areas – and for that matter, roadless area in general – had to be regarded as potential statutory wilderness areas and treated as such. Several Forest Service development plans were stopped in their tracks by injunctions and court orders.

One of the four cases I studied was the East Meadow Creek (*Parker v. U.S.*) litigation. The area is on the White River National Forest near Vail, Colorado. A controversy arose there because the Forest Service was planning to sell timber on roadless land adjacent to the Gore Range-Eagles Nest Primitive Area. The result of the lawsuit was a court order to the effect that roadless national forest lands contiguous to primitive areas had to be taken into consideration when primitive area reviews were conducted. The East Meadow Creek drainage was added by Congress to the primitive area when it created the Eagles Nest Wilderness.

Local environmentalists, including the Eagles Nest Wilderness Committee based in Vail, assisted by the national Sierra Club, had sued to stop the East Meadow Creek timber sale. The Eagles Nest Wilderness Committee had tasted success by winning Secretary of Agriculture Orville Freeman's denial of a 1968 request by the Colorado Department of Highways to build Interstate 70 through the primitive area. Explicit language in the Wilderness Act gave the secretary discretion to delete up to 7,000 acres (2,834 ha) of the southern tip of the primitive area if he determined "that such action is in the public interest." Highway- and water-development interests wanted to build roads and dams in that area. Secretary Freeman defended the wilderness and said "no" to development there. That's why I-70 makes a big dip to the south between Dillon and Vail.

Policy Direction for the Forest Service

In an interesting quirk of fate, shortly after I conducted this study, I was appointed by President Carter to provide policy direction to the Forest Service. Although the final word on any policy issue would come from the White House and its Office of Management and Budget, as USDA assistant secretary I had three primary constituencies to answer to: commodity production coalition members (the forest products industry), amenity coalition members (the environmentalists), and scientific management coalition members (forestry professors). I dealt with their competing recommendations for policies and Forest Service actions by asking myself, "What would Jimmy Carter do?" President Jimmy Carter, a farmer, was an avid forest, soil, and water conservationist and was supported in his run for the presidency by a Georgia group called Conservationists for Carter. I tried to imagine how Carter the Conservationist would approach these issues and take that stand.

As assistant secretary I had several opportunities to influence American wilderness history. One element of that history was my initiation of RARE II, which more than doubled the contribution of the national forests to the NWPS. Chief John McGuire ably led that painstaking review of every roadless area in the entire national forest system. RARE II consisted of a nationwide review of every acre of the 192-million acre (77.7 million ha) national forest system and allocated so-called roadless lands either to wilderness consideration or to other multiple uses. This program consumed the time of Forest Service field staff for three years and produced a bookcase full of draft environmental impact statements identifying some 62 million acres (25.1 million ha) as roadless, recommending 15 million acres (6.1 million ha) for wilderness, 36 million acres (14.6 million ha) for other multiple uses, and leaving 11 million acres (4.4 million ha) in a further planning status. Its recommendations and its roadless area inventory became the basis for a long series of congressional acts to add areas to the NWPS that has grown from 9 million acres (3.6 million ha) in 1964 to more than 110 million acres (44.5 million ha) today.

I initiated RARE II on the spur of the moment. I was testifying on the Endangered American Wilderness Act,

a wilderness-creation bill drafted by private pro-wilderness groups, before a House of Representatives subcommittee chaired by Teno Roncalio of Wyoming in May 1977. It became embarrassingly clear that the Forest Service had insufficient data on its roadless areas, or, at least, those that were the subject of that hearing. After checking over my shoulder with Chief John McGuire as to whether the agency could do such a review and getting his affirmative answer, I told the House subcommittee the Forest Service would review the whole national forest system for its wilderness potential within two years.

I am proud of the job the Forest Service did on RARE II, despite the fact that the environmental community condemned the process ("a rush to judgment") and its recommendations ("far too little for wilderness"). It provided substantive data for well-founded national forest resource allocations, including many new wilderness areas, and it was responsive to the forest products industry's demand for an assurance that federal timber would be available to sustain sawmill-based western communities.

Another opportunity to influence wilderness history was my participation in the Carter administration team that drew up the plan for new parks, wildlife refuges, and wilderness areas in Alaska that became the Alaska National Interest Lands Conservation Act of 1980 (P.L. 96-487), which created or expanded 15 national park units (see figure 5). It gave the Forest Service responsibility for continued management, as wilderness, of Admiralty Island and Misty Fiords within the Tongass National Forest. It provided for the protective designation of 80 million acres (32.4 million ha) of public lands, a third of which was declared wilderness. I had the pleasure of attending the ceremony in the East Room of the White House when President Carter signed the bill, his major environmental accomplishment.

Figure 5 – M. Rupert Cutler testifying before a congressional subcommittee on the Alaska National Interest Lands Conservation Act with former Secretary of Interior Cecil D. Andrus. Photo courtesy of M. Rupert Cutler.

Wildlife and Open Space Protection

Since that time – more than 30 years ago now – I've worked for the National Audubon Society and been the chief executive officer of Population-Environment Balance and Defenders of Wildlife. On my watch, Defenders of Wildlife provided the main NGO support for the reintroduction of gray wolves to the Yellowstone ecosystem, and it initiated the nationwide program of creating designated wildlife viewing areas in the late 1980s.

In Roanoke, Virginia, I've been executive director of Virginia's Explore Park, an outdoor living history museum and environmental education center, and the Western Virginia Land Trust. I was an elected member of the Roanoke City Council for six years and served on other boards, including those of the Western Virginia Water Authority and the Virginia Outdoors Foundation. The Virginia Outdoors Foundation is a state agency that holds some 3,000 conservation easements on 580,000 acres (234,818 ha) of undeveloped open space land in the commonwealth. Its projects, in partnership with private land trusts, have included protecting wildlife travel corridors and views from the Blue Ridge Parkway.

Conclusion

We are in this good fight together. We must pass the baton of responsibility from one generation to the next. Our motivation to protect wilderness may be emotional, from the gut, or intellectual, from a desire to bridge gaps in biodiversity protection. It's all good. The 50th anniversary of the passage of the Wilderness Act will be celebrated in just three years. Those of us involved with wilderness policy 40 years ago had no clue that the NWPS would someday be, not the 9 million acres (3.6 million ha) we started with, or the 30 or so million acres (12.1 million ha) we optimistically hoped it might become, but more than 110 million acres (44.5 million ha). Hallelujah!

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Local Economic Importance of Designated Wilderness

Evidence in the Literature

BY NEAL CHRISTENSEN

As we approach the 50th anniversary of the passage of the 1964 Wilderness Act, the public and federal land management agencies continue to search for a better understanding of the benefits and costs of inclusion of new areas within the National Wilderness Preservation System (NWPS). There are numerous U.S. federal lands considered suitable for inclusion in the NWPS. Forest Service lands that are potential candidates for future Wilderness designation are managed as Inventoried Roadless Areas under the Roadless Rule of 2001, Wilderness Study Areas that have been designated by Congress for further study, and Proposed Wilderness Areas that were identified through formal planning efforts. The U.S. Fish and Wildlife Service and the National Park Service manage suitable areas as Proposed Wilderness Areas. The U.S. Fish and Wildlife Service and the Bureau of Land Management also have a number of Wilderness Study Areas identified by Congress. Formal designation of these lands as Wilderness under the 1964 Wilderness Act requires a decision by Congress to protect their long-term national interest for a broad set of wildland-related values.

Although federal wildland protection reflects national interests, the political power behind the decisions is often centered in local areas near the proposed wilderness (Bryner 2007). Although the 1964 Wilderness Act does not address economic values, political support for designation is critical to its success, and that support often depends on economic considerations. Local communities are particularly interested in economic information when evaluating potential wilderness designation decisions (Czech 2000; Bryner 2007). Decisions about increasing protection of federal public lands are often contentious in local communities, at least partly because of concern about possible negative economic effects of designation (Rasker 2006). Bryner (2007) compared wilderness designation efforts across several decades in U.S. western states to determine the types of factors and supporting information that were most influential. He described local concerns as tending to be more narrowly focused on economic and local ecological considerations than on the broader national interests associated with the NWPS. These local concerns compel stakeholders and decision makers to consider local economies in comprehensive evaluations of the impacts of wilderness designation decisions in nearby communities.

Neal Christensen.

Benefits derived from protected public lands generally accrue differentially to the public across geographic scales. Protecting the environment and providing rare opportunities for wilderness experiences, including solitude, potentially interest a wide national audience. Local communities may benefit economically from nearby wilderness through increased visitation and local expenditures as well as through the protection and enhancement of amenities related to quality of life. Quality of life is thought to be enhanced by amenities offered by nearby protected public lands, and these qualities are key to driving economic development by attracting people and businesses to a community (Buckley 2005; Rasker and Hansen 2000). Although direct economic contributions derived from local spending associated with wilderness visits are relatively small and highly variable by location and season, the overall potential local economic contributions of NWPS lands are substantial when consideration is given to a broader set of benefits (Bowker et al. 2005). Because commercial activities within designated wilderness are limited, and the

benefits of protected areas go beyond on-site activities, amenity-based economic contributions of designated wilderness to local communities are likely to far exceed those generated from local recreation visitor spending.

Marketing the Wildland Recreation Setting

The Wilderness Society (2009) describes designation of wilderness as the highest form of U.S. federal land protection, and this level of protection comes with increased national recognition along with a fairly standard list of allowable developments and uses. Tasci and Gartner (2007) describe tourism supply and demand within a marketing framework that considers destination image as a primary factor. This destination image is a result of brand recognition where visitors come to expect a certain type of recreation setting. Thus, a change in wilderness designation status could influence the destination image and have the potential to change both the perceived supply of and demand for a specific recreation opportunity in a specific wildland place. If recreation visits to a public wildland area increase because of an increase in its protection status, local economies could benefit from a wilderness "designation effect." A designation effect would be characterized from a marketing perspective as a brand recognition or brand loyalty response. This type of response would contribute to an increase in visitation as a function of changing demand rather than a change in the actual supply of local wildland opportunities. There is conflicting evidence on whether or not this type of wilderness designation effect occurs.

A perceived change in the quality of a recreation setting and an increase in public awareness suggest that recreation use could increase, or the types of users could change as a result of designating a place as wilderness. McCool (1985) published one of the few comparison studies of the influence on recreation use before and after wilderness designation. The study at the Rattlesnake National Recreation Area and Wilderness in Montana found no evidence of increased use related to designation. The data actually showed a slight decline in wildland recreation use from 1977 (pre-designation) to 1981 (post-designation). Further refuting a visitation effect attributable to recognition or loyalty toward the NWPS, the study showed no increase in the percentage of first-time visitors to the area. McCool noted that recreation use patterns are inherently in flux, wilderness designation is only one of many potential influences, and trends influenced by designation may take a long time to manifest. He also observed that the process of wilderness designation circa 1980 generated extensive media coverage for a number of years prior to designation; this is often true of contemporary designation efforts as well (e.g., Carrus, Cini, Bonaiuto, and Mauro 2009). McCool reasoned that media coverage prior to designation could result in a substantial "pre-designation" effect that dilutes the influence of the actual legislation.

Figure 1 – This solo backpacking trip in the Bob Marshall Wilderness contributed little to the local economy. Photo by Neal Christensen.

There is some evidence of a designation effect on public lands outside of the context of wilderness that could inform the wilderness debate. Weiler (2005) found a considerable increase in recreation use resulting from changing the designation of eight federal properties from national monuments to national parks between 1979 and 2000. Weiler's study found substantial and persistent increases in visitation at these parks. The study found an apparent market signaling influence from designation that provides information to new visitors, particularly those from farther away who do not rely on local knowledge to form the decision to visit. Evidence from Weiler (2005) suggests that many people plan recreation trips based on a general desire to visit national parks and that they also appear to seek out new national park experiences

Figure 2 – A home in Montana's Boulder Valley near the Absaroka-Beartooth Wilderness. Residential land area grew at more than twice the rate in this county (Sweet Grass) as in all non-metro counties in Montana between 1980 and 2000 (Headwaters Economics 2011). Photo by Neal Christensen.

during these trips. Thus, evidence shows a potential for increased recreation use by new visitors to places that become newly designated national park units. National park designation attracts new visitors by providing information about recreation setting qualities and amenities through a market signal about a somewhat fungible type of recreation setting (i.e., brand recognition), and through the general popularity of the national park system (i.e., brand loyalty). Similarly, the National Wilderness Preservation System, because of its relatively uniform management practices imposed by the 1964 Wilderness Act, could also provide a market signal of a specific desirable type of wildland recreation experience. However, this type of designation effect has not been supported by empirical studies in the NWPS.

Community Characteristics and Amenity Benefits

Recreation visitation to the NWPS is not the only important factor contributing to healthy local economies dependent on wildlands. A case study of Doña Ana County, New Mexico, suggested that protecting local public lands had a positive economic influence and provided a competitive advantage over other communities, but that success was dependent on appropriate infrastructure and community capacity (Sonoran Institute 2006). Doña Ana County was found to be better positioned than many other amenity-rich communities to benefit economically from wilderness designation because of nearby commercial air service, a substantial amount of public land under a variety of management types, high numbers of service sector jobs with a good mix of producer and consumer services, and an educated population (Sonoran Institute 2006).

Further evidence of the positive amenity-based association between protected public lands and healthy local economies is found in a study examining the potential economic contributions of designating a proposed 30,000-acre (12,141 ha) wilderness in central Oregon (Headwaters Economics 2007). That study found no empirical evidence or peer-reviewed literature suggesting that the designation of wilderness in any western U.S. county had been detrimental to a local economy. The study concluded that there is a positive relationship between protecting public lands and local community economic health. In general, this conclusion is supported by a number of studies that have found correlations between different types of local economic benefits and the presence of designated wilderness (e.g., Headwaters Economics 2007; Holmes and Hecox 2004; Kline 2006; Lindsey, Man, Payton, and Dickson 2004; Lorah 2000; Phillips 2004; Rasker and Hansen 2000).

Conclusions

Many proponents argue that wilderness designation proposals are generally worthy of support simply because some places should be protected from development. The National Wilderness Preservation System represents a national public good that was not created for the purpose of regional economic development. However, in a world involving trade-offs of scarce resources, successful proposals are increasingly required to also be economically justified. The presence of designated wilderness in the western United States has been positively correlated with population and economic growth, property value increases, and enhanced quality of life. New designation of wilderness may bring these types of benefits to more of the West, including communities where traditional extraction activities are declining. Local communities in the western United States may consider new wilderness designation to be a rural

economic development tool in the same sense that nature-based tourism is viewed as a conservation tool for protected areas throughout the world.

Local debate over proposed wilderness designation should consider the following points about the research described in this review:

- No evidence was found that designation has increased use, changed use patterns or changed types of visitors to wilderness.
- There is substantial evidence of positive local amenity-based economic contributions associated with the NWPS. There is also evidence suggesting that new additions to the system can improve local economies.
- No evidence has been identified showing overall negative economic impacts resulting from wilderness designation.

Although the public purposes of places protected under the 1964 Wilderness Act, and subsequent designation legislation, do not include local economic development, potential local economic impacts remain a fundamental consideration in the evaluation of tradeoffs in both designation and management of public wildlands. This article has focused on understanding protected areas from an economic viewpoint with the intent of providing managers and the public with understanding of current literature on the NWPS's economic contributions to local communities. The economic evidence is overall positive, but sparse and inconclusive. There is a need for further research to better document impacts on local economies due to wilderness designation – especially studies that can compare areas before and after designation.

Wilderness designation debates may tend to focus on local economic benefits, and those benefits can be substantial. However, decisions affecting public lands within the NWPS are held to a high standard of responsibility to first and foremost protect their natural condition as established by the 1964 Wilderness Act and specific enabling legislation for each designated wilderness. Wildland-based tourism and amenity migration offer an economic opportunity and local justification for protecting special wildland places. However, the management priority for units of the NWPS in the United States must be to protect the public purpose of these places as repositories for natural conditions rather than to enhance the economic health of local communities.

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PERSPECTIVES FROM THE
ALDO LEOPOLD WILDERNESS RESEARCH INSTITUTE

Science and Stewardship to Protect and Sustain Wilderness Values

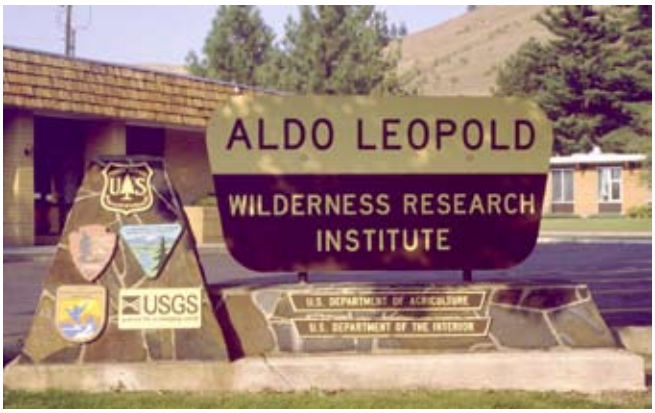
Proceedings of the Ninth World Wilderness Congress Symposium

BY BROOKE B. McBRIDE

WILD9 convened in Meridá, Yucatán, Mexico, in 2009 with a challenging agenda. For more than eight days, 1,800 delegates from more than 50 nations gathered to FEEL, THINK, and ACT (SIENTE, PIENSA, ACTÚA) on many important conservation issues requiring international cooperation. The compilation of papers from the Symposium on Science and Stewardship to Protect and Sustain Wilderness Values is now available online, in hard copy, and on CD by mail order.

The WILD9 proceedings comprise 32 papers that are organized into seven sections:

1. *Empowering Young People* highlights the promise of youth service programs as a powerful tool for global conservation. This section traces the history of the youth conservation service movement in the United States and provides an overview of its current programs. Similar programs in the developing world are also making substantial contributions to conservation and human well-being.
2. *Promoting Involvement of Local Communities* presents strategies for maximizing the involvement of indigenous communities in conservation planning, management, and decision making. Case studies and examples from Mexico, Uganda, and the United States are provided, and the potential impacts of climate change on such relationships are given special consideration.
3. *Enhancing Transboundary Conservation Goals* details regional and international efforts to span both geographic and cultural boundaries in order to protect natural and cultural resources. Successfully implemented projects in Africa, Europe, and between Canada and the United States are discussed. New cooperative partnerships between Mexico and the United States, and across even larger hemispheric scales, are strongly urged.
4. *Exploring Wilderness Meanings* investigates sociocultural meanings of wilderness and the implications for management. Questions about the meanings and importance of wilderness to humans in many different parts of the world are explored through different cultural, theoretical, and spiritual lenses.



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Using Technology to Deliver Wilderness Management Training to Federal Workers

Outcomes of an Instructor-Led E-learning Pilot Training Course

BY TOM CARLSON and LISA EIDSON

Management of lands in the United States designated as wilderness occurs in accordance with the 1964 Wilderness Act (P.L. 88-577). This single law applies to all wilderness areas regardless of when they were designated and provides guidance on how management of wilderness differs from management of other public lands. As with any profession, job training is required to ensure a knowledgeable workforce that, in this case, is charged with proper care of American's legacy of wilderness lands. The Arthur Carhart National Wilderness Training Center (ACNWTC), established in 1993, provides specialized wilderness management training for federal government employees from the Bureau of Land Management, Fish and Wildlife Service, Forest Service, and National Park Service who manage wilderness lands.

Although federal wilderness management employees consistently prefer the classroom training format, training and travel budget cuts and competing priorities are making participation in classroom courses progressively less feasible (ACNWTC 2009). Increased adoption of e-learning – electronically enabled learning and teaching – by the ACNWTC simply reflects a broader trend within the federal government initiated by President Bill Clinton's (1999) Executive Order 13111, which suggested that a "coordinated Federal effort is needed to provide flexible training opportunities to employees and to explore how Federal training programs, initiatives, and policies can better support lifelong learning through the use of learning technology." Incorporation of e-learning into government training programs has further expanded under President Barack Obama's administration through initiatives sanctioning the use of various online social media as learning tools (Federal Web Managers Council 2009).

Tom Carlson.

Lisa Eidson.

The ACNWTC's early e-learning training courses – developed and delivered in partnership with the Eppley Institute for Parks and Public Lands at Indiana University – were self-paced, meaning that the timing, duration, and pace of learning were student-controlled. Although this type of e-learning continues to be highly desirable for some (ACNWTC 2009), anecdotal evidence and results from a study of one of the ACNWTC's longer, multimodule, self-paced courses revealed that situational, dispositional, and epistemological barriers often resulted in a learning experience that was inconvenient, frequently interrupted, hurried, superficial, marginalized, and lonely (Eidson 2009). In response, the ACNWTC supplemented its self-paced training course offerings by piloting an instructor-led e-learning model, which engaged students in interactive, structured study. This article describes the pilot course, titled Minimum Requirements Analysis (MRA) Live, and discusses outcomes and lessons learned. Although the course was not offered for academic

Figure 1 – An airplane crash, like this one in Squaw Basin in the High Uintas Wilderness, was the subject of the sample MRA exercise students in MRA Live evaluated. A crash scenario was specifically chosen because it was uncommon and would help students understand and avoid preconceived ideas about the MRA process and its applications. Photo by Ken Reed.

credit, the term *student* is used to describe the federal wilderness management employees who participated in MRA Live.

MRA Live: An Experiment in Live E-learning

One of the most important, challenging, and complex tasks for wilderness managers and decision makers is proper application of the MRA process – a framework for decision making that implements and embodies the Wilderness Act's spirit of light-handed, deliberate management. To minimize the various barriers identified during self-paced courses, MRA Live

- was delivered on a set schedule to encourage students, and their supervisors, to sanction the time necessary for learning;
- used Wilderness Connect, a new social network for wilderness professionals that incorporates discussion groups, to stimulate exchange of ideas between students and the instructor and among students;
- required hands-on participation through instructor-evaluated assignments;
- increased relevance to professional work by requiring a final assignment that allowed students to choose a real issue or project and prepare their own analysis.

MRA Live was taught over a seven-week period in January through March 2011, and enrolled 20 students evenly distributed among the four wilderness management agencies. The course consisted of different components intended to facilitate learning through a combination of reading, discussion, and application, both individually and as a group. All students were required to have completed two prerequisite self-paced portions – each culminating in a multiple-choice question test – that provided background information on the Wilderness Act and MRA process. Following this, students evaluated a sample MRA, using a provided evaluation guide, in order to identify and understand common mistakes often seen in real MRAs (see figures 1, 2a, and 2b). Next, students prepared their own MRA using the ACNWTC's recommended Minimum Requirements Decision Guide (MRDG), a form that standardizes and documents the MRA process. Student MRAs went through a two-round review by ACNWTC agency representatives in which they were required to correct all mistakes to produce an acceptable or exemplary final analysis. Throughout the course, students participated in weekly discussions on Wilderness Connect that loosely paralleled the assignments described.

MRA Live Outcomes

Overall, student post-course evaluation data revealed that most students rated the usefulness of the course materials, assignments, and instructor feedback as helpful or extremely helpful. The majority (65%) of students successfully completed all required elements of MRA Live. Of the remainder, four students did not successfully complete one or more of the course requirements and three students withdrew.

Prerequisites on the Wilderness Act and MRA Process

All students completed the self-paced prerequisites on the Wilderness Act and MRA process. As these same prerequisite components are also required for other ACNWTC classroom and e-learning courses, completion of these components at any time prior to the start of MRA Live was accepted. Four students had taken earlier versions of the prerequisites (offered prior to 2010). Of these students, two failed MRA Live.

Activity data for the prerequisites indicate that students often "tested out" by accessing the test first, engaging in closely repeated test attempts (typically seconds or minutes apart), or viewing the content for a minimal amount of time before or after accessing the test. Fifteen students took this approach for the Wilderness Act prerequisite, including three of the four

who failed MRA Live. Ten students did the same for the MRA process prerequisite, including two of the four who failed. Student post-course evaluation data also revealed that the self-paced prerequisites received almost an equal number of positive and negative comments regarding information and format.

Sample MRA Evaluation

All students completed the sample MRA evaluation assignment and shared questions via the Wilderness Connect discussion group where they were assisted in their interpretations by the instructor. Instructor review of the sample MRA evaluation assignment revealed common misunderstandings of key components of the Wilderness Act, which dictate how the MRA process is applied. In particular, many students misunderstood and could not correctly apply the definitions of the four statutory qualities of wilderness character and the public purposes of wilderness. Both wilderness character and the public purposes are covered in the prerequisites and are further explained in the MRDG instructions, which were provided as part of the training materials and required to be used.

Original MRA

According to student post-course evaluation data, 40% had completed an MRA prior to MRA Live, and 20% had completed more than one MRA. Overall, students ranked the original MRA assignment as one of the most useful and helpful elements of MRA Live.

Of 20 students, 13 completed acceptable original MRAs through the two-round review process conducted by the ACNWTC agency representatives. During this process, each agency representative reviewed MRAs drafted by students working for their respective agency. Each section of a student's MRA was rated as unacceptable, acceptable, or exemplary, and a single unacceptable mark in any section meant that the MRA as a whole required revision. Only one student submitted an MRA that was determined to be acceptable during round-one review. An additional 12 students submitted acceptable MRAs during round-two reviews; however, two delayed the assignment, and five others, three of whom withdrew, cited other work priorities as reasons for not completing or not doing acceptable work. The four students who failed MRA Live all submitted MRAs for round-one review, but failed to correct identified mistakes and resubmit during round two.

Figures 2a and 2b. In the sample MRA, a fictitious situation was created, based on real crash events, and students were required to evaluate the analysis detailing wreckage removal options – including both motorized (helicopter) and nonmotorized (mule) means – as a way of understanding common mistakes often seen in real MRAs. It was during this exercise that knowledge gaps in understanding the definitions of the four statutory qualities of wilderness character and the public purposes of wilderness first surfaced. Photo 2a by Ken Straley; photo 2b by Ken Reed.

Table 1 – Frequency and type of the most common errors made by students during the original MRA assignment revealed through a two-round review by the ACNWTC agency representatives. Error categories follow the segmentation found in the MRDG.

Error category	Round 1	Round 2
STEP 1		
Description of situation (missing information)	8	2
Qualities of wilderness character	9	3
Public purposes	8	2
Rationale for decision	10	2
STEP 2		
Description of alternatives	9	1
Qualities of wilderness character	31	10
Maintaining traditional skills	11	1
Economics and timing constraints	8	2
Decision and rationale	10	3

The most common student errors made during the original MRA assignment (see table 1) reflected continued misunderstanding of wilderness character and the public purposes that originally surfaced in the sample MRA assignment. Significant mistakes also occurred in descriptions of the situation and alternatives, primarily due to pre-decisional bias toward a particular action. In addition, misinterpretations of the opportunities for traditional skills use and improper weighting of cost and project time ultimately resulted in poor decision making and an unsupported decision rationale.

After review of the MRAs and companion online discussions, it was determined that 16 students used actual work projects for their original MRA assignments. Despite the high number of errors seen in the round-one review, three students ultimately prepared MRAs good enough to be used as examples on www.wilderness.net.

Weekly Online Discussions

Weekly online discussion topics on Wilderness Connect included misconceptions about nonmotorized methods and tools, common MRA problems, challenges associated with the MRA process, consequences of inadequate analyses and decision making, and applying the MRA to challenging and controversial situations. Student post-course evaluation data revealed that 87% rated their computer abilities as good or excellent, and 53% had participated in more than one discussion forum prior to MRA Live. Seventy-nine percent of students who completed the course responded to all required discussion questions and provided at least one meaningful post or reply each week. More than 65% of discussion posts by students were in response to a post by another student, indicating that student-student interactions were high. Despite efforts to inform students of time requirements, however, nearly 40% of student postings were made after normal work hours or on weekends, and several students admitted to minimal involvement due to time constraints.

The online discussions both revealed and were used to address common misconceptions about law and policy for wilderness stewardship. In addition to misconceptions about wilderness character and the public purposes of wilderness, the discussions revealed a widespread misunderstanding of agency safety policy for visitors and work crews in wilderness. This included perceptions that all naturally occurring hazards must be addressed, persistent beliefs that a motorized tool is always safer than a nonmotorized tool, and reluctance to consider other potentially safer (and legally required) nonmotorized options. There were also common misunderstandings of the cooperative relationship and statutory requirements of both the state fish and wildlife agencies and federal wilderness managers and, contrary to agency policy, perceptions that cost and time are primary criteria for determining whether prohibited uses are the minimum requirement for projects inside wilderness. Collectively, these misconceptions often led students to incorrectly justify actions that included the use of motorized equipment or structures, both during the discussions and in the other required assignments.

Lessons Learned about E-learning

The lessons learned from MRA Live provide a glimpse into the potential for successful e-learning in the government workplace as well as influences of current agency culture. A review of these findings provides some implications for wilderness stewardship.

Designing and Delivering E-learning in the Government Workplace

The outcomes of MRA Live indicate that design and delivery of e-learning, including course scheduling, participation requirements and opportunities, and course content, are critical factors for successful participation by federal workers. Conflicts with other priorities such as field and fire season and annual reporting requirements can be somewhat minimized by scheduling courses during the typical training season. Requirements should match both the training needs and expected capabilities of students. The nature of both e-learning and the current agency work culture requires that both the course content and the instructor be available during and after normal work hours. Most of MRA Live student work was conducted outside normal work hours, indicating a desire and commitment to learning, despite the influence of competing priorities. The original MRA and sample MRA assignments and discussion forums ranked as the most important elements of MRA Live, suggesting that relevance to and alignment with real work may make training more appealing.

Course content must provide the information, examples, and rationale needed for an understanding of the requirements, process, typical problems, and consequences of the topic in a manner that promotes efficient learning and retention. This includes both the design and delivery of course materials and interactive components. For example, whereas students ranked the discussion forum as one of the most helpful elements of MRA Live, they also ranked it as the least useful element due to lack of strong relationships with course assignments. And, although the prerequisites were assigned to ensure understanding of the fundamental direction found in the Wilderness Act, unengaging self-paced content and minimal student effort (e.g., testing out) may be responsible for knowledge gaps in law and policy revealed in subsequent assignments. Prior research suggests that negative attitudes toward e-learning exist based on experiences with some poor-quality training required by the federal agencies (Eidson 2009). In the type of "sit and get" training offered by the agencies, students often rapidly click through e-learning courses resulting in superficial and inadequate learning. The knowledge gaps students exhibited in the sample MRA and original MRA assignments, coupled with prerequisite activity data, suggest that self-paced e-learning must be more carefully structured to promote deeper learning, and that e-learning biases revealed in prior research may continue to be relevant for self-paced elements.

Wilderness Training and Agency Culture

Without support for wilderness training, increased learning and improvements in job performance may remain elusive. The agencies do not require training for all managers who make decisions related to provisions of wilderness law where poor analysis has repeatedly resulted in adverse court decisions. During MRA Live, those students who failed to produce an acceptable original MRA also exhibited a poor understanding of law, which is critical to producing supported analyses and defensible decisions.

Motivated employees who elect to take wilderness training sometimes find that their supervisors do not allow sufficient time for nonrequired training, regardless of cost, availability, or relevance to work goals. For MRA Live students, conflicting priorities often resulted in after-hours learning and, for three students, withdrawal. Proper course scheduling can provide some relief from conflicting priorities, but ultimately supervisors should review and support the time commitment with students to help ensure that adequate time is available for quality learning and that learning occupies a high priority amidst other tasks.

Implications for Wilderness Stewardship

MRA Live was successful as an experiment in instructor-led online training for federal agency wilderness managers. The course provided numerous lessons learned for improvement during subsequent offerings, including a need to improve course design and content, especially self-paced portions, and require additional learning by students early in the course. Generally, it increased the knowledge and skills of most students for preparing an MRA; however, it failed to successfully train all students, as a significant portion (35%) failed to complete the original MRA assignment successfully, despite two reviews.

Only one student produced an acceptable original MRA during the first review, despite the fact that 40% had completed an MRA prior to MRA Live, and 20% had completed more than one. This indicates that employees are not getting the knowledge they need to produce or review an acceptable MRA elsewhere on the job. Aspects of agency work culture, including marginalization of nonrequired training, means that many employees, especially those in decision-making positions, are not getting access to the training they require, or are not afforded or choose not to allot adequate training time. The realities of increased workload, current cultural approaches toward nonrequired training, and persistent knowledge

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San Pedro Mezquital

The Last Free-Flowing River in the Western Sierra Madre

BY JAIME ROJO

Rivers are full of symbolism based around the freedom of movement by water. For some cultures the symbolism represents the fertility of the Earth, as the water irrigates their crops; for others, the inextricable passing of time, as water will run down and not return. It is the great movement of rivers that has given rise to legends about the progression of life itself, from small streams that are born in the mountains to the great rivers that meet death in the oceans. Free-flowing rivers are at the core of all this symbolism, and also, a wild heritage that is increasingly scarce. The majority of the large rivers in the world have had their courses modified by dams or other artificial barriers. Who would suspect then that an almost unknown river in western Mexico would be the last to run free across the Western Sierra Madre?

From left to right: Santiago Gibert, Octavio Aburto, Pablo Fregoso, Raquel Gómez (WWF Mexico), Jesús (local guide), and Jaime Rojo, members of the San Pedro Mezquital Expedition for WWF Mexico. Photo by© Jaime Rojo/ WWF.

San Pedro Mezquital River

The San Pedro Mezquital, in northwest Mexico, is the seventh largest river in the country and the last to cross the Western Sierra Madre without dams or other artificial barriers (see figure 1). Its vast watershed expands over 7 million acres (2.8 million ha) and connects the Neartic Chihuahuan Desert with the Neotropical realms of the coast, in a mosaic of ecosystems that results in a rich biodiversity. On its way to the sea, the San Pedro Mezquital runs 355 miles (573 km) through some of the wildest and more remote areas of Mexico, some of them still oozing a true wilderness feeling. The river is born by the union of its three main tributaries that originate in the highest parts of the mountain ranges of the states of Durango and Zacatecas, amid cold and silent fir forests and rich pine-oak woodlands, considered a world biodiversity hotspot. The river descends southeast, and then turns west to cross the Sierra Madre through the Mezquital Canyon – a deep gorge of almost 3,000 feet (914 m) that bisects the mountain range – to exit in the tropical valleys and alluvial plains of Nayarit, where it becomes the main artery that supplies freshwater for Marismas Nacionales (see figure 2), a complex wetlands system that encompasses more than 1,100 square miles (2,849 sq. km) between the states of Nayarit and Sinaloa and contains the largest mangrove forest in the Mexican Pacific (see figure 3).

The watershed supports approximately 450 species of vertebrates and at least 60 are under a protection status designated by Mexican law, such as the jaguar (*Panthera onca*) or the American crocodile (*Crocodilus acutus*). Its importance as a key habitat for migratory birds of the northern Pacific is remarkable; every winter more than 200,000 individuals of 40 species arrives at these wetlands in their immutable quest for milder climates. The tropical forests of the lower elevations are also key in the survival of more than 110 species of migratory passerines that every year embark on an epic migration, for birds of such a small size, across North America. The whole watershed, especially the canyon of Mezquital, is a hotspot for terrestrial mammal diversity, 112 species that account for 23% of the total in Mexico. All

of this richness makes the corridor San Pedro Mezquital-Marismas Nacionales a true jewel of Mexico's biodiversity, a wild complex of rivers, estuaries, channels, and lagoons that is worth protecting as one of the last great wetlands of the Mexican Pacific.

For its large size, biodiversity, and importance as a migratory pathway for birds, global institutions have acknowledged the conservation values of the region: it is recognized as a Wetland of International Importance by the Ramsar Convention and a site of hemispheric importance for migratory birds by the Western Hemispheric Shorebird Reserve Network. CONABIO, Mexico's National Commission for the Knowledge and Use of Biodiversity, designated it as a Marine, Terrestrial, and Hydrological Priority Site and an Important Bird Area. According to the North American Landbird Conservation Plan by the Partners in Flight, Marimas Nacionales may host half of all Neotropical landbird species and up to 16 Watch List Species – species of highest conservation concern. BirdLife International included this area in their Endemic Bird Areas worldwide list, and last year, 300,000 acres (741,000 ha) of the wetlands system in the state of Nayarit were designated by the Mexican Government and UNESCO as a Biosphere Reserve, entering the network of protected areas in Mexico. There are currently plans to expand this reserve in an equivalent area to its neighbor state of Sinaloa.

The survival of Marismas Nacionales and its biodiversity directly depends on: (1) the conservation of the rivers that drain into the wetland – particularly the San Pedro Mezquital, which is the main artery that supplies freshwater to the system; (2) the maintenance of their environmental flow regime – the quantity, timing, and quality of water flows required to sustain freshwater and estuarine ecosystems; and (3) the human livelihoods and well-being that depend on them. The great floods that are frequent in the rainy season help to balance the levels of salinity in the estuaries – salt water from the sea, freshwater from the rivers – and together with the presence of nutrients and sediments, increase productivity in the system. Following natural rhythms, the level of water in the San Pedro Mezquital varies substantially during the dry and rainy seasons, defining the life-cycles of many species such as mangrove, shrimps, or oysters, which

Figure 1 – The San Pedro Mezquital River is the last to cross the Western Sierra Madre without dams. Photo by © Santiago Gibert/WWF.

Figure 2 – Traditional shrimp fishing in Marismas Nacionales Nayarit Biosphere Reserve. Nayarit, Mexico. Photo by © Octavio Aburto/WWF.

Figure 3 – The mangrove forests of Marismas Nacionales are considered the largest of the Mexican Pacific. Photo by © Santiago Gibert/WWF.

Figure 4 – Oyster culture is an important economic activity in Boca de Camichin, at the mouth of the San Pedro Mezquital River. Nayarit, Mexico. Photo by © Jaime Rojo/WWF.

together with agriculture and fishing represent the main economic activity in the region (see figure 4). This is an extremely productive ecosystem on which almost 50,000 humans directly depend for their survival, and that represents a key spot for the productivity chain of the whole Gulf of California, a sea that hosts the largest fisheries – both traditional and industrial – in Mexico.

The San Pedro Mezquital River is also special for its cultural and historic values. On different spots across the large watershed archaeologists have found records of human presence that date back several thousand years (see figure 5). In the river mouth at Marismas Nacionales lies the little and picturesque village of Mexcaltitan, which, according to popular legend, is the mythical Aztlan city, the origin of the Mexica migration that would later populate the central valleys and catalyze the foundation of ancient Mexico's capital: Tenochtitlan. Since then, different societies have inhabited the area with one thing in common: they all established strong bonds of dependence with the river and the water, which even today remains a key element in the day-to-day needs of the local populations, such as water for drinking, cooking, or cleaning. Of remarkable importance is the spiritual value of the river as a sacred place for the native people that live in the watershed: Tepehuanes, Huicholes, Coras and Mexicaneros.

The availability of water and other resources from the river, such as fishing for food or materials for construction (see figure 6), encouraged the development of important human settlements that as a consequence irrigated and cultivated large extensions of land, which in time, allowed for important cattle production. Cities were built and industries thrived, creating a diverse and complex human society that today accounts for more than 800,000 people in the states of Durango, Nayarit, and Zacatecas. But as history has taught us, all this development usually comes with serious alterations to the ecosystem, mainly driven by the need to exploit the river's water and other resources, changing its natural cycle and jeopardizing the existence of its flow by radically shifting the processes of water, nutrients, and sediments that make this one of the most productive ecosystems in Mexico.

A free-running river is a healthy and functional living asset for our society.

Protecting the San Pedro Mezquital River

In order to maintain the system's full range of life-supporting, ecological, and evolutionary processes, the long-term survival of the species that live there – including ourselves – and to ensure its resilience in the face of environmental change, the San Pedro Mezquital-Marismas Nacionales system needs representation from all sectors of society. Like many other rivers in the world, the source of most conflicts is the lack of understanding of the watershed as a unit that links the mountains with the sea. What we do in the upper basin – let's not forget that ground and surface waters are connected – has repercussions for the lower basin, and this fact is often ignored in the decision-making process. In the case of the San Pedro Mezquital – an immense watershed that connects two worlds apart, where the inhabitants of the lush lower basin are both physically and emotionally disconnected from the population of the dry upper basin – this problem is accentuated. In addition, there is a surprising ignorance among the local populations of the natural and economic values that the river offers them (see figure 7); often it is seen only as a water source or, in the worst case, a dump.

But not all is lost. The city of Durango is becoming conscious of the nature of the problem and has started some partial mitigation measures, such as installing wastewater treatment plants. However, there is a lack of a holistic vision; instead, the focus is only on identifying and trying to solve isolated problems. There is an urgent need for cooperation between the different sectors of society – government, private sector, and civil organizations, particularly on the local stage – to reach joint solutions oriented toward work in the watershed as a whole. The WWF-Gonzalo Río Arronte Foundation Alliance promotes the integrated management of the San Pedro Mezquital watershed to maintain the freshwater ecosystems (see figure 8) and the valuable services they provide to our society. To achieve this, they work with partners in the region to promote sustainable water management, empower the local communities, create working groups and dialogue spaces in the watershed, and develop communications

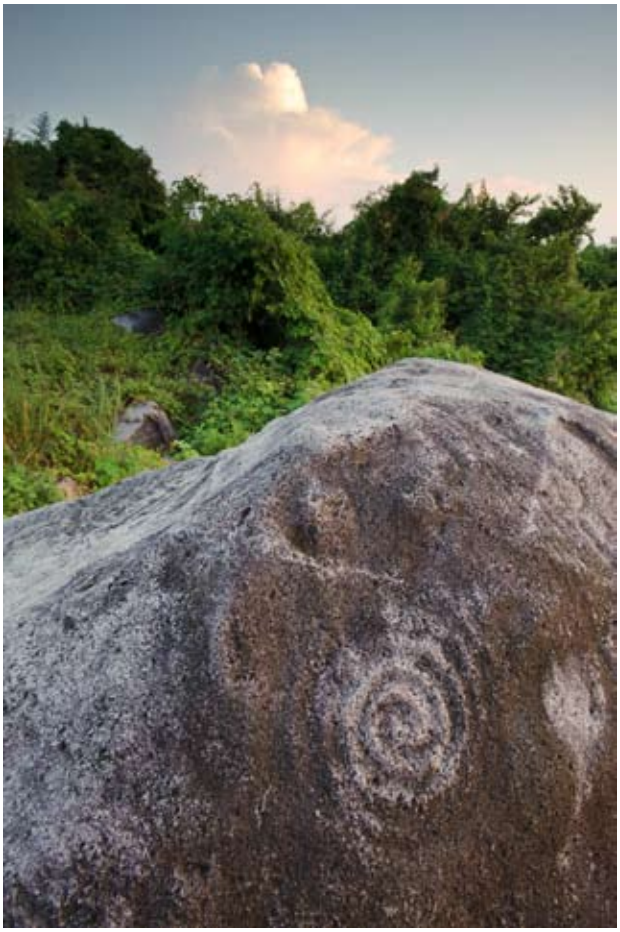

Figure 5 – The petroglyphs of Coamiles are among the oldest traces of the Paleolithic era that can be found in Marismas Nacionales Biosphere Reserve. Nayarit, Mexico. Photo by © Jaime Rojo/WWF.

Figure 6 – San Pedro Mezquital River near El Venado, Nayarit, at dawn. The stones and cobbles of the shores are an important building material in the region. Photo by © Jaime Rojo/WWF.

Figure 7 – Bats come out of their cave at dusk in a mine near El Zopilote, a village that lies on the shore of San Pedro Mezquital River. Bats are an important ally in the control of crop plagues. Photo by © Pablo Fregoso/WWF.

Figure 8 – The *ahuehuete* or Montezuma cypress (*Taxodium mucronatum*) is an emblematic tree species in the upper basin of the San Pedro Mezquital River in Durango, Mexico. Photo by © Jaime Rojo/WWF.

materials to create awareness of the values of the watershed, with special interest in the local level.

In October 2010, driven by the need for visual materials to develop an awareness campaign about the San Pedro Mezquital, a team of four photographers – Octavio Aburto, Pablo Fregoso, Santiago Gibert, and this author – worked with WWF Mexico to accomplish the first watershed-scale photography assignment that would result in a series of three expeditions to the lower and upper basins and produced the most complete photographic archive ever compiled in the region: more than 9,000 images of wildlife, people, vegetation, landscapes (see figure 9), threats, and success stories. Since then, these images have illustrated publications in national and international magazines, such as *National Geographic en Español* or *Newsweek Latinamerica*, and have been featured in social networks, online galleries and slideshows, websites, and photo exhibits. These photographs have reached a large, diverse, and non-specialized audience that to date is close to 8 million people, based on studies that estimate audience per media. This communication campaign will continue during the coming months and focus on specific audiences – with emphasis on decision makers and local inhabitants – to create awareness of the valuable services provided by the river, to reinforce the sense of belonging of the local inhabitants to the watershed, and to put the eyes of national and international audiences on the San Pedro Mezquital.

A free-running river is a healthy and functional living asset for our society and has had millennia for evolution to reach the delicate balance that defines its course. These rivers, shared, respected, and enjoyed by the local inhabitants, are the best guarantee of freshwater supply for the future in any society. They are natural capital with incalculable value; we cannot forget this if we want to guarantee our own human existence. Taking this into account, the WWF-Gonzalo Río Arronte Foundation Alliance proposes the following specific actions for the conservation of the San Pedro Mezquital watershed:

1. To achieve a sustainable water balance by estimating and maintaining the historic environmental flow

regimes in the river through the development of the water reserves, in collaboration with the National Commission of Water of Mexico (CONAGUA) and the National Commission of Protected Areas (CONANP).

2. To promote water governance based on fully participatory decision-making processes.
3. To develop instructive projects with local communities regarding integrated water supply and ecosanitation based on appropriate technology, conservation, and restoration of associated ecosystems, and valuation of the ecosystem services that they provide.
4. To advocate for a new culture of water among local inhabitants, reinforcing the sense of belonging to the watershed and creating awareness of the need to protect and restore the river and its unique biodiversity.

In the last several decades, our species has generated an unprecedented force of change with negative consequences for the ecosystem. However, we have good reasons to be optimistic. Our society is getting organized for the protection of nature and wildlands, and the environmental movement to stop the advancement of the human footprint is becoming more successful every day. The work that is done in the region opens a door for the hope that those who live along the San Pedro Mezquital River and enjoy its benefits will do what is in their power to guarantee that in 10, 50, or 100 years, people will still be able to swim in the river, fish in Marimas Nacionales, or simply find a quiet spot to retire and think, and they will thank us for not having spoiled this living treasure.

Figure 9 – The riparian forests of San Pedro Mezquital are an artery of life in the middle of the semidesert in Durango, Mexico. Photo by © Jaime Rojo/WWF.

Acknowledgment

For more information, please visit wwf.org.mx/sanpedromezquital/. In addition to the San Pedro Mezquital, the Freshwater Program of WWF Mexico works in two other priority watersheds in Oaxaca and Chihuahua. The Gonzalo Rio Arronte Foundation is one of the largest in Latin America to support water projects.

JAIME ROJO is a freelance photographer and writer based in Mexico. He moved from Spain to Mexico to join two successful conservation organizations – Unidos para la Conservación and Agrupación Sierra Madre – to work on different projects that protect Mexico's last wild places. He is a trustee for The WILD Foundation and an associate photographer of the iLCP (www.ilcp.com); email: jaime.rojo@gmail.com.

Forever Wild?

Our Conservation Lands in the 21st Century

BY GORDON CESSFORD

The Federated Mountain Clubs of New Zealand held its 80th anniversary conference on June 11–12, 2011, at the Te Papa Museum in Wellington, New Zealand. This national gathering of groups, organizations, and individuals associated with outdoor recreation, conservation, and wilderness continued the tradition of landmark conferences held every 10 years by the Federated Mountain Clubs of New Zealand (FMC). The theme for 2011 was targeted at better anticipating and meeting the challenges faced for the protection of conservation lands and wilderness in the future, and in improving the ways in which people can engage with and value these special places.

Keynote presentations on future directions were made by senior government figures in New Zealand (NZ) conservation management, including the NZ minister of conservation, the parliamentary commissioner for the environment, and the deputy director general of the Department of Conservation (DOC). Other keynote presentations addressed the broader trends in recreation, tourism, biodiversity conservation, and legal directions, and representatives from the major political parties outlined their conservation positions. These presentations raised a number of key issues in NZ conservation lands and wilderness, with discussions focused on issues and trends related to outdoor recreation participation; public access; statutory protections of wilderness and conservation; mining and energy projects; funding for conservation; biodiversity loss; and how to engage more people with nature and wilderness. These presentations and discussions provided the context for the series of targeted workshops conducted on the second day.

Figure 1 – Prominent NZ wilderness advocates Dave Bamford and Kevin Hackwell discuss wilderness issues at the wilderness conference. Photo by Gordon Cessford.

The workshops addressed four priority themes for the future: (1) Wilderness Values – fostering and growing the range and importance of society's values for wilderness; (2) Public Access – maintaining and enhancing the tradition of free public access to the outdoors in NZ, subject to appropriately protecting the places providing those opportunities; (3) Fostering Volunteers – facilitating more future opportunities for people's active involvement with nature, wilderness, and supporting wilderness recreation; and (4) Inspiring Youth – finding ways to provide more opportunities for the young to experience wilderness and engage in outdoor recreation activities.

Making gains in all of these themes was considered critical to achieving the wider aims of enhanced conservation protection and wilderness value in the future in conjunction with a vibrant and growing outdoor recreation community. This was acknowledged as being a real challenge, as there needs to be more attention paid to increasing people's involvement and engagement with wild places, which would involve doing many things differently from the ways they had been done in the past. It was noted that FMC and its partner groups had traditionally acted defensively to protect conservation places from overuse and exploitation,

but there is a need to broaden the protection focus to accommodate the likely reality of a future population less engaged with the outdoors than were the preceding generations. This means putting more focus on initiatives to encourage people to participate in the outdoors, providing a means for strengthening the outdoor recreation community, and growing a renewed constituency with national values for wilderness. At the close of the conference, the president of FMC concluded that the future focus for efforts should emphasize participation, conservation, and conservation funding.

GORDON CESSFORD is a wilderness researcher, past DOC social scientist and author of reports on wilderness management (gordon@visitorsolutions.net). Information on the FMC and past conferences can be viewed at www.fmc.org.nz.

There is a need to broaden the protection focus to accommodate the likely reality of a future population less engaged with the outdoors than were the preceding generations.

Continued from PERSPECTIVES FROM THE ALDO LEOPOLD WILDERNESS RESEARCH INSTITUTE, page 28

5. *Monitoring and Predicting Change* offers different strategies for assessing and monitoring impacts, as well as projecting future scenarios, in a rapidly changing world. The values of different tools, such as ecosystem services valuation (ESV) and geographical information systems (GIS), for identifying and representing this information are described in-depth.
6. *New Directions in Wilderness Stewardship* includes different models and case studies aimed at the long-term conservation of significant landscapes. Models provided by the U.S. National Landscape Conservation System and National Wildlife Refuge System are evaluated. Case studies from South Africa, the Great Lakes in the United States, and Taiwan provide new insights.
7. *A Tribute to "Wilderness Dan" Henning* (1931–2009), features Henning's final contribution to our international wilderness community through a description of some of the values associated with tropical rain forests in their natural and near-natural conditions.

The WW9 proceedings are available at www.leopold.wilderness.net or can be obtained by writing to Publications, Leopold Institute, 790 E. Beckwith Ave., Missoula, MT 59801, USA. The Aldo Leopold Wilderness Research Institute, the Sonoran Institute, The WILD Foundation, and the USDA Forest Service Rocky Mountain Research Station are proud to have cooperated in compiling, publishing, and distributing this publication. Primary funding for printing and recording this publication came from the USDA Forest Service Office of International Programs.

BROOKE B. MCBRIDE is a cocompiler of these proceedings and recently received her PhD from the College of Forestry and Conservation at The University of Montana and is employed at the Aldo Leopold Wilderness Research Institute as a research associate.

Announcements

COMPILED BY GREG KROLL

U.S. Forest Service Announces 2011 National Wilderness Awards

Eight awards, honoring individuals and groups for excellence in wilderness stewardship, were recently bestowed by the U.S. Forest Service:

- **Aldo Leopold Award for Overall Wilderness Stewardship Program** was presented to the Stanislaus Wilderness Volunteers for sponsoring two wilderness ranger interns to assist the Stanislaus National Forest wilderness crew with invasive species management.
- **Bob Marshall Award for Individual Champion of Wilderness Stewardship** was conferred upon Deb Gale of the Bitterroot National Forest for her active participation in regional and national wilderness issues.
- **Bob Marshall Award for Group Champion of Wilderness Stewardship** went to the Duchesne/Roosevelt Ranger District, Ashley National Forest, for removing 13 high mountain lake dams.
- **Bob Marshall Award for Group Champion of Wilderness Stewardship** was presented to The WILD Foundation for its active leadership in developing, managing, and publishing the *International Journal of Wilderness* as well as its pivotal role in organizing the World Wilderness Congresses.
- **Wilderness Education Leadership Award** recognized the Juneau-Admiralty Wilderness Rangers for building a multifaceted program that emphasizes local partnerships and education.
- **Traditional Skills and Minimum Tool Leadership Award** was conferred upon the Hoosier Mule Team, Hoosier National Forest, for their outstanding leadership and use of traditional tools and skills in wilderness.
- **Excellence in Wilderness Stewardship Research Award** was presented to Don McKenzie and Jeremy S. Little of the University of Washington for their published work on the impacts of climate change on wilderness fire regimes.
- **Excellence in Research Application Award** honored Tyson Cross, Willamette National Forest, for his graduate research resulting in the publication of *Rapid Assessment Campsite Inventory Mapping and Protocol Research*.

(Source: U.S. Forest Service, Washington Office)

Federal Judge: A Creek Bed in Canyonlands NP Is Not a Road

In an 81-page ruling heralded as a landmark decision, U.S. district judge Bruce Jenkins held that the state of Utah and San Juan County had not demonstrated during the trial that Salt Creek, in Canyonlands National Park, has been used continuously as a public road, and that "a Jeep trail on a creek bed with its shifting sands and intermittent floods is a byway, but not a highway." Under R.S. 2477, a federal Civil War–era statute initially created to further western expansion, roads crossing federal lands can be granted to local governments if they can prove a history of continuous public use. Although Congress repealed the law in 1976, it provided that any valid R.S. 2477 route existing at the time of the repeal could continue in use.

Born from springs and snowmelt in the Abajo Mountains, Salt Creek runs high during flash floods but is reduced to a trickle for most of the year, depending largely on the output of occasional springs and storms. Its 32-mile (50 km) course drains into the Colorado River. Along the way, it passes Angel Arch, one of Canyonland's most iconic geological features. Although the national park's 1995 backcountry management plan placed daily limits on vehicle traffic up Salt Creek – 10 personal vehicles and two commercial rigs daily – the Southern Utah Wilderness Alliance (SUWA) challenged the plan in court at the time on a variety of issues. The district court decided that the park's vehicle restriction, although reduced from the previous uncontrolled access, was still impacting resources along the creek and "cannot be reconciled with the [National Park Service] Organic Act's overarching goal of resource protection." That ruling led

Submit announcements and short news articles to GREG KROLL, *IJW* Wildernss Digest editor. E-mail: wildernessamigo@yahoo.com

the Park Service to close the creek in 1998 to vehicular traffic.

The determination that the agency had the administrative authority to close the route led to the recent challenge on the grounds that the creek qualified as an R.S. 2477 route. However, local jurisdictions must demonstrate 10 years of continuous use on routes in question to qualify. In this case, because Canyonlands National Park was established in 1964, the county and state of Utah needed to prove there was continuous motorized use of Salt Creek from 1954 to 1964. Judge Jenkins ruled that the evidence did not support that contention.

Heidi McIntosh, a SUWA attorney, summed up the importance of the outcome: "The reason this case is important is because there are countless routes where cowboys ran cows or sheep or people poked around in Jeeps just exploring or looking for uranium. … Westerners are famous for poking around in the middle of nowhere. … Counties in Utah [claim] about 15,000 of these old routes. If they can validate them as highways, they can grade them, pave them." (Sources: *National Parks Traveler*, May 30, 2011; *The Salt Lake Tribune*, May 31, 2011)

NPS Director Takes Chair of North American Wilderness Committee

U.S. National Park Service Director Jonathan Jarvis has taken over as chair of the North American Wilderness Committee, an international organization focused on boosting wilderness conservation. The committee is a coalition of seven U.S., Canadian, and Mexican federal land management agencies. It was established to "foster collaboration to ensure conservation, management and recovery of North American wilderness and other protected land- and seascapes; to contribute to conserving the ecosystem integrity of wilderness in North America; to help stakeholders achieve effective, efficient, and mutually beneficial wilderness conservation in North America; and to foster communication regarding the management, conservation, and sustainable use of wilderness."

The committee was established in late 2009. During its first 18 months, it focused on transboundary cooperation, training, networking, ecosystem services, marine wilderness, and monitoring. In the future it plans to delve into climate change issues, connectivity, and the values of protected areas.

In addition to Jarvis, committee members are Bob Abbey, director of the U.S. Bureau of Land Management; Greg Siekaniec, assistant director of the U.S. Fish and Wildlife Service; Joel Holtrop, deputy chief of the U.S. Forest Service; Mariana Bellot Rojas, director general, Comisión Nacional de Áreas Naturales Protegidas, México; and Alan Latourelle, chief executive officer, Parks Canada. (Source: *National Parks Traveler*, May 24, 2011)

Biodiversity Loss Does Not Concern the Majority of Europeans

The results of a survey on the attitudes of European citizens toward the environment reveal that although people consider protection of nature and efficient use of resources to be important, the loss of biodiversity does not worry the majority of them. A Eurobarometer survey, based on almost 27,000 face-to-face interviews, was carried out in April and May 2011. Interviewees were shown a list of 15 environmental issues and asked to select five that worried them the most. Although 47% identified protecting nature as most important in relation to environmental issues, the loss of biodiversity was one of the top five concerns of only 22% of those interviewed – ranking 10th among the issues. According to the survey, Europeans' main environmental concerns are human-made disasters such as oil spills, and water and air pollution. (Source: ec.europa.eu/environment/pubs/pdf/eurobarometer/factsheets/european_union.pdf)

Leanne Martin Named Director of Wilderness and Wild and Scenic Rivers with the USFS

Leanne Martin, most recently forest supervisor of the Allegheny National Forest, Pennsylvania, is the new director of Wilderness and Wild and Scenic Rivers for the U.S. Forest Service (USFS), replacing Chris Brown, who retired in March 2011. During her 20-year career with the USFS, she has served as forester, environmental coordinator, district ranger, deputy forest supervisor, forest supervisor, and acting deputy regional forester. Leanne earned a BS in environmental science from Washington State University and an MS in forest resources from the University of Idaho. (Source: U.S. Forest Service, Washington Office)

Seychelles: First Country with Half Its Land Protected

The government of the Republic of Seychelles has announced that it will soon declare new protected areas in the archipelago. According to Seychelles president James Michel, "We will become the first country in the world that has half of its territory protected as national parks and nature reserves. This will ensure that our most beautiful islands remain in the hands of all Seychellois for many generations to

come. We will show the world how important it is to preserve this precious natural heritage, both for sustainable development of a small island nation, for tourism development, as well as the protection of our planet for our children." The Seychelles, composed of 115 islands in the western Indian Ocean, encompasses 175,000 square miles (45,500 ha). (Source: *eTurboNews*, June 17, 2011)

Department of Justice Revises Rule on Mobility Disabilities

On March 15, 2011, a new U.S. Department of Justice rule went into effect, specifying that "other power-driven mobility devices" (OPDMD) can be used on trails by individuals with mobility disabilities. The rule applies to all trails open to the public, with the exception of federally designated wilderness areas. Under the Americans with Disabilities Act (ADA) Title II, the rule applies to trails on state and local government lands. Also, under the ADA Title III, it applies to other "public accommodations" that include trails open to the public on privately or commercially managed lands. Federal agency-managed lands are not directly covered by the ADA; however, this rule sets legal precedents federal agencies need to be cognizant of.

Under the new rule, an OPDMD is defined as "any mobility device powered by batteries, fuel, or other engines – whether or not designed primarily for use by individuals with mobility disabilities – that is used by individuals with mobility disabilities for the purpose of locomotion, including golf carts, electronic personal assistance mobility devices, such as the Segway® PT, or any mobility device designed to operate in areas without defined pedestrian routes, but that is not a wheelchair within the meaning of this section." Under section 508(c)(2) of the ADA, wheelchairs, including electric wheelchairs, are already allowed in all designated wilderness areas. In other words, an OPDMD is anything with a motor that can be driven, regardless of size or horsepower, if it is driven by a person who has a mobility-related disability.

The new rule states that a person may be asked to provide "credible assurance" that a mobility device is required. The rule also addresses limited exceptions to the access provision based on an entity's completed assessment of a facility, trail, route, or area, prior to the person requesting use of an OPDMD arriving on-site. (Source: www.americantrails.org/resources/accessible/OPDMD-DOJ-requirement-basic.html)

Outdoor Nation: A Youth-Led Movement

Outdoor Nation launched in June 2010 in New York's Central Park when 500 young adults, representing all 50 states, gathered in what became the largest and most diverse summit to connect youth to the outdoors. The event sparked a youth-led movement that empowers 18- to 28-year-olds to reconnect, redefine, and rediscover America as an Outdoor Nation. Although Richard Louv's book, *Nature Deficit Disorder*, alerted the public to how America's youth is losing its connection to nature, most of the resulting focus was directed toward creating programs for the very young. According to Stefanie Michaelson, an Outdoor Nation Youth Ambassador from Salt Lake City, Utah, "When we got together in New York and saw the commitment and passion of so many of our peers from across the country, we agreed that we wanted to lead this revolution on our own terms, for ourselves and the generations to follow."

In 2011, Outdoor Nation hosted three-day regional youth summits in New York City, Atlanta, Minneapolis, Denver, and San Francisco. In each location, delegates brainstormed project ideas that addressed regional issues with the goal of engaging more young people in outdoor activities. Support for the events was provided by the not-for-profit Outdoor Foundation, which was founded with initial support from The North Face, Recreational Boating and Fishing Foundation, REI Foundation, The Conservation Fund, and the National Park Service. (Sources: www.outdoornation.org; www.outdoorfoundation.org)

Judge Denies Cell Tower Request Adjacent to Wilderness

In a victory for Friends of the Boundary Waters Canoe Area Wilderness, Hennepin County (Minnesota) district judge Philip Bush ruled that AT&T cannot build a 450-foot (135 m) lighted cell-phone tower visible from inside the Boundary Waters Canoe Area Wilderness (BWCAW). In a 58-page decision, Bush wrote that the tower and its flashing lights "would adversely, materially and significantly impair the scenic view and aesthetic resources of the BWCAW," and could be potentially harmful to migrating birds. The judge did permit the building of a 199-foot (60 m), unlit tower in the same area. The shorter tower would be unseen from inside the designated wilderness while providing similar cell phone coverage as the prohibited tower.

The proposed tower would have been visible from at least 8 miles (13 km) away during daylight hours and from more than 10 miles (16 km) at night from at least 10 locations within the BWCAW, including from several

lakes. Judge Bush said that when the taller tower received county approval, AT&T erroneously told residents that it would cover an area 16 times larger than the 199-foot tower. In fact, the taller tower would have rendered only a 17% coverage increase over that of the shorter tower.

During the weeklong trial, AT&T argued that even if the taller tower were occasionally visible from within the BWCAW, it was vital for public safety. "We're reviewing the ruling and considering our options," according to AT&T's spokesman Marty Richter. (Source: *Minneapolis Star Tribune*, August 3, 2011)

Blimp Used for Natural Resource Monitoring at Biscayne NP

Helicopters and fixed-wing aircraft have been used effectively for many years to monitor wildlife and other park resources, but staff at Florida's Biscayne National Park wondered if there might be a better way. Helicopters are maneuverable but they're also noisy, and their strong downdraft winds are a potential problem for wildlife if a helicopter is operating at low altitudes.

Matt Patterson, the South Florida/Caribbean Network Coordinator for the National Park Service, observed MetLife's *Snoopy One* blimp in the air over southern Florida and wondered if a blimp might have advantages over the helicopters normally used for resource monitoring projects. After obtaining the necessary approvals, MetLife provided the use of the airship at no cost to the park. During the trip, the observers documented several species of birds, including osprey, roseate spoonbills, great blue herons, anhinga, and double crested cormorants. They also saw manta rays, several sharks, dolphins, and manatees.

A principal purpose of the trip was to evaluate how colonial nesting bird activity might change when approached by a blimp compared with similar approaches by helicopter. Patterson said that although the blimp isn't silent, it's less noisy than a helicopter. The larger craft has one key difference – a much larger shadow. One flight isn't enough to draw any firm conclusions about the pros and cons of airship use, Patterson said, but park staff would like to use this platform again if it becomes available. (Source: *National Parks Traveler*, January 30, 2011)

Update: Proposed Serengeti Road

The proposal to build a 33-mile (55 km) asphalt road bisecting the northern end of Tanzania's Serengeti National Park (*IJW* Digest, April 2011) has been scrapped, according to natural resources and tourism minister Ezekiel Maige. However, Maige stated that "the project is still there without a shadow of a doubt. But the road will be unpaved, so there will be no tarmac road or highway traversing through … the park." The road would cross the path used by 2 million wildebeests, zebras, gazelles, and other grazers as they travel north in search of food and water during the dry season.

Maige said rangers from the state-run Tanzania National Parks Authority (TANAPA) will set up checkpoints and control the flow of traffic through the wilderness. "The road will be closely supervised," he said. "TANAPA will put up gates and carry out regular patrols to ensure no harm comes to the wildlife population as a result of vehicles that will be allowed to pass through." Maige stated that the road will remain under the ownership and control of TANAPA, and will not be transferred to the government's highway roads agency. Roads outside the national park will be paved, but roads leading to the park and those inside the wildlife sanctuary will not be.

In an editorial, *The New York Times* opined, "By conceding its hopes for an asphalt road across Serengeti, Tanzania gets a gravel road by sleight of hand. In fact, it was a plan for a gravel road across the park that caused worldwide protest last year." (Sources: Reuters, July 1, 2011; *The New York Times*, June 27, 2011)

Nina Leopold Bradley, 1917–2011

Scientist, conservationist, philosopher, and humanitarian, Nina Leopold Bradley was the third child of wilderness-champion Aldo Leopold. Born in Albuquerque, New Mexico, in 1917, she died on the morning of May 25, 2011, at her home on the Leopold Reserve near Baraboo, Wisconsin. She is survived by her sister, Dr. Estella Leopold, and was preceded in death by her brothers Starker, Luna, and Carl.

After growing up in New Mexico, Bradley attended the University of Wisconsin, graduating in the 1930s with a major in geography. With her first husband, zoologist William Elder, she collaborated on many wildlife projects, studying Canada geese in Illinois, ducks in Manitoba, big game populations in Africa, and the rediscovered but nearly extirpated population of Nene geese in Hawaii. In 1971, Nina accepted a position with the Thorne Ecological Institute in Boulder, Colorado, facilitating conferences to introduce corporate leaders to important ideas in ecology. Along with her second husband, Charles, she was instrumental in the establishment of the internationally recognized Aldo Leopold Foundation and the construction of the Leopold Center. (Source: Aldo Leopold Foundation)

Book Reviews

A Century of Parks Canada, 1911–2011

Edited by Claire Elizabeth Campbell. 2011. University of Calgary Press. 447 pages. $35.00 CAD (paperback). E-book available by open access through uofcpress.com.

Examining the evolution of the world's first national park service agency (Parks Canada) from a historical perspective is timely, given that 2011 marks this agency's centennial. As the first text in a partnership between the University of Calgary Press and the Network in Canadian History and Environment (NiCHE), it reflects the series's mandate of seeing Canadian history through an environmental lens and the environment through a historical lens.

Edited by Dalhousie University professor Claire Campbell, the text unravels the history of Parks Canada over the past 100 years in a case study format that takes the reader to national parks from coast to coast to coast. The first half of the book deals with the ideological and practical tensions in the development of a national park movement between the conservation ideal and the tourism reality, primarily through examining the role and pressures that automobiles and the growing tourism market had on park creation and use. In the latter chapters, the changing role of Aboriginal peoples (and more contemporary traditional park users) in park establishment and use is explored. An intense examination of a Canadian institution, *IJW* readers in particular may find the historical analysis and evolution of the concept of wilderness within the Canadian context especially interesting.

Edited volumes can often be disjointed, but Campbell and contributors have done an excellent job in producing an integrated story that weaves themes from one chapter to another and reflects, contrasts, and reinforces other sections in more than just a passing way. Each chapter adds a new voice or lens to this historical analysis. That strength, however, is also a potential limitation, as most chapters do not tend to stand independently and several could better link the specifics illustrated in the one case to the broader situation in other national parks.

No single book can adequately cover all topics. Although philosophical issues of conservation and ecological management are examined through the evolution of the agency mandate and park establishment, a detailed examination of ecosystem management within the park service will await another text. Similarly, although archaeological, historical, and cultural values are discussed as they influence the natural landscape and conservation mandate of the agency, this book is more comprehensive in its treatment of preservation of the natural landscape than the agency's role in cultural landscape preservation through historic parks and sites.

As Campbell states in the introduction, Canadian "national parks are not 'islands of wilderness' saved from history: they are the work of human hands and records of our history. They document our relationship to nature, not just as we wish it could be, but as it has been" (p. 2). This text, available both in paperback and in open access e-book format, is an insightful examination of that relationship and well suited to the serious scholar or to upper-level parks and protected area students.

Reviewed by PAM WRIGHT, associate professor in the Ecosystem Science and Management Program at the University of Northern BC, Prince George, BC, Canada; email: pwright@unbc.ca.

A Storied Wilderness: Rewilding the Apostle Islands

By James W. Feldman. 2011. University of Washington Press. 330 pages. $35.00 (hardcover).

The long history of human influence and activities in the Apostle Islands area of Lake Superior is chronicled through the designation in 2004 of the Gaylord Nelson Wilderness Area (33,500 acres; 13,563 ha) that includes 80% of the Apostle Islands National Seashore. The wilderness area and the national seashore are located in Wisconsin and managed by the National Park Service to now protect 21 of the 22 islands in this Great Lakes freshwater seashore. The wilderness area honors former Wisconsin governor, former U.S. senator, and founder of Earth Day, Gaylord Nelson.

Feldman uses the history of resource harvesting and extraction and later protection of the Apostle Islands as a case study to argue for using these types of historical events to look at the interplay of human activities and nature. Regeneration of these wild and primitive places brings new discussions about what should now be the role of humans in nature. Feldman notes that although many people like to read about pristine wild nature, such stories do not answer more complex questions about rewilding landscapes and places such as the Apostle Islands because "they also fail to provide answers to the most challenging management questions posed by these places – maintaining and nurturing wild, healthy environments, balancing competing demands on resources, mitigating visitor impact on places valued for both natural and cultural reasons. These challenges can only be met by keeping past uses and ways of valuing the islands always in front of us" (p. 21).

The book is well documented and provides extensive historical references about the Apostle Islands, including chapters on logging and forest history; commercial and recreational fisheries and regulations; development of recreation and tourism; the tension and long history of controversy between different proposals to manage the Apostle Islands by various levels of government; and the dilemmas and controversies faced by National Park Service managers to rewild the Gaylord Nelson Wilderness Area and Apostle Islands National Seashore.

The overall theme of the book can best be summarized by Feldman in his statement that past human use does not tarnish the current rewilding efforts: "Recognizing the history embedded in the island environments does not detract from their value. Rather, it deepens and enriches this value. The Apostle Islands should be treasured as a wild place, and particularly as a rewilding place. Doing so will let us see in such places the consequences of human interactions with the world that surrounds us" (pp. 223–24). The supposition here is that we will learn from the past and better understand what we are leaving for future generations – it is a hopeful and positive message.

Reviewed by CHAD P. DAWSON, *IJW* editor in chief and managing editor and professor emeritus at the State University of New York, College of Environmental Science and Forestry at Syracuse, New York; email: cpdawson@esf.edu.

Continued from EVOLUTION OF A WILDERNESS CONSERVATIONIST, page 23

We all know of areas that qualify for inclusion in the wilderness system that still need to be added. Let's see to it that more such good roadless areas continue to be given wilderness system protection. Just as important, let's support efforts to protect the wilderness character of these lands, once they're classified as wilderness. The federal land management agency wilderness managers need support as they try to see to it that our precious wilderness areas remain untrammeled, natural, and undeveloped and continue to offer solitude or a primitive and unconfined type of recreation.

As our spiritual mentor Aldo Leopold observed in the first sentence of the foreword to *A Sand County Almanac*, "There are some who can live without wild things, and some who cannot." You and I cannot live without wild things; thus, we are doing something about it, to see to it that we, and our descendants, do not have to live without wild things.

M. RUPERT CUTLER of Roanoke, Virginia, has served in many capacities as an advocate and policy advisor on wilderness for the federal government and numerous nongovernmental organizations. This article is adapted from a presentation made in the American Mountaineer Building auditorium, Golden, Colorado, on June 6, 2011.

Continued from USING TECHNOLOGY TO DELIVER WILDERNESS MANAGEMENT TRAINING, page 33

gaps related to law and policy may be contributing to decreases in wilderness job performance over time through failures to analyze critical tasks and produce defensible minimum requirements decisions. The implication for wilderness stewardship is the inability of the workforce to protect and preserve the values and benefits of wilderness as required by the Wilderness Act, which could also lead to increases in appeals and litigation.

Job training is required to ensure a knowledgeable workforce that ... is charged with proper care of American's legacy of wilderness lands.

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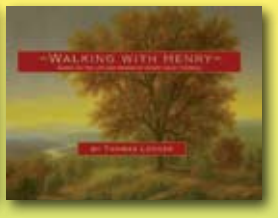

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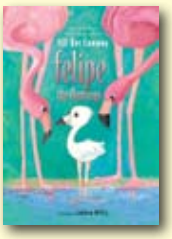

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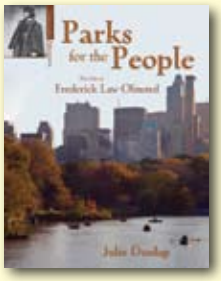

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