INTERNATIONAL

Journal of Wilderness

In This Issue

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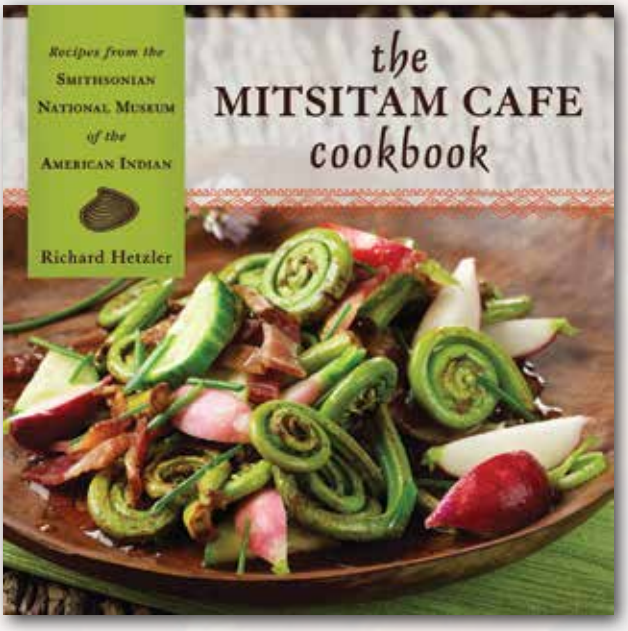


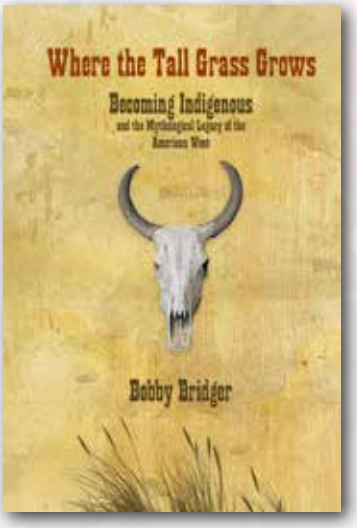
The Mitsitam Cafe Cookbook

Recipes from the Smithsonian National Museum of the American Indian

Richard Hetzler

Hardcover, 8 x 8, 192 pages, $26.95 US

Showcases the Americas' indigenous foods in 90 easy-to-follow, home-tested recipes. Author and Mitsitam Cafe chef Richard Hetzler spent years researching Native American dishes and food practices for this stunning cookbook. Includes full-color images of the dishes and of objects from the museum's collection.



Where the Tall Grass Grows

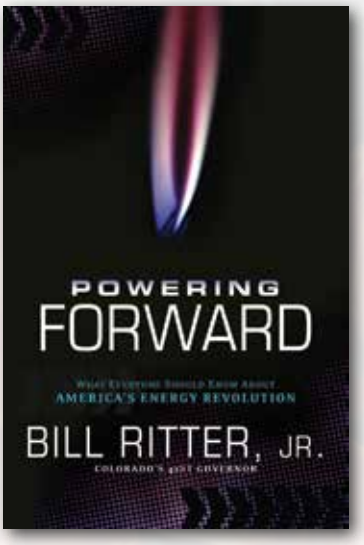
Becoming Indigenous and the Mythological Legacy of the American West

By Bobby Bridger

Paperback, 6 x 9, 464 pages, $29.95 us

Bridger's book is a gift to all who love the American West.
—Daniel Wildcat

The prophecies of the Lakota holy man Black Elk are woven into a chronicle of American Indians in the American culture psyche from the era of Buffalo Bill, Sitting Bull, and the Wild West through the creation of the Western, John Wayne, *Dances with Wolves*, *Avatar*, and modern myth making. In so doing, Bridger provides a highly original look at American history and culture from the mid-nineteenth century to the present day.



Powering Forward

What Every American Should Know About the Energy Revolution

Bill Ritter, Jr.

Paperback, 6 x 9, 350 pp, $17.95 us

A historic energy revolution is underway and wind, sunlight, and other sustainable resources are now the fastest growing sources of energy worldwide. American families are installing power plants on their roofs and entire communities are switching to 100 percent renewable energy. The urgent need to prevent climate change is causing people around the planet to question their reliance on carbon-intensive oil, coal, and natural gas. Author Bill Ritter Jr., discusses the forces behind the energy revolution, the new ways we must think about energy, and the future of fossil and renewable fuels. It is an essential read for any who want to understand one of history's biggest challenges to peace, prosperity, and security in the United States.

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AUGUST 2016 VOLUME 22, NUMBER 2

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

On the Cover

Main image: Dalmatian Pelicans (*Pelecanus crispus*) at Lake Kerkini, Macedonia, Greece. © Jari Peltomaki, courtesy Wild Wonders of Europe.

Inset image: Mountain impression Paternkofel and Tre Cime, Italy. © Frank Krahmer, courtesy Wild Wonders of Europe.

International Journal of Wilderness

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

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Submissions: Contributions pertinent to wilderness worldwide are solicited, including articles on wilderness planning, management, and allocation strategies; wilderness education, including descriptions of key programs using wilderness for personal growth, therapy, and environmental education; wilderness-related science and research from all disciplines addressing physical, biological, and social aspects of wilderness; and international perspectives describing wilderness worldwide. Articles, commentaries, letters to the editor, photos, book reviews, announcements, and information for the wilderness digest are encouraged. A complete list of manuscript submission guidelines is available from the website: www.ijw.org.

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EDITORIAL PERSPECTIVES

Much Wilder Than You Think It Is … Europe!

BY VANCE G. MARTIN

People often ask me what I consider the most exciting place "for wilderness." Expecting something exotic and super-remote, they are always surprised when I say that Europe is high on my list. That said, it was not true in 1983 when we convened the 3rd World Wilderness Congress (WWC) in Scotland. We chose Scotland to promote the wilderness concept and to protect the wild reality in that corner of the globe. It was also chosen to celebrate the Celtic "nature-awe" and kinship with wildness. However, a change occurred some 10-15 years ago when we first began to receive reports of wilderness recovering across Europe – in virtually all areas – and of a return of wildlife never before experienced in contemporary history.

What a pleasure it is to report to you that my excitement toward Europe remains high on my list today, with the continuing return of wild nature across the world's most densely populated continent. In places we never think of as wilderness, amazing things are occurring. The wolf is expanding from Italy and eastern Europe into Germany, Belgium, Denmark, and even into the Netherlands. The European wisent (European bison) has also been reintroduced and is thriving. In the wilder parts of Europe, private sector initiatives thrive, including the Fundatia Conservation Carpathia, or community-based wildlands conservation in the Danube Delta in the south, or in Laponia in northern Sweden. The Wilderness Foundation (UK) continues a 35-year history of taking people into wilderness areas for therapy and self-discovery, while many other efforts in the long-settled (but not fully tamed!) United Kingdom are restoring wild nature, such as the world-acclaimed Trees for Life in Scotland. One of the outcomes of the 3rd WWC was the Associazione Italia per la Wilderness, reported on many times in IJW, and still pioneering wilderness designations across Italy. There are so many more!

Vance Martin

As part of this remarkable chain of events, just a little over two years ago in October 2013, WILD10 (the 10th World Wilderness Congress) convened in Salamanca, Spain. Reported on in the April 2014 issue of IJW, planning that Congress survived the complete collapse in 2011 of the Spanish economy and a general recession across Europe, to produce a series of outcomes still in play as well as empowering a growing wilderness movement in Europe today. Two years of collaborative planning culminated in WILD10, which explored the phenomenal resurgence of wild nature across Europe and leveraged that return with enhanced media (characterized by the remarkable Wild Wonders of Europe, which provided the cover images for this issue), new information, new initiatives, then articulating it in A Vision for a Wilder Europe, a policy framework prepared for and presented at WILD10 to the European Commission and the Council of Europe (and recently both updated and translated into German).

In this issue of IJW, Tina Tin and River Yang examine the development of wilderness in both the Chinese mind and culture. Frans Schepers and Paul Jepson discuss rewilding Europe as it continues to expand and create new models of wild nature-based solutions. Toby Aykroyd of Wild Europe reports on the continuing expansion and strengthening of wilderness policy in Europe. And the relatively new Rewilding Britain, announced at WILD10 by columnist and author George Monbiot (Feral: Searching for Enchantment on the Frontiers of Rewilding), is now a fully functioning, on-the-ground organization. These

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SOUL OF THE WILDERNESS

Bob Lucas, Pioneering Wilderness Scientist

February 11, 1931–February 21, 2016

Editor's Note: Jim Brown, David Cole, Dave Lime, Steve McCool, George Stankey, and Alan Watson contributed to this article.

In 1967, a young geographer, Bob Lucas, moved to Missoula, Montana, to serve as the first project leader for the new Wilderness Management Research Unit for Forest Service Research. After the Wilderness Act passed in 1964, the US Forest Service was responsible for providing the science needed to help managers make decisions about protecting these places for their wilderness character. Bob was the guy to take on that challenge.

Bob was a PhD student at the University of Minnesota in the late 1950s when he was approached about taking a position with the research arm of the US Forest Service. The position focused on creating a better understanding of visitor use patterns in national forests. Bob's major advisor was geographer John Borchert, who had broad interests in spatial distribution of human behavior and development, and he most likely played a key role in Bob's growing interests. Bob and his wife, Grace, were outdoor enthusiasts and were attracted to the northern Minnesota canoe country where they had spent a lot of time. And so it was quite natural, given increasing visitor use there, that his first projects involved research on visitors in what is now known as the Boundary Waters Canoe Area Wilderness.

Bob's initial work focused on visitor use, conflict, and experiences, leading to two publications in 1964 (Lucas 1964a, 1964b) that have been so frequently cited that wilderness social scientists know their content when they see them cited in an article. Moreover, the key insights of this research, more than 50 years later, still influence wilderness science and visitor use research. The sources of many research advances in wilderness visitor experiences can ultimately be traced to those two classic 1964 research papers.

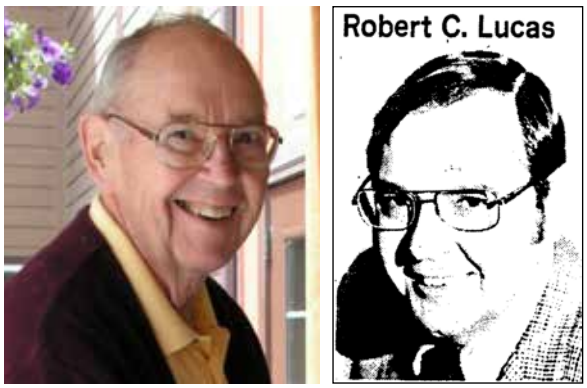

Figure 1 – Bob Lucas

When Bob arrived in Missoula, he was already recognized as an accomplished social scientist. And while his work took an initial turn in that direction, he had always recognized that understanding wilderness required complementary biophysical sciences, an action initiated in his work in Minnesota and eventually continued in Montana.

Bob worked for years with several key scientists, beginning with Dave Lime joining his project in 1967 while in Minnesota and continuing with George Stankey in 1969. This team of scientists stimulated and collaborated with academics and graduate students and provided the excitement, energy, and foundation for the new field of social science wilderness research. Those of us enthusiastic about wilderness in the 1970s and 1980s read everything Bob, George, and John Hendee wrote, including the first *Wilderness Management* textbook in 1978. One scientist recently compared meeting Bob at a wilderness training session to "meeting a rock star." They were our inspiration. They were our mentors. The project entered its second generation in the late 1980s as David Cole and Alan Watson joined the Wilderness

Management Unit, while George moved on to new challenges and Bob prepared for retirement.

Bob retired in 1989 to a life that included more time with his lifelong companion, Grace, who passed in 2014, and time for more hunting and for his children and grandchildren. Bob loved participating in outdoor activities and adventures with his family and friends, especially hunting birds and big game. He was forever optimistic about successfully pursuing his passion for hunting. As years went by, he increasingly enjoyed hunting upland birds and training his Labrador retrievers and German shorthaired pointers. The camaraderie he shared with his hunting partners, including conversations about every conceivable topic, was a great source of pleasure to Bob. He was an active member of sportsman organizations and became a leader and spokesperson for efforts to increase hunting opportunities and develop programs to enhance upland bird habitat. He often lobbied Montana Fish, Wildlife, and Parks and at Montana's state legislative hearings to promote these interests. In 1986, he was instrumental in forming the Big Sky Upland Bird Association, an organization dedicated to advancing the conservation, development, and management of habitat for all of Montana's upland birds. In 1990, Montana's governor appointed Bob to the Tribal-State advisory board, where he served for 12 years in bettering relations between Native tribes and Montana's hunters and anglers. In recognition of his leadership, Bob received the Holmquist Sportsmen's Achievement Award in 2012 from the Montana Wildlife Federation.

Sadly, Bob passed away in Missoula, Montana, on February 21, 2016. He enjoyed a monumental 30-year career with the US Forest Service, which came to a close six whole years before the first issue of the *International Journal of Wilderness*. He never published a paper in *IJW*, but Bob's work has been referenced hundreds of times there. The research Bob conducted and stimulated, the team he developed in partnership with George Stankey and frequently Dave Lime, and his way of inspiring young scientists broke new ground in a research discipline that only began in earnest in the 1960s. They and their colleagues in US Forest Service research, universities, and management held a keen understanding of how humans interacted with the land, the water, the wildlife, and the other natural elements of wilderness. They set the direction for wilderness research as it expanded to Alaska, as it began to look for commonalities and differences between eastern and western areas and their visitors, as it began to include science to support restoration of fire in wilderness, and as it expanded from an American ideal to one of international interest. And, they set a pattern for addressing problems, working directly with managers to help frame and solve problems, a model that holds lessons for research applications.

The Wilderness Management Research Unit transitioned to become the interagency (Departments of Agriculture and Interior), interdisciplinary, and international Aldo Leopold Wilderness Research Institute. Bob occasionally visited the Leopold Institute after retirement, and on one trip he observed, "You know, when we first started there were only a couple of us and we focused on a small number of questions we thought we could answer in a few years. You folks are now asking questions we hadn't even thought of back then."

Bob taught us how to ask questions. And maybe more importantly he taught us how to conduct science of the highest integrity, how to argue scientific points in a courteous but confident manner, and he often commented that he was known for being a good judge of character. Being his friend, receiving funds from the Wilderness Management Unit, being hired by him, or just being lucky enough to hear him make a presentation made you happy that he must have judged your character positive enough to spend some time with you.

To many, Bob was a colleague, a mentor, and a friend. He inspired us all to seek new pathways to understanding the value of wilderness and how to sustain it. Bob had a great sense of humor, and it was fun being with him during work assignments. For Bob Lucas, wilderness science involved three dimensions: science *about* wilderness, science *in* wilderness, and science *for* wilderness. Bob's career exemplified all three dimensions. His spirit will live long with us. Both personally and professionally, Bob's life was a life well-lived. We were honored to have known him, and if you didn't know him, you should now understand the importance of this founding father of wilderness science to what you are doing today.

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Passing the Wilderness Research Leadership Torch

Lucas to Watson

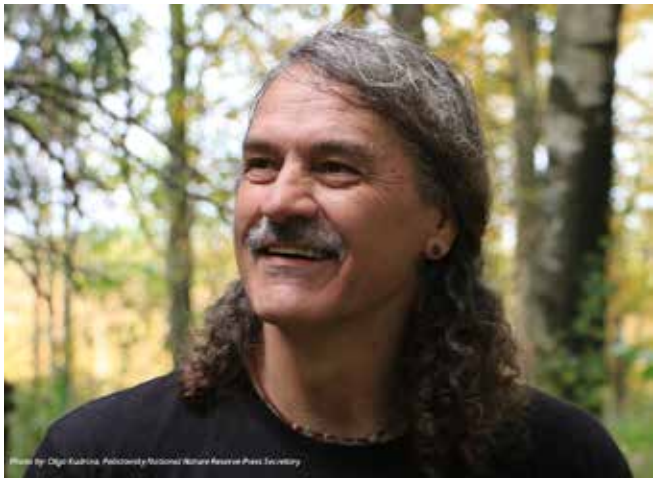
BY CHAD DAWSON

In this issue of *IJW*, we celebrate the life of Bob Lucas as a well-known wilderness research leader and recreation research pioneer. During his career, Bob mentored many people who became leaders in their own right within the wilderness movement. One of his protégés was a young social scientist, Dr. Alan Watson, who was hired to work for Bob after completing his PhD at Virginia Polytechnic Institute and State University in 1983.

Alan is fond of recounting his awe at first meeting Bob, and how Bob immediately invited him to see his lab. Alan claimed to be overwhelmed that Bob would be so quick to accept him and take him to his laboratory to share his research work. Alan's thrill turned to laughter when Bob's big black Labrador pounded into view. It was not the "lab" Alan had been thinking of seeing, but such was Bob's quiet humor, and we can well imagine that both of these talented storytellers kept each other entertained during their highly productive research careers.

Throughout his career, Alan has conducted research on a wide variety of stewardship topics related to the human aspects of wilderness use and values. His research projects include topics such as

- the role of wilderness in larger social and ecological systems,
- conflicting personal and social meanings and values associated with wilderness,
- monitoring recreation use,
- experiential aspects of wilderness use,
- understanding personal relationships with place,
- wilderness activities among nonconforming and contentious uses of wilderness,
- personal and societal response to recreation fees for wilderness use,
- the role of traditional ecological knowledge in wilderness protection, and
- the relationship between the public and public lands.



Alan Watson in the Polistovsky National Nature Preserve in Northwest Russia. Photo by Olga Kudrina.

Additionally, Alan has been very active internationally in working with researchers and managers from 13 countries on wilderness management and, in the process, receiving five Fulbright awards to further these cooperative efforts.

Alan's long career as a research social scientist at the Aldo Leopold Wilderness Research Institute in Missoula, Montana, was reviewed by a panel of scientists from across the United States at the request of the US Forest Service (USFS). According to a USFS press release in March 2016, the review panel "acknowledged that a significant thread through his career accomplishments at the Leopold Institute has been research leadership in expanding understanding of the meaning and value of wilderness, and how it plays out across different locations and

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A Wilderness Career Ladder

Repairing the Rungs

BY GABRIELLE SNIDER

Competition for talent is one of the leading challenges facing many of today's organizations. Recruitment and retention of top talent in public service organizations and agencies is more important than ever in a work environment with persistent low employee engagement scores and an emerging generation of workers who are expecting more from their employers in terms of growth, training, and career ladder opportunities. Talent management for wilderness professionals is no different. With increasingly complex issues facing wilderness managers (e.g., climate change, ecological restoration, drought, fire and disease, high recreation use, technology, and decreasing budgets), recruiting and keeping the best and brightest to manage wilderness areas should be a paramount goal across all agencies with wilderness management responsibilities.

The USDA Forest Service has a strategic goal to "excel as a high performing agency," with key objectives to "attract and retain top employees," "promote an inclusive culture," and "recruit a diverse workforce" (USDA Forest Service 2015). Although much is being done by the Forest Service to reach this goal, several challenges to retaining experienced and qualified wilderness specialists have been identified within the Forest Service wilderness program. Recent efforts led by the chief's Wilderness Advisory Group (WAG) have been undertaken to address some of these challenges.

In 2013, the WAG responded to concerns raised by wilderness specialists about the apparent lack of a well-defined career ladder in wilderness management within the Forest Service. It published a white paper titled *The Forest Service Wilderness Career Ladder: In Search of the Missing Rungs* (Wilderness Advisory Group 2013), outlining key career ladder barriers, relevant personnel case studies, and several possible solutions to identified obstacles. The paper found employees with significant wilderness management experience gained through progressively responsible field positions (e.g., Lead Wilderness Ranger) had extreme difficulty breaking into higher level management positions for a variety of bureaucratic and administrative reasons. Confronted with these challenges, many felt trapped in their current positions with no opportunity for advancement, resulting in low morale and in some cases leaving the agency for private sector jobs where their skills, experience, and education would be more recognized. From the agency perspective, loss or lack of advancement of these employees represents a loss of highly valuable knowledge, skills, and abilities, sometimes gained over decades, from the Forest Service wilderness program.

Gabrielle Snider, with son Olin Broom. Photo by T. J. Broom.

Understanding the Barriers

Most wilderness and recreation management positions in the Forest Service are currently classified in the GS-0401 General Natural Resources Management and Biological Sciences Series. The General Schedule (GS) establishes a pay scale with progressively higher salary from GS-01 (e.g., entry level Forestry Aid) to GS-15 (e.g., Forest Supervisor), and the series indicates the occupational group to which the position belongs (i.e., biological science, engineering, administrative). To qualify for General Natural Resources Management and Biological Sciences Series, an applicant must have either a degree in a biological science, agriculture, natural resource management, chemistry, or related discipline or a combination of education (at least 24 semester credit hours) and appropriate experience. Although the GS-0401 Series recognizes wilderness management as a natural resources management function, wilderness and recreation undergraduate and graduate degree programs at US universities and

colleges do not typically include a sufficient scientific component and "related discipline" coursework to qualify for the GS-0401 Series. For example, a candidate with a wilderness or recreation management undergraduate or master's degree that does not also include 24 semester hours of biological (or related) sciences would not qualify for a wilderness manager position, whereas a candidate with a microbiology or chemistry degree and no wilderness management coursework would. Additionally, entry into the Forest Service wilderness and recreation program is frequently through the GS-0462 Forestry Technician Series (GS-8 and below), while positions at or above the GS-9 level are usually classified in the professional GS-0401 General Natural Resource Management Series. Relevant work experience gained in a "technical" position is consistently not counted toward qualifying for a "professional" position, even when work assignments overlap substantially and when technicians have successfully demonstrated professional level competency. As a result, highly qualified candidates with relevant education and/or experience are frequently disqualified from wilderness and recreation management positions in this framework.

Building Tools to Increase Flexibility

To address this situation, the WAG/Human Resources Management (HRM) group has developed a full suite of recreation and wilderness management position descriptions (PDs) classified in the GS-0301 Miscellaneous Administration and Program Series (GS-5 through GS-12). Positions in this series do not have a minimum education requirement, but they do involve the type of analytic, research, writing, and judgment skills typically gained through a university level education or through progressively responsible experience. Prospective candidates who gain applicable program knowledge and skills through extensive and progressive field experience and training in series such as the 0462 Forestry Technician would qualify for this series. This constitutes the elusive "bridge" from technician to manager positions that has been missing from the wilderness career ladder in the USFS land management context. Additionally, candidates from wilderness and recreation undergraduate and graduate degree programs who do not meet the scientific component or the "related discipline" requirement of the GS-0401 Series would now qualify for the GS-0301 Series. Adding this new series to the existing set of PDs classified for wilderness positions affords maximum flexibility and benefit in the recruitment, retention, and advancement of employees within the recreation and wilderness program area by recognizing the diversity of education and experience relevant in wilderness management positions.

Going Forward

Some challenges and misperceptions must be overcome for the 0301 Series to gain widespread acceptance across the USFS Wilderness and Recreation programs. Wilderness professionals currently classified in the Professional Series may be reluctant to accept positions in the Administrative series, fearing lack of flexibility and mobility in future desired positions. However, other program areas that have adopted the Miscellaneous Administration and Program Series categorization (Fire and GIS) have not found these barriers to exist in reality; in fact, positions at the highest level within the Forest Service (line officers and directors) are frequently hired utilizing the Miscellaneous Administration and Program Series.

Another possible challenge may include hiring and human resource managers and staff being unaware of the new series or unfamiliar with its values and benefits, missing opportunities to advertise positions so they are accessible to the most qualified applicants. Therefore, use of this new series will take education, outreach, and time: the more the Miscellaneous Administration and Program Series is used in a wilderness management application, the more positions will be outreached, advertised, and filled using this series, and the more likely hiring managers and candidates will take advantage of these new position descriptions. The value of providing a career path for high-performing, experienced, and qualified candidates into positions with increasing wilderness responsibility and leadership will improve employee morale, benefit recruitment and retention, and ultimately benefit the wilderness resource.

The Future Is Bright

Retaining top talent in wilderness management is an important management goal. As we are faced with the next wave of retirements and look to advance the next generation of wilderness professionals, continually improving and developing tools to advance the most experienced and qualified individuals will serve the wilderness resource well. We may even see

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Bicycles in Wilderness Areas?

Must We Ride Up This Dead-End Trail Again?

BY DOUG SCOTT

We all love getting outdoors for a walk or hike. Our families can't wait to get in the car and head out on a camping trip – and to enjoy the scenic drive amid the canyons of Big Bend, or the Great Smoky Mountains, or along the edges of the deepest, wildest forests and great peaks of the Rockies. And, young and old, we yearn to lace up our boots, shoulder our backpacks, and hit the trail in some of our 765 congressionally designated wilderness areas across America.

As the government's peer-reviewed public opinion survey has consistently found since the 1960s, 3.6 billion people participated in nature-based outdoor recreation of all kinds in 2005–2008. The social scientists who conduct the ongoing National Survey on Recreation and the Environment (NSRE) report, "Both the total number of Americans and the total number of days annually in which we participate in nature-based recreation have grown since 1994. In particular, viewing, photographing, and studying nature in all its forms, for example, wildlife and birds, have grown strongly" (Cordell et al. 2008).

The NSRE confirms: Americans want to see wilderness areas preserved, want to see more wilderness areas protected in their own states – and see their recreational enjoyment as ninth down the list of values for which they support the national wilderness program (NSRE 2016).

Fifty-one years ago, in August 1964, the US Senate and House of Representatives passed the Wilderness Act unanimously. In a confirmation of the broad bipartisan support of their constituents, year after year, including in 2015, Congress has continued to enact laws adding units to our National Wilderness Preservation System. In a representative democracy, the overwhelming and bipartisan votes of our elected representatives for the 124 laws passed since 1964 adding new areas is the best evidence of the overwhelming, bipartisan public support.

Mountain Biking Controversy

Doug Scott

Some mountain biking enthusiasts want to open the way to get bikes into some wilderness areas. For example, one such group created the Sustainable Trails Coalition (STC) (STC 2016). They're planning to write a bill that grants this discretion to the four wilderness administering agencies. Should such a bill become law, this could set the stage for unprecedented mechanical entry into the boundaries of any wilderness area.

This idea of bikes-are-okay-in-wilderness is not new. One assertion is that Congress did not intend to ban bicycles in the Wilderness Act. This leap of creative imagination never touches down on the actual legislative history of the law, however. For example: "The Sustainable Trails Coalition believes that the legislative history of the Wilderness Act of 1964 shows that Congress *would have wanted to allow bikes* in wilderness *if mountain bikes had existed* or they had thought about them" (STC 2016, emphasis added). Sadly, this is the stuff of fairy tales. As an advocate before Congress for more than 40 years, a close friend of the leaders who gave us the Wilderness Act and subsequently worked for its faithful interpretation and application to new areas of the federal lands, I know that such arguments are simply wrong.

Public use of any form of motorized or mechanical transport has been illegal within wilderness areas beginning with the first one established – Gila Wilderness Area in New Mexico in 1924. The policy of preserving this area was strictly extended to *every* subsequently established wilderness area and every addition to an existing area. On

September 3, 1964, the Wilderness Act became law, and this prohibition was made as firm as possible – in statutory law.

For opponents who failed to stop the law, the new line of resistance became "anything but statutory wilderness." This was the stance taken by some logging companies, mining companies, road builders, and other development lobbies. Their opposition is now long in the past. But this is the heritage that today flows through the arguments of some mountain bike advocates – although not the vast majority of mountain bikers, many of whom are also hikers and backpackers. Some advocates of mountain bikes in wilderness have spent years purposefully deconstructing and distorting the clear and otherwise undisputed facts of wilderness preservation history. However, Congress only opened a few, very narrow exceptions.

Wilderness administrators, academic researchers, and volunteer advocates and stewards know the key language of the Wilderness Act well. "Except as specifically provided for in this Act, and subject to existing private rights, there shall be no commercial enterprise and no permanent road within any wilderness area designated by this Act and, except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act (including measures required in emergencies involving the health and safety of persons within the area), there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, *no other form of mechanical transport*, and no structure or installation within any such area (US Public Law 88-577, emphasis added).

In statutory language, the term *may* is permissive; it is a grant of discretion to officials of the executive branch. By contrast, the term *shall*, as used here, is a command. These commands are binding on officials of the executive branch, they are mandatory; there is no discretion whatsoever.

There is no way around these nine words. You needn't be a law professor; the meaning is crystal clear: *"There shall be … no other form of mechanical transport."*

However, a US Forest Service (USFS) regulatory error implementing the act was spotlighted in the first authoritative legal analysis of the new Wilderness Act and the proposed regulations, and was published in the June 1966 *Oregon Law Review*. Commenting on the wording as it appeared in the draft form of the regulations published the previous year, attorney Michael McCloskey caught the error,

> In its regulations to implement the act, the Forest Service has defined "mechanical transport" as "any contrivance propelled by a nonliving power source." As a nonliving power source is the same as a motor, mechanical transport is thus defined as being the same as "motorized transport," and there is no exclusion [in the agency regulations] of horse-drawn vehicles, bicycles, or cargo carriers. The wording of section 4(c) is that there shall be "no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport." In an effort to give meaning to each item enumerated, the rules of statutory construction would suggest that duplicate definitions should be avoided. For this reason, the Forest Service would appear to be in error in saying that the phrase "mechanical transport" means no more than the preceding phrase "motor vehicles." *The meaning of the sentence would appear to be that the final phrase refers to modes of mechanical transport that are not motor vehicles, motorboats, or motor-driven aircraft. By a process of elimination, this would seem to leave only items such as bicycles, wagons, and cargo carriers as the referent for the phrase*. (McCloskey 1966, emphasis added)

The Department of Agriculture was on notice from the time it published its draft regulations for comments in 1965 – their interpretation of this key element of the Wilderness Act's objective was wrong.

Legislative History

The flat prohibition of *any* form of mechanical conveyance or transport was in the first version of wilderness preservation legislation introduced in 1956 by Senator Hubert H. Humphrey (D-MN), cosponsors in the US Senate, and Representative John P. Saylor (R-PA) in the US House of Representatives – and every subsequent version of the legislation right to its signing.

Senator Humphrey and nine bipartisan cosponsors in the Senate introduced the first wilderness protection legislation in 1956. This bill provided that "there shall be no … use of motor vehicles, nor any airplane landing field, or other provision for mechanized transportation" (McCloskey 1966). Introducing the identical House bill in July 1956, the lead sponsor, Representative Saylor, explained to his colleagues: "The stress and strain of our crowded, fast-moving, highly-mechanized and

raucously noisy civilization create another great need for wilderness – a deep need for areas of solitude and quiet, for areas of wilderness where life has not yet given way to machinery." (Cong. Rec. 12583, 1956). Reintroducing his bill at the start of the next Congress in 1957, Senator Humphrey explained on the Senate floor, "Mr. President, here is a measure designed to make sure that some parts of America may always remain unspoiled and beautiful in their own natural way, untrammeled by man and unmarred by machinery" (Cong. Rec. 1893, 1957).

The statutory prohibition on any other form of mechanical transport was not altered in any way through the next eight years to enactment of the law on September 3, 1964. The statute expresses exactly what Congress intended … and what Congress has consistently maintained in the 124 wilderness designation laws enacted since. Congress has never waivered from this strict prohibition on public use of all forms of mechanical transportation in wilderness areas. These words express exactly what Congress intended – then and now. These exceptions prove how narrowly Congress views this issue – and the limited exceptions were and are supported by wilderness advocates.

- *Agency stewardship*. The four wilderness agencies have a very limited grant of discretion to use certain practices and tools in stewardship of wilderness areas.
- *Agency response to health and safety of visitors within a wilderness area.* The administrative agencies are given very narrow discretion to use motorized and mechanical transport in cases involving the health and safety of persons within the areas for search and rescue.

"Congress has never waivered from this strict prohibition on public use of all forms of mechanical transportation in wilderness areas."

- *Mobility disabled individuals*. The Americans with Disabilities Act interprets, not amends, the Wilderness Act. Mobility disabled visitors – and no others – may use nonmotorized wheelchairs in wilderness areas. "Congress reaffirms that nothing in the Wilderness Act … is to be construed as prohibiting the use of a wheelchair in a wilderness area by an individual whose disability requires use of a wheelchair, and consistent with the Wilderness Act no agency is required to provide any form of special treatment or accommodation, or to construct any facilities or modify any conditions of lands within a wilderness area in order to facilitate such use (US Public Law 110-325).
- *Rural subsistence users in Alaska.* The wilderness areas in Alaska are enormous. Therefore, Congress allowed use of snow machines, motorboats, and other motorized and mechanized means of surface transportation by rural residents relying on hunting, fishing, and trapping for their subsistence lifestyle (US Public Law 96).

Controversy Revisited

Every member of Congress is already hearing from America's wilderness advocacy and stewardship organizations, including their constituents back home. In a March 23, 2016, joint letter to members of Congress, 116 organizations wrote: "For over a half century, the Wilderness Act has protected wilderness areas designated by Congress from mechanization and mechanical transport, even if no motors were involved with such activities" (Wilderness Watch 2016). This has meant, as Congress intended, that wilderness areas have been kept free from bicycles and other types of mechanization and mechanical transport.

A bicycle is indisputably a machine – a mechanized contrivance of metal with rubber tires, braking mechanisms, an adjustable seat, suspension forks for front suspension, a chain and gears, and a derailleur for shifting gears while in motion. The result is a mechanized vehicle with the more durable heavy-duty wheels, more powerful brakes, and lower gear ratios needed for steep grades that offer poor traction.

The first mass-production mountain bike – and hence the beginning of the considerable use of these machines on our federal lands came 17 years after Congress enacted the Wilderness Act. No one – no member of Congress, no federal official, and no bicyclist was anticipating this important and popular new machine.

Some mountain bike advocates claim to see some ambiguity in the wording of the Wilderness Act. They assert that the legislative history demonstrates this. Then they pile on irrelevant out-of-context quotes made by other members of Congress after the law was enacted. They offer statements from internal memos between mid-level USFS officials. This is not legislative history; Duke Law School provides this definition:

"The 'legislative history' of a particular law consists of all the documents created by the legislature during the process of the law's passage. This material often becomes valuable later, when disputes arise from vague or ambiguous statutory language" (Duke Law 2015). As shown here, everything that is legislative history of subsection 4(c) of the Wilderness Act is specific and consistent: no other form of mechanical transport.

Some mountain bike advocates claim that mountain bikes were allowed in wilderness areas until 1984, but were then banned administratively by a reversal of the Forest Service regulatory policy (STC 2016). The Forest Service did go through initial regulatory confusion for understandable reasons. Drafted in 1965 by the agency, the Department of Agriculture's initial regulations misinterpreted this part of the new law: "Mechanical transport, as herein used, shall include any contrivance which travels over ground, snow, or water, on wheels, tracks, skids, or by floatation and is propelled by a nonliving power source contained or carried on or within the device" ((36 CFR § 293.6(a), 1973), (formerly 36 CFR § 251.75, 1966.)).

Some internal communications within the USFS during 1977 and 1986 do show confusion on how to interpret the Wilderness Act. However, in 1986 the Forest Service announced that their original 1966 regulation, which allows for wilderness travel by living power sources, "is to be read as prohibiting Wilderness travel by certain living power sources, including bicycles" (51 FR 13835, April 21, 1986).

As a litany of federal agency confusion, this confusion is classic. But look at the pattern – fitfully and with some backward steps, the Forest Service leadership finally got it right. This is not surprising, as I was among wilderness advocates who both argued these points directly with the chief and with Department of Agriculture leaders and mobilized powerful members of the House and Senate. These leaders – Senator Frank Church, Idaho Democrat, and Representative Morris K. "Mo" Udall, Democrat from Tucson, Arizona – collaborated on several "message bills" designed with wilderness advocates – including me – to provide focus for hearings at which the two committees and conservation group witnesses could correct the chief of the Forest Service.

When the bikes-in-wilderness advocates began their agitation, I was the policy expert on the Wilderness Act and its history for the Sierra Club and later The Pew Charitable Trusts. I made it my business to visit Bill Worf, who was then in charge of the USFS wilderness program. Prior to that he had administered USFS wilderness areas in Montana and the Northern Rockies. Because of his depth of on-the-ground experience as a wilderness area administrator with wilderness, Bill was one of the field officers called to Washington in 1965 to draft what became the original Department of Agriculture wilderness regulations and the related *Forest Service Manual* documents to guide field personnel on the practical details of the new program.

I asked Bill how they could have failed to avoid misunderstanding; they could have listed bicycles, wagons, wheeled game carriers, and other forms of mechanical transport in these original regulations. "Doug," he replied, with a laugh, "we were all from the West. Our experience was with rugged, straight up-and-down wilderness areas. Given the bicycles which existed at that time, long before the invention of the mountain bike, it simply did not occur to us that anyone would want to ride a bike in wilderness areas like the Bob Marshall."

Bill's fierce loyalty for the correct interpretation and application of the Wilderness Act by Forest Service administrators is reflected by the fact that when he retired and move back to Missoula, Montana, he founded Wilderness Watch – the reliable chief watchdog advocacy group on wilderness protection issues.

Rattlesnake Wilderness

Misrepresentations of the legislation and policies abound among certain advocacy groups. For example, some mountain bike advocates misrepresent the 1980 law that established the Rattlesnake National Recreation Area and Wilderness Act north of Missoula, Montana, alleging that in this statute Congress considered cycling as "primitive recreation" and would be allowed in the Rattlesnake Wilderness. In fact, the Rattlesnake law, like every other of its kind, carefully divided the land designations into two clearly separate management areas. The section designating the Rattlesnake Wilderness Area is nothing more than the straightforward designation language Congress used in the first law adding an area to the National Wilderness Preservation System in 1968 – and in every law since. It makes no departures from the policies of the Wilderness Act itself. Bicycles are not allowed – and never were. The separate second section establishes a nonwilderness management area in which bicycles are allowed (Public Law 96-476).

This handful of leaders has been pursuing this line of misinformation

for years. But everything they marshal for their noncase is irrelevant. *Bicycles are prohibited in every designated wilderness area – and always have been.*

There is a better option: encourage mountain biking enthusiasts, of which there are many, to meet with local wilderness advocacy and stewardship folks in their areas, of which there are also many. They will be happy to get acquainted and sit down with maps to see what can be worked out. This is what local wilderness leaders and bicycling groups did in Virginia in the early 2000s. The result was the establishment of a number of new wilderness areas " *and several nonwilderness scenic areas* – areas designated by law, devoted to recreational use, prohibiting any roads and use of motor vehicles – and allowing bicycles" (Scenic areas, 16 US Code § 546b – Seng Mountain and Bear Creek Scenic Areas, Jefferson National Forest, Virginia, 2009). This was a similar case to the adjoining, but separate, Rattlesnake National Recreation Area and Rattlesnake Wilderness – two separate land management areas operated under different regulations.

Historic Guidance

Finally, some words of historic guidance. The first to propose establishing a wilderness area, Aldo Leopold, advised, "Recreation is valuable in proportion to the intensity of its experiences, and to the degree to which it differs from and contrasts with workaday life. By these criteria, mechanized outings are at best a milk-and-water affair" (Leopold 1949). He added, "Public wilderness areas are, first of all, a means of perpetuating, in sport form, the more virile and primitive skills in pioneering travel and subsistence. … We who seek wilderness for sport are foiled when we are forced to compete with mechanized substitutes" (Leopold 1949, pp. 192–193).

Bob Marshall wrote the first detailed article in a scholarly journal promoting preservation of wilderness areas – *The Scientific Monthly* (which became *Scientific American*). He defined wilderness "to denote a region which … possesses no possibility of conveyance by any mechanical means" (Marshall 1930).

In a short essay found among his papers by Bob's brother George, and published posthumously as the editorial in the summer 1954 issue of *The Living Wilderness*, Bob Marshall – the great champion of American wilderness preservation – wrote, "A wilderness journey provides the ideal conditions for developing physical hardiness. In the wilderness a person cannot buy transportation or services. He must provide them for himself. He cannot find machinery to relieve him of the need for expending his own strength and energy. If he gets into trouble he must get himself out of it or face the consequences" (Marshall 1954).

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PERSPECTIVES FROM THE ALDO LEOPOLD WILDERNESS RESEARCH INSTITUTE

A Journey to Wilderness Far from South Korea

BY SEOK SEUNG LIM

The Aldo Leopold Wilderness Research Institute often hosts international visitors, usually from a few days to a few months. Scientists at the Leopold Institute have developed strong relationships with these visitors from all over the world, and as a result, our two organizations often become much closer. A great deal of intercultural learning often takes place as well. A new relationship that started this past year was with the Korea Forest Service. Seok Seung Lim was selected by his government to come to the Leopold Institute for a two-year fellowship that began in June of 2015. We asked Seok Seung (we call him Forrest) to reflect a little on why he came here and how his first year is going.

My wilderness journey began in December of 2014. I clearly remember the moment that I first saw mention of the Aldo Leopold Wilderness Research Institute (ALWRI) back in South Korea. I had been chosen as a recipient of the Korean Government Fellowship for Overseas Study. At that time, I was trying to find a place in the United States where I could come to study ecotourism and sustainable recreation in forests. This is an important topic for the Korea Forest Service.

While I was Internet surfing on this topic of sustainability, just by chance I found an intriguing article entitled "Protecting Ecotourism Resources in a Time of Rapid Economic and Environmental Transformation in Asia" by Alan Watson et al. (2009) of the Aldo Leopold Wilderness Research Institute. I learned from this article one approach to studying the relationship between natural resources, ecotourism, and sustainability, and I had a strong feeling that I could continue to learn a great deal from the authors of this paper. I sent an e-mail message right away to ask if it would be possible to study under Dr. Watson's supervision. Fortunately, I received a positive response and was accepted as an International Visitor of the USDA Forest Service to come study at the Aldo Leopold Wilderness Research Institute in Missoula, Montana.

After some initial excitement, I looked again at the name of the institute where I was accepted to study. I realized that two parts of the institute name, "Aldo Leopold" and "Wilderness," were beyond my knowledge. I had to start studying this place I was going to spend the next two years visiting. It didn't take me very long to find that Aldo Leopold was a colossal figure in American conservation history. He had presented new perspectives on the relationship between humans and nature by advancing a land ethic (another philosophical concept to study, and one I am still working on!). But at least I understood that this place where I was going to study is dedicated to the life's work of this man. Also, wilderness must be connected somehow to this idea of a land ethic.

Seok Seung Lim

I then examined translations of the word *wilderness* in an English-Korean dictionary. In there, wilderness was translated as "황야 (*Hwang-ya*)," or "황무지 (*Hwang-mu-ji*)." When I saw these Korean translations for wilderness, it suggested to me that these people must study a barren and desolate land in which living things are barely seen. *Hwang-ya* and *Hwang-mu-ji* are both defined very basically in Korean as a field or a wasteland that has been neglected and untouched. These words are used in phrases such as:

- "a trackless and desolate *Hwang-ya*,"
- "make a barren *Hwang-ya* fertile,"
- "cultivate *Hwang-mu-ji*," and
- "due to the war, many villages fell into ruin and the farmland have turned into *Hwang-mu-ji*."

At the same time, the word *Hwang-ya* reminded me of two American western films I had watched when I was little. Each of them had this word in the Korean titles. One was *A Desperado of Hwang-ya* and the other was *Seven Men of Hwang-ya*. It was not until recently that I found that the original titles of these films in English were respectively *A Fistful of Dollars* and *The Magnificent Seven*. Why did both of them include the word *Hwang-ya*? I assumed it was because the main settings of the movies were barren and arid deserts, where clouds of dust rose as heroes galloped on their horses.

Regarding the word *Hwang-mu-ji*, the only use of it I knew came from a Korean translation of the title of a famous poem: "The Waste Land" by T. S. Eliot. The Korean title of this poem is simply "Hwang-mu-ji." This knowledge had me perplexed. What does the Leopold Institute have to do with barren wastelands? Am I going to the right place to learn about sustainability issues?

I had to dig deeper into this concept of wilderness. I looked it up in an English dictionary and found that *wilderness* can have several meanings, including (1) "a wild and uncultivated region, as of forest or desert, uninhabited or inhabited only by wild animals"; "a tract of wasteland"; (2) "a tract of land officially designated as such and protected by the U.S. Government"; (3) "any desolate tract, as of open sea"; (4) "a part of a garden set apart for plants growing with unchecked luxuriance"; and (5) "a bewildering mass or collection" (Dictionary.com). Also, with the first letter capitalized, Wilderness can be part of the name of specific areas such as a wooded region of Virginia where several battles were fought in 1864 between the armies of Generals Grant and Lee. Also, the Wilderness can be the barren regions to the south and east of Palestine where Israelites wandered before entering the Promised Land.

It seems that wilderness has at least two types of meanings in the United States: One is a region where the wild and uninhabited characteristics are seen as a positive set of attributes and are even protected to stay that way, and the other is a wasteland focusing on desolate and barren landscapes. I was hoping *wilderness* in the ALWRI context would be related to the former rather than the latter, and that if I came to understand a land ethic I would also understand these positive values associated with its protection.

I was right – it became clear when I examined the definition of *wilderness* in the Wilderness Act of 1964. It says that a wilderness is an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. Wilderness, within the institute where I would go to study, turned out to be an area where the natural and wild conditions are unimpaired by human beings and its primeval character is well kept. It contains tremendous treasures such as ecological, geological, scientific, educational, scenic, historical, or recreational values, and therefore deserves to be protected and preserved for now and future generations. We did not have such a word in Korean. At last, I felt like I was heading in the right direction to learn.

Six months later, on June 1, 2015, I made a trip from South Korea to the United States and arrived in Missoula, Montana. After setting up a base camp at ALWRI, I resumed my journey to understand wilderness. My adventure into the concept of wilderness has been getting wider and deeper step by step. Looking back on my struggle to understand wilderness, I feel so lucky and grateful that I have this perfect base camp, ALWRI, because I am learning about the concept of wilderness both in the United States and in many other countries. I imagine going back home next year and telling the story of my journey through the wilderness and how I came to understand the role of a land ethic in planning for sustainability. This story might stimulate curiosity and trigger other journeys to the wilderness in South Korea.

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"Looking back on my struggle to understand wilderness, I feel so lucky and grateful that I have this perfect base camp, ALWRI, because I am learning about the concept of wilderness both in the United States and in many other countries."

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initiatives and reports bring fabulous news that should inspire and encourage us. We need such vision, good news, and new models … and, amazingly … coming from Europe – such an interesting and wild place!

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stakeholders, particularly with respect to the Circumpolar North and Tribal Nations around the world." The panel concluded that "Dr. Watson's efforts have moved the science and understanding of wilderness towards better policies and well-informed management decisions and a greater likelihood of promoting an enduring contribution of wilderness to society and a sustainable planet."

Based on the extensive panel review of Alan's work, the USFS promoted him to an "ST" graded position in recognition of his contributions and leadership to the mission of the Aldo Leopold Wilderness Research Institute and the Rocky Mountain Research Station's Strategic Research Priority on Human-Landscape Interactions. Only 100 of the 4,200 scientists in the US Department of Agriculture have achieved such an award for high-level research performance.

Finally, I acknowledge and appreciate Alan's dedication to fostering science reporting in *IJW* in his capacity as a board member for more than 20 years.

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increased engagement of current and prospective candidates interested in a career in wilderness and the retention of the skills and experience necessary for the complex, yet rewarding, work of wilderness management.

Acknowledgments

Progress on this issue would not have been possible without the initiative, dedication, and support from the USFS's chief's Wilderness Advisory Group (past and current representatives), the USFS Human Resources Management Group (especially, Anita Valdez), Washington Office Wilderness staff, and the many employees who shared their stories and suggestions for improving career ladder opportunities within the Forest Service Wilderness program.

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Protecting Visitors and the Wilderness with Stewardship Research

By STEVEN R. MARTIN

Editor's note: Dr. Steven R. Martin, Humboldt State University, received the *US Forest Service Chief's Excellence in Wilderness Stewardship Research Award* for 2015. In the award notification, these words signified the importance of Dr. Martin's (and Humboldt State graduate students') recent contributions to wilderness stewardship through science:

> *Dr. Martin has collaborated with the Leopold Institute, as well as Forest Service and National Park Service units in the Sierra Nevada, to support management and planning decisions by employing science in a diversity of areas including: bear-proof containers and visitor safety, the use of technology in wilderness by visitors, quota decisions based on visitor travel simulation and visitor attitudes about intervention to adapt to climate change, and ecological restoration to fix problems caused by past human behavior. He remains focused on management solutions applied to wilderness stewardship issues relevant across the National Wilderness Preservation System.*

This article was invited by the Editorial Board of *IJW*.

Growing up in Pennsylvania, and attending college in Illinois, I had little if any grasp of the concept of wilderness. My first natural resources–related job after college was as a seasonal "rec tech" (recreation technician) with the US Forest Service (USFS) in Tennessee, patrolling a lake in an agency motorboat, and mainly serving as a management presence so things didn't get too out of control on the weekends. Exiting my boss's office one day, a title on his bookshelf caught my eye – a tan-colored book called *Wilderness Management* (the 1st edition by Hendee, Stankey, and Lucas). I remember thinking, "That sounds interesting," and asked to borrow it. I read it from cover to cover that summer and decided that I'd found my calling.

That realization took me to the Tonto National Forest and the Superstition Mountains Wilderness the following winter and spring of 1984, where I lived in a platform tent at a trailhead, talked to visitors, hiked the trails, and never found that Lost Dutchman gold mine. But I did find that I loved wilderness, and my exposure to it that winter and spring confirmed my calling. I worked with a dedicated group of men and women, including fellow wilderness information specialist Greg Hansen, and I met Bob Lucas when he came to "the Supers" as part of a Regional US Forest Service training. I was motivated to apply to graduate school in Missoula, Montana, and with a bit of persistence, was accepted. I talked Dr. Steve McCool into taking me under his wing that first year, the start of a long and fruitful professional relationship and personal friendship. Right next to our Science Building on the University of Montana campus was the Forest Service Research Lab, and before long I had persuaded Bob Lucas and David Cole to round out my thesis committee. How could I go wrong with mentors and advisors like that!

Steve Martin

One thesis, two summers of Forest Service wilderness trail crew, two stints as park ranger and recreation planner/social scientist in Glacier National Park, and one dissertation later (with another all-star cast of committee members including McCool, Alan Watson, and Sid Frissell), I found myself on the faculty at Humboldt State

Figure 1 – Personal locator beacons make rescues much easier to request, but might they change visitor behavior? Photo by Andrew Skurka, http://andrewskurka.com/2015/spot-gen3-satellite-gps-messenger-review-long-term/.

University, on the wild northern coast of Humboldt County, California. The Trinity Alps Wilderness (USFS), one of the largest in California, is two hours inland, and a few years after my arrival, a large portion of the King Range National Conservation Area was designated as the King Range Wilderness (Bureau of Land Management/BLM), including the longest stretch of undeveloped coastline in the United States outside of Alaska.

I was fortunate to quickly get to know some wonderful wilderness folks in these agencies. Bob Wick, now a wilderness specialist for the BLM's Washington, D.C., office, was at the King Range in the 1990s. We collaborated on several visitor studies, examining issues such as visitor conflict arising from motorized beach access along a stretch of the Lost Coast Trail prior to its wilderness designation, and looking at indicators and standards for solitude. Jim Holmes in the Trinity Alps Wilderness graciously agreed to hike into various campsites every September (annually for nearly 20 years now) to meet me and groups of my students on field trips. Jim's talks inspired my students, many of whom over the years returned to the Trinity Alps to work or volunteer for Jim as wilderness rangers.

New wilderness research opportunities presented themselves as I got to know more wilderness managers and other agency folks in California. Kate McCurdy, a wildlife biologist in Yosemite who then became a graduate student in my lab, had been dealing with problem bears for years and decided she wanted to study the human dimensions of the problem. Collaborating with Yosemite biologist Tori Seher (now at Golden Gate NRA), we studied the effectiveness of food storage canisters in the Yosemite Wilderness and found that although the rate of carrying canisters was quite high, the actual rate of full compliance with food storage regulations was much lower. This was at least partly because visitors did not always take adequate steps to purchase and prepack their food into the canisters prior to the trip. They tended to overestimate canister storage capacity, and then on the first night or two of the trip found they couldn't fit everything into them. We also found that when visitors tried to fit more than four person-nights worth of food into a canister, the chances that that they would be out of compliance rose significantly.

A few years later I had a chance to work in Yosemite again, this time with National Park Service (NPS) social scientist Bret Meldrum (now in Fort Collins, Colorado) and wilderness specialist Mark Fincher. With a Humboldt State colleague in the Math Department (Rob Van Kirk) and a couple of graduate students (one of whom, Mark Douglas, is now a professor at the University of Maine–Machias), we collected trail and campsite diary data from a large sample of Yosemite backpackers, compared it to the even larger wilderness permit database, and created an innovative travel simulation model of the Yosemite Wilderness. By adjusting daily trailhead quotas, the model predicted how many groups and people would be camped in each of 53 wilderness zones every night from May 1 to September 30, and how that spatiotemporal distribution of visitor use would change by increasing or decreasing different trailhead quotas. The idea was that managers could experiment with

Figure 2 – A variety of canisters makes food storage easier, but preparation is needed to make sure everything fits. Photo by Kate McCurdy.

higher or lower trailhead quotas and resulting visitor use distributions much more quickly and easily than with on-the-ground trial and error, and without the public and political consequences.

Another line of research I've been working on recently is the role that technology, particularly handheld information and communication devices such as personal locator beacons (PLBs), plays in visitor perceptions of risk, safety, and rescue, and whether such devices may influence visitor decision making. Credit for first bringing this issue to my attention goes to Kristen Pope, who began working with me as a graduate student in 2008. The following summer we did a study in the King Range Wilderness, asking people about their perceptions of handheld information and communication technology and how it influenced their perceptions of risk and rescue. About 40% of our sample considered themselves to be risk-takers, and these risk-takers said they were significantly more likely to take chances that could increase their exposure to risk if they had information/communication technology with them. A subsequent graduate student, Jessica Blackwell, continued this line of research by interviewing 65 Sequoia-Kings Canyon Wilderness backpackers, both those who carried a PLB and those who did not. Her results suggest a possible increase in both solo travel and cross-country (trailless) travel in wilderness by PLB users. This has the potential to increase search and rescue (SAR) events and lead to increased resource and social impacts in trailless areas that are currently pristine or near-pristine.

Ecological restoration and climate change mitigation in wilderness is beginning to command more attention from wilderness managers and researchers. Alan Watson of the Aldo Leopold Wilderness Research Institute, Dan Williams of the USFS Rocky Mountain Research Station, and I collaborated with wilderness manager Gregg Fauth on a study in the Sequoia-Kings Canyon Wilderness and examined visitor attitudes both toward efforts to restore naturalness and toward management interventions to mitigate climate change. We found broad visitor support for efforts to restore natural conditions, but little support for actions to mitigate climate change. The visitors who most value natural conditions in wilderness most support nature restoration efforts, but they are also the least supportive of interventions to mitigate climate change.

Figure 3 – Proper food storage is necessary to protect both bears and visitors in wilderness. Photo provided by Kate McCurdy.

What might the wilderness stewardship research agenda of the future look like? Ecological restoration and climate change mitigation will continue to be important topics for wilderness stewardship research, as will technology use in wilderness, including drones and new potential forms of access (e.g., motorized hang gliders). Research to help with managing day use in wilderness will be important as day users become an increasingly large part of the visitor population. But perhaps most important will be continued research on wilderness values that are important to different stakeholder groups, and how those may change in the future. We need to be well-informed about the changing relationship between wilderness and modern society, and how to make sure wilderness remains relevant to an increasingly diverse population. Collaborating with colleagues in other disciplines (geography, sociology, ethnic studies, etc.) should become more important and more common.

I feel fortunate to be at a university like Humboldt State that values both teaching and research. The research that my graduate students and I conduct not only (hopefully) helps wilderness managers but also informs my teaching. Whether I'm discussing food storage regulations, management interventions to restore natural conditions or mitigate climate change impacts, use limits and trailhead quotas, or the potential

influence of technology on visitor experiences, the research I've done on these topics gives additional depth to my teaching presentations and discussions with students. And I'm proud that many of those students have gone on to work in wilderness areas throughout the country, from wilderness rangers to USFS forest supervisor.

I also feel very fortunate to have had the chance to experience wilderness so many times and in so many places since my first real exposure in the Superstition Mountains, including working in and visiting numerous USFS, NPS, and BLM wilderness areas, many long backpacking trips (and llama-packing as we got older) into the Bob Marshall Wilderness with Steve McCool, and kayaking and rafting trips on the Selway, Yampa, San Juan, Green, and Colorado Rivers. The opportunity to work with talented graduate students and inspiring colleagues at my university, other universities, and throughout the federal agencies that manage wilderness has been a source of joy and professional satisfaction, and I look forward to future collaborations with others dedicated to the stewardship of our wilderness resources.

"What might the wilderness stewardship research agenda of the future look like? Ecological restoration and climate change mitigation will continue to be important topics for wilderness stewardship research, as will technology use in wilderness."

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Notes from the Future

Thoughts from Millennials at the 2015 Wilderness Workshop

BY A. ANDIS, ROBERT DVORAK, and LISA RONALD

Call-and-Response as a Call to Question

Just over a year ago, I was sitting in a ballroom in Albuquerque listening to one of my heroes, Dave Foreman, deliver the farewell address to the entire wilderness community at the 50th Anniversary National Wilderness Conference. Dave spoke of the legacy of the last 50 years and the challenges facing us in the next 50. He made a call for "quiet wilderness recreation" by sharing his experiences conversing with birds, flowers, and lightening that ended in a raucous "Chickadee dee dee!" call-and-response with the audience.

As much as I admire Dave and the work he and many other well-known conservationists have done, his talk did not resonate with me. Looking around at the perplexed faces at my table, most of them also under the age of 30, it was clear that the speech was not resonating entirely with them either.

Earlier in the day, another wilderness veteran recounted, with disgust, an encounter with a trail runner. The runner, wearing brightly colored clothes and ears tethered to a music player, ran past the presenter while he was quietly strolling on a trail. This anecdote was intended as an object lesson illustrating the attrition of wilderness values in young outdoor users. I watched as half the audience shook their heads in agreement while the other half looked around in self-conscious incredulity.

After Foreman's conclusion, a conversation began at my table. For many of us in the sub-30-year-old cohort, it felt as though the conference was speaking *about* us, but not *to* us. Over subsequent months, we continued that conversation, drawing intergenerational support from folks like Dr. Bob Dvorak from Central Michigan University who has been conducting research on generational values, Lisa Ronald from the University of Montana who works with a number of up-and-coming professionals in the school's Wilderness and Civilization and Environmental Journalism programs, and others who recognized

A. Andis.

Robert Dvorak. Photo by Jordan Bruursema.

Lisa Ronald .

the need for investigating such a topic. The fruit of that ongoing conversation manifested itself in an entire track at the 2015 National Wilderness Workshop in Missoula, Montana, United States, dubbed the "Millennial Track,"* which asked three basic questions: (1) What can millennials offer to wilderness management, preservation, and conservation? (2) What are the barriers to engaging millennials in professional practice and wilderness careers? and (3) How can we address and remove those barriers?

The Millennial Track at the 2015 Wilderness Workshop

The Millennial Track included diverse topics. Women professionals in the Selway-Bitterroot Wilderness shared ideas for inspiring female representation in wilderness stewardship. We heard from professionals and volunteers alike about the pros, cons, and trends of certification and mentoring programs to professionalize the discipline of wilderness stewardship. In a session titled "The Recreation Conservation Nexus," members of the recreation community, who are also card-carrying wilderness stewards, explored the potential synergy between evolving outdoor sports and wilderness support. Military veterans

*For the context of these discussions, we defined millennials as individuals born in the 1980s to early 2000s, but really, the discussion intended to engage anyone in the "new guard," approximately under age 30.

like Tristan Persico – an important, often-overlooked, and increasingly young demographic of wilderness users – identified themselves as prime candidates for future wilderness and land management leadership roles. Two impressive panels of agency and nonprofit stewards and educators explored pathways to better engage younger professionals in leadership and provide mechanisms to enhance transitions between staff in agencies and organizations. And in a session led by the authors, we considered the evidence and implications of a diversity (or lack thereof) in wilderness values between generations. The Millennial Track culminated in a two-hour wrap-up session facilitated by the authors during which participants met to discuss what they had heard. We were charged by this session's participants (and other participants of the track over the course of the workshop) to draft a message on behalf of millennials to the wilderness community. We recognize that this attempt may not represent or resonate with all the views of millennials at the workshop (more than half of the 200-plus attendees at the 2015 National Wilderness Workshop were age 35 or younger). Instead, we have strived to anecdotally show the spirit and values of their generation. First, however, it is important to define and describe millennials in the context of this article.

Who Are the Millennials?

There is a common litany among veteran wilderness professionals and advocates: the movement is graying; organizational membership is waning among younger generations; backcountry users are increasingly "matured." There is support for these concerns. The United Nation's 2013 report *World Population Ageing* defines an aging global population as the number of global individuals age 60 years or over, which is expected to more than double from 841 million in 2013 to more than 2 billion in 2050. Wilderness visitor use and user trend studies also mirror this pattern. Dvorak et al. (2012) found during a 40-year period in the Boundary Waters Canoe Area Wilderness, United States, mean user ages increased from 26 years of age in 1969 to 45 in 2007. However, these trends do not represent a decrease in the demand for wilderness recreation. Survey data from the *National Survey on Recreation and the Environment* has shown record visitation levels for US national parks and wildlife refuges in the late 2000s, with wilderness and primitive area visitations having increased by 12% for that same period (Cordell, Betz, and Green 2008). Millennials are among the folks trail-running through wilderness, as described in the aforementioned anecdote.

"The most important message from millennial-age wilderness professionals and stewards is a promise that, with everyone's help, the new guard of stewards and managers will continue to uphold the spirit of the Wilderness Act."

We would also suggest that millennials are not neophytes to the cause of wilderness. They have no less respect for the intentions of the Wilderness Act nor an inchoate understanding of wilderness values. Many already work for agencies and nonprofit organizations, putting in 50-, 60-, 70-hour weeks protecting wilderness. Increasingly, younger folks are engaging in the movement in nontraditional, nonmembership-based ways, such as volunteering for trail crews, conducting citizen science, and organizing recreational groups. Younger generations are very concerned about their impact to the environment but can be more independent in approaching solutions (Digital Operative 2015). This independence means they may be less apt to participate in a traditionally organized fashion. Examples of this sort of independent leadership can be found in most sectors. Of the 10 board members behind the National Wilderness Stewardship Alliance (one of the primary hosts of the 2015 workshop), 4 are under age 36; for example, 25-year-old Ben Hamilton, an independent filmmaker, was awarded the Wilderness Legacy Award in 2014 for producing the inspiringly novel film *The Meaning of Wild*; Alyssa Ravasio, a Millennial Workshop presenter and tech entrepreneur, founded the website HipCamp (www.hipcamp.com), which facilitates camping on both public and private lands.

Similarly, millennials may engage with the outdoors differently. Rather than a multiday canoe trip, many are more likely to choose day-use activities, such as trail-running, stand up paddle boarding, or backcountry skiing (Outdoor Foundation 2013). Millennials commune with wilderness in different, but profoundly meaningful ways. Some seek sublimity in paddling amid the raw power of whitewater rivers or humility in climbing steep walls. Others seek knowledge through field research or tradition through subsistence practices. Wilderness is the place where millennials go to exercise, challenge

their recreational skills, hunt, conduct science, and get their hands dirty volunteering.

These observations might seem like timeworn objections. After all, each generation seeks validation and strives for recognition and differentiation from their predecessors. However, as representatives charged to bring these issues to light, we think it is important to understand that these genuine perspectives were the underpinnings of the Millennial Track that drove discussions addressing barriers to engagement and future roles in wilderness stewardship.

Millennial Track Perspectives

Professionals, both new and those midcareer, made up a large proportion of the track participants. As such, career tracks was an important topic. Systemic problems in career tracks and funding priorities were cited as principle challenges by Mills and Patel (2016) in the previous issue of this journal and by participants during the Millennial Track wrap-up session. Both agencies and nonprofit organizations have realized the benefits of engaging young professionals in entry-level, seasonal positions as summer interns or seasonal crew members. Yet, participants felt that seasonal workers are sometimes considered "less professional." The issue for these entrants to the field is the growing gap between the bottom rung and the next step up in the career ladder. Despite recent changes to federal hiring practices that include preferential hiring of part-time and temporary employees, for example, Millennial Workshop participants noted numerous obstacles they had observed in their emerging careers. They had experienced the trend for organizations to accord these positions lower wages than permanent positions and fewer, if any, benefits. They described how after participating in the "internship-martyrdom culture" for multiple seasons, they were still unlikely to possess the minimum requirements for a full-time position. Based on these participant observations, it is critical that the wilderness community continue to address the proliferation of underpaid and unpaid internships, and build upon ongoing and new initiatives that open doors and create mechanisms for sustainable careers in wilderness stewardship.

Many Millennial Workshop participants expressed being subject to distrust, with veteran wilderness stewards assuming that those in the younger generation are less staunch in their interpretation of the Wilderness Act. One participant suggested that "people want us to take the reins, but they don't trust we will take the same path. Accept that we may expand the path." Others noted that although younger generations may have diverse views on wilderness, there are many firebrands in the ranks – some that rival even today's most ardent voices. Millennial participants asked to be trusted not to devalue the wilderness ideal, yet be allowed the latitude to accrue more acreage and address stewardship challenges in current contexts, recognizing that their creativity may be needed to further the causes for wilderness globally.

Millennial participants highly value their contemporary heroes who fight for wilderness and expressed a sincere desire for the opportunity to learn from them through mentorship. As authors, each of us can speak to many instances where a mentor has imparted their wisdom, steered our passion, and encouraged us along paths that make positive impacts for wilderness stewardship. However, participants spoke of how it can be intimidating for a young steward to approach a busy professional and establish a rapport with a potential mentor. Participants echoed Mills and Patel (2016) by asking that professionals make themselves available, intentionally seek a mentee, and leverage their contacts and resources to open doors for that mentee that might otherwise be closed. The more formalized the mentorship, the more effective. Both agencies and nonprofit organizations must continue to invest and build the emerging mentorship opportunities that exist and incorporate structured mentorship and develop succession plans that raise young wilderness stewards from entry-level into permanent professional positions.

It will take continued, concerted effort from all sectors of our wilderness community to dismantle these barriers and others expressed by Millennial Workshop participants. Funding agencies and organizations will need to provide more unrestricted funds to allow organizations to pay staff and provide benefits. The outdoor recreation industry must align their outdoor ethic to encourage corporate accountability by giving back monetarily, not only to designation and advocacy campaigns, but also to wildlands stewardship and education. Federal agencies must increase the value they place on wilderness management as a professional practice in its own right and not allow it to be lost as an ancillary assignment or duty. These are big obstacles to overcome, and they are entrenched in our conservation culture; however, there are smaller, more tractable changes that workshop participants believe can be enacted now.

For example, conservation leaders can highlight and award

individuals to recognize their future potential rather than past achievements. While an award given to a veteran wilderness steward is an appreciated and important acknowledgment of their contributions and dedication, an award given to a promising professional translates into tangible résumé currency that will be spent to leverage resources and create greater leadership, overall accruing compounded rewards for the wilderness community.

The wilderness community can also recruit more young people in elective leadership roles, including serving on organizational boards. Inclusion at this level is mutually beneficial: young stewards learn the ropes early from experienced professionals, while the organization benefits from the added diversity of opinion, especially in the area of engagement where organizations often struggle. It is important to consider that although many boards have good intentions to recruit younger participants, it does little good in practice without codified requirements and strategic goals. As Glenn Nelson pointed out in his concluding keynote at the 2015 Wilderness Workshop, good intentions don't count unless they are reflected in writing, either in bylaws or the budget. Glenn was speaking to the paramount topic of including racial diversity, but the rule holds true for generational diversity as well.

Conclusion

While the views expressed by those attending the Wilderness Workshop Millennial Track are not fully representative of the diverse opinions of millennials in general, they do represent the earnest thoughts of wilderness advocates and stewards (from many age groups) who dedicated two days to considering these issues. And although many of these issues have been debated since the inception of designated wilderness, the fact that they linger unsolved 50 years later is noteworthy and continues to make them relevant to today's broader discussions.

We may ask why these issues linger so persistently. Is it an inherent trait of successional generations to strive for recognition and individuality or simply a seat at the table? Is it an inherent patrimonial trait of preceding generations to want subsequent ones to "stay the course"? Is it the product of a latent human tendency to perpetuate barriers? This article does not attempt to explain their existence but rather to highlight it as evidence of the need for continued focus on generational diversity issues within the wilderness movement. As cliché as it may be, we truly believe that the "kids are alright" and have a great chance for success given the efforts of those who have come before them.

As facilitators of this conversation, we hope to stress that individuals of the millennial generation are our colleagues, peers, and integral components of our professional network. They echo our community's ubiquitous passion, commitment, and enthusiasm for the wilderness movement. The most important message from millennial-age wilderness professionals and stewards is a promise that, with everyone's help, the new guard of stewards and managers will continue to uphold the spirit of the Wilderness Act. They are willing to invest the time, energy, and talent. But most importantly, they have made a promise that when they are senior members of the wilderness community, they will hold themselves accountable to the same standards addressed herein and commit to passing on the torch for the next generations.

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Rewilding in a European Context

BY FRANS SCHEPERS and PAUL JEPSON

Rewilding is a powerful new term in conservation. This may be because it combines a sense of passion and feeling for wilder nature with advances in ecological science. In Europe, rewilding is gathering momentum as a young and vibrant movement of conservationists and citizens seeking a counterweight to our increasingly regulated lives, society, landscapes, and nature. It signifies a desire to rediscover the values of freedom, spontaneity, resilience, and wonder embodied in Europe's natural heritage, and to revitalize conservation as a positive, future-oriented force.

Rewilding is now widely reported in the European media. It is exciting, engaging, and challenging, and it promotes healthy debate and deliberation on what is natural and the natures we collectively wish to conserve and shape. In the context of Europe's dynamic multicultural societies and landscapes, a distinct approach to rewilding is unfolding – one that is shaped by our conservation heritage but that resets expectations of what is possible in European biodiversity conservation policy. In this article, we present the latest thinking and developments on rewilding in Europe, with a focus on the efforts of Rewilding Europe and its many partners across the continent.

Rewilding in the European Context

In Europe, just as in the United States, rewilding is developing in relation to the cultural and institutional context of conservation. In the United States this context is influenced by the wilderness ethic and the ability to conserve functional ecosystems at a large scale. In Europe there are some key differences that affect the development of rewilding. First, European ideas of the wild are influenced by long traditions of scientific, recreational, and cultural engagement with rugged landscapes. National parks in regions such as the Alps and Pyrenees are much more lived in and more developed in terms of recreational infrastructure than their US counterparts. This creates an opportunity and indeed an imperative for larger rewilding projects to link the restoration of natural processes with the modern economy and society.

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Second, there has been an interesting resurgence of iconic wildlife species in Europe over the last 40 to 50 years, both in mammals and birds (Deinet et al. 2013). Wolf populations are rebuilding themselves in regions of Europe due to legal protection and processes of rural depopulation rather than active management. At the same time in large parts of the continent, biodiversity is still decreasing due to the ongoing intensification of agriculture, forestry, and fisheries. Thus, the comeback of large carnivores is remarkable and shows Europe has found ways of coexistence with such species, albeit not without challenges (Chapron et al. 2014).

Finally, the baseline for conservation policy in many European nations has been preindustrial agriculture, which requires the protection and maintenance of wildlife-rich patches of cultural landscapes through active scientific management. This conservation approach, which has been compared to restoring a painting that then needs curating, is at odds with the process-oriented ethos of rewilding and the uncertain ecological and conservation dynamics this entails.

In the context of Europe, rewilding is not synonymous with wilderness. It is about moving up the scale of wildness within the constraints of what is possible. Rewilding is seen as a process rather than a state, it is about giving ecosystems a functional "upgrade," whatever their nature, scale, or location. On a hypothetical rewilding scale of 1–10, wilderness areas would already be at 9–10 and restricting rewilding to this upper end would limit both its geographical scope and transformative potential.

A Working Definition for European Rewilding

The scientific literature presents a number of definitions of rewilding, but none fully captures the specifics of Europe's history, culture, landscape conditions, and the element of coexistence, which are so relevant for conservation in Europe. In response, Rewilding Europe published the following "working definition" of rewilding in 2015 and is encouraging other organizations and initiatives to adopt it:

> Rewilding ensures that natural processes and wild species play a much more prominent role in the land- and seascapes, meaning that after initial support, nature is allowed to take more care of itself. Rewilding helps landscapes become wilder, whilst also providing opportunities for modern society to reconnect with such wilder places for the benefit of all life.

As such, rewilding is a multifaceted concept with three broad dimensions that interact with each other: (1) restoring and giving space to natural processes, (2) reconnecting wild(er) nature with the modern economy, and (3) responding to and shaping cosmopolitan perceptions of nature conservation among European society. As such, rewilding in a European context is much broader than "species reintroductions." The following principles are coming to characterize and guide rewilding in Europe as a distinct approach to conservation.

- *Restoring natural processes and ecological dynamics*, including both those that are abiotic, such as river flows, and those that are biotic, such as the ecological web and food chain through reassembling lost guilds of animals in dynamic landscapes.
- *A gradated and situated approach*, where the goal is to move up in the scale of wildness within the constraints of what is possible, and interacting with local cultural identities.
- *Taking inspiration from the past but not replicating it* by developing new natural heritage and values that evoke the past but shape the future – with the point of reference in the future, not in the past.
- *Creating self-sustaining, robust ecosystems* (including reconnecting habitats and species populations within wider landscapes) that provide resilience to external threats and pressures, including the impact of climate change.
- *Working toward the ideal of passive management*, where once restored, humans step back and allow dynamic natural processes to shape conservation outcomes.
- *Creating new natural assets* that connect with modern society and economy and promote innovation and enterprise in and around natural areas, leading to new nature-inspired economies that conversely also contribute to rewilding.
- *Reconnecting policy with a grassroots conservation* sentiment and a recognition that conservation is a culturally dynamic as well as a scientific and technical pursuit (Jepson and Schepers 2016).

A Short History of Rewilding Europe

A prominent factor in the emergence of European rewilding is the rise of *functional ecology*, which has exposed the extent to which in Europe we have come to accept degraded ecosystems and introduced a new focus on restoring ecological functions. Also, large-scale land abandonment and a substantial wildlife revival in regions of Europe (Deinet et al. 2013) were identified as a historic opportunity for nature conservation and to build new rural economies on wild values. As a result, the number of popular articles and books that connect rewilding with public demand for more exciting engagements with nature has increased rapidly during the last few years.

In 2008, conservationists in the Netherlands, the United Kingdom, and Sweden began to explore the conservation opportunities presented by these trends. The group was particularly interested in engaging with the dynamics of large-scale land abandonment of rural areas in Europe. They were concerned that spontaneous reforestation and declines in grazing associated with land abandonment would result in a loss of the rich biodiversity, and that the exodus of skills, experience, and energy from rural areas would undermine opportunities to "steer" these landscapes towards a rewilded future where restored ecological systems supported new nature-based economies.

This group was the founding inspiration for Rewilding Europe.

They set an agenda by asking if we could develop and launch a new but complementary vision and approach to conservation in Europe that would address such opportunities and challenges, and if we could pioneer and develop these new ideas in practice in areas across Europe, providing new perspectives for both nature and people.

After three years of preparations and fund-raising, Rewilding Europe was created in 2011 with support from the World Wide Fund for Nature (Netherlands), Wild Wonders of Europe, Conservation Capital, and ARK Nature. It pursues a vision in which "*wild nature is recognised as an important and inherent aspect of Europe's natural and cultural heritage and an essential element of a modern, prosperous, and healthy European society in the 21st century.*"

Rewilding Europe has developed an ambitious strategy to put this vision into reality through five 10-year objectives (Figure 1). These objectives are being pursued by creating 10 rewilding areas in different geographical regions and in different socioeconomic settings across Europe. Areas have been chosen where rewilding is possible at a scale of least 100,000 hectares (247,105 acres) within a wider landscape setting. By early 2016, nine of these are operational and are run and owned by local partner organizations that receive technical, financial, and promotional support from the Rewilding Europe central team.

Beyond developing these 10 rewilding areas as showcases for its vision, Rewilding Europe is working with the wider conservation community to create a supportive environment for rewilding to take root. An important step was made thanks to efforts of The WILD Foundation prior to and during WILD10 in October 2013 in Salamanca (Spain), where "A Vision for a Wilder Europe" was presented and signed by 10 European conservation organizations (Sylvén and Widstrand 2015). This vision was a landmark publication, for the first time addressing 10 key actions to promote a wilder Europe, many of which are now being taken forward by the various

Figure 1 – Rewilding Europe's five main 10-year objectives

signatory organizations. WILD10 also marked the first specific seminar on rewilding in Europe, involving many different speakers and positions on this topic, further elaborating and sharing views and experiences.

Since 2011, dozens of rewilding initiatives have been launched independent to those of Rewilding Europe. An important recent development is the launch of Rewilding Britain in June 2015, which is opening up the conservation debate in the UK and providing the inspiration for pioneering rewilding projects there. Rewilding Europe liaises closely with Rewilding Britain and other rewilding groups across Europe to promote alignment of rewilding approaches, taking into account the national context in which each is working. For instance, land ownership is different in many European countries; in some, land is mostly privately owned (e.g., Spain), in others, large tracts are state owned (e.g., Poland), and in still others conservation NGOs own large properties and have great rewilding possibilities (e.g., UK, Netherlands, Germany). But it is not only land tenure that is a key factor determining rewilding possibilities –user rights (hunting, grazing, fishing, logging, management) of public, communal, and state land also provide ample rewilding possibilities through engaging with local stakeholders.

The rise of rewilding projects across Europe shows that nature conservation is opening up to new approaches in which the restoration of ecosystems becomes a priority alongside traditional concerns of preservation of species and habitats. It is important to promote exchange of knowledge, expertise, and experience to promote alignment and coordination in rewilding approaches and definitions. This extends to the messages rewilding proponents convey to the wider European audiences and to key stakeholder groups, such as policy makers, scientists, and practitioners. In such activities Rewilding Europe adopts a bottom-up approach, recognizing the fact that conservation is a culturally dynamic as well as a scientific and technical pursuit.

Supporting 10 Showcases across Europe

Rewilding Europe's aim is to rewild at least 1 million hectares (2,471,053 acres) of land by 2022 through the creation of 10 wildlife and wild areas of international quality that will serve as inspirational examples of what can be achieved elsewhere (Figure 2). In these areas, where the rewilding vision is pioneered in practice, natural processes will be allowed to play a vital role in shaping landscapes and ecosystems. Among such natural processes are flooding (including erosion and sedimentation), weather conditions (including storms, avalanches, and wind-shaped sand dunes), and natural calamities (such as natural fires and disease).

The nine areas selected so far were identified on the basis of more than 30 nominations from across Europe and detailed feasibility studies on opportunities for rewilding. Rewilding Europe is working with local partner organizations to develop rewilding pilots in priority areas within these larger landscapes. Current activities include reinstating natural processes such as restoring river dynamics and flooding of former polders and floodplains; supporting wildlife revitalization through the reintroduction of species; reducing human-wildlife conflict and developing new business models with hunting associations (including wildlife breeding and no-hunting zones); and establishing natural grazing pilots with a variety of large herbivores. To support nature-based economic activities, local rewilding businesses and wildlife-watching experiences are supported – to name a few.

New, Innovative Conservation Tools

Rewilding Europe has developed three novel and innovative tools to support the on-the-ground work in these rewilding areas: (1) European Rewilding Network, (2) Rewilding Europe Capital, and (3) the European Wildlife Bank. The European Rewilding Network (ERN) is a growing network of larger and smaller areas in Europe where rewilding is a key target and takes place in line with the philosophy of Rewilding Europe. The network promotes sharing expertise and lessons, creating a rewilding movement and network across Europe. Since the launch at WILD10 in Salamanca, the ERN now counts 48 members, representing 22 European countries and a total surface of 2.5 million hectares (6,177,635 acres) (Figure 3).

Rewilding Europe Capital (REC) is Europe's first conservation finance facility; it is a revolving fund supported by a mix of philanthropic and investment capital. Since 2013, REC has provided loans to 16 enterprises in 5 rewilding areas in order to leverage carefully defined rewilding outputs as part of a pioneer phase. During the next phase, from 2016 to 2018, REC is expected to grow further. Connected to this upscaling, REC will also extend its working sphere, not only including the Rewilding Europe areas but also the ERN member areas.

The European Wildlife Bank (EWB) is a live asset-lending model designed to reintroduce and expand naturally grazing wild herbivore populations across Europe. Landowners

Figure 2 – Areas where Rewilding Europe is working

Figure 3 – European Rewilding Network, April 2016 status

receive herds of large herbivores in a custodianship agreement and must give back half of the herd after a five-year period, while keeping the founder herd. As an average, a well-managed herd doubles in size in five years – if the grazing area extends, the landowner keeps the herd and enters a new five-year custodianship agreement, and so on. In this way natural grazing and extension of naturally grazed land is being promoted, where the return on investment is in animals.

By April 2016, the European Wildlife Bank hosted 580 animals, consisting of 50 European bison, 300 wild-living horses, and 230 tauros,* while 15 natural grazing projects started in 9 different rewilding areas.

Building Nature-Bases Economies

Rewilding Europe operates in a challenging context for rural societies in Europe. In regions where agriculture is marginal, land abandonment is resulting in an exodus of skills, experience, and energy from areas with a corresponding negative impact on local and regional economies. While Rewilding Europe is primarily concerned with nature conservation, social and economic goals are also at the heart of its strategy. We recognize that in order for conservation objectives to be achieved, we need to secure the positive engagement of local people in Europe's rural areas as well as government policy makers at local, national, and international levels.

The creation of nature-based economies in and around rewilding areas is therefore a key component of Rewilding Europe's approach. This requires the development of businesses that have a positive relationship with wild nature and wildlife – and whose commercial success is carefully linked to those natural values. We are working to demonstrate that rewilding can generate new business opportunities, jobs, and income for society, thereby creating an alternative and competitive form of land use for local people, landowners, and communities.

Rewilding in European Policies

Rewilding needs a supportive, enabling environment. Natural value is under pressure across Europe due to economic and development pressures. In 2015, the European Commission embarked on a "fitness check" of its nature legislation. This move resulted in a campaign, supported by a petition with half a million signatories of European citizens, to maintain the legislation in its current form and focus on better implementation.

*"Tauros" is the name of a bovine breed that resembles the original auroch (Europe's original wild bovine), which is being bred-back from old cattle breeds in Europe that are genetically close to the auroch. See https://www.rewildingeurope.com/tauros-programme/.

As a new conservation policy vision, rewilding represents an exciting opportunity to refashion conservation for the 21st century, and with this attract new investment and generate significant social, ecological, and economic returns for the next few decades. However, any new approach also involves risk and uncertainty, and development pressures on Europe's protected areas (called Natura 2000 sites), particularly in western Europe, have resulted in a strict interpretation of nature laws.

A challenge for European policy makers is how to find spaces in nature legislation and policy that will simultaneously protect the gains of the past and provide the flexibility to allow the rewilding movement to innovate and develop. Our assessment is that spaces for innovation exist not only in medium and larger Natura 2000 sites across Europe, they can also exist by framing rewilding as a conservation agenda for the wider European countryside, including smaller and even urban areas where ecological processes can be improved. The strength of rewilding is its flexibility, which derives from its focus on "upgrading" ecosystems processes, using the past as a source of insight and inspiration rather than a template for restoration, and willingness to mix nature, society, and a nature-based economy.

We have recently initiated a dialogue with policy makers, practitioners, and scientists at the European level and published a policy brief that positions rewilding in the context of European conservation policy. We are encouraged by the willingness to engage with rewilding ideas and think creatively about where supportive spaces can be developed within the constraints of law and politics. In support of this process we are forming a European-wide task force of experts to spearhead thinking in this area. The emerging message from citizens, scientists, and conservation practitioners is that we want to safeguard what we have achieved in protecting existing natural value, but we also want to reset expectations about what is possible from nature conservation policy.

In summary, rewilding represents an opportunity for conservation policy to shift gears – from a focus on protecting and designating to a focus on restoration that "upgrades" ecosystems, improves network connectivity, and creates new values for people in Europe.

For more information about Rewilding Europe, visit www.rewildingeurope.com and www.facebook/rewildingeurope, or download the Policy Brief or our latest Annual Review.

Note: This article is largely based on a paper prepared by both authors called "Making space for Rewilding – creating an enabling policy environment in Europe" and "Rewilding Europe's Annual Review 2015" – both to be published in 2016.

"A challenge for European policy makers is how to find spaces in nature legislation and policy that will simultaneously protect the gains of the past and provide the flexibility to allow the rewilding movement to innovate and develop."

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Rewilding Britain

BY REBECCA WRIGLEY

There is something very odd about Britain. We have lost most of our large mammals, more than any other medium-sized or large European country except Ireland. While the average forest cover in the rest of Europe is 37%, the UK has only 13%. In Europe the uplands tend to be refuges where forests and wildlife have been allowed to remain. In Britain our uplands are largely degraded and ecologically barren.

We have no large areas either on land or at sea in which we let natural systems unfold. Britain's land is almost all managed. Even in conservation areas, nature is controlled and natural processes of succession are seldom permitted. Our upland national parks are dominated by sheep, grouse, and overstocked deer and are unable to reach their ecological potential. Practices such as cutting, grazing, drainage, and burning are routine. Naturally regenerating native trees and shrubs are also routinely cut and excavated in our nature reserves. Conservation in Britain, to a greater extent than perhaps anywhere else on earth, does not aim to protect self-willed ecosystems but rather farming systems, where only a small and unrepresentative sample of wildlife can persist. And because of this, very few people have experienced truly balanced functioning natural habitats and the sense of wildness these places allow.

Why Are There So Few Naturally Functioning Ecosystems Left in Britain?

There are complex, complicated, and possibly controversial reasons why this is the case. These largely come down to the way that land has been owned and used – in particular, the highly concentrated pattern of ownership. Britain is believed to have the second highest concentrations in the world (after Brazil). As far back as the 11th century, the Norman conquest brought with it a unique form of land ownership to England (and later to Wales and Scotland), placing absolute land rights in the hands of the king and his nobles. Later, the dissolution of the monasteries in the 16th century meant that large chunks of monastery land (approximately 25% of the total land area) passed into royal possession and was sold off over the next century to ease the pressure on royal finances. Over the same period, rapid urban growth provided an expanding market for agricultural surpluses quite unlike anywhere else in Europe. The enclosures of agricultural and common land, both by local agreement and through a succession of Parliamentary Acts, also brought with it considerable landscape change. The resulting consolidation of land into individually owned or rented fields saw the end of the peasantry and the start of a system of ownership, tenancy, and agricultural laboring only seen in Britain. A great diversity of landscape features and habitats were cleared to create the first commercially driven farmscapes.

Rebecca Wrigley

In Scotland, the Highland Clearances during the 18th and 19th centuries saw the forced displacement of a significant number of people from traditional land tenancies where they had practiced small-scale agriculture. Large sporting estates were bought by newly rich industrial magnates, and the collapse of sheep prices in the 1870s released further cheap land for sporting use. (This is one reason why almost 60% of Scotland is now used for deer stalking or driven grouse shooting.) And with it developed a rich set of Victorian-era mythologies, traditions, and perceptions which surround sporting land ownership.

As the potential for profits from the land rose so did the pressure to bring previously marginal lands into production. For example, it saw the drainage of huge areas of wetland in the fens, despite fierce opposition from local villagers who were deprived of their traditional means of livelihood from wildfowling, fishing, and reed cutting. Profits from the wool trade and their proximity to water and water power also turned much of Britain's uplands into extensive sheep pastures.

Across all these years there has also been an incessant campaign, brought about through a lucrative bounty system legislated by Parliament, for extermination of "vermin" – those birds and mammals perceived as in conflict with humanity's shifting interests and priorities. Over a 500-year period, this saw the extermination of the last of Britain's apex predators – the wolf – and many of our native birds and large mammals (beavers, wildcats, pine martens, sea eagles).

The result of these events has been the long-term impoverishment of Britain's native wildlife and habitats and the loss of its functioning ecologies, including its trophic cascades. While in Britain we understand the importance of nature and landscape to our quality of life, our experience and knowledge of the natural world is based on highly managed countryside or nature reserves. Wrecked and barren landscapes are commonly described in glowing terms, such as this description of the almost lifeless Cambrian Mountains by Uney (1999): "Quite simply, there is nothing in Wales to compare to the wilderness and sense of utter solitude that surrounds these vast empty moorlands."

The concentrated ownership, fragmentation, and compartmentalization also means that, although in the rest of Europe land abandonment is leading to spontaneous rewilding, it is not happening in Britain. Because landholdings tend to be much bigger, they permit farmers to make a living purely from drawing subsidies. This, combined with the tax advantages granted to landowners and the prestige value of shooting estates, ensures that infertile land that might otherwise have been of little interest is a highly lucrative asset.

Why We Need Rewilding

In part due to this complex past, Britain's ecological systems are currently at a breaking point. In the words of David Attenborough, "Far more species are declining than increasing in the UK, including many of our most treasured. Alarmingly, a large number of them are threatened with extinction. The causes are varied, but most are ultimately due to the way we are using our land and seas and their natural resources, often with little regard for the wildlife with which we share them" (*State of Nature Report* 2013). In fact, 60% of all recorded species in the UK have declined in the last 50 years. We are seeing a drastic collapse in many of our upland ecosystems, and even in our national parks we are witnessing an astonishing deterioration of the habitats the parks are claiming to protect (Rewilding Britain 2016).

People in Britain have never before spent so little time in contact with nature and rarely gain a sense of just being part of the environment rather than in control of it. Indeed, three-quarters of our children spend less time outdoors than prison inmates (*The Guardian* 2016). This is having a huge impact on health and well-being, and has been connected to increased levels of stress, physical inactivity, and obesity.

The damage to our natural systems also means our environment is less able to provide the goods and services upon which we depend. Across the whole of the north of England in late January 2016, about 16,000 homes and businesses were flooded. The preliminary estimate of the cost of the flood damage is £1.3bn, and rising. It is now increasingly recognized that the impacts of this extreme rainfall were exacerbated by the overgrazing, deforestation, burning, and drainage of the uplands and by the canalization and dredging of the rivers. And there are increasing calls for investment in planting trees and changing land management practices to encourage the restoration of natural climax vegetation communities in areas upstream of our towns and cities.

And it's not just water – we are losing our soils at an alarming rate as well as the ability of our habitats to act as carbon "sinks." We now know that the highly simplified ecosystems of the kind that prevail across Britain are also much less resilient to environmental change, such as climate change and invasive species.

Rewilding Britain – The Start of a New Organization

The debate about an alternative future for Britain's ecosystems and wild places was unleashed by the publication of George Monbiot's book *Feral.* Rewilding is not new to Britain. Over the last 20 to 30 years, visionary projects such as Trees for Life, Wild Ennerdale, Carrifran Wildwood, and the work on the Knepp Estate have provided a glimpse of how rewilded landscapes could look. Large conservation organizations such as the National Trust, the RSPB, the Forestry Commission, the Wildlife Trusts, and Natural England have also begun to move toward rewilding on some of their land. However, *Feral* helped open the space for debate and inspire and engage a much wider audience.

Some of those inspired by this debate met in late 2013 to discuss what could be done to advance the case for rewilding in Britain. There was a common desire to revisit the way we manage and conserve the land, to allow natural processes to reassert themselves and to create

inspiring landscapes that deliver maximum benefit to society and to nature. It was clear that while there are a number of local and regional projects in Britain, there was no national-level initiative taking a progressive, collaborative approach to large-scale rewilding. Hence the start of a new organization: Rewilding Britain (Figure 1).

Figure 1 – Board and staff of Rewilding Britain

Rewilding Britain's Vision

Rewilding Britain was set up to promote the large-scale restoration of ecosystems in Britain, both on land and at sea. We believe it is not enough merely to try to preserve tiny fragments of our wildlife. Meaningful conservation must involve restoring natural processes and reestablishing missing species. Rewilding does not attempt to produce fixed outcomes. It sees dynamic ecological processes as an essential, intrinsic aspect of healthy living systems. The animals we lack, such as beavers, boars, lynxes, wolves, large tunas, pelicans, cranes, and storks, are not just ornaments of the ecosystem – they have a role as ecosystem engineers and are essential to an effectively functioning environment.

Within 100 years we would like to see at least 1 million hectares (2,471,053 acres) (4.5%) of Britain's land and 30% of our territorial waters rewilded. To put this in perspective, in England alone there are 380,000 hectares managed as golf courses (BBC 2013). By 2030 we would like to see at least 300,000 hectares (741,315 acres) of core land areas and three marine areas established where nature is starting to take care of itself and key species are starting to become reestablished. These areas will be ecologically connected, supported by an engaged and enthusiastic public, and will deliver a range of benefits for local communities and landowners.

Some key elements of the rewilding projects we aim to catalyze and support are that:

- owners and communities have taken their own decision to transition from the current land use to an economic model based on facilitating the access and enjoyment of natural functioning ecosystems.
- functional natural processes and succession are being restored.
- active habitat management is only used to help restore natural processes (e.g., removal of fencing and blocking of drains) or to replace functions of missing keystone species where reintroduction is not currently possible, for example, deer control in the absence of predators.
- natural dynamics such as habitat regeneration, movement of rivers, expansion of bogs, siltation of ponds, seasonal floods, and accumulation of dead wood are accepted and not controlled.
- missing keystone species are assessed, and, if not present, reintroduction is facilitated where appropriate in open discussion with communities and landowners.
- rewilded areas at a scale that allows, where practical, a full range of natural processes to occur on an integral, self-sufficient basis.
- economic and social benefits are demonstrable for local communities, landowners, and businesses through nature-based revenue flows and/or payments for ecosystem services.
- access for the wider public to engage them in the visual, physical, and psychological benefits of being immersed in wild nature.
- wider society benefits from an increased understanding of and passion for the natural world through creative and innovative communication resources.

How Will We Do This?

Understanding the historical context of wild places in Britain is crucial for the effectiveness of our approach to rewilding. The different social, political, and cultural contexts in England, Scotland, and Wales necessitate taking very different approaches in each country. In Scotland, our focus is on the rewilding

of at least one large area up to 5,000 km^2 (1,930 miles^2), crossing different biogeographic zones on land and down to the sea. We are ultimately aiming to put the building blocks in place toward securing long-term protection through, for example, IUCN Category II National Park status and assuring the worldwide recognition this would bring.

Central to delivering this vision in Scotland is a demonstrated desire to empower the rural communities and people who work on the land along with the owners of that land, whether community, environmental NGO, or private. This approach recognizes the need to lead by example and responds to three specific issues. The first is that the rewilding agenda will require a significant reduction in red deer. This represents a change to single species management of the Victorian sporting estate model. And for those Highland stalkers affected, we will need to demonstrate that there is a viable alternative involving jobs that require similar skill sets and deliver similar rewards.

The second is that the Highland Clearances have left a legacy (which Land Reform in Scotland in part seeks to address) of grand ideas being imposed on rural communities with disastrous consequences. It is crucial therefore for landowners and communities to take ownership of the idea, look critically at the risks and the benefits, and be willing to be part of establishing a wider rewilded landscape with the significant economic drivers this could bring.

The third is that many of the 432 landowners who own 50% of private Scottish land base their estate management on the traditional Victorian model of a highland sporting estate (Hunter et al. 2016). Balmoral is a key example of this. Landowners who behave differently (for example by reducing deer numbers and affecting their neighbors' sporting interest) can feel ostracized from their social networks. So few have forged a new path. It will therefore be important to provide owners who wish to change with a new form of social identity, one that promotes recognition and self-worth based on caring for the natural world and providing public goods.

In England and Wales there are fewer areas suitable for large-scale rewilding. However, there are some interesting potential models emerging that can achieve rewilding through connectivity – particularly those where working in partnership at a catchment level could provide nature-based revenue flows and public goods to multiple stakeholders. For example:

- In response to recent flooding there is increasing interest in taking a community-led catchment-based approach to flood management. This could see rewilding in the hills connecting down through the river systems, to urban rewilded areas, and down to the sea. Beavers could also play an important part in this approach.
- In the lowlands the Knepp Estate, owned and managed by Rewilding Britain's chair Charlie Burrell, provides an example of how rewilding can have both a dramatic effect on biodiversity but can also generate diversified rural income streams. While not a purist example of rewilding (for example, there are no apex predators, and proxies such as Exmoor ponies and Longhorn cattle are used instead of native herbivores), Knepp now has the highest populations of purple emperor butterflies and nightingales. To ensure its long-term viability, the estate continues to earn subsidies while also attracting income from ecotourism, organic meat, and rural enterprises.
- Currently the Common Agricultural Policy (CAP) provides an incentive to clear wildlife habitat (described as Permanent Ineligible Features) that disqualify the land from subsidies. We would like to see this policy change to encourage features of environmental benefit, such as a ponds, bogs, scrub, and woods. In the longer term, this could lead to a shift in CAP from an agricultural policy to a land-use one, with a focus on payment in return for public goods.

To this end we are already in discussions with partners with access to, and/or influence over, land the way it is used such as the National Trust, Countryside, Land and Business Association, Ministry of Defence, Wildlife Trusts, Yorkshire Water, private landowners, and others.

Rewilding Britain is in its infancy. We are still developing our approach and, as yet, can claim to have found few answers to the complexities of putting into practice our vision for rewilding. We are, however, keen to learn from other models for rewilding from around the world. And we are excited about the potential for bringing rewilded landscapes to Britain. Not as a re-creation of the past but rather as part of a new relationship with the land and nature for ourselves and future generations.

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Tracing the Contours of Wilderness in the Chinese Mind

BY TINA TIN and RIVER YANG

Wilderness has been widely recognized as an important component of the world conservation movement and is a specific category (Category 1b) of the International Union for the Conservation of Nature (IUCN) Protected Area Category System (Dudley 2008). It is sometimes advocated as a land classification providing opportunities for humans to experience natural and unfettered environments; it also makes important contributions to conservation by providing core areas for biodiversity, refuges for endangered species, baseline understanding of environmental change influences, protection of quality and quantity of drinking water, as well as safeguarding spiritual and intrinsic values of nature (Cordell et al. 2005). Wilderness is often considered a European concept that was exported and implemented outside Europe in English-speaking countries, including the United States, Canada, Australia, and New Zealand. However, wilderness legislation and policies exist in other parts of the world (Martin and Watson 2009; Kormos 2008). In a symbolic move to "reimport" the wilderness concept to Europe, the European Parliament (2009) adopted a resolution in 2009 supporting the protection of wilderness in the existing Natura 2000 network. In Asia, Japan's Nature Conservation Law set aside five IUCN Category 1b wilderness areas; Sri Lanka has a National Heritage Wilderness Areas Act and 9,000 km^2 (3,475 sq. miles) of land protected as wilderness (Hayashi 2002; Kormos 2008; IUCN and UNEP-WCMC 2016). As the world responds to China's increasingly important role in the world economy, in ecological conditions, and in politics, there is a growing interest in understanding Chinese perceptions of issues of international significance. Conservationists are interested in the potential benefits of and barriers to application of wilderness to Asian cultures (Watson et al. 2009). In particular, there is a great deal of interest in understanding "Wilderness and the Chinese mind."

Tina Tin

River Yang

In the Chinese language, there are no exact equivalents of the word *wilderness*. In modern Chinese, *wilderness* is commonly translated as *huāng yě* （荒野）. *Huāng* （荒）and *yě* （野）can be considered as synonyms, indicating places where plants and animals are not cultivated by humans. In modern Chinese, this has been extended to include places that have not been subject to human influence. Because land that has not been tamed by humans may threaten human survival, *huāng yě* has also adopted a connotation of being savage, violent, and dangerous (Wang 2010; Lin 2010; Hahn 2001). *Huāng* and *yě* can be separated and paired up with other words, such as *dì* (地 "land," as in *huāng dì*) or *yuán* (原 "the plains," as in *yuán yě*) to describe wild land, wasteland, or fields that are original/primitive (Harris 2015). *Kuàng yě* （旷野）and *mán huāng* （蛮荒）are also sometimes used to describe wilderness. They convey additional connotations of vastness and spaciousness (*kuàng* 旷) and being savage and uncivilized (*mán*蛮) (Meng 2012).

Roderick Nash's *Wilderness and the American Mind* (2001) is a classic text that traces the history of the concept of wilderness in the imagination and reality of the American people. There is no similar work on the relationship between wilderness and the people from the "Middle Kingdom" (the literal translation of the word *China*). This

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article is a first attempt at tracing "not so much what wilderness is but what men think it is" (Nash 2001) – in this case, what Chinese people have considered as wilderness in their relationships with nature. Making use of English- and Chinese-language studies, we highlight instances where wilderness has appeared prominently in the imagination or reality of those who have lived in what is today known as the Greater China region (mainland China, Taiwan, Macau, and Hong Kong). Ours is necessarily a selective and incomplete study: Chinese culture has evolved over 5,000 years and is continuously evolving through the lives of 1.5 billion people of multiple ethnicities on all 7 continents. An in-depth study would involve multiple years of dedicated effort that lies beyond the scope of the present short piece. As such, this article only barely traces the contours of the immense and intricate landscape that is wilderness in the Chinese mind. Our hope is to make a very modest contribution to a vast body of work still to be done.

Unity of Heaven and Man

Daoism, Confucianism, and Buddhism are widely considered as the three most influential religions and philosophies in Chinese history. They share a common characteristic in that they consider all life-forms to be interdependent, interactive, and interrelated (Yu et al. 2014). Human beings are seen as an organic part of nature; nature is considered to be consistent with human culture (Han 2008). In Daoism, humans are seen as enfolded in a matrix of cosmic power, in the oneness that is all things; there is no distinction between humans and nature. Wilderness and domestic space are complements of each other. Building human paths through wild, natural spaces weave together the seemingly disparate elements of life into a seamless whole (Miller 2008; D'Ambrosio 2013). Confucianism considers humans to be the respectful son or daughter of the cosmic process. Humans should harmonize with nature and accept its appropriate limits and boundaries. The highest ideal is the "Unity of Heaven and Man" (Tu 1985). Chinese Buddhism considers the existence of all phenomena, including human existence, to be illusory. While most schools focus on spirituality and place little emphasis on their relationship with the natural world, some consider nature to be a manifestation of the ultimate reality and the world as a net of relationships (Sørensen 2013; Barnhill 2005).

Scholars in the 21st century have often associated classical mountain and river (*shan-shui* 山水) poetry – a tradition heavily influenced by Daoism, Confucianism, and Buddhism – with wilderness appreciation. *Shan-shui* poetry originated in the third and fourth centuries CE. Landscape became a prominent and independent object for aesthetic consideration (Yip 1997). Wild nature functioned as much as a symbol as a concrete locality. Landscapes, especially mountains, were revered by Buddhists and Confucians as sources of enlightenment, and many poems contained references to Daoist classics (Yang 2000). Poems conveyed poets' wish to return to their original "wild" roots, where one could express one's freely flowing emotions, sense one's interdependence with all land and nature, and live one's freedom and wildness away from the bondage of society (Tan 2009; Wang 2010). The mountain and river landscapes were depicted as sites of raw, original nature. Under the poets' brush, these were not horrific landscapes associated with danger or violence. They were idealized as safe sanctuaries where one could hide from criticisms of society, or places where one could sense the ubiquitous spirit in nature and pursue one's spiritual enlightenment (Tan 2009; Yang 2000). *Shan-shui* poetry is considered to be the product of the contact between the poet and the landscape and has the ability to transcend the duality between subject and object (Wang 2010). Some poems convey the poets' experience of oneness with the cosmos and attempt to bring the reader into the experience (Hinton 2005). Poems from before the Tang dynasty (618–907 CE) contained descriptions of places with few traces of human activity and where wild plants and animals lived without human influence. As population increased, landscapes with no human influence became rare; human presence, such as villages, footbridges, and cabins, became integrated into the landscapes of mountains and rivers in poems from later periods (Wang 2010).

Material First, Spiritual Second

Apart from *shan-shui* poetry, we have found few systematic analyses that have focused on the treatment of wilderness in classical Chinese culture. Yang (2000) showed that in China's earliest poetry, dating from around the 2nd century BCE, wild nature was depicted as frightful and treacherous. Wild animals and plants, hostile conditions, and barbarians made wild nature highly undesirable compared to the comforts of the city and human civilization. Nearly 2,000 years later, in the 17th century CE, Chinese travelers and settlers to the newly annexed island of Taiwan also considered the impenetrable mountains, dense forests, and uncultivated lands to be worthless compared to comforts of their hometowns. After having listed the wild animals that

could be found on the island, one of them wrote, "This is nothing more than wilderness. If you are looking for natural landscape scenery, there is nothing at all" (Teng 2006, p. 84). The new island lay far away from the imperial center, in a region of *huāng* that was considered to be cultureless, savage, and chaotic. As an agricultural nation, ancient Chinese laws have always sought to promote the expansion of agriculture into hitherto uncultivated land. Only land that was tamed and shaped by humans could become productive or beautiful. Around the same period, the northeastern corner of China was coined the "Great Northern Wilderness" (*Běi dà huāng* 北大荒). Migration into the region from the south was prohibited by imperial rule. Population was kept low in the region, and agriculture was not developed. The region was preserved as a private royal park – a storehouse of wild game and plants for consumption of the imperial court. In the late 19th century CE, it was still described as an "unfortunate land" of "bleak desolation" due to the absence of human settlements (Shan 2014). Migration into the region began at the beginning of 20th century CE. In the middle of the century, the region was home to massive migration and land reclamation. Youths, soldiers, urban dwellers, and dissidents were sent to the region to convert vast expanses of wetlands to agricultural land that would feed the country. Conditions in the Great Northern Wilderness were harsh. People often had to work at -30°C (-22°F) temperatures with little mechanical assistance. To attract urban dwellers to migrate, government talks and writings portrayed the region as beautiful, wild, and fertile, waiting for humans to explore and transform it; a place where one's manual labor could contribute to the glorious cause of the socialist nation. In reality, basic living conditions and hard labor meant that hunger, sickness, suicide, and death were not uncommon (Pan 2003; Wang 2008).

Moving into the 21st century, a number of researchers in Canada and the United States examined how Chinese immigrants have engaged with the concept of wilderness in their newly adopted countries. Johnson et al. (2004, 2005) reported that immigrants from Asia were generally less likely than white Americans to visit a wilderness, and Chinese immigrants were less likely than white Americans to hike and camp. In Canada, Lo (2011) reported that outdoor activities in wilderness areas were not popular among Chinese families who preferred to play badminton or walk in the mall on weekends. To first- and second-generation Chinese immigrants from the Greater China region settling in Vancouver, Canada, wilderness was often associated with places that were barren, desolate, hostile, undesirable, and abandoned. To those who had previously been sent by the Chinese government to work in the Great Northern Wilderness, wilderness had the additional connotation of punishment. Many of the immigrants who came from the urban centers of Hong Kong and Taiwan found the wide open spaces of the Canadian wilderness overwhelming. The lack of familiarity and lack of skills for wilderness survival made them fearful toward wilderness; they wanted comfort and safety in their recreational activities. Some immigrants from rural China associated wilderness with the rural, impoverished countryside in China where they (or their family members) walked, worked, and slept outdoors as a matter of toil and survival and not of spiritual escape or choice. In general, the longer an immigrant lived in Canada or the United States, however, the more likely his or her concept of wilderness approached that of the Canadian or American ideal (Geddes 2002; Hung 2003; Johnson et al. 2004). Han (2006) interviewed Chinese tourists in three UNESCO World Heritage sites in China. She surmised that her respondents would consider camping in the wilderness to be troublesome and dangerous, and that eating in the wind and sleeping in the dew would be a humiliation. In reality, many perspectives on the human-nature relationship have existed throughout Chinese history (Weller 2006). In fact, examination of China's environmental history showed that the ideal of "Unity of Man and Heaven" has not prevented humans from massively using nature's resources for power and profit (Elvin 2004; Roetz 2013). At the beginning of the 20th century, China was exposed to the Western concept of nature and rapidly adopted the nature-culture dichotomy (Weller 2006). Throughout the next 70 years, China was embroiled in revolutions, wars, and civil wars. Natural resources were often heavily utilized to advance political and social goals (Shapiro 2001). From the last quarter of the 20th century onward, poverty alleviation, economic development, economic growth, and wealth creation were of the highest priority to the Chinese government (Harris 2006). Out of Marxist historical materialism arose the common Chinese saying, "Material first, spiritual second," reflecting a widespread belief that material abundance is the source of spiritual happiness (Yu et al. 2014), leaving little room for nature conservation or appreciation.

Opportunities and Challenges

Rapid industrialization in the late 20th and early 21st centuries in the

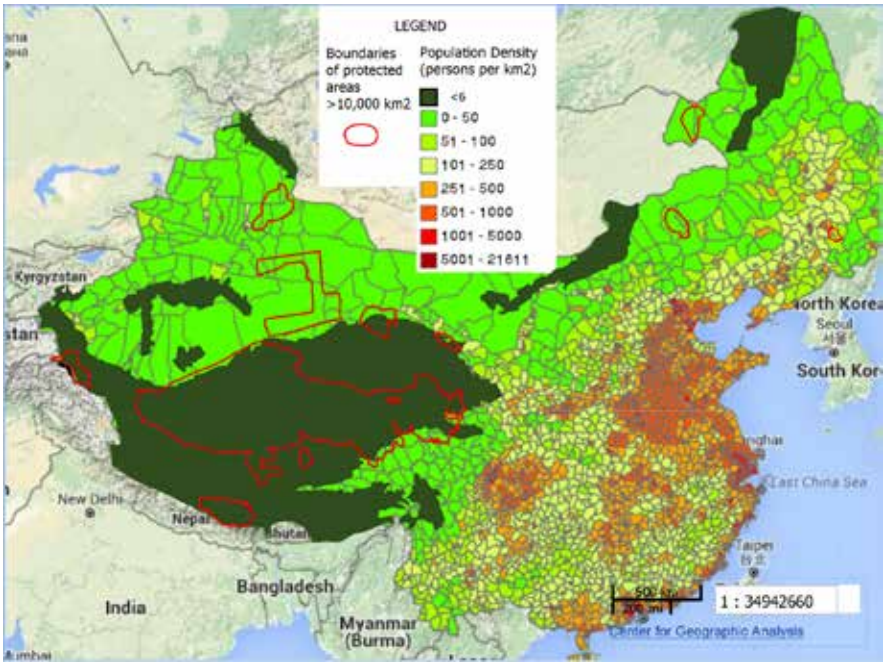

Figure 1 – China's largest nature reserves lie in the sparsely populated western regions. Composite map illustrating population density (areas colored in green to red) and the locations of protected areas exceeding 10,000 km^2 (3,861 sq. miles) (red boundaries) in China. Boundaries of protected areas derived from IUCN and UNEP-WCMC (2016). Base map of population density provided by China Data Center (2015) based on 2010 county population census.

Greater China region has raised the standard of living of its citizens. Yet it has been accompanied by pollution, deforestation, desertification, and other environmental and public health problems that have, in turn, combined to bring about greater state-led and citizen environmentalism (Shapiro 2016; Grano 2015; Choy 2011). Some citizen environmental organizations have included the words *huāng* and *yě* in their titles, indicating that the concept of wilderness has shed some of its repugnance. The efforts of organizations such as Society of Wilderness (Taiwan) and Wild China Film (mainland China) to promote nature conservation through management of wildlands and wildlife photography are probably contributing toward cultivating positive meanings of wilderness in the imagination of the Chinese public (Grano 2015; Zhang and Barr 2013).

Writings about nature and environmental concerns have flourished. At the beginning of the 21st century, novels focusing on the relationship between humans and wolves in the wild became best sellers and won widespread acclaim (He 2009). The academic fields of ecocriticism (Estok and Kim 2013) and environmental ethics (Lin 2010) have matured since their beginnings in the 1970s and 1980s. After having focused on interpreting theories developed by authors from Western countries, including those concerning wilderness protection, scholars are now developing concepts applicable to the specific situations in China. There is also a revival of interest in incorporating traditional Chinese views of nature into China's transition to an ecologically sustainable economy (Miller 2006).

Despite being the most populated country in the world, large areas of China have extremely low population density. More than half the area of China's national nature reserves lies in the sparsely populated western regions (Wu et al. 2011) (Figures 1 and 2). According to the World Database on Protected Areas, there are currently more than 2,000 protected areas in China covering 1.6 million square kilometers (617,763 sq. miles). None of them has been reported as being managed as an IUCN Category 1b wilderness area (IUCN and UNEP-WCMC 2016). Yet China's nature reserves in sparsely populated regions are good matches for Category 1b wilderness areas, which are "large … slightly modified areas, retaining their natural character, … without permanent or significant human habitation, managed so as to protect the long-term ecological integrity of the area and undisturbed by significant human activity" (Dudley 2008).

On the other hand, many of China's protected areas are, in reality, "paper parks." Managers lack sufficient resources to implement their mandate of conservation. Mining has taken place even in areas with the highest level of protection. National

Figure 2 – At an average altitude of 4,000 meters (2.5 miles) above sea level, the Qinghai-Tibet plateau in western China is one of the least populated regions of China and of the world. Nomadic pastoralism is one of the traditional livelihoods. Photo by Claudia Cheng.

parks have the additional role of generating income and employment (Yeh 2013). The government continues to have plans to develop the western regions, especially for the extraction of natural resources (Su and Cui 2016; Yeung and Shen 2004). From the social perspective, people living in the sparsely populated regions of China are among the poorest of the country. Both limiting their access to local natural resources and sometimes resettling them to places outside protected areas raise additional issues of social justice (Yeh 2013; Han 2006). Outside protected areas, there has been little incorporation of the concepts of wilderness into land management practices in China (Wu et al. 2013). There has been documentation of loss of wild areas (Zhang 2011). Protecting areas wholly as wilderness areas is considered by some to be an imported Western perspective and has rarely been voiced in the Chinese literature (Ma et al. 2009; Han 2006). Increases in population and urbanization continue to place insatiable demands for land. Many opportunities as well as challenges are likely to continue to shape the relationship between the Chinese people and wilderness in the 21st century.

In countries that now have legal regimes of wilderness protection (c.f. Martin and Watson 2009), wilderness was also often once considered as undesirable, as wasteland by the first settlers (e.g., Nash 2001; Hall 1992). Public opinion started to change when the human footprint expanded so much that wilderness became a rarity, a commodity that was worth valuing. Is it possible that Chinese people are following a similar trajectory? The mindset of "material first" in China has resulted in rapid economic development as well as deterioration of the environment. Severe sandstorms and air pollution have caused significant human suffering. The Chinese population is, as a consequence, becoming increasingly aware of the costs of prioritizing utilitarian orientations toward nature at the expense of environmental quality. What is more likely is that differences in the past (arising from environmental and cultural history) and the present (linked more to this historical time period, advances in technology, characteristics of governance, and increasing availability of information) will continue to dictate a relationship with wilderness that will remain unique to the Chinese mind.

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European Commission Guidelines

Toward a Wilder Continent

BY TOBY AYKROYD

Over the last decade the profile of wilderness has risen steadily within the European conservation agenda. Growing popular support was strikingly reflected in a 2009 resolution from the European Parliament passed by an overwhelming majority of 519 votes that called for improved protection and recognition of wilderness. Five years later this mandate still resonates.

Recognizing this momentum, the European Commission published in August 2013 a set of guidelines on management of wild and wilderness areas in the Natura 2000 network (European Commission 2013). Covering 18% of Europe's terrestrial area, this network is now the largest coordinated set of protected areas in the world.

The guidelines were campaigned for through a petition signed by approximately 130 nongovernmental organizations – the first time such a united position on wilderness had been adopted by conservationists and allied interests in Europe. The guidelines provide a useful set of recommendations on how, where, and under which circumstances nonintervention management may be applied within Natura 2000 areas.

Official Recognition of the "Nonintervention" Concept

Implementation of the European Commission Guidelines is not mandatory, in line with a current lack of support in Europe for any new conservation legislation. However, critically, for the first time the guidelines bring official European Commission recognition to the concept of nonintervention as having major biodiversity value. The focus is on an ecosystem approach governed by natural processes rather than intervention management aimed at individual species, which has traditionally characterized so many conservation endeavors.

The guidelines are based on a definition of wilderness developed by the Wild Europe initiative, in consultation with some 50 organizations (Wild Europe 2016):

> A wilderness is an area governed by natural processes. It is composed of native habitats and species, and large enough for the effective ecological functioning of natural processes. It is unmodified or only slightly modified and without intrusive or extractive human activity, settlements, infrastructure or visual disturbance.

Toby Aykroyd. Photo by www.rewildlingbritain.org.uk/.

This definition is also rooted in IUCN's global Category 1b, adapted with emphasis on scientific credibility in a European context. Its aim is to enable implementation of protection and restoration schemes to a uniform standard regardless of geographic or cultural circumstances.

With this also in mind, the European Commission Guidelines point toward a number of key recommendations for application:

- More effective use of legislative capacity already existing within the Natura 2000 network to protect wilderness and linkages with local laws.
- Using wilderness to support the wider conservation agenda, realizing its economic, social, and cultural potential alongside its intrinsic, biodiversity, and ecosystem service benefits.
- Identifying best practice in nonintervention management, including circumstances where nonintervention

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Announcements

COMPILED BY GREG KROLL

Senator Dianne Feinstein Honored with Wilderness Society's 2016 Ansel Adams Award

The Ansel Adams Award is conferred on a current or former federal official who has demonstrated exceptional commitment to the cause of conservation and the fostering of an American land ethic. "Over the years, Senator Feinstein has championed more than a dozen unique wilderness bills that resulted in more than eight and one half million acres of permanently protected wilderness," said Jamie Williams, president of The Wilderness Society. "The most sweeping of these, the California Desert Protection Act, is the single largest wilderness bill passed for the lower 48 states since the 1964 Wilderness Act."

During Feinstein's tenure on the Senate Appropriations Committee, she worked with President Barack Obama to designate new national monuments in the California desert that preserve natural, cultural, and historical treasures. "For all these reasons," Williams said, "The Wilderness Society honors Senator Dianne Feinstein for her exceptional commitment to the cause of conservation and her extraordinary leadership in fostering an American land ethic."

The Ansel Adams Award is presented on behalf of the renowned photographer who was an outspoken advocate in defense of the nation's natural heritage. Past winners include President Jimmy Carter; Secretaries of the Interior Ken Salazar, Bruce Babbitt, and Stewart Udall; Senate Majority Leader George Mitchell; Senators Gaylord Nelson, Bill Roth, Maria Cantwell, and John Chafee; Congressmen Phillip Burton and John Lewis; and Secretary of the Pennsylvania Department of Environmental Protection Kathleen McGinty. (Source: wilderness.org, February 24, 2016)

Indonesians Receive Kenton Miller Award

In recognition of their role in developing and implementing innovative approaches to forest conservation in Indonesia, Sukianto Lusli, Agus Budi Utomo, and Yusup Cahyadin were honored with the 2014 Kenton Miller Award. Through their vision, commitment, determination, advocacy, and leadership, they changed national policy and legislation so that lowland forests designated for production and logging can now be managed under license by NGOs and other private organizations for conservation.

Working with international NGO partners, the team has obtained a 95-year license to conserve and manage 10% of the remaining lowland forest on Sumatra in the Harapan Rainforest. According to a press release, through their leadership and positive example, Sukianto, Agus, and Yusup have created the enabling environment, lessons, and good practices to enable other practitioners to replicate this approach to ecosystem restoration across Indonesia and beyond. Building on the Harapan example, there are now more than 40 ecosystem restoration licenses in process in Indonesia, with plans for other "Forests of Hope" elsewhere in Asia – a true testimony to the creativity and determination of this remarkable team. (Source: iucn.org/news, February 8, 2016)

First Public Access Coming to New Mexico's Sabinoso Wilderness

Thanks to a US$3,150,000 contribution from the Wyss Foundation, The Wilderness Land Trust has purchased the Rimrock Rose Ranch, a 4,176-acre (1,690 ha) property adjacent to the Sabinoso Wilderness in the state of New Mexico. Landlocked by private properties and lacking a legal public access point, the rugged acreage has been off-limits to visitors. The Wilderness Land Trust will work to transfer the Rimrock Rose to public ownership by donating it to the Bureau of Land Management so that it may be added to the 16,030-acre (6,500 ha) Sabinoso Wilderness to provide public access.

"We've been working on creating access to the Sabinoso Wilderness since it was proposed for designation," said Reid Haughey, president of The Wilderness Land

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Trust. "To the best of our knowledge, Sabinoso is the only wilderness area … within the National Wilderness Preservation System that does not have public access. It will be a pleasure to unlock the Sabinoso this summer. It's a great place to hike, hunt, ride horseback, explore and backpack." Before the lands may be donated to public ownership, however, the Bureau of Land Management needs to conduct and complete a review of the area to determine whether it is suitable for addition to the Sabinoso Wilderness and meets the agency's criteria for accepting a donation.

The Sabinoso Wilderness, created by Congress in 2009, is a rugged backcountry area east of Las Vegas, New Mexico, that is home to elk, mule deer, mountain lions, bobcats, gray foxes, and a wide range of plant and animal species that populate the high plains. The headwaters of the Canadian River run through both the Rimrock Rose property and the remote and beautiful Canyon Largo. Canyon Largo was a well-traveled route used by cavalry traveling from Fort Union to Fort Bascom in the 19th century, and by Native people for centuries before it was patented as private land 100 years ago.

Founded in 1998, the Wyss Foundation has long supported locally led efforts to conserve public lands in the American West. The Foundation's philanthropy has helped conserve and restore public lands from the Crown of the Continent in Montana and the Hoback Basin in Wyoming to the coastline of California and the rivers of Maine.

The Wilderness Land Trust is a small, highly specialized nonprofit organization established to buy and protect wilderness land. Since founded in 1992, the Trust has preserved 432 parcels comprising more than 47,000 acres of wilderness (19,000 ha) inholdings in 93 designated and proposed wilderness areas across 9 states. (Sources: *Santa Fe New Mexican*, January 29, 2016; New Mexico Wilderness Alliance)

Group Seeks to Allow Mountain Biking in Wilderness

Colorado-based Sustainable Trails Coalition has drafted legislation to amend the Wilderness Act of 1964 to allow federal land managers to decide where mountain bikes would be allowed in wilderness areas. The draft legislation, called the Human-Powered Wildlands Travel Management Act, would amend the Wilderness Act to define "mechanical transport" as that "propelled by a nonliving power source." The draft bill would also allow land management agencies to use "motorized and mechanical equipment, such as chainsaws and wheelbarrows, to construct, improve, and maintain trails and other primitive infrastructure."

Sustainable Trails Coalition board president Ted Stroll said, "I'd like to emphasize that our proposed legislation seeks an exceedingly modest reform. It would continue to let government officials ban bikes in wilderness and on national scenic trails. But they would do it at the local level, based on local input and knowledge. What would change, along with a handful of less formal bike-banning policies in discrete areas, are formal regulations imposing blanket, nationwide bicycle bans that emanated from central administrative offices in Washington, D.C. decades ago. They no longer make sense, if they ever did."

The Sustainable Trails Coalition has added former International Mountain Bicycling Association (IMBA) president John Bliss to its six-person board of directors. However, IMBA spokesman Mark Eller said that organization has not joined the effort to allow mountain bikes in wilderness areas. Eller said public land managers have not expressed frustration with the Wilderness Act's prohibition on biking, and IMBA is concerned that the effort to allow it could disrupt biking advocates' cooperative relationship with the agencies.

In response to the draft legislation, 116 conservation organizations from across the United States have asked Congress to oppose attempts to amend and weaken the Wilderness Act. "At a time when wilderness and wildlife are under increasing pressures from increasing populations, growing mechanization, and a rapidly changing climate, the last thing Wilderness needs is to be invaded by mountain bikes and other machines," said George Nickas, executive director of Wilderness Watch.

On its website, the Sustainable Trails Coalition states it "reveres" the Wilderness Act. (Sources: *Idaho Mountain Express*, February 5, 2016; wildernesswatch.org)

Accord Reached to Protect Canada's Great Bear Rainforest

After 10 years of debates, protests, and negotiations, a deal has finally emerged to protect the majority of British Columbia's Great Bear Rainforest, one of the world's largest remaining tracts of temperate rainforest. The agreement applies to a stretch of 6.4 million hectares (16 million acres) along the coast from the north of Vancouver Island to the Alaska Panhandle. It promises to protect 85% of the region's

old-growth forests, with logging in the remaining 15% subject to the most stringent commercial logging standards in North America, specifically designed to maintain economic opportunities for the locals, both indigenous and otherwise. The deal prohibits hunting of what some indigenous groups call the "spirit bear," a rare, white-furred species of black bear. Commercial hunting of grizzly bears on First Nations land is also prohibited, although it can continue on other lands.

Negotiators reached a partial agreement over forest use in 2006 that won a Gift to the Earth Award from the World Wildlife Fund, although difficult negotiations continued for the next 10 years. Environmental campaigners say the deal is a model for resolving similar land-use disputes around the world. Indigenous tribes, timber firms, and environmental groups in western Canada have generally welcomed the deal. (Sources: *The Globe and Mail*, February 1, 2016; wilderness-society.org, March 7, 2016)

Sochi Olympics Leave an Environmentally Damaging Legacy

Russia's rich and powerful are using troubled economic and political times to resuscitate an investment plan long in the making. It involves stripping bare some of the world's most pristine mountain areas and removing them from the protection of international conventions to construct a world-class ski resort. The plan is the legacy of the 2014 Winter Olympics in Sochi, where all the ski and resort infrastructure was built from scratch. Sochi National Park, in the Caucasian Mountains, home to many threatened and endangered plants and animals, was rezoned as a huge construction area. And that was to be only the start.

The International Olympic Committee (IOC) looked positively upon the Russian government's ambition to develop the Caucasus in awarding Russia the Games. At the time that the bid was accepted, the Russian government formally promised the IOC and the UN Environment Program to compensate for the environmental destruction by increasing protection for areas adjacent to the new development. Namely, the boundary of the Western Caucasus World Heritage Site was to be expanded to include the upper Mzymta River.

Following the Olympics, the Russian government appeared to be on the path to fulfilling its commitments. It submitted a nomination to the UNESCO World Heritage Center in 2014 to expand the boundaries of the Western Caucasus site, and the Ministry of Natural Resources and Environment drew up a draft resolution to make the change to Russian law. But then "the situation drastically changed," according to Mikhail Kreindlin, director of the program on protected areas at Greenpeace Russia. In August 2015 the ministry submitted a new draft resolution to legalize construction in the national park by downgrading its protective status and withdrawing from UNESCO its commitment to expand the preserve. "They began plans to expand the resort complex instead," Kreindlin said. "The government changed the status of the area on the boundary of the park to the lesser status of a recreation area in which construction of tourist infrastructure is allowed."

But in December 2015, Deputy Prime Minister Dmitry Kozak, who personally oversaw the construction of the Olympic facilities, issued an order under which the upper Mzymta River would be removed from any protections, transferring it to a group of ski resort developers. Sergey Bachin, director of the Russian developers, wrote to Kozak that "In order to effectively use and develop the facilities of the Olympic legacy," the territory available for skiing must be expanded to attract 20,000 people per day, year-round. (Source: chinadialogue.net, January 3, 2016)

Austria Launches "Let's Get Wild" Wilderness School Project

Austria's Federal Ministry of Agriculture, Forestry, Environment and Water Management is supporting a two-year, bilingual wilderness school project called "Let's Get Wild." Targeting students 15 years of age and older in all Austrian schools, the program aims to promote understanding of the value of Austria's national parks within that population. Through multimedia and interdisciplinary environmental education, the project highlights the diversity of habitats, nature, climate change, and biodiversity in terms of wilderness in the parks. "Let's Get Wild" also strives to prepare the public for the return of large carnivores, such as wolf, bear, and lynx. (Source: wilderness-society.org, March 3, 2016)

UNESCO Declares Largest Biosphere Reserve in North America

In March 2016, UNESCO designated 20 new biosphere reserves around the world. Included is the new Tsá Túé International Biosphere Reserve, the first in northern Canada and the first to be managed entirely

by indigenous communities. Far into Canada's Northwest Territories, Great Bear Lake, at 3.2 million hectares (8 million acres), is the eighth-largest lake in the world – so vast that it generates its own weather systems. It is also one of the world's last remaining pristine great lakes, providing important habitat to four species of fish despite its being covered in ice nine months of the year. The surrounding watershed supports woodland caribou, wolves, grizzly bears, musk ox, and many other species.

The indigenous Dél̨ı̨nę Got'ı̨nę also call the area home, living in the village of Dél̨ı̨nę on the southwestern shore of Great Bear Lake. Concerned by the effects of climate change, Dél̨ı̨nę community members have been developing plans to mitigate and adapt to ecological shifts as their world warms. For example, they established a caribou conservation plan for a local herd that has been experiencing severe decline. To reflect the efforts of the Dél̨ı̨nę Got'ı̨nę to protect the land, water, and wildlife of their territory, the Tsá Túé International Biosphere Reserve encompasses more than 9.3 million hectares (23 million acres), making it the largest UNESCO biosphere reserve in North America.

"The leaders and Elders have always stressed that Great Bear Lake is the source of life for Dél̨ı̨ nę," said Michael Neyelle, chair of the Tsá Túé Stewardship Council. "Elders refer to the lake as our freezer because it takes care of our food. They have been very adamant about protecting it in any way possible. The international biosphere reserve designation is another way to help us be a voice for Great Bear Lake." While the new designation does not confer any additional protections for the region, it is expected to attract more research and monitoring attention from the scientific community, as well as making Great Bear Lake more of a tourism destination. "I'm really looking forward to what the future holds for Dél̨ı̨nę," Neyelle said. "The International Biosphere Reserve status will help us to incorporate the traditional knowledge of our Elders in preserving the watershed for future generations. We want visitors to join us in enjoying this beautiful environment." (Source: mongabay.com, March 21, 2016)

Drone Program Strives to Protect Elephants and Rhinos from Poachers

The Charles A. & Anne Morrow Lindbergh Foundation – along with South African partners Peace Parks Foundation, Ezemvelo KwaZulu-Natal Wildlife, and UAV & Drone Solutions – has unveiled its Air Shepherd initiative to help protect elephants and rhinos from poaching. The effort is being sponsored by South African Airways. After undergoing months of extensive training, Air Shepherd drone teams are deployed into areas known for illegal poaching activities. Using intelligence from many sources, infrared-capable drones fly silently at night when poachers operate. Once poachers are spotted on screens in the operation vehicles, rangers are sent to the area to intercept them. The Air Shepherd drones offer more protection to rangers who, while patrolling at night, are exposed to a high level of danger from armed poachers and wildlife.

After extensive testing, it has been shown that when Air Shepherd drones are flying, poaching stops. Many more teams are needed to address the widespread poaching problem, and Air Shepherd is therefore discussing program expansion with officials in five other countries. "We are thrilled that our drone teams are fully operational," said John Petersen, chairman of the board of the Lindbergh Foundation. "The poaching of wildlife has hit record highs and we have come to a critical juncture where action must be taken. Fortunately, many other African countries recognize this and have reached out to the Lindbergh Foundation with interest in implementing Air Shepherd pilot programs." (Source: www.airshepherd.org)

Continued from NATURE-REWILDING BRITAIN, page 34

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may be less appropriate, such as where individual species require active management, or in productive "cultural" landscapes (commercial agriculture or forestry).

Further promotional work and outreach efforts are required for the Guidelines to have maximum impact, particularly at the field level. They are, rather slowly, being translated into other languages, beginning with German and French. Their principles also need to be effectively extended to countries outside the European Union, which harbor some of the best expanses of wilderness (e.g., Belarus, Ukraine, the Caucasus, and of course Russia). And there are many relevant areas within the European Union not covered by the Natura 2000 network.

Closer ties are also needed with landowning, forestry, hunting, and farming interests. Their concerns need to be properly addressed, incentives more fully developed, and wherever possible wider common ground identified for joint partnerships.

Figure 1 – Retezat National Park in the Southern Carpathians in the "green heart" of Europe.

A Wider Message from Europe

Implementation of the European Commission Guidelines represents part of a broader program to advance the wilderness and wild area agenda in Europe. To have secured this level of official endorsement is by itself of considerable value. As with other endeavors to make our highly developed and populous continent a wilder place, it hopefully sends a useful global message to countries with much larger and more pristine areas of nature whose fate hangs increasingly in the balance.

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TOBY AYKROYD works for Wild Europe, UK; email: tobyaykroyd@btconnect.com.

Book Reviews

JOHN SHULTIS, BOOK REVIEW EDITOR

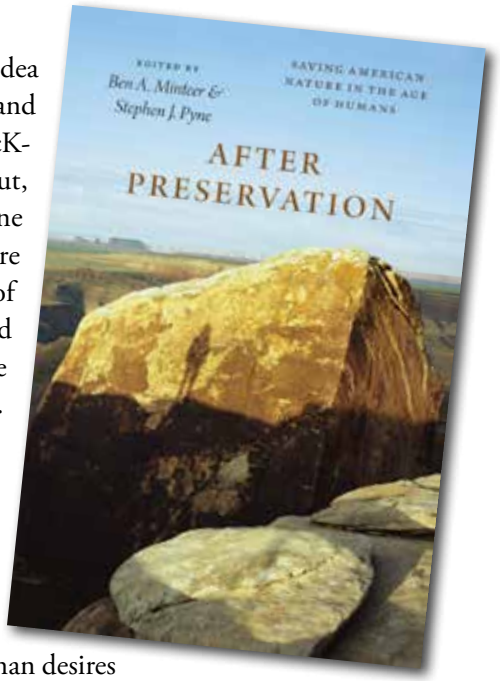
After Preservation: Saving American Nature in the Age of Humans

Edited by Ben A. Minteer and Stephen J. Pyne. 2015. University of Chicago Press. 240 pages. $18.00 (pb).

In an age of supposed human domination of the planet, the Anthropocene, environmental ethicist Ben Minteer and fire historian Stephen Pyne ask if "the very idea of preservation [is] anathema to good conservation stewardship." Should we "get on with the business of smart planetary management and get over outmoded myths of a separate, pristine, wild nature that exists free from human influence"? They collect accessible essays from prominent ecologists, historians, philosophers, foresters, activists, and journalists who focus on the struggle to find a moral and objectively successful alternative to the gold standard of wilderness and strict nature preservation.

While an expanding anthropogenic influence might now be inevitable, these authors find the notion of "the Anthropocene" to be wanting and overwrought. As a construct it is insufficiently precise as to when it began and does not rise to the level of a geological epoch. Anthropological criticism pins impacts not on all human action but rather on those of a small group of industrial capitalists. Conservation biologists suggest it invites complacency and question the degree to which humans do impact, control, and dominate the planet. The Anthropocene critique and its attendant "boisterous humanism" offers inadequate alternatives to preservationism and even less foresight to the consequences of greater human domination and control. As ecologist John Vucetich and philosophers Michael P. Nelson and Chelsea Battavia note, "Highlighting that we live in the Anthropocene adds little insight for understanding how we ought to behave."

With frequent inspiration from Aldo Leopold's writing and an enthusiasm for environmental pragmatism, the authors in this collection seek a moral heart for conservation. There are frequent calls for humility, restraint, caution, and care toward nature. Holmes Rolston III urges humans to "manage ourselves as much as the planet." Since



"we're used to the idea of centralization and control," Bill McKibben points out, the Anthropocene notion leads more to an expansion of hubris and greed than to a genuine respect for nature. In the face of the mysterious, the beautiful, the unknown, and the unknowable, we must still moderate human desires and sacrifice our current wants in the name of other priorities, current and future.

This collection, then, does little to weaken the value of wilderness. Indeed, environmental reporter Andrew Revkin writes, "On a human-dominated planet ... retaining some sense of the wild and untrammeled – actually becomes even more important." Instead, these authors call for a range of conservation efforts. Curt Meine reminds that agrarian and urban conservation traditions are entirely complementary to wilderness preservation. Ecologist Terry Chapin suggests that nature "should be celebrated across a broad spectrum of naturalness," and Jamie Rappaport Clark points out that "nature cannot thrive with only pockets of protection." Writer Emma Marris acknowledges, "Wilderness is, however, the moral heart of such conservation. Respecting the self-willed character of the land is the moral motivation for many conservationists." Later she adds, "To be truly humble is to put other species first, and our relationship with them second."

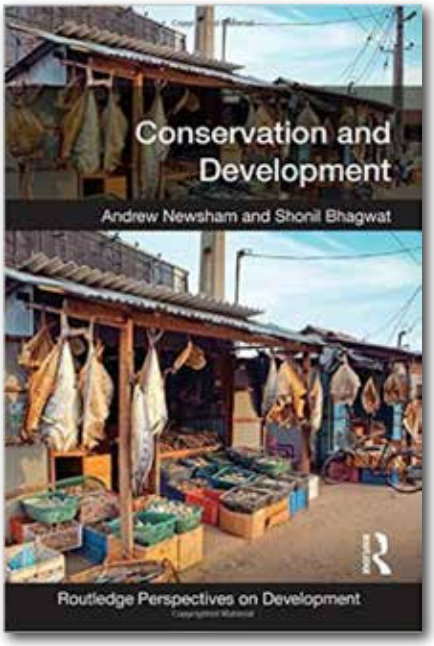
REVIEWED BY BILL BORRIE, professor of Park and Recreation Management, University of Montana; email: bill.borrie@umontana.edu.

Conservation and Development

By Andrew Newsham and Shonil Bhagwat. 2016. Routledge. 412 pages. $65.95 (pb).

Conservation and Development is a detailed overview of the past, present, and future intersections between environmental conservation and economic development, explored within a framework of globalization and a hegemonic neoliberal political and economic system. Newsham and Bhagwat consider conservation and development to be deeply and inextricably intertwined: first, because they share roots in "the same historical processes of European expansion and the intensification of increasingly global trade" (p. 2), and second, because nature and society form a single, complex sphere, of which one part cannot be affected independently of the other. Based on this compelling premise of simultaneity, and set against the background of a capitalistic global political and economic agenda, Newsham and Bhagwat explore and evaluate past and present attempts to reconcile conflicting international conservation and development objectives, and identify alternative visions for their future reconciliation.

The text has 14 chapters, divided broadly into three sections. "Histories of Conservation and Development" reviews the coemergence of conservation and development in the 18th century and the rise of sustainability from the environmental movement in



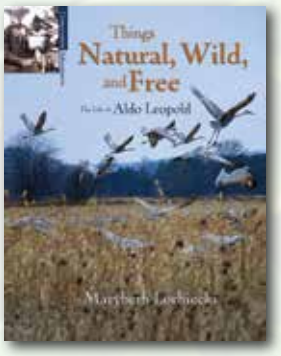
the 20th century. "Conservation and Development in the Broader Global Context" explores the contextual underpinnings of contemporary conservation and development practices, including in particular the relationship between nature and society, neoliberalism, mass production and consumption, and global governance and natural resource management. "Conservation and Development in Practice" provides an overview and assessment of several conservation and development approaches that have already been put into practice, including protected areas, community-based conservation, ecotourism, and the ecosystem services approach. These chapters in particular highlight one of the text's main themes: increasingly, conservation is turning to "capitalist modes of thinking and doing as a means to 'save' nature … [which] is paradoxical, given that the biggest drivers of environmental degradation are rooted in the workings of a capitalistic global economy" (p. 337). Unfortunately, from an environmental standpoint, the relationship between conservation and development has predominantly been one of compromise rather than cooperation, landing heavily in favor of economic development. While this "capitalist conservation" seems unlikely to change significantly without a restructuring of the global economic system, Newsham and Bhagwat conclude the text by identifying three key trends that could have substantial impacts on the future of conservation and development: conflict within wildlife conservation, ecological resilience as a framework for development, and the shift away from conservation as a rural focus toward "green cities" and other urban conservation efforts.

Ultimately, Newsham and Bhagwat have produced a thorough and informed overview of key themes and trends in conservation and development, featuring current case studies and presented in an accessible manner to those without significant prior knowledge of either topic. As such, *Conservation and Development* is a valuable introductory, supplementary, or reference resource for students, scholars, or readers seeking to better understand vital contemporary conservation issues.

REVIEWED BY STEPHANIE COULSON, a graduate student in Outdoor Recreation and Tourism Management at the University of Northern British Columbia; email: scoulson@unbc.ca.

For Young Conservationists, ages 9–12 • each is 7 x 9, 112 pages, paperback, $12.95 US

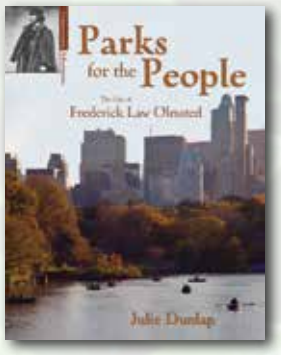
Aldo Leopold – Father of the Land Ethic



Things Natural, Wild, and Free
The Life of Aldo Leopold
Marybeth Lorbiecki

Aldo Leopold was a forester, wildlife scientist, author, and one of the most important conservationists in history. Leopold was the father of the *Land Ethic*, that states that plants, animals, all living things make up "the Land" and should be protected. Award-winning author Marybeth Loribiecki brings Leopold to life in this vivid new biography. Featuring resource and activity sections, a time line, a bibliography, and historic black-and-white photographs.

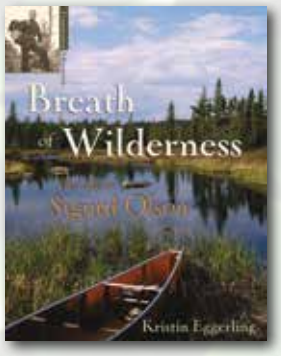
Frederick Law Olmsted – Landscape Architect



Parks for the People
The Life of Frederick Law Olmsted
Julie Dunlap

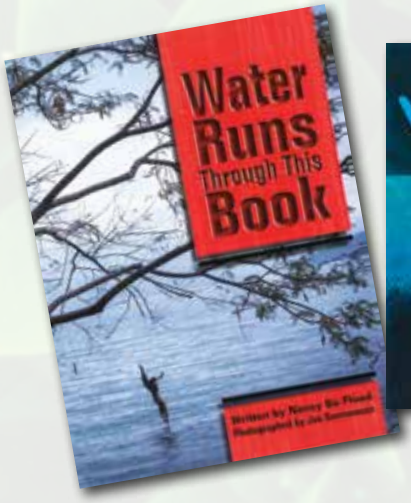
A contest to design the United State's first city park opened new doors for Olmsted when his winning design became New York's Central Park, just one of Olmsted's ideas that changed the nation's cities. Award-winning author Julie Dunlap brings Olmsted to life in this memorable biography, featuring resource and activity sections, a time line, and a bibliography, as well as black-and-white historical photographs.

Sigurd Olson – helped draft the Wilderness Act



Breath of Wilderness
The Life of Sigurd Olson
Kristin Eggerling

Sigurd Olson's love for wild places and how that love transformed his life, inspired him to play a key role in the movement to preserve wilderness throughout North America, including the Boundary Waters Canoe Area Wilderness, the largest lakeland wilderness in the United States. Features resource and activity sections, a time line, a bibliography, and historic black-and-white photographs.



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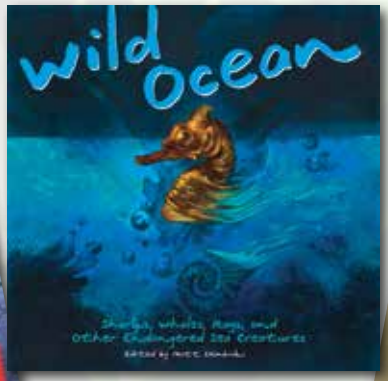

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