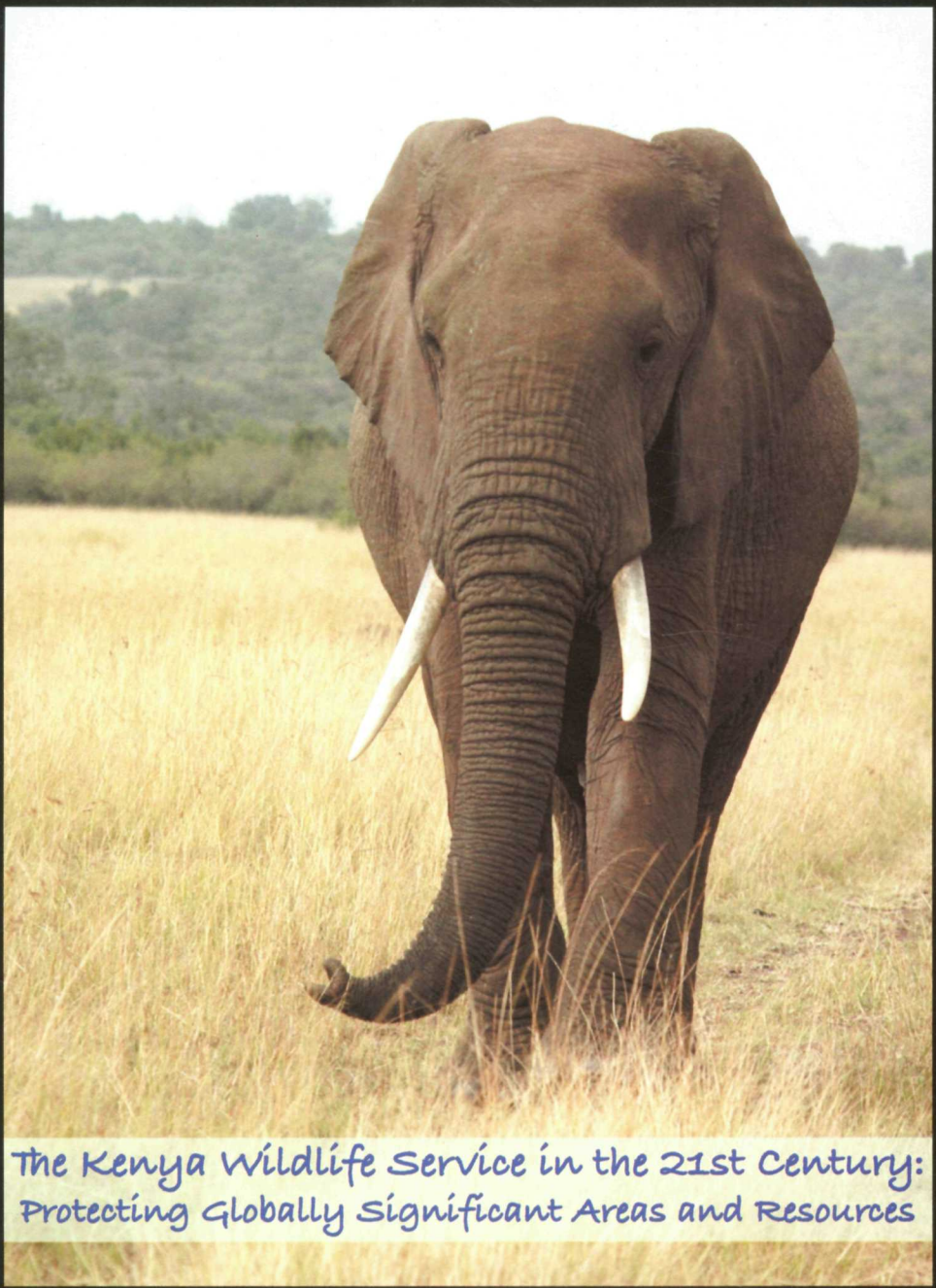

The Kenya Wildlife Service in the 21st Century: Protecting Globally Significant Areas and Resources

The George Wright Forum

The GWS Journal of Parks, Protected Areas & Cultural Sites

volume 29 number 1 • 2012

Origins

Founded in 1980, the George Wright Society is organized for the purposes of promoting the application of knowledge, fostering communication, improving resource management, and providing information to improve public understanding and appreciation of the basic purposes of natural and cultural parks and equivalent reserves. The Society is dedicated to the protection, preservation, and management of cultural and natural parks and reserves through research and education.

Mission

The George Wright Society advances the scientific and heritage values of parks and protected areas. The Society promotes professional research and resource stewardship across natural and cultural disciplines, provides avenues of communication, and encourages public policies that embrace these values.

Our Goal

The Society strives to be the premier organization connecting people, places, knowledge, and ideas to foster excellence in natural and cultural resource management, research, protection, and interpretation in parks and equivalent reserves.

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On the cover: African elephants are perhaps the most potent symbol of wildlife on the continent, and certainly rank as one of the planet's iconic species. Kenya, the focus of this issue, has established itself as a world leader in elephant conservation, forcefully arguing that only a total ban on the ivory trade will safeguard the species from highly organized criminal poaching. See the series of articles beginning on p. 21. Photo courtesy of the Kenya Wildlife Service.

SOCIETY NEWS, NOTES & MAIL

Emory highlights Wright's role in saving trumpeter swans

GWS Life Member Jerry Emory was the keynote speaker at the 2011 annual meeting of the Trumpeter Swan Society (TSS), and he used the occasion to provide context for a relatively little-known facet of George Melendez Wright's career: his role in saving the species from extinction in the Lower 48. In the 1930s, Wright conducted the first detailed studies of nesting trumpeter swans and documented that illegal shooting in areas near Yellowstone National Park was imperiling the last remnant population. He discovered the crucial importance of nesting habitat in the Red Rock Lakes area of Montana, west of Yellowstone, and laid the foundation for subsequent swan studies in the region. Determined to halt the illegal shooting, Wright launched a public campaign to save the trumpeters by creating a wildlife refuge at Red Rock Lakes. His efforts culminated in the establishment of Red Rock Lakes National Wildlife Refuge in 1935 by President Franklin Delano Roosevelt. That protected area was the linchpin in the species' recovery in the Lower 48.

At the annual meeting, the TSS, US Fish and Wildlife Service, and National Park Service presented a joint letter of tribute to Wright's family, expressing their recognition of his crucial role in saving the trumpeters. Wright's granddaughter, Jeannie Lloyd, accepted the letter on behalf of her mother, Pamela Wright Lloyd. TSS also presented the Wright family with an historic trumpeter swan conservation poster—conceived by Wright himself—that had been part of the campaign to stop the illegal shooting. The presentation by Emory, husband of Jeannie Lloyd, showed historic photos from Wright's early studies and provided an overview of his career. TSS plans to create a page on its website to recognize Wright's crucial role in the conservation of what he himself called "the most magnificently beautiful bird of the North American continent." [Ed. note: Thanks to Ruth Shea and John Cornely of TSS for their contributions to this story.]

2012 GWS Board of Directors election: Call for nominations

This year, two seats on the Board of Directors are up for election. One is held by a retiring Board member, and the second by an incumbent who may seek re-election. We are now accepting nominations from GWS members who would like to be candidates in this year's election. The term of office runs from January 1, 2013, through December 31, 2015. Nominations are open through July 1, 2012.

To be eligible, both the nominator and the potential candidate must be GWS members in good standing (it is permissible to nominate one's self). Potential candidates must be willing to travel to in-person Board meetings, which usually occur once a year; take part in Board conference calls, which occur several times per year; help prepare for and carry out the biennial conferences; and serve on Board committees and do other work associated with the Society. Travel costs and per diem to the annual Board meeting is paid for by the Society; otherwise there is no remuneration. Federal government employees who wish to serve on the Board must be prepared to comply with all applicable ethics requirements and laws; this may include, for example, obtaining permission from one's supervisor, receiving ethics-related training, and/or obtaining a conflict of interest waiver. Currently, the National Park Service prohibits its active-duty employees from running for the Board.

The nomination procedure is as follows: members nominate candidates for possible inclusion on the ballot by sending the candidate's name to the Board's nominating committee. The committee then, in its discretion, determines the composition of the ballot from the field of potential candidates. Among the criteria the nominating committee considers when determining which potential candidates to include on the ballot are his/her skills and experience (and how those might complement the skills and experience of current Board members), the goal of adding and/or maintaining diverse viewpoints on the Board, and the goal of maintaining a balance between various resource perspectives on the Board. (It also is possible for members to place candidates directly on the ballot through petition; for details, contact the GWS office.)

To propose someone for possible candidacy, send his or her name and complete contact details to: Nominating Committee, George Wright Society, P.O. Box 65, Hancock, MI 49930-0065 USA, or via email to info@georgewright.org. All potential candidates will be contacted by the nominating committee to get background information before the final ballot is determined. Again, the deadline for nominations is July 1, 2012.

Diane L. Nicholson, 1951–2012

Diane L. Nicholson, regional curator for the National Park Service Pacific West Region and a Life Member of the George Wright Society, died unexpectedly on January 3. She received a bachelor's degree in history from Oregon State University in 1974 before going on to earn her master's degree in museum science from Texas Tech University in 1976. She worked in museum positions at NPS's Harpers Ferry Center, the Midwest Regional Office, and at Tuskegee Institute National Historic Site before moving to the San Francisco area, where she spent the balance of her career at Golden Gate National Recreation Area and the Pacific West Regional Office. Perhaps her most noteworthy accomplishment was overseeing the transfer of the Army's vast museum collections to NPS when Golden Gate took over the Presidio of San Francisco, but Nicholson was also credited with developing a cultural resources "SWAT" team to respond to emergencies within parks. This innovation has proven useful on a number of occasions, such as the response to the tsunami that struck National Park of

American Samoa in 2009. Nicholson was also a highly regarded mentor to young colleagues entering the museum field.

Errata

Twice in the last issue of the *Forum* we mistakenly referred to Apostle Islands National Lakeshore as "Seashore": once in the obituary of Darlene Wahl, and again in the author's identification for Bob Krumenaker's article "International Experience: Personally Rewarding and Good for NPS." The errors have been corrected in the PDF versions of that issue.

We also published an incorrect email address for Frank Buono, author of "The Wilderness Act: The Minimum Requirement Exception." His correct email is fwbuono@earthlink.net.

The Park Idea as Catalyst and Conscience

George B. Hartzog III

In the early years of the 21st century, the issues that face (and jeopardize) the world's parks and protected areas are enormous and urgent. Often they exceed the boundaries of the parks and are beyond the conventional scope of park management—whether it be environmental degradation and climate change, economic disparity and poverty, globalization and ethnic strife, or terrorism and war. All of these—and more—affect parks, park administration, park programs, and the park experience.

While the park as idea has helped to inspire visitation, promote patriotism, encourage recreation, educate about nature and history, and instill a pride in democracy,[1] now is the time to place parks and protected areas as idea within the larger context of the great issues which confront us.

Indeed, this is a "kairos" moment in history *and* the park movement—"kairos" being the ancient Greek term for a special moment which is ripe for action. As David Harmon has written, "Events during the next few decades will determine whether we will cross over into a fundamentally changed or diminished world."[2] The US National Park Service's Second Century Commission was prescient as it admonished that "an expanded national park idea is first priority." To do so, the park idea must be linked with the great ideas which form our common life: the ideas we live by—liberty, justice and equality; the ideas by which we judge—truth, goodness and beauty.[3]

As we come to a deeper understanding of these dimensions, it is then that the park idea can be persuasive, compelling, and generative for a new century and its enormous challenges. A new and more comprehensive understanding of the park idea can open new opportunities for the establishment and management of parks, their stewardship, and ways by which to serve persons and communities more effectively.

Toward a new definition and framework

The Organic Act of 1916 ordered the newly formed US National Park Service (USNPS) "to

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conserve the scenery and the natural and historical objects" and "to provide for the enjoyment of the same in such manner as will leave them unimpaired for future generations." Since March 1, 1872, when the first national park was established, the park idea has continued to change—from initially preserving natural wonders and historic sites to establishing cultural parks and international biosphere reserves.

It is recognized by many that the park idea is one of the finest contributions to world culture. In moving toward a new definition and framework, may I suggest for your consideration that parks are all of those natural, historical, cultural, and recreational places, sites and areas owned and managed by governments (federal, tribal, state, regional, or municipal), indigenous peoples, charitable organizations, private enterprise, or partnerships as well as those managed by communities through traditional and customary means.[4]

Throughout the centuries, places set aside for special purposes, such as parks, have evolved and expanded: from Nebuchadnezzar's Hanging Gardens of Babylon to New York City's Central Park, from regional forest preserves to the Washington, D.C.'s National Mall of monuments and museums, from Yellowstone National Park to amusement parks, from backyards to international biosphere reserves. As national and international nomenclatures now attest, parks are many different types and sizes (e.g., those of the US national park system and the International Union for the Conservation of Nature's protected area categories).

As disconcerting as it may seem to link Yellowstone with amusement parks[5]—or as incongruous as it may seem to link natural, historical, recreational, sacred, and cultural sites—this international and interrelated network of parks and protected areas serves as:

- Expressions of local, regional, tribal, and national self-understanding and the values of a people;
- The "miner's canary," giving forewarning of the changes in the natural and human condition; and,
- "Bridges" for mutual understanding among the world's diverse communities.

Significantly, the world's parks and protected areas share a common "language" that gives expression to the diversity of identity and interest among the peoples of the world and, also, expresses their shared heritage in the world community. As a whole, these parks and protected areas are more than physical resources. They are a living, changing legacy —a cosmorama—for exploring the dimensions essential for developing an ethic for personal and corporate behavior.[6]

The centennial of the US National Park Service offers an opportunity to reassess the meaning of parks and their significance for society. Indeed, the challenge of a threatened biosphere, growing economic disparity, the degradation of cultural landscapes and historic sites, the disappearance of flora and fauna and the world's languages, the pandemics of human illness and hunger, political upheaval, widespread corruption, and unprecedented immigration make vivid the urgency posed to conscience. Amid these "sea-changes," are parks and protected areas relevant to the human experience and the quality of life? Does the park experience provide only a transitory escape and respite, or is the park experience *re-creative*, personally and collectively, for humankind?

I suggest that the park, parks as a whole, and the park experience can only be understood fully in the context of feeding the hungry, housing the homeless, restoring the land, releasing the oppressed, and caring for the ill and the aged and the young. As Freeman Tilden, the preeminent park interpreter wrote, parks are about the question, "Who am I?" *In a very real way, parks and the park experience are mandated to be a strategic fulcrum for re-creating a quality of life for all humankind and the Creation.*

To do so, a meaningful and sustained discourse of the park idea with the great ideas of our common life—liberty, justice and equality; truth, goodness and beauty—and the interface with the pressing and urgent issues of society must take place. It is then that an expanded park idea can be developed, which, in turn, can provide our several vocations—park professionals, educators and researchers, public activists, policy leaders—with new vistas for effective management, stewardship, and relevance.

The park idea in practice and the common good

During the last several years, scholarly treatises have been developed about the relationship of research and management, rethinking nature, the role of conservation, reassessing history, civic engagement, and understanding the values (both tangible and intangible) of parks.[7] These efforts have made significant contributions to the park movement. An expanded park idea can be a part of this renaissance. To illustrate, I offer the following suggestions using one of the six foundational ideas: justice.

In the United States, our common creed is "liberty and justice for all" and it is fitting to begin with the idea of justice in order to expand the park idea. One of the most visited parks, the Statue of Liberty in New York City's harbor, gives eloquent testimony to three interrelated philosophical–ethical concepts: liberty, justice, and equality.

Naturally, when we remember the Statue of Liberty, our thoughts turn to liberty and all that that has meant and still means for our nation and the peoples of the world as well as for each one of us. The Statue of Liberty, as a literal landmark of welcome to millions of immigrants, also speaks of the idea of equality and the promise of equal opportunity. Yet, this internationally recognized symbol of freedom and democracy is, also, about justice.

In recognition of the friendship established during the American Revolution, "Liberty Enlightening the World" was a centennial gift to the United States from France. However, the United States, in order to receive and display the gift, was to build the pedestal upon which "Liberty" was to stand. For months, the United States had difficulty in deciding upon the design of the pedestal and even more difficulty in raising sufficient funds to build it—and "Liberty," in pieces, sat in the shipping crates on the dock. With fundraising efforts stalled, Joseph Pulitzer, publisher of *The World*, decided to use his newspaper to push Americans to donate. A sonnet was written in 1883 as a donation to an auction of art and literary works that, then, raised the money to build the pedestal. "Liberty" was assembled and finally erected. The poem, entitled "The New Colossus," was written by a young Jewish immigrant, Emma Lazarus. In 1903, the final lines of the poem were inscribed on a bronze plaque and placed inside the pedestal.

"Keep, ancient lands, your storied pomp," cries she
With silent lips. "Give me your tired, your poor,
Your huddled masses yearning to breathe free,
The wretched refuse of your teeming shore.
Send these, the tempest-tost to me,
I lift my lamp beside the golden door."

Justice in its most ancient understanding, that of the Sophists of ancient Greece, was obedience to the law. Plato and Aristotle qualified that understanding because a more powerful people could impose their law and customs upon another people. Thus, they said justice is served when there is also non-interference. While obedience to law and non-interference have been predominant, the Judeo-Christian tradition has understood justice to be the care of the least and most vulnerable, e.g., the widow, the orphan, those in want, the newcomer, the refugee. This Judeo-Christian tradition of justice has deep similarities in the Gandhian and Hindu tradition, *Antyodaya* (the well-being of the poorest individual) is the pathway to *Sarvodaya* (the welfare of the entire human society). Today, we starkly realize, whether in our cities or among nations, injustice anywhere is a threat to liberty everywhere. *Indeed, liberty, justice, and equality are inextricably linked and, if separated, their individual meanings and their moral imperative are severely misunderstood and diminished.*

Profoundly, the very foundation of liberty is always justice. Like the original pedestal of the Statue of Liberty, justice is, at times, difficult to design and often there is deep resistance to invest in its construction. But justice is the hallmark of a people and a civilization. Justice is linked with participation—the aspiration and access of all peoples as well as all the creatures and elements of the Creation. Justice, as one of six foundational ideas, can expand the park idea.

At times, assuredly, it will be difficult to design, to build, and to implement such an expanded park idea as a part of a 21st-century park movement. Yet, in our intensely interconnective world, liberty, justice, and equality as well as the other great ideas—truth, goodness, and beauty—have taken on a new urgency. With an expanded park idea, park management and programs as well as the park experience can become more deeply fulfilling, generative, compelling, and persuasive as we move into a new century.

To continue the illustration, I will pair three critical functions—management, stewardship, and relevance—with justice. (One can continue to expand the park idea by pairing, again, these functions with all the great ideas—the ones we live by and the ones by which we judge.)

Management and justice

Most recently, the National Parks Conservation Association (NPCA) in partnership with USNPS has convened a consortium of universities to provide leadership development programs called "Leadership for Public Lands and Cultural Heritage." This effort takes its place in a long-standing tradition of management consulting, leadership development, and organizational effectiveness programs with public, private, and non-profit institutions.

In 1914, upon graduating from Northwestern University (Chicago), Edwin G. Booz began to develop an idea that organizations could be more successful if they could call upon someone outside their own organization for expert, impartial advice. His theory, new at the time, evolved into a new firm and a new profession: management consulting. During the 20th century, the firm Booz, Allen and Hamilton became the leading provider of management consulting services to the US government with services in human capital, operational improvement, communication and information technology, organizational change efforts, and program innovation.[8]

Building upon this success, on May 9, 1968, President Lyndon B. Johnson opened the Federal Executive Institute (FEI) to improve the quality of government and better serve the American people. The first director of the FEI was Frank P. Sherwood, professor of public administration at the University of Southern California. Among the FEI's initial participating agencies was the US National Park Service. Since that time, other efforts also have been created such as the Washington, D.C.-based Center for Government Leadership. Its Leadership for Public Service programs connect experts from America's top corporations with federal leaders to confront government's key management challenges on an operational level.[9]

Within this tradition, the new NPCA–NPS leadership program offers courses and certificates in a variety of areas for park and conservation leaders. It is guided by the NPCA Center for Park Management Advisory Council[10] and the program's faculty comprises faculty members of six universities with expertise in park and public administration. The program's overall purpose is "to produce park, public land management, cultural resources management, and conservation leaders who are forward-thinking, proactive, and strategic with a keen ability to think holistically about the challenges facing their organizations in an increasingly interconnected world of the 21st century."[11]

With this purpose in mind, what would happen if one thought more expansively using the concept of justice? For instance, what would happen if the faculty of this new initiative were multidisciplinary and multicultural? Sometimes, as in the case of parks and public lands, it is easy to focus, as qualifications for teaching and program design, on faculty whose experience and expertise are only in administration and/or parks. What would happen if the faculty of this consortium effort included other disciplines, such as urban studies, anthropology, critical theory, etc.? What would happen if the advisory council and the faculty included a school teacher from Harlem or a migrant worker from California or a Native American from Wisconsin or a young person from Cincinnati? Perhaps, then, the questions of relevance and effectiveness and leadership for parks would take on new meaning, significance, and a much-needed depth.[12]

Stewardship and justice

In the 1960s, USNPS, along with the National Education Association and the Association of Classroom Teachers, developed the first environmental education program. This is when the word "environment" was not yet in the everyday lexicon. Today, the word is most readily associated with the natural world. However, the original and more complete understanding of "environment" included both natural and cultural dimensions. The original NEED (National Environmental Education Development program)[13] included all the academic dis-

ciplines and USNPS designated certain natural and historical areas as special NEED sites. These parks were like "prisms" used to refract the newly developed "five-strand" interdisciplinary pedagogy. But the real focus of NEED was to help students understand the environment through understanding their neighborhood in all of its natural/"built," social, historical, economic, and ethnic complexities—for this constitutes "environment" in its comprehensive definition. The motto of the program was:

> There is one web of life.
> You are a part of it.
> The web is in trouble.
> And you can do something about it.

Today, elementary and secondary environmental education principally consists of science-based programs[14] and often national parks are used as outdoor classrooms and laboratories. At times, the programs include stewardship activities such as restoring natural habitats in national parks or local communities—and these are important contributions to education and parks. However, expanding the role of parks and its education mission through the concept of justice, again, could make parks more relevant and compelling (as well as build important community and political support).

For instance, what if young people from St. Louis traveled to Diamond Grove, Missouri, the birthplace of George Washington Carver, and Tuskegee University (Alabama), the place where he taught.[15] George Washington Carver, born in obscurity as a slave, became one of the world's most renowned scientists. With the small peanut, Carver developed new products and nutritious foods, bringing new hope to people and lifting the South from overwhelming poverty to a new quality of life.[16] With head and heart and hand—and the small peanut—Carver changed the course of history!

What would happen if USNPS and the National Park Foundation, in the spirit of the original NEED program, enlarged their focus to partner with a school in St. Louis, with the teachers and the young people and neighborhood residents? In their conversations and assessment of the neighborhood,[17] they, perhaps, would discern, among the many needs, the pressing priority was for healthy, affordable food—and jobs. Subsequently, UNSPS personnel, retirees,[18] and volunteers, working alongside the teachers and students and residents, could create a "George Washington Carver Community Garden" to grow nutritious food for the neighborhood residents as well as supply local grocery stores, restaurants, and schools with affordable, fresh foods. They could even teach new culinary arts and/or build a farmer's market. Working with the neighborhood in such a manner could create, over the long term, healthier family lifestyles and school lunches and, perhaps, new jobs for the unemployed. Linking parks and the park experience with this form of community development is using justice to enlarge the park idea and make the park experience have new relevance for persons who might never have an opportunity nor an interest to visit a national park.

Naturally, efforts like the suggested St. Louis initiative would necessitate that park and foundation personnel to have knowledge about community organizing and economic development. What if USNPS or a foundation partnered with universities to restructure present

park administration programs? Presently, many university programs are structured, from the early years of the park movement, within departments organized around recreation and tourism. Today, the issues facing parks require knowledge of many fields, e.g., anthropology, economics, education, history and cultural studies, psychology, sociology, jurisprudence, communication and information technology, the natural sciences and the humanities, etc. An expanded park idea could be a catalyst to re-tool universities to broaden their curriculum in order to diversify leadership specialties and equip future park leaders for the challenges of the 21st century.

Relevance and justice

Lastly, along these lines of justice and relevance, an expanded park idea has the potential to address conceptually some of the most pressing needs of society and parks which, then, would have implications for public policy, park priorities, and programs—thus, setting a new agenda and direction for society and for parks. One such issue is poverty and the growing economic disparity within and among communities and nations. Poverty (and its twin, global warming), are overwhelming issues facing the human family—and the press of both is jeopardizing the integrity of parks, particularly poverty in the Third World and economic development/global warming worldwide.

In the 1950s, Freeman Tilden wrote about the linkage between ecology and economics (both rooted in the Latin word, *oikos*, meaning "household management") —a truth, he said, we reluctantly acknowledge or dismiss at our peril.[19] Should not poverty and its effects[20] on parks, park programs, and park policy warrant attention as a comprehensive research project within the park movement and its cooperating agencies and universities? Like the Leopold Report, such a research project should be comprehensive, interdisciplinary, and interagency in its scope.

The Leopold Report, officially known as "Wildlife Management in the National Parks," was a series of recommendations presented to United States Secretary of Interior Stewart Udall in 1963. It was named for the advisory board chair and principal author, zoologist and conservationist A. Starker Leopold. The Leopold Report became the basis for "science-based" management by the US National Park Service; it was the first plan to manage park visitors and ecosystems under unified principles. The report was reprinted in several publications and had far-reaching effects beyond national parks. (A. Starker Leopold was the son of Aldo Leopold, noted scientist and professor at the University of Wisconsin who was influential in the modern development of environmental ethics; cf. "the land ethic" in *A Sand County Almanac*, 1949.)

Presently, the secretary of the interior's Advisory Board on National Parks, with the lead of the US National Park Service, is reexamining the original Leopold Report in terms of climate change and its affect on national parks and their management. An expanded park idea would direct this effort to include the whole cluster of issues related to climate change, such as poverty and economics. An expanded park idea could be a catalyst to implement a broad research effort regarding climate change/poverty, economics, and parks—and engaging several universities, cooperative ecosystem study units, other park agencies, and related organizations to address the philosophical–ethical, cultural, scientific, political, and governance

aspects. Utilizing some preliminary works by Elinor Ostrom, Jane Jacobs, William R. Lowry, Paul Shackel, Peter Harnik, and David N. Cole and Laurie Yung,[21] for example, such an effort could build upon the 1992 United Nations Conference on Environment and Development (UNCED) and its subsequent studies and work, e.g., Convention on Biological Diversity, Framework Convention on Climate Change, Kyoto Protocol, Declaration on the Rights of Indigenous Peoples, etc. As widely acknowledged, climate change can only be understood and effectively addressed when poverty, economics, ethnic traditions, and ethics become integral to the discussion and decision-making. This is all the more true regarding parks and protected areas.[22]

Conclusion

As many know, the great devotion of my father (George B. Hartzog, Jr., USNPS Director 1964–1973) was to the parks and park people. But many do not know his first calling was to the Methodist ministry. His favorite sermon subject was the prophet Amos, a busy layman, a farmer, who took time for God. This calling informed my father's character and inspired the priorities of his park administration that became so generative and creative.[23]

Perhaps the reason the prophet Amos was an inspiration to my father was that his own youthful years, spent in South Carolina, were during the Great Depression when his family lost their farm—an experience that indelibly etched his character and shaped his vision for a greater society and the ultimate purpose of parks. As he took the pulpit at age 16, he read the Scripture to the people:

> Be prepared to meet your God … for I take no delight
> in your assemblies and offerings of well-being,
> but let justice roll down like waters
> and righteousness like an everflowing stream.
> For it is then I will restore the fortunes of my people
> and they shall rebuild their ruined cities and flourish
> in the land I gave them, says the Lord.
>
> — *Amos, ch. 6–9*

I am sure, today, he would remind us: The great moral, ethical, and philosophical issues of our day and their relation to parks form the *raison d'être* of the park movement. Woe unto us, as Amos proclaimed, if we forget the grave injustice in social dealings, the abhorrent immorality in the public and private spheres, and rely on shallow, meaningless piety, military might, or economic superiority. If parks are to be relevant, if parks are to maintain their integrity, the park movement must come to terms with the most critical issues facing our common life. It is with such an expanded park idea as *catalyst and conscience* that the park movement will have a lasting impact and eternal significance.

Endnotes

1. Robert Sterling Yard, *The National Parks Portfolio* (Washington, DC: US Government Printing Office, 1916); Freeman Tilden, *The National Parks: What They Mean to You and Me* (New York: Alfred A. Knopf, 1951); Tilden, *The State Parks: Their Meaning in*

American Life (New York: Alfred A. Knopf, 1962); National Park Service, *Who Am I? Reflections on the Meaning of Parks on the Occasion of the Nation's Bicentennial* (Washington, DC: Office of Publications, National Park Service, 1975); Dayton Duncan and Ken Burns, *The National Parks: America's Best Idea* (New York: Alfred A. Knopf, 2009).

2. David Harmon, *In Light of Our Differences: How Diversity in Nature and Culture Makes Us Human* (Washington, DC: Smithsonian Institution Press, 2002).
3. Mortimer J. Adler, *Six Great Ideas* (New York: Simon & Schuster, 1981).
4. During the Conservation Foundation Symposium held at Yosemite National Park (1970), USNPS Director George B. Hartzog, Jr., first offered the definition of national parks as areas owned or managed by various public, charitable, quasi-public, indigenous, and private entities to suggest new opportunities for collaboration and cooperation among agencies and organizations. The General Authorities Act of 1970 was an amendment to the National Park Service Organic Act of 1916 to consider all areas—natural, recreational, historical—administered by USNPS as a single entity, stating that "though distinct in character, [they] are united through their interrelated purposes and resources into one national park system as cumulative expressions of a single national heritage; that, individually and collectively, these areas derive increased national dignity and recognition of their superb environmental quality through their inclusion jointly with each other in one national park system preserved and managed for the benefit and inspiration of all people. . . ."
5. Unconventionality and imagination often go hand-in-hand. During the 1960s and 1970s, the USNPS director sent maintenance personnel to Coney Island, New York, "because they were the best in America for keeping the park clean." He also assigned new park rangers to urban areas as a part of their training before they could serve in places like Yellowstone or Yosemite in order to expose them to the issues of serving an urban society.
6. See note 5. Also see George B. Hartzog, Jr., "Closing Speech," in *Proceedings of the Second World Conference on National Parks, Yellowstone National Park, 1972,* Hugh Elliott, ed. (Morges, Switzerland: International Union for Conservation of Nature and Natural Resources, 1974).
7. Marc Hockings, et. al. *Evaluating Effectiveness: A Framework for Assessing the Management of Protected Areas* (Cambridge, UK, and Gland, Switzerland: IUCN, 2000); William Cronon, ed., *Uncommon Ground: Rethinking the Human Place in Nature* (New York: W.W. Norton, 1998); Ben A. Minteer and Robert E. Manning, eds., *Reconstructing Conservation: Finding Common Ground* (Washington, DC: Island Press, 2003); Gustavo Esteva and Madju Suri Prakash, *Grassroots Post-modernism: Remaking the Soil of Cultures* (London: ZED Books, 1998; Robert E. Stipe, ed., *A Richer Heritage: Historic Preservation in the 21st Century,* Chapel Hill: University of North Carolina Press, 2003); David Harmon, Francis P. McManamon, and Dwight T. Pitcaithley, eds., *The Antiquities Act: A Century of American Archaeology, Historic Preservation and Nature Conservation* (Tucson: University of Arizona Press, 2006); David Harmon and Allen D. Putney, eds., *The Full Value of Parks: From Economics to the Intangible* (Lanham, MD: Rowman & Littlefield, 2003).

8. In 1998, Booz, Allen and Hamilton led the efforts to modernize the Internal Revenue Service and, over the years, its clients have been as diverse as AT&T and the National Football League, as it serves organizations in the public, private, and non-profit sectors.
9. The Center for Government Leadership is a part of the Partnership for Public Service (http://ourpublicservice.org). In 2005, the Partnership for Public Service merged with the Private Sector Council and created the Leadership for Public Service program. The projects have ranged from revitalizing the federal workforce to digitizing the Food Stamp program. It has built a broad base of financial support including the Annenberg Foundation, Atlantic Philanthropies, the Ford Foundation, and the Rockefeller Brothers Fund.
10. One of the members of NPCA Advisory Council is Tom Fox, vice president for leadership and innovation, Partnership for Public Service, where he oversees the Center for Government Leadership.
11. The mission statement of the Leadership for Public Lands and Cultural Heritage (PLCH) program (http://publiclandsleadership.org).
12. The recent program of the NPCA and USNPS partnership is one of many for emerging leaders, such as the internship programs of federal departments (e.g., US Department of Health and Human Services) and non-profit organizations (e.g., George Wright Society).
13. The nation's first environmental education program (National Environmental Education Act of 1970 (Public Law 91-516, October 30, 1970, 84 Stat. 1312) was initiated and administered by USNPS and the US Department of Education; it was based upon the more comprehensive definition of "environment," including natural, historical, and cultural dimensions. Unfortunately, "environment" became more narrowly defined when the public law was amended in 1975. Environmental education became administered by the Environmental Protection Agency. The National Environmental Education Act of 1990 specifically delineates only the natural dimensions in its definition of "environment." The North American Association for Environmental Education and the National Environmental Education Foundation, not to be confused with the original NEED program, also use the more narrow definition of environment as the basis for their programs. Today, there is a growing recognition among scholars and public leaders, students and activists, individuals and governments that environmental challenges are inextricably interwoven with issues of economics, ethnic/cultural traditions and ethics. The 21st century will be the time to reclaim the original vision of environmental education as developed by Wayne F. Miller, special assistant to the director for environmental education, USNPS, who helped author the original act of 1970 and design its programs.
14. One of the most recent examples of this emphasis is the new partnership of USNPS with NatureBridge, funded with a $4 million grant from Google, Inc. "NatureBridge's continued efforts to engage children in science at some of the nation's most beautiful sites comes alongside a national push to improve the quality of STEM—or science, technology, engineering and mathematics—instruction." Quote from Nora Fleming, "National Park Service Expanding Education Mission," *Education Week* (December 14, 2011).

Also, USNPS recently has made strides in its service-learning and civic engagement initiatives. See www.nps.gov/civic/ and *Beyond Outreach Handbook,* Conservation and Stewardship Publication no. 21 (Woodstock, VT: USNPS Conservation Study Institute, 2011). While service-learning and civic engagement are important methodologies, community development—beginning with and addressing the critical issues of both society and a neighborhood—redirects these outreach efforts in order to fulfill the re-creative purpose of parks.

15. Tuskegee Institute National Historic Site (established in 1974) includes the George Washington Carver Laboratory and the Booker T. Washington Home, all part of what is now Tuskegee University. Tuskegee is the only park/protected area in the world which is also a university.
16. George Washington Carver's contributions to agriculture were substantial. He was not single-mindedly focused on peanut research and, as history demonstrates, the peanut alone did not lift the South from poverty. Although in popular memory Carver and the peanut have become inseparably linked, Carver's research on several nitrogen-fixing plants (e.g., sweet potatoes, cowpeas, etc.) was driven by the dual purpose of restoring soils that had been exhausted through decades of dependence on cotton monoculture. Carver's wide-ranging innovations and discoveries helped to develop a commercially viable, diversified agricultural base that, importantly, also required relatively low input labor which, then altogether, helped to lift subsistence farmers of the South out of poverty.
17. Some of the promising forms of new community development are holistic participatory learning and action (PLA) and capacity building using the appreciative inquiry approach (AIA). Over the last several decades, community development has undergone substantial changes; cf. Bryan L. Myers, ed., *Working with the Poor: New Insights and Learnings from Development Practitioners* (Colorado Springs, CO: Authentic, 2008); Paul G. Hiebert, *The Gospel in Human Contexts: Anthropological Explorations for Contemporary Missions* (Grand Rapids, MI: Baker Academic, 2009); and M.J. Brown, *Building Powerful Community Organizations* (Arlington, MA: Long Haul Press, 2006).
18. The Volunteers-in-Parks, the Employee & Alumni Association (USNPS), and the Coalition of National Park Service Retirees represent a tremendous wellspring of voluntarism. While these groups have traditionally focused their efforts on parks, it is suggested here that their efforts could abet such cooperative park/community development projects as these.
19. Tilden, *The National Parks.*
20. J.M. Griesgraber and B.G. Gunter, eds., *Rethinking Bretton Woods*, 5 vols. (Washington, DC: Center of Concern, 1996); , John B. Cobb, Jr., *The Earthist Challenge to Economism: A Theological Critique of the World Bank* (London; MacMillan,1999); Robin Attfield and Barry Wilkins, eds., *International Justice and the Third World* (London: Routledge, 1992).
21. Among the many works that provide some of the "building blocks": David N. Cole and Laurie Yung, eds., *Beyond Naturalness: Rethinking Park and Wilderness Stewardship in an Era of Rapid Change* (Washington, DC: Island Press, 2010); Peter Harnik, *Urban Green: Innovative Parks for Resurgent Cities*, (Washington, DC: Island Press, 2010);

Jane Jacobs, *The Death and Life of Great American Cities* (New York: Modern Library, 1961; rev. ed. 2011; its chapter on parks is a classic in the field); Elinor Ostrom (who was a Nobel Laureate in 2009), *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge, UK: Cambridge University Press, 1990); Setha Low, Dana Taplin, and Suzanne Scheld, *Rethinking Urban Parks: Public Space and Cultural Diversity* (Austin: University of Texas Press, 2005); Setha Low and Neil Smith, eds., *The Politics of Public Space* (New York: Routledge, 2006); William R. Lowry, *Preserving Public Lands for the Future: The Politics of Intergenerational Goods* (Washington, DC: Georgetown University Press, 1998); Paul A. Shackel, *The Archeology of American Labor and Working-Class Life* (Tallahassee: University of Florida Press, 2009); Paul A. Shackel, *Archeology and Created Memory: Public History in a National Park* (New York: Kluwer Academic/Plenum, 2000); R. Gerald Wright, ed., *National Parks and Protected Areas: Their Role in Environmental Protection* (Cambridge, MA: Blackwell Science, 1996).

22. It is important to note that the US National Park Service, particularly since the 1960s, has sought to diversify its leadership and involve community participation, including indigenous peoples, in the management of parks and protected areas, e.g., the "Programmatic Agreement Among the National Park Service (USDOI), The Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers for Compliance with Section 106 of the National Historic Preservation Act."
23. George B. Hartzog, Jr., became the seventh director of the US National Park Service (1964–1973). During his administration, the national park system experienced its largest expansion in visitation and the number of new units added: more than 70 new areas, including the "Alaska Amendment" setting aside the vast preserves of the 49th state. He was instrumental in the passage of the Land and Water Conservation Fund, the National Historic Preservation Act, the Wilderness Act, the National Wild and Scenic Rivers Act, and urban recreation. He helped to institute science-based management and appointed ethnic minorities and women to important leadership positions. In 1968, he appointed Grant Wright to head the US Park Police, the first African American to lead a major police force in the United States. He established the nation's first environmental education program and fostered "Living History" as a new interpretive tool. Summer-in-the-Parks for urban young people, the Volunteers-in-Parks and the National Park Foundation were other signature accomplishments during his years of service. (For a more complete profile: www.aapra.org/Pugsley/HartzogGeorge.html.)

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Letter from Woodstock

Rolf Diamant

William E. Brown: Now More Than Ever

Twenty years ago Bill Brown wrote his first "Letter from Gustavus" for *The George Wright Forum*. Bill, the author of *Islands of Hope: Parks and Recreation in Environmental Crisis*, retired from the US National Park Service (NPS) in the early nineties and settled in Gustavus, Alaska, on the rim of Glacier Bay National Park. Back then our paths crossed once or twice at conferences and we had a few Alaska friends in common. I had read *Islands of Hope* and a college friend of mine, Richard Caulfield (now provost at University of Alaska), had worked alongside Bill and Bob Howe, former superintendent of Glacier Bay National Park and Preserve, in the very early days of the Yukon–Charley Rivers National Preserve.

Bill Brown 's 32-year career with the National Park Service as a writer, historian, and "key-man" played out primarily in the Southwest and Alaska. It was a career that was interrupted several times by an innate restlessness, a desire to write and a yearning for more direct conservation engagement and advocacy. Each time Bill left the Park Service he was brought back into the organization, first by Director George Hartzog, and then later by Regional Director John Cook. In an interview, Brown recalled Hartzog's invitation to return: "He said words to the effect: as long as I am Director we want people with strong opinions and a diversity of opinions—that keeps us alive as an institution." Neither Hartzog nor Cook were put off by Brown's characteristic directness; rather they both valued his plain-spokenness and a knack for building friendships and relationships in skeptical if not often openly hostile communities. These skills were put to the test when Bill joined the NPS Alaska Task Force in the mid-seventies.

Bill Brown served on the task force with a remarkable group of colleagues, with unusually varied backgrounds. Bob Belous and John Kauffmann, for example, had experience in journalism; Stell Newmann and Zorro Bradley were anthropologists; Ray Bane had been a

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high school teacher in Hughes, Alaska. They fanned out across Alaska at a time of widespread public misinformation and distrust, to learn as much they possibly could about the places that were to become new national parks and the diverse people who inhabited them. They spent a great deal of time working with people from traditional cultures and experiencing firsthand many of their specific subsistence activities. Most importantly, they attempted to place a human face on a relatively large and remote bureaucracy as they tried to build local relationships and establish some level of trust and mutual respect.

In his administrative history of the early Alaska national parks, *Do Things Right the First Time,* G. Frank Williss writes: "Bill Brown and John Kauffmann for example … sought to physically immerse themselves in their respective field areas to experience more fully the areas and appreciate the nature of the place, something they believed necessary for proper planning. Brown, along with Rick Caulfield and former Glacier Bay National Monument superintendent Robert Howe, spent as much time as possible in the Yukon–Charley proposal and nearby communities running rivers, inspecting proposed trails and campsites, taking dog-sled trips, and becoming acquainted with local residents…." (A number of these people, including Bill Brown, were later interviewed in a series of extraordinary oral history projects conducted by NPS and the University of Alaska; see http://jukebox.uaf.edu.)

In light of this background, it is with a great deal of humility that I embark upon this first "Letter from Woodstock." Like Bill was when he began working on his "Letter from Gustavus," I am recently retired from the ranks of the National Park Service. The decision on where each of us would make our home—Bill and family in Gustavus, Alaska, Nora Mitchell and I in Woodstock, Vermont—was guided in large part by a curiously similar philosophy. As Bill explained in an interview, "… one of the great benefits of the Park Service and system is its dispersion.… I chose to be to be close to Glacier Bay … this is a place where some good, discreet, specific work can be done." Nora and I feel much the same, living in Vermont near Marsh–Billings–Rockefeller National Historical Park and its Conservation Study Institute, where we worked for many years.

Bill wrote a "letter" for each issue of *The George Wright Forum* from 1992 to 1996. His writing style wasted few words. His opinions, guided by his sharp intellect and a powerful moral compass, were invariably incisive and provocative, and framed in a larger, global context. It is not the intention of this "Letter from Woodstock" to either replicate Bill's distinctive perspective or style—that would be a tall order for anyone. Rather, the editors of *The George Wright Forum* asked me to re-establish the column's original "op-ed" feel and purpose—recognizing that having such an independent perspective on a range of national park and protected area conservation issues will always be a good fit for this journal.

I recently reread Bill's last column and found his words as prescient today, perhaps even more so, than when they were written almost 16 years ago. So I thought I might begin my letter where Bill left off: his August 1996 "Letter from Gustavus" entitled "Islands of Hope: Now More Than Ever."

Bill suggested that the United States (though he could have been speaking of many different countries) "is based on the three legs of livable home environments, public health, and public lands" that are all under stress. He recalled the positive impact of Rachel Carson's *Silent Spring,* published 34 years earlier. I think it is worth noting that there was a campaign

at that time to discredit Carson, accusing her of "exaggeration and sensationalism"—using rhetoric eerily similar to today's cynical attacks on climate science. In his 1996 letter, Bill prophetically warned about the manipulative use of "falsehood and fear" which he referred to as "acid in the face of established fact and the looming patterns that warn us."

Bill went on to admonish us all about the disappearance of "common courtesy and collegiality" from the "polluted public discourse" on environment and public lands issues. In particular he was distressed by "current 'take no prisoners' attitudes and expressions." When public dialogue is "dominated by absolutist stridency" he worried that "the democratic processes designed to help people of different views and interests find common ground" would be "poisoned."

Again, this was the year 1996. But Bill could have been describing the political landscape that we are facing in 2012, and in particular challenges to the stewardship of our public lands. These challenges have been exacerbated over time by the advent of near-instantaneous communications and a blogosphere that can provide a cloak of anonymity for grandstanding and enmity.

There also seems to be less and less time available for really getting to know people and communities and for maintaining functional relationships based on trust and respect. But this investment of time and attention cannot be considered optional in an unforgiving political and technological environment where issues can rapidly escalate into controversies, polarize communities, and raise the risk of litigation and higher-level political intervention. Make no mistake—this is not a rationale for an abandonment of principles or weakening established legal frameworks for park and protected area governance. It is, however, a recognition that there will always be a need for precisely the kind of openness, experience, and emotional intelligence that Bill Brown and his colleagues on the Alaska Task Force offered to the National Park Service and the people of Alaska at a pivotal moment in conservation history.

THE KENYA WILDLIFE SERVICE IN THE 21ST CENTURY:
PROTECTING GLOBALLY SIGNIFICANT AREAS AND RESOURCES

John Waithaka, guest editor

Historical Factors that Shaped Wildlife Conservation in Kenya

John Waithaka

Introduction

Kenya lies across the equator and borders Somalia, Ethiopia, Tanzania, Uganda, Sudan, and the Indian Ocean. The country did not exist until 1920, when the British East Africa Protectorate officially became Kenya and the current borders were established. However, the events that led to the creation of Kenya date from the Berlin Conference of 1885, when the European powers first partitioned Africa into spheres of influence and the area now called Kenya became part of the British Protectorate.

British rule in Kenya lasted for nearly 70 years, between 1895 and 1963. Their style of governance; their approach to land acquisition, ownership, use, and management; their philosophy and patterns of wildlife conservation, utilization, and establishment of protected areas; their relationship with the native people and attitude toward African cultures; and their approach to law enforcement and response to resistance by discontented communities—all played a crucial role in shaping the attitude of many Kenyans towards wildlife, and continues to have a bearing on how conservation issues are perceived and tackled.

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Traditional lifestyle

Kenya comprises 42 ethnic communities, each with its own unique values, language, and cultural practices. Before the arrival of the Asians and Europeans, each of these communities either stayed in one place for generations or moved from one place to another according to seasonal dictates. They depended on tilling the land, herding, hunting, fishing, and gathering for subsistence. Food, water, diseases, and droughts shaped their demographics, while intercommunity hostilities defined ethnic boundaries.

Land in most cases was communally owned and every person had an ancestral land base. There were no cases of landlessness among the people.

The land was used for many purposes, and had physical, intellectual, and spiritual values; hence no land was considered wasteland. By combining these values, indigenous communities, whether pastoral or agricultural, had developed norms, rules, and practices that achieved sustainable resource use within their environments. These regulations were mainly based on long-term, empirical knowledge acquired from experiences, observations, and practices over countless generations, and were mainly adapted to local conditions and embraced local variation.

Responsibility for enforcing community regulations was usually vested in the elders who were empowered to exercise control over the land and prevent over-exploitation. Village councils also existed to settle disputes over use of resources.

Respect for the environment was almost universally practiced. From childhood, people were taught to respect nature and the world around them. Wild animals were used on a sustainable basis for the provision of food, clothing, shelter, medicine, weapons, and other needs, including tribal ceremonies and rituals. Some of the traditional natural resource management approaches were based on a belief system that included prescriptions for restraining excessive resource use. It was a taboo, for example, to kill a living organism without cause.

Although wildlife was common property until killed or captured by a hunter, taking more than was necessary for survival was prohibited and was perceived as a bad omen that would bring natural disasters such as drought, famine, and diseases to the entire community.

Wild animals were regarded as "second cattle" in some pastoral communities and were not hunted for food except during periods of drought when cattle was scarce. In the absence of natural catastrophes such as disease or drought, livestock was enough to sustain the populations of such communities.

Each group related with the environment in distinct ways, and was able to sustain ecologically viable resource management systems with considerable success.

Wildlife featured prominently in most cultural activities, ceremonies, and folklore. In most communities, folklore based on various aspects of wildlife was an important mode of imparting cultural and social norms and morals to the youth. Some animals were recognized as community totems and were protected from any form of destruction.

Cultural differences existed that spared some species from use in some parts of the country. Some myths forbade the hunting, killing, or interfering with certain animals, their young or habitats. Others despised the use of some resource types and looked down upon communities that used them. For example, some communities considered it a taboo to eat

fish, birds, primates, or certain species of mammals, while others valued them greatly. These cultural differences ensured survival of species in regions where they were less preferred and exploited.

These traditional resource management systems remained strong until 1895 when Kenya became a British protectorate. They declined very rapidly thereafter, and have faded into insignificance in most communities.

Outside influence: The Arabs, Portuguese and the British

The east coast of Africa has long attracted international maritime trade, with records of trade missions going as far back as 3,500 years ago (Hall 1996). The rise of Islam in Arabia marked the beginning of a more enduring Indian Ocean trade epoch, with the presence of a significant 9th-century Islamic civilization in Kenya that has endured to the present day. The coming of Arabs gradually gave rise to a distinct culture and civilization in the coastal areas, and Swahili language and culture developed. Trading in animal skins, ivory, and agricultural produce for cloth, metals, ceramics, grain, ghee, and sugar was introduced and increased with time. The need for porters to carry the ivory from inland areas to the coast gave birth to a slave trade. Oddly but luckily for Kenya's people and wildlife, the Arab traders appeared to have had little or no interest in the Kenyan interior, which remained unknown to the outside world until the 19th century. However, coastal towns in Kenya were used as points of transit for slaves captured from present-day Tanzania.

Portugal was the first European power to forge a maritime route to Asia in the 15th century around the African coast, but battles with the Arabs who controlled trade along the east coast probably kept them too busy to have time to venture into mainland Kenya.

The Asians introduced bananas, yams, and rice, while the Portuguese brought American crops: corn, cassava, and tobacco. These food crops hugely raised the potential for the increase of the country's population while enabling a greater degree of permanent settlement, factors that would beleaguer wildlife conservation in the years to come.

Over the course of the 18th century, Britain became the dominant European power in the Indian Ocean. However, Europe still knew little about the Kenyan interior. It was only in the 1840s that German missionaries first reported the existence of Kilimanjaro and Mount Kenya, and their descriptions of snow on the equator met with open ridicule in Europe. Over the next 40 years, British missionaries and explorers undertook a series of pioneering expeditions into the East African interior, prompted by a renewed obsession with the mystery that had intrigued geographers since Roman times: the source of the River Nile. The period of exploring mainland Kenya had begun.

The explorers went back to Europe with stories about Kenya's immense game populations that appeared almost inexhaustible. These stories drew European hunters in droves. Many hunting parties, some employing a hundred or more porters, went on the hunting expeditions, killing wildlife for trophies, food, and for pleasure. By the 1880s, concerns were already being expressed over the decline in wildlife in the region, and suggestions made that some kind of control measures were needed to save wildlife (Noel 1963).

Scramble for Africa: Kenya becomes a British colony

By this time, European powers had laid claim to parts of the continent, and were aggressive-

ly trying to spread their spheres of influence. In late 1884, a conference was convened in Berlin, Germany, to negotiate a settlement regarding the political partitioning of Africa. Fourteen nations participated, including France, Germany, Great Britain, and Portugal. The area now known as Kenya fell under the British.

The British had set in place the fundamentals of colonial administration in 1888. A British trading company, Imperial British East Africa Company, was established and posted to administer Kenya and Uganda under the name "British East Africa Protectorate." The company was granted permission to undertake commercial operations in Uganda, as the British were more interested in Uganda because Kenya seemed like a wasteland that was largely inhabited by hostile tribes. Uganda, on the other hand, was strategically important for the control of the River Nile. The company made treaties with several tribes and quelled others into submission by military force. However, it was unable to contain Kenya's hostile communities, forcing the British to declare the country a colony and protectorate on 1 July 1895 and to post a colonial governor to establish a formal British administration. Sour relationships between Kenyan communities and the British had already developed.

Following the formal declaration of Kenya as a British protectorate in 1895, the colonial government immediately made two crucial decisions that were to define the future of wildlife in the country. The first was to construct a railway line from the Kenyan coastal town of Mombasa to Uganda, and the second was to tighten measures for protecting wildlife.

The railway: Arrival of European settlers, land appropriation, destruction of wildlife

The building of the railway commenced in 1896 and reached Kisumu on Lake Victoria in 1901, reducing the journey between Mombasa and Lake Victoria from months to a single day. The completion of this £5 million investment completely transformed the future of Kenya, its people, cultures, economy, politics, and wildlife. The enthusiasm of the colonial government to develop trade with the distant, yet unknown Uganda waned, and the opportunity to develop the already accessible, cool, and fertile Kenya highlands became more attractive. The government made a policy decision: the railway was to be used for opening up the inland areas to farming, hunting, and tourism as a way of making returns on investment. This policy changed the shape of Kenya forever. Under the policy, the British government encouraged white settlers to farm large tracts of Kenyan highlands that the railway had made accessible. In 1907, the government designated the fertile highlands of Central Kenya and parts of the Rift valley as "White Highlands," and the traditional owners were forcibly concentrated into newly created tribal reserves. Any show of discontent was ruthlessly discouraged by sheer military might. Parts of the White Highlands not occupied by settlers were declared "Crown Land" and the native occupants declared "tenants at will" of the Crown and liable to summary eviction.

In their colonial conquest, the British devised a policy of "divide and rule," turning some African groups against others. They classified people into ethnic groups called "tribes" based on linguistic variations and locality, creating divisions and boundaries that had not existed previously. The government appointed "chiefs" over each of the groups, whose main duty was to collect taxes from the people, forcing men to seek employment in European

farms to get money for taxes as Africans were not allowed to grow cash crops under the "Colour Bar"—a policy of racial discrimination.

In the years leading to World War I, large tracts of land had were allocated to European settlers who began to decimate wildlife populations in order to create room for crop and livestock farming. As more land was put under agriculture, wildlife habitats and populations declined. Animals were also killed in large numbers to protect crops and eliminate predation of livestock. Only animals in the inhospitable savannas that lacked water and harbored sleeping sickness were spared. Wherever wildlife was in conflict with farming, it stood no chance.

Hunting had also become a big-time business. The prospects of commercial profit from Africa's great charismatic African wildlife lured professional hunters, mainly from Europe and America. The so-called Big Five—buffalo, elephant, leopard, lion, and rhino—were the main attraction. For example, former US President Theodore Roosevelt sailed to Mombasa in 1909 to embark on the most elaborate hunting safari East Africa had ever seen. With a large contingent of professional hunters, taxidermists, and over 500 porters to carry loads of trophies, he embarked on a safari that lasted the best part of the year, killing animals to the extent of attracting controversy on account of the sheer number of animals shot. The expedition opened Kenya for sport hunting by Americans like never before.

The clearing of land for settler occupation, hunting extravaganzas, expropriation of African land, forced labor, and extinguishing of African traditional rights over land and resources opened a chapter that would have lasting effects on Kenyan society and its wildlife even after the end of the colonial era. The building of the Uganda railway was where all this began.

Tightening measures to protect wildlife: Creating game and forest reserves

As mentioned above, the colonial government took immediate steps to protect wildlife soon after declaring Kenya a British protectorate in 1895. It placed restrictions on hunting of wildlife and created game reserves to protect wildlife habitat. In 1899 and 1900, respectively, the Southern Game Reserve and Northern Game Reserve were established, covering nearly 70,000 square kilometers.

Extermination of vermin

Britain also took the fight to protect wildlife outside its sphere of influence. It organized an international convention in London in 1900 that was attended by representatives from colonial powers with African dependencies—Great Britain, France, Portugal, Spain, Belgium, Germany, and Italy—with the goal of facilitating the creation of uniform game regulations and law enforcement procedures within the African continent. Among many decisions reached, the conference called for the establishment of game reserves within 18 months of the treaty's ratification, in which it would be unlawful to kill wild animals "except animals such as lions, leopards, hyenas, wild dogs, otters, baboons, some monkeys, large birds of prey, crocodiles, poisonous snakes and pythons" which were categorized as "vermin" and were to be eradicated both inside and outside protected areas (Sorrenson 1965). The "vermin" policy had devastating impacts on wildlife in Kenya.

In 1907, a Game Department was established and charged with the responsibility of enforcing game laws and protecting the reserves, efforts that were nevertheless hobbled by a shortage of personnel and minuscule budgets. A major problem arising from the establishment of the reserves was human–wildlife conflicts. Animals ventured outside the reserves and caused damage to people and property, destroying their crops, killing livestock, spreading diseases to livestock, and even killing people (Weller 1931).

The Game Department was given the responsibility of controlling dangerous and crop-raiding animals (vermin), and overseeing the clearing of animals from large tracts of land to permit settlement and agricultural development. By the mid 1930s, thousands of so-called vermin had been eliminated by farmers and government officers. The scale of such schemes is evident from the control program the Game Department undertook in Makueni area, where 996 rhinos were killed between 1944 and 1946 to open up an area of 200 square kilometers for settlement (Hunter 1952). Other such incidents are described by Western and Waithaka (2005). There were also massive killings of game to feed troops, prisoners, and laborers during World Wars I and II, incidents that went unreported though they may have been "the most intense legal game use of the twentieth century" (Parker and Bleazard 2001). These efforts created the odd situation of having a Game Department that spent more of its time and money killing wildlife than protecting it.

Protection of forests

The forests were also affected by the railway and settlers. The 1897 Ukamba Woods and Forest Regulation was the first forestry legislation in Kenya. The regulation placed forests within one mile of the railway line under the control of the railway administration to ensure fuel supplies for railway locomotives. Forests beyond this were placed under the local government administration. The government then initiated a move to place all the major forest areas in the country under the control of the Crown, emphasizing that "the public good was best served through the protection of forests and water resources, even if this meant the displacement of the local communities" (Logie and Dyson 1962). A forest department was created in 1902 and mandated to curtail forest destruction by shifting cultivators and pastoral groups. By 1908, most major forest blocks had been declared forest areas. Also by 1908, over 264,000 acres of prime forest land had been alienated to the settlers. This prompted the chief conservator of forests to stress, in vain, the need to demarcate all the forests to stop the settlers from destroying them. Over time, a total of 43 forests were defined as government forests, and a law was passed that provided for the creation of nature reserves within forest reserves (Logie and Dyson 1962).

Clamor for parks

Alarmed by the widespread cultivation and the huge numbers of animals killed to protect crops, the British government started to explore the possibility of a new accord that would focus on more effective ways of protecting wildlife. A committee established by the British government in 1932 called for the establishment of "national parks and reserves where hunting, killing or capturing of fauna, and the collection or destruction of flora would be limited or prohibited."

Unfortunately for the Africans, the land that was available to them became the target for establishing national parks.

A local campaign to create national parks was initiated but was greeted with apathy and opposition by the local colonial administration whose priority was to set aside land for farming, mining, and to accommodate a growing African population. Through public support and spirited persistence, the campaigners forced the government to appoint a Game Policy Committee in 1938. The committee planned for part of Nairobi to be designated as a national park but its work was derailed by the outbreak of World War II. It was not until it ended that enabling legislation was enacted and Nairobi National Park was established as Kenya's first in 1946. The era of establishing parks had begun.

Kenya`s first national park and park service

According to Parker and Bleazard (2001), the Game Department was never particularly intellectual. Civil servants in colonial Kenya were required to pass both oral and written exams in Swahili if they wished to advance in their career, but game wardens were exempted from this requirement. It is reported that they had a particular dislike for paperwork, and had very little time for filing systems. The wardens were also treated differently in other aspects. Many of them were posted to stations without any housing facilities and often used their own funds to run their offices when their allocations were delayed (probably due to late submission of accounts). Most interestingly, they were the only government officers who were required to provide their own vehicles for service in the field as a condition for employment. This rule was relaxed in 1956 for wardens recruited for the anti-poaching campaign of 1956–1957, and the last time a warden was required to provide his own transport was in 1962, a year before Kenya became independent (Parker and Bleazard 2001). To make matters worse, they were the lowliest paid among the civil servants, but they competed to have these jobs due to the status and honor they carried. This was the state of affairs at the Service Department that transitioned into independent Kenya. With poorly paid wardens who had no material prospects but were in charge of vast treasures, it is not a great surprise that they participated in the poaching of the very resources they were entrusted to protect.

The colonial legacy

The legacy of the 70 years of colonial rule in Kenya was the alienation of people from wildlife and other resources they had traditionally relied on. Throughout the colonial period, the law played an important function in the legitimization of policy, particularly with respect to land acquisition. A series of land laws were passed to justify expropriation of lands from indigenous people to give to settlers and to create game and forest reserves. The wholesale forcible removal of entire populations from their native lands was carried out without any form of compensation. Foreign governance systems and institutions were imposed on the native people.

Political structures were established that disempowered the native peoples, paving the way to the unhindered access and acquisition of the natural resources of the country. The tough legislation in favor of wildlife created conflicts that linger today. Hunting laws devastated traditional subsistence hunting, since the vast majority of indigenous people could not

afford licenses. Subsequent game laws banned traditional hunting techniques, on the grounds that these techniques were cruel to animals, effectively declaring subsistence hunting illegal. The introduction of sport hunting was strongly detested by the native people who could not understand the basis for killing animals for self-gratification while they were denied their traditional means of livelihood and subsistence.

Imposing foreign rule brought about the erosion of indigenous cultures; destroyed long-established traditional natural resource management systems that had ensured the survival of the soils, plants, and creatures which they needed in order to live; introduced wildlife management laws that failed to address the social and ecological contexts within which wildlife had thrived; and created conflicts arising from the transfer of power from traditional governance systems to a centralized power base.

Eventually, it became almost impossible for the Africans to co-exist with wildlife without breaking the law. Many adult males were punished and imprisoned for petty offenses, experiences that solidified the negative attitudes toward wildlife and the colonial regime. Game Reserves were surrounded by hostile people who had no sympathy for them, the wildlife, or conservation in general. By the 1950s, the desire to reclaim control of their natural resources reached its zenith, and the struggle for political liberation was unstoppable.

Independent at last

As Kenya's independence approached, many people expressed pessimism that conservation would not be given the priority it deserved by the new African government. These fears were alleviated when the government of Jomo Kenyatta unveiled the government policy on wildlife protection during the General Assembly of IUCN in Nairobi in September 1963, three months before Kenya attained full independence. The announcement read:

> The natural resources of this country—its wildlife, which offers such attraction to visitors from all over the world, the beautiful places in which these animals live, the mighty forests which guard the water catchment areas so vital to the survival of man and beast—are a priceless heritage for the future.
>
> The Government of Kenya, fully realising the value of its natural resources, pledges itself to conserve them for posterity with all the means at its disposal. We are confident of the cooperation of other governments of East Africa in this important task, but at present, we are unable, unaided, to provide the specialist staff and money that are necessary. We, therefore, invite other nations and lovers of nature throughout the world to assist us in honouring this solemn pledge.

Fulfilling the pledge

The articles in this journal illustrate how Kenya, through the Kenya Wildlife Service, is using "all means at its disposal" to honor the promise of the above solemn pledge.

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Laying the Foundation for Conservation of Kenya's Natural Resources in the 21st Century

Julius Kipng'etich

> The natural resources of this country—its wildlife, which offers such an attraction to visitors from all over the world, the beautiful places in which these animals live, the mighty forests which guard the water catchment areas so vital to the survival of man and beast—are a priceless heritage for the future.
>
> The Government of Kenya, fully realising the value of its natural resources, pledges itself to conserve them for posterity with all the means at its disposal. . . .
>
> We, therefore, invite other nations and lovers of nature throughout the world to assist us in honouring this solemn pledge.

The above pledge by Kenya's founding President, Jomo Kenyatta, on September 18, 1963, shortly after Kenya attained independence from the British, provides a clear example of the Kenyan government's commitment to the conservation of its natural resources.

Forty-seven years later, when Kenya adopted a new constitution on August 27, 2010, and later launched the Vision 2030 development blueprint, the same spirit was re-affirmed by the important role accorded to the environment in national development. Indeed, the history of the Kenya Wildlife Service has emerged as one of Kenya's most inspiring success stories, as I will show in the rest of this article.

Introduction

Since the first national park, Nairobi National Park, was gazetted in 1946, Kenya has seen an increase of more than 60 national parks and reserves as well as conservancies. However, climate change, high population growth, and inappropriate land use practices have caused significant loss of wildlife habitats, migratory corridors, and dispersal areas, greatly reducing the land available for wildlife outside protected areas.

About KWS

The Kenya Wildlife Service (KWS) is a state corporation established by an act of Parliament, Cap 376 in 1989, with the mandate to conserve and manage wildlife in Kenya's protected and non-protected areas. KWS presides over a system of more than 60 national parks and

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reserves as well as 125 wildlife stations outside protected areas. The protected areas encompass 8% of the nation's landmass.

Reviving conservation

Since its inception, KWS has made huge strides in curbing poaching, enlisting international support for conservation, establishing infrastructure, and developing human capacity. This success has been made possible through the support from the government of Kenya, local and international donors, local communities, and non-governmental organizations.

But our history has not all been plain sailing. Eight years ago, when the head of state honored me with the appointment to preside over the nation's natural heritage, I felt truly privileged—and profoundly shocked.

At age 39, I was relatively young and a greenhorn in matters of conservation. However, as a management specialist from the University of Nairobi, I was certain I was up to the enormous task ahead.

I was to oversee the recovery of endangered species, including rhinos, elephants, lions, and cheetahs, and the restoration of degraded habitats, not forgetting the daunting task of addressing the incredible pressure on wildlife habitats from the fast-growing human population.

I took over the management of KWS at a time when the organization had gone through a period of sharp decline. It had suffered from a high turnover of 13 chief executives within a span of 14 years. This had resulted in low staff morale, lack of clear direction and a poor public image. The organization had also suffered from political interference, poor governance, inadequate management systems and structures, and low revenue occasioned by fraud (KWS 2005). In fact, workers lacked basic supplies to support their routine operations in the field.

Having been weighed down by these challenges, the organization had to be stabilized before fundamental changes could be effected.

The organization chose a phased approach to implementing wide-ranging reforms through a number of strategic management tools and initiatives. We are in the third phase of reforms to drive conservation and tourism efforts in the 21st century.

One early key decision was the Board of Trustees' approval of the *Strategic Plan 2005–2010* in June 2005. This marked the first phase of the reform program that is continuing. The plan focused on enhancing science for wildlife management, information for institutional development, and marketing for financial management. Within the five-year plan, we developed a mission statement that outlined the aim of the organization: to conserve and manage Kenya's wildlife for posterity on a sustainable basis.

The plan concentrated on institutional strengthening, specifically creating order and discipline among a demotivated workforce, and designing structures, systems, processes and procedures to produce a more accountable and agile organization. It also developed a clear organizational structure with clear job descriptions, evaluation procedures, and performance indicators, so that all KWS employees knew what was expected of them (KWS 2005).

The new KWS brand promise was developed and articulated at strategic points within the organization. It contained a clear vision, mission, and expression of core values that was

cascaded to all field stations and national parks and reserves to enable full participation by all staff.

New and innovative programs to engender the brand promise have been implemented. These include daily communal staff tea-break sessions taken in open courts rather than in offices, a director's tea-break session with staff every Friday, quarterly Kamukunji (informal meetings), and organized internal competitions.

Honoring fallen conservation heroes

One factor not generally appreciated by outsiders is the sheer danger that many KWS staff face in discharging their duties. The stakes in wildlife crime are so high that rangers in particular put their lives at risk when pursuing poachers and other criminals. Since 1990, KWS has lost more than 50 rangers while in combat with armed bandits, preventing wildlife crimes, on rescue missions, and protecting people's lives and property from damage by wild animals.

This loss has not been in vain; they have lost their lives for the country and the world at large. To honor these brave people and appreciate their sacrifice, KWS holds a Heroes Day every December 16 at a special monument erected in Nairobi. The commemoration date coincides with the day Nairobi National Park was gazetted as Kenya's first national park. The occasion is attended by families and friends of the departed heroes, KWS employees, government agencies, conservationists, and well-wishers.

The event provides a special occasion to reflect on the lives of those who displayed courage and self-sacrifice in the face of danger, and to celebrate the continued commitment by their remaining colleagues.

An imposing statue of a ranger was erected at the entrance to KWS headquarters in December 2011 to serve as an inspiration to the living heroes.

Ahead of the game

Due to exceptional dedication by KWS staff and an upturn in tourism earnings, the *Strategic Plan 2005–2010* activities were implemented by the end of 2008, well ahead of the 2010 target.

This made it necessary to develop the *Strategic Plan for 2008–2012,* building on the achievements of the previous plan. It is focused on enhanced management that embraces ICT systems, greater institutional capacity, and improved relationship with stakeholders.

The plan integrated the Balanced Score Card approach and deepened emphasis on science, information, and markets. It also extended KWS's focus on people as the organization's most valuable resource, new opportunities arising from emerging technologies, and the strengthening of the KWS brand. Highlights of the new plan included force modernization, the building of forensic and genetic laboratories, and the creation of an information system to provide KWS and other stakeholders with scientific data on which to base wildlife conservation decisions.

We synchronized the new strategic plan with rolling planning cycles as well as the national development goals of the Vision 2030 roadmap. This marked the second phase of the reform process.

Performance management

The government of Kenya's Public Sector Reform Secretariat has directed public agencies to adopt various tools to improve their efficiency and productivity.

Given the breadth and complexity of the KWS mandate and the need to balance the various objectives, the organization chose the Balanced Score Card management tool to guide its management strategy. This is a sophisticated strategic planning and monitoring system that allows every department and employee to report and track progress toward the various strategic objectives (KWS 2008). Once fully implemented and computerized, the Balanced Score Card system is expected to become a nerve center of the organization—showing the user progress, blockages, and what needs to be done to resolve bottlenecks.

Already, KWS is ISO 9001: 2008-certified, an international recognition of the KWS management systems, and a confirmation to our suppliers, customers, and other stakeholders that we maintain robust systems and standards in service delivery.

To keep abreast with developments in management in the corporate sector, KWS has consistently participated in corporate competitions. Since 2007, KWS has won several "Company of the Year Awards" attesting to its success in attaining global competitiveness. This has boosted staff morale and created considerable improvements in operational effectiveness. Winning these awards has demonstrated that public institutions can beat the private ones at their own game (Kenya Institute of Management 2010).

KWS has also been vetted by Superbrand, an independent authority on branding with experience in over 80 countries, and awarded the Superbrand status based on consumer feedback in the areas of quality, reliability, and distinction (KWS 2010: 9). This momentum for excellence is expected to continue as the organization aims for the ISO 14,000 series on environmental standards and ISO 22,000 for advanced quality measures (KWS 2009: 13).

Force modernization

KWS has embarked on a number of bold, all-inclusive strategies to protect wildlife populations against the ever-increasing sophistication of wildlife crime. These include implementing a force modernization program based on three core principles: force restructuring, professional force and equipment acquisition, and infrastructural development to improve efficiency and effectiveness.

The program recognizes the need for change in strategy and operational tactics, use of post-operation intelligence, and leveraging of information and communication technology. As part of this, we are in the process of establishing a forensic laboratory to support law enforcement and prosecution of wildlife-related crimes.

Harnessing emerging technology

To stay afloat in the fast-paced technological era, KWS has deployed wide-ranging information communication and technologies in decision-making and implementation processes.

For instance, to keep tabs on the movement of wildlife and fortify ecosystem monitoring, KWS is rolling out a georeferenced wildlife monitoring system that will enable rangers to collect vital information on wildlife (KWS 2009).

Partnerships

Over the last decade, KWS has employed a coordinated and participatory approach to conservation that ensures the involvement of key stakeholders while respecting the rights of communities and individual landowners. We partner with various like-minded nongovernmental organizations (NGOs), corporate bodies, and governmental agencies to undertake conservation efforts. One of the most outstanding partnership achievements, steered by KWS and the NGO Rhino Ark, was the completion of the 450-km Aberdare Fence, a project that took a decade (KWS 2009).

KWS has also been instrumental in efforts to repossess and rehabilitate the Mau Forests Complex, the largest closed-canopy forest ecosystem in Kenya. Millions of people depend on the 12 rivers that flow from this large ecosystem. In recent years, it has been under immense pressure from politicians illegal squatters.

KWS is also partnering with private organizations to save endangered habitats, such as Nairobi National Park, which is under siege from the growing metropolis. To restore some degraded habitats, a Ksh40 million (US$0.5 million) Nairobi Greenline Project was initiated that planted trees along a 32km-by-50m strip that will act as a buffer zone protecting the park from the growing city. This initiative was spearheaded by KWS and the Kenya Association of Manufacturers, and attracted the participation of industries, conservationists, corporations, and the public.

We have also embraced social media—YouTube, Facebook, Twitter, and an interactive website—to engage the public.

International engagement

Internationally, Kenya is an active party to a number of multilateral environmental agreements (MEAs) relating to wildlife resources conservation and management. These include CITES (the Convention on International Trade in Endangered Species), the Lusaka Agreement, the Convention on Biological Diversity (CBD), the Convention on Migratory Species, the World Heritage convention, and the Ramsar Convention on Wetlands.

An example of which we are particularly proud is a recent decision by CITES to entrust the leadership of developing the African Elephant Action Plan to Kenya. Consequently, KWS will host the secretariat that will develop the plan and its accompanying fund for the conservation and management of the African elephant in 37 African countries.

Species management programs

On the species conservation front, a number of management and conservation plans have been developed for large carnivores such as spotted hyenas, lions, and wild dogs, as well as for such marine species as sea turtles. Indeed, Kenya is the first African country in the region to develop national conservation strategies for large carnivores (KWS 2009, 2010). The strategies aim at improving the conservation and management of these species within their existing and potential geographical ranges. These strategies are expected to help ease the pressure facing large carnivores from Kenya's high human population, which has risen from 1 million at the turn of the last century, to 10 million in 1963, to an estimated 40 million this year. This growth has put intense pressure on land use.

Task forces to develop conservation strategies for other large carnivores, bongo, roan antelope, sable antelope, sitatunga antelope, giraffe, and primates have been set up. Management committees on the hirola antelope and Grevy zebra have been launched (KWS 2010).

Over the last 10 years, the elephant population has increased at the rate of 1,000 each year. Within the same time, we have grown the rhino population from about 600 to 920. These are great achievements for endangered species given the escalating insecurity and impacts of climate change.

Visitor experience and customer orientation

Over the last couple of years, KWS has become more people-centered and customer-focused, shaking off the previous paramilitary image. Uniformed professional customer service officers have replaced rangers at park gates to make the visitor experience more pleasant and memorable. This has enhanced KWS brand visibility as well as staff motivation and identity.

KWS has a developed strong customer orientation and conducts regular competition analyses and market intelligence. Systems used for measuring changes in customer trends include KWS visitor statistics analyses, Kenya Advertising Research Foundation quarterly reports, tourism satellite accounts, monthly industry tourism trend reports by the Kenya Tourist Board (KTB) and United Nations World Tourism Organization, among others.

As part of the KWS revival and to prepare the ground for park entry tariffs review, a branding program was started in 2005 with the aim of giving each park a unique identity. The program, now covering 22 national parks and reserves, has created new systems, signage, visitor accommodation, and infrastructure, and has received positive feedback from the tourism industry, communities, and other partners. Covered under the program is retraining of staff to improve service delivery and to support community projects in three areas: water, health, and education (KWS 2005).

The refurbishment of the parks and reserves is in line with Kenya's Vision 2030 development blueprint, which seeks to make tourism a leading contributor to the economy. The goal is to place Kenya among the best tourist destinations in the world, offering a high-end, diverse, exclusive, and distinctive visitor experience.

The huge investment in branding has shown good returns in improved service delivery, increased park visitation, good customer feedback, and more positive community perceptions of wildlife, as well as providing a unique identity for each protected area. However, one of the biggest challenges KWS is tackling is to tilt tourism earnings in favor of communities living in wildlife areas.

Visitor safety

The safety of local and international tourists within protected areas and other areas is ensured through enhanced visitor security patrols and operations. KWS works closely with Kenya's Tourist Police Unit and other stakeholders in the tourism industry to ensure that the parks and reserves remain safe and secure.

Financial management

Until a couple of years ago, KWS relied heavily on the government, tourism revenues, and

the goodwill of development partners to fund its operations. In the course of eight years, the KWS budget has increased sevenfold. For a record six years, we have had a clean bill of health from the National Audit Office. At the same time, we have transformed KWS into one of the most transparent organizations in the world. Staff recruitment is corruption-free, enabling us to select the best people and to build public confidence in our operations.

The organization's new thrust is devising innovative sources of funding and creative solutions to support conservation. The revenue trend has been upwards due to park entry charge adjustments, an increase in tourist arrivals, and marketing, as well as compliance with financial and procurement procedures.

KWS has sought creative ways to cushion conservation activities from the variability of the tourism industry without compromising the core business of managing and conserving wildlife. Towards this end, KWS established an endowment fund in 2009. It serves as a mechanism through which Kenyans and the rest of the world can contribute to the conservation of wildlife and its habitat against the vagaries of international economics and trends in tourism. The fund has registered phenomenal growth, starting with Ksh20 million (US $250,000) in 2010 to Ksh60 million in January 2012. KWS projections indicate that the initial target of US$100 million by 2020 will be achieved, increasing the organization's capacity to wean itself off over-reliance on unpredictable tourism earnings (KWS 2010).

The success of the fund is a clear indication that both local and global communities value Kenya's natural heritage, of which KWS is privileged to be the custodian. It's this human charitable nature that KWS is tapping into to enable it discharge the mandate of protecting wildlife for the current generation and posterity. Through the fund, KWS seeks to boost its ability to enhance the conservation of Kenya's biological diversity (KWS 2010). Diversifying revenue streams will not only broaden funding sources but will also provide a buffer against unanticipated events such as abrupt declines in tourism and shifts in development partners' priorities.

Corporate citizenship and environment

KWS has implemented corporate citizenship and social responsibility policies based on the existing wildlife legislation. The key components include prevention of adverse environmental impacts; strengthening compliance with national legislation and regulations; promotion of the use of eco-friendly and efficient technologies; enhancing education of employees, stakeholders and communities; and auditing for continual improvement. (Kenya Institute of Management 2010). Part of this initiative includes providing health facilities, public education and awareness, and clean water. An important outcome of this initiative is the reduction of poverty and improvement of the livelihoods of communities living around protected areas.

More land for wildlife

In collaboration with partners, KWS has managed to acquire more than 1 million ha of land for wildlife conservation under community conservancies. The latest acquisition is the 17,000-acre Laikipia National Park donated to KWS by the Africa Wildlife Foundation and The Nature Conservancy. Another is Kenya's first voluntary land easement adjoining Nairobi National Park.

We are seeking more community land for conservation. The Mount Kenya East Pilot Project is jointly implemented by KWS and the International Fund for Agricultural Development with the aim of reducing poverty around Mount Kenya and the Tana River catchment basin through sustainable natural resource management practices.

Stepping into the future

Going forward, Kenya faces huge environmental challenges in various key areas: food security, water, energy, and pasture for livestock**.** We are also working with other stakeholders on alternative sources of energy, moving away from charcoal burning that has depleted many forests. We are encouraging commercial tree planting and educating communities to conserve the environment and use natural resources in a sustainable way.

We are reviewing human settlements along wildlife corridors and dispersal areas with the aim to minimize effects on the environment and wildlife.

A distinctive characteristic of our mandate is that the challenges never go away. Climate change, a volatile global economy, population pressure, capricious land use policies, and poaching are threats that will be with us for the foreseeable future.

Despite these challenges, KWS is well-positioned to face them. The new constitution provides strong justification and direction for conserving wildlife for generations to come. It provides for a devolved structure in which natural resources are managed at two levels: national and county.

We are also embarking on the protection of critical national water catchments of Mau Eburru and Mount Kenya. Loita Forest in Narok and Marsabit are also within sight. KWS will provide leadership and engage other stakeholders in protecting key water catchment areas.

Phase III: KWS 2.0 strategy

In the third phase of our reforms, we have realigned our strategic plan from aspiring to be a world leader in wildlife—a task that we feel has largely been accomplished—towards "saving the last great species and spaces on earth for humanity." We've dubbed this the "KWS 2.0" strategy.

The new focus puts greater emphasis on the urgency of protecting our natural heritage from the threats of a growing population, climate change, wildlife crime, and abuse of the environment.

To achieve this vision, we will focus on three priority areas of the new strategy, namely: conservation stewardship, people excellence, and collaborative partnership. All our initiatives are aligned to these strategic focal areas.

Improving and aligning our intangible assets and our organization's readiness to improve critical processes depends on having the people with the right attitude, character, capacity, and aspirations.

Executing this strategy and achieving our strategic results will depend on engaged leadership at all levels, interactive communication among all employees, and strong adherence to our core values of passion, professionalism, innovation, and quality.

Our success will be defined by the impact on execution of our mandate. This will be

achieved through enhanced ecological integrity, improved wildlife industry governance, reduced human–wildlife conflict, enhanced collaboration with our stakeholders, and strengthened law enforcement and security.

In this third phase of reform, the organization will be rolling out a number of initiatives to establish a sound financial footing to support conservation activities. These include revision of pricing to reflect the true value of products and services, and diversification of revenue streams. KWS is in the process of refreshing the domestic tourism campaign and leveraging branded parks by segmenting and repositioning them to meet market demands. Plans are also underway for increasing points of service delivery, including encouraging tourism investment in key strategic areas outside national parks.

KWS will also impress upon the government the urgent need for enacting appropriate legislation and policy, engage the treasury for budgetary support, and extend partnerships for funding in Kenya and abroad. KWS will also strengthen relations with communities living near wildlife areas as well as ensure they benefit from the presence of wildlife in their areas. Internally, we are working on having employees with a greater passion for the job, ones who are well-paid, well-equipped, well-housed, and knowledgeable.

With the new constitution, provisions of Vision 2030 development blueprint, endowment fund, and the expected review of wildlife policy and legislation, wildlife conservation in Kenya will have a more enabling environment to play its rightful role. We are particularly keen on new benefit-sharing arrangements with communities and other stakeholders as well as more responsive institutional arrangements. The new policy and bill are also expected to sharpen penalties for environmental crime.

The conservation journey ahead of us is still long. A lot needs to be done to heal the fragile planet from climate change and other challenges. KWS has a good foundation for an exciting future full of hope and promise.

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The History and Evolution of National Parks in Kenya

Mungumi Bakari Chongwa

This historical perspective of national parks in Kenya will cover early preservation of wildlife in the then-British East Africa Protectorate to the current re-orientation of conservation in the country. Six topics will be discussed:

1. Trading of wildlife resources and early conservation efforts;
2. Royal efforts to promote wildlife conservation;
3. The evolution of safari sojourns to ecotourism in parks and community lands;
4. National parks as drivers of the country's gross domestic product (GDP);
5. National park management and resource devolution; and
6. New legislation.

Trading of wildlife resources and early efforts towards conservation

Kenya has a rich abundance of wildlife that thrives in habitats stretching from the Indian Ocean to forested ecosystems, vast savannah woodlands, mountain peaks, to the bottom of the Great Rift Valley. A cross-section of the country shows considerable diversity of habitats and ecosystems, right from the ocean bed to the snow-capped Mount Kenya, to the Chalbi and Turbi deserts.

Local communities in the 1800s and in recent history used wildlife for food, with hardly any evidence of monetary factors influencing trading in wildlife resources. There are arguments for and against the impacts of early humans on wildlife species composition, populations and the environment. But in retrospect, a lot of factors may have favored the co-existence between early humans and wildlife in what is now Kenya:

- Human populations were too small and scattered to have had an adverse impact on wildlife species, whether through direct consumption or hunting for secondary products such as feathers, eggs, shells, etc.;
- The space used by humans was small in comparison with the vast country that was free for wildlife;
- Human use of wildlife was directed at satisfying basic necessities, so that trading in wildlife, in whole or in part, was limited; and
- Human activities in the period stretching from the early 1800s to the early 1900s consisted mainly of shifting cultivation and nomadic pastoralism.

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The interest in official protection of Kenya's wilderness and its resources went hand in hand with the emergence of the British imperial rule in the 1890s. Western travelers arrived in the newly created British East Africa Protectorate to undertake huge hunting safaris, which resulted in the wholesale slaughter of wildlife (Honey 1999). The British wanted protected lands so that they could continue their big-game hunting safaris while the locals acted as guides, porters, and servants. Over the years, the British passed laws in order to cater to their recreational needs as well as providing for hunting safaris (Honey 1999).

Following the formal declaration of the British East Africa Protectorate in 1896, the colonial government issued a declaration to set up wildlife game reserves. The South Game Reserve (13,000 square miles) and North Game Reserve (13,800 square miles) were established.

With the entrenchment of British rule in the East Africa Protectorate, the need arose to set up more areas under protection and this led to the formation of a game department in 1906. In 1945, the British Protectorate passed the National Parks Ordinance that paved the way for the establishment of more protected areas. This was followed by the establishment of Nairobi Royal Park the following year.

Royal efforts at preserving wildlife

The East Africa Protectorate not only offered the best returns to the expansionist British, but was also strategic in reaching Uganda, the Nile State that had vast resources the British needed. As British interests increased in the region, so did the need to not only offer hunting safaris but also much-needed recreation to ever-increasing settler population.

The National Parks Ordinance of 1945 provided the energy with which the game department drove the establishment of protected areas in the country. Aberdare Royal Park and Mount Kenya Royal Park (later renamed National Parks) were established not only for protection of wildlife but to also to offer exclusive recreation to the settlers.

The birth of Kenya's protected areas did not bode well for the local communities who were immediately faced with challenges of displacement and human–wildlife conflict (Honey 1999).

Safari sojourns to ecotourism in Kenya's parks and reserves

With the trend of preserving wildlife resources and setting out of areas for protection gaining popularity, there was also nostalgia among the rich and famous in Britain and America to continue with hunting safaris in the British East African Protectorate. Among those who came for hunting and safari expeditions included an American president and the queen of England. In fact, her daughter, Princess Elizabeth, became queen while on a visit to Aberdare National Park in 1952 when news reached her of the death of her father.

In the years leading to Kenya's independence, concern for the continued preservation of Kenya's wildlife was in the minds of both colonial leaders and Kenyan nationalists.

Upon attainment of independence in 1963, there was a strong move to establish national parks and reserves, and to promote wildlife safaris and recreation. Over the years, Kenyan communities have become increasingly engaged in ecotourism and wildlife conservation through the establishment of wildlife sanctuaries.

Parks driving Kenya's GDP

As the world gets more industrialized, the number of people seeking recreational opportunities is increasing.

From the early days of wildlife hunting safaris, Kenya's park infrastructure has improved to allow for lodges and hotels, ecolodges, and home stays that attract more people to visit parks than ever before. The government, through the Ministry of Tourism and Wildlife, has adopted policies that have increasingly made Kenya one of the most attractive tourist destinations globally. Today, wildlife-based tourism has become the cornerstone of the country's GDP.

The tourism industry has been identified as one of the key pillars under the government's near-term blueprint for economic development—popularly known as Vision 2030. The annual gross revenue of the tourism industry is over US$1.5 billion, with still-unrealized potential remaining.

While opinion is still divided on whether to lift a ban on wildlife hunting that was put in force in 1977, there is no doubt that now and for the foreseeable future wildlife-driven tourism will greatly contribute to the GDP and economic growth of the country.

Park management and resources devolution to the people of Kenya

Historically, park management in Kenya tended to be based on the assumption that preserving wildlife by the state in parks and reserves for the common good would be enough. Over the last two decades, however, many individuals and community groups have demonstrated the willingness to conserve wildlife on their own land, resulting in a broader perspective that augments state-run protected areas with other efforts. Reasons that have been advanced to explain the changing attitude and trend include:

- The fact that most of the animals in parks and reserves move out of parks and into neighboring areas at some point, where they come into conflict with people;
- The need to develop enterprises to counter the negative impacts of wildlife on people; and
- The realization that ecotourism has positive impacts on the socioeconomic well-being of the people and contributes to the revival of traditional Kenyan art.

The Wildlife Conservation and Management Act recognizes the state as the sole regulator of matters related to wildlife, a position perceived as restrictive and insensitive to the realities of wildlife conservation, particularly the potential role of local people. In order to address this gap, the Kenya Wildlife Service (KWS) was created through subsidiary legislation that allows private people to participate in wildlife conservation and ecotourism subject to compliance with appropriate legislative requirements. Initiatives such as the community wildlife service and corporate social responsibility came into being as mechanisms for delivering the government mandate of conserving Kenya's biodiversity. Since the formation of KWS in 1990, a lot of effort has been made to accommodate the role of local people in the management of wildlife, an initiative that has been supported by many conservation partners, including nongovernmental organizations and donors.

Despite the gains resulting from this subsidiary legislation, a more realistic new wildlife bill would be preferred by both the state and the various actors in the wildlife industry.

New legislation

Realizing the limitations of the existing legislation framework, KWS has initiated efforts to create a new wildlife policy and bill that would address the current shortcomings.

The new bill, currently awaiting consent from parliament, holds a lot of promise for the people of Kenya. If approved, it will allow greater participation by local communities, business, and private persons in matters related to wildlife conservation and tourism. While the state will ultimately continue to exercise its regulatory mandate, a lot of ground will be ceded to local people and other competent authorities. The enactment of the bill will place KWS in a more desirable position—envisioned as "KWS 2.0."

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Protection of Marine Areas in Kenya

Arthur Tuda and Mohamed Omar

The need for marine protected areas

Kenya has a rich diversity of marine and coastal ecosystems. These ecosystems include mangrove wetlands, coastal forests, estuaries, sandy beaches and sand dunes, coral reefs, and seagrass beds that support a host of marine and coastal species. The ecosystems constitute an important life-support system for local communities. They supply vital resources that support livelihoods and economic development. Additionally, these ecosystems maintain the health of marine and coastal landscapes and seascapes at large.

The Kenyan coast is also endowed with a rich history of social and cultural interactions and traditions that span the entire shoreline. Notable amongst these traditions are the social, cultural, and economic opportunities that have been provided to the Kenyan coastal population through the use of the marine and coastal ecosystems for food, trade, recreation, and transport (Government of Kenya 2011). It is reported that trade in mangrove poles surpassed tourism and agriculture in foreign earnings in colonial times. To this day, opportunities for employment, tourism, and recreation provided by the marine and coastal environment and its resources, continue to make considerable contribution to the Kenyan economy. It estimated that more than 60% of tourists visiting Kenya must pass through the coast.

However, immense pressure has been exerted on Kenya's marine resources by the ever-increasing human population and demand for natural resources. Consequently, Kenya's marine environment, ecosystems, and associated resources have shown signs of degradation due to over-exploitation as a result of unregulated use. Recognizing the value of its coastal and marine resources and the imminent threats, Kenya adapted the use of marine protected areas (MPAs) as one of the management strategies to ensure marine ecosystems remain ecologically and economically viable.

MPAs are defined as "any area of intertidal or subtidal terrain, together with its overlaying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment" (Dudley 2009).

Kenya is signatory to several international conventions and protocols that advocate the implementation of MPAs as a tool for biodiversity conservation and regulation of fisheries. Some of these conventions include the Convention on Biological Diversity (CBD) and the United Nations Law of the Sea, and Chapter 17 of Agenda 21. The Jakarta Mandate (1995), which outlines the program of action for marine and coastal biodiversity within the CBD,

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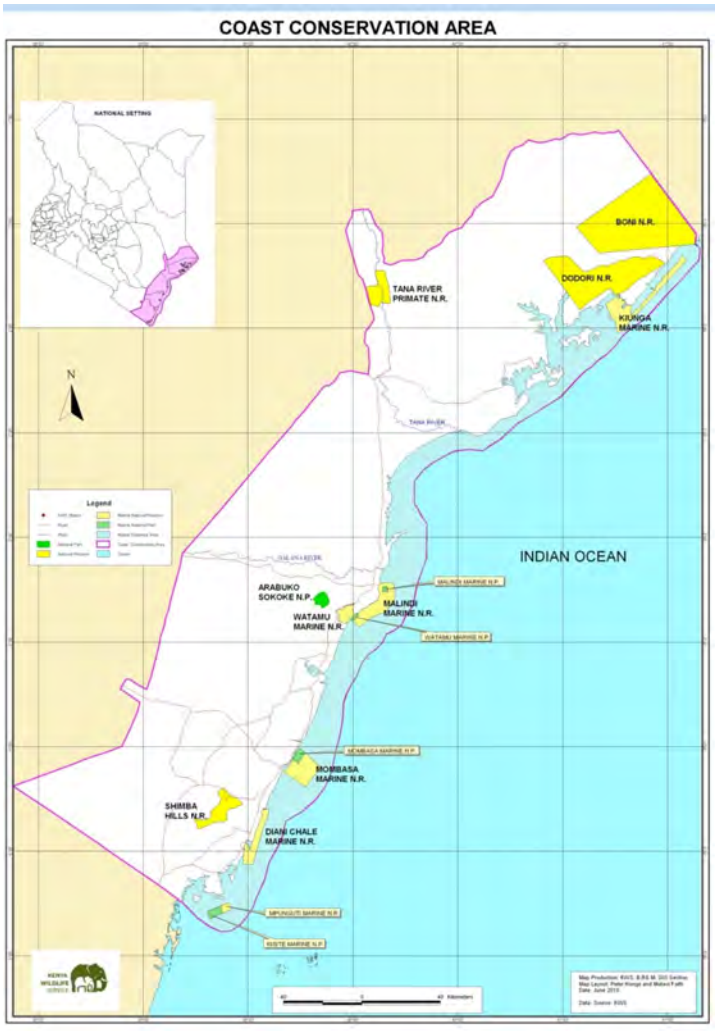
identifies the establishment of MPAs as one of the five thematic areas for implementation of the convention. MPAs are also meant to promote the implementation of an ecologically representative, effectively managed network of protected areas. Kenya made a commitment to work towards meeting the international target of establishing representative and effectively managed MPA networks by 2012 (IUCN 2003). The country has already established a fairly unified network of MPAs, under the management of Kenya Wildlife Service (KWS; Figure 1). All the existing MPAs were established between 1968 and 1993, and protect ecosystems, habitats, and fauna and flora that transcend international borders. International conventions, treaties, and agreements are used to guide regional conservation efforts. These include the CBD, Convention on Climate Change (CCC), Convention on Migratory Species (CMS), Convention on International Trade in Endangered Species (CITES), and the Nairobi Convention.

Figure 1. Kenya's marine protected areas network.



History of MPAs in Kenya and institutional arrangements for management

The first MPA in Kenya, Malindi/Watamu Marine National Park and Reserve, was established in 1968. To date, five more MPAs have been established covering a total area of 1,139 km² (Figure 1). Three of these have been protected from all forms of fishing since the period 1968–1972 (Malindi, Watamu, and Kisite national parks). Mombasa Marine National Park is the most recent MPA, effectively protected since 1991. (The Diani–Chale Marine National Reserve was gazetted in 1994, but there is no official active management.) This is mainly the result of opposition by local communities, although efforts are underway to solicit support from them. Two main categories of protection are defined for MPAs in Kenya:

- Marine national park: Total protection from any type of consumptive utilization. Research and recreation (tourism) are the only uses allowed, for a fee.
- Marine national reserve: Traditional harvesting of resources is allowed as well as research and tourism.

In most cases, a marine park is surrounded by or contiguous to a marine reserve which acts as a buffer. All MPAs have management plans produced by KWS in collaboration with key stakeholders, including government institutions, local communities, nongovernmental organizations (NGOs), the private sector, community-based organizations (CBOs), and interested individuals.

Kenya's MPAs fall under two IUCN categories (IUCN 1994) which incorporate a range of types of management areas or zones. These include no-take areas (parks), multiple-use areas (reserves) and biosphere reserves (Table 1). Kenya's MPAs were established to protect and conserve the marine and coastal biodiversity and related ecotones for posterity in order to enhance regeneration and ecological balance of coral reefs, seagrass beds, sand dunes and beaches, and mangroves. Additionally, they are established to promote sustainable development, scientific research, education, recreation, and any other resource utilization. The goals include:

Table 1. Kenya's marine protected areas.

MPA	DESIGNATION	SIZE (km²)	IUCN CATEGORY	YEAR ESTABLISHED
Kiunga	MR &MaBR	600	VI	1980
Malindi Marine Park	NP &MaBR	6.3	II	1968
Watamu Marine Park	NP &MaBR	32	II	1968
Malindi&Watamu	MR &MaBR	177	VI	1968
Mombasa	NP	10	II	1986
Mombasa Marine Reserve	NR	200	VI	1986
Diani	NR	75	VI	1993
Kisite	NP	28	II	1978
Mpunguti	NR	11	VI	1978

MR – Marine Reserve, MP- Marine Park, MaBR – Man and Biosphere Reserve, NR – National Reserve

- Preservation and conservation of marine biodiversity for poverty alleviation;
- Provision of ecologically sustainable use of the marine resources for cultural and economic benefits; and
- Promotion of applied research for educational awareness programs, community participation, and capacity-building.

Issues addressed by MPAs in Kenya

Conservation of reef systems and fisheries. An important function of MPAs is to mainly enhance marine biodiversity, and in particular enhance sustainable fisheries associated with the coral reef ecosystem. MPAs have mainly protected the "fragile benthic habitat-forming organisms" from the direct physical impacts of fishing. This has subsequently improved the habitat quality within the MPA, enhancing overall coral reef ecosystem structure and function (Rodwell et al. 2003). There are indications that the degradation of reef ecosystems—and in particular fisheries—has been checked or at least reduced along those stretches of coast where MPAs have been established (FAO 2001). Monitoring in Kenya's MPAs has shown that protection from resource use has significantly changed the ecology of coral reefs. MPAs have improved coral reef habitat quality over the years with active management (Rodwell et al. 2003). A good example is the case of Mombasa Marine Park, which was established in 1986. The coral cover and fish biomass increased significantly in the first 10 years of its establishment (McClanahan and Kaunda-Arara 1996; Rodwell et al. 2003).

The improved coral reef ecosystem has provided an important breeding ground for fish. This has generally improved fisheries, mainly through enhanced fish biomass and a "spillover phenomenon" associated with the movement of fish assemblages from the marine park into the reserve, enhancing adjacent artisanal fisheries. The role of MPAs in enhancing fisheries, through the emigration or spillover of exploitable fishes, has been studied in all Kenya's MPAs. These studies have found evidence of spillover from the park boundaries, mainly associated with better fisheries management (McClanahan and Mangi 2000).

Tourism and livelihoods. All MPAs in Kenya serve as important tourist attractions. Many dive operators in Kenya conduct most of their business within MPAs. The total number of visitors in Kenyan MPAs has been ranging from 70,000 to 160,000 visitors annually from 1997 to 2010. The revenues generated from MPAs entry fees are above US$1.5 million annually (KWS, unpublished reports). The MPAs support close to 2,000 local boat operators who conduct marine park tours and excursions.

A recent study estimated the value of goods and services within the Watamu Marine Park and Reserve at over US$135,000 per hectare per year. The figure excludes the value of fuelwood, timber, carbon sequestration, and coastal protection.

This study and numerous others generally substantiate a high degree of dependence on marine ecosystems by local communities. A majority of the communities rely on fishing or fishery-related activities. Of all the estimates, tourism has the highest value, being a major income earner probably in all MPAs. This highlights the importance of integrating protected areas into wider landscapes, seascapes, and sectoral plans and strategies. This also demonstrates that MPAs are important national economic assets.

Threats to MPAS in Kenya

There are numerous resource management and environmental challenges facing MPAs in Kenya. The main concerns are the loss of biodiversity through habitat degradation, overexploitation, and development. Human-related pressures come from overfishing and fisheries-related damage, urbanization, tourism development, agriculture, and industrialization. The impacts of climate change, including temperature increases, irregular precipitation, sea level rise, and ocean acidification also pose great challenges to the health, structure, and function of these ecosystems. These challenges have contributed to coral bleaching and the sporadic infestation of coral reefs by the invasive crown-of-thorns starfish. Additionally, enhanced precipitation events have greatly increased siltation, which in turn has resulted in diebacks of mangroves.

The high poverty levels of coastal communities, coupled with their dependence on natural resources and high population growth rates, have generally resulted in the overexploitation of natural resources. The growing coastal populations, rising global demand for fisheries products, and introduction of new technologies are creating increasingly severe threats to many coral reef and mangrove ecosystems. The loss of mangrove cover due to overharvesting of mangrove wood for domestic fuel has also greatly reduced breeding habitats for a diverse array of species. These increased pressures result in diminishing fish stocks, and declines in catches per unit effort. In all the MPAs increased fishing intensity has reduced the number of sea urchin predators, allowing the population of sea urchins to increase. In turn, sea urchins scrape the corals, reducing their diversity and complexity (McClanahan et al. 1994). Overfishing has altered reef ecology, delaying the effects on coral and reef recovery.

Climate change effects are also increasingly impacting on the coral reef systems. Coral reefs along the entire coast of Kenya suffered widespread bleaching and mortality during the first half of 1998 (Wilkinson et al. 1998; Obura 1999; McClanahan et al. 1999, 2005). Land use changes in adjacent watersheds contribute to the problem of sedimentation in coral reefs. Sediment loads change the nutrient balances of shallow coastal waters and can kill corals directly through smothering (McClanahan and Obura 1997). Other key sources of land-based pollution that threaten reefs include urban runoff, industrial discharges, drainage schemes, and coastal developments. Ships further threaten coral reef areas through ballast discharges, oil spills, and sewage.

Management measures

Monitoring climate impacts. Kenya has expansive reef coverage, with over 250 species of corals identified. Coral bleaching is caused by unusually warm sea waters, making it a phenomenon outside the direct control of MPA management. KWS has partnered with marine scientists in the region to monitor coral bleaching, mortality, and effects on the benthic structure. Coral bleaching impacts are monitored by use of sea temperature maps generated from satellite sea-surface temperature data. These maps help the managers understand the level of temperature stress on the corals. In order to get more accurate local information, KWS is establishing a network of temperature loggers throughout the MPAs. Most of these are downloaded about once per year and provide a historical picture of sea temperatures. Surveys of

corals through rapid assessments (Obura et al. 1998) and line transects (Obura 1995) are also used to monitor the effects of bleaching on the benthic community. Given that bleaching events are predicted to increase in intensity and number (Hoegh-Guldberg1999) it is crucial that MPAs develop mechanisms that minimize the potential impacts of future El Niño–Southern Oscillation (ENSO) events.

Improving management, including training MPA managers. The availability of skilled personnel is fundamental to the successful management of MPAs. To enhance the skills of its managers, KWS has encouraged the capacity-building of its MPA staff through various regional trainings. The Western Indian Ocean Marine Science Association (WIOMSA) has been in the fore at advancing opportunities for training of MPA managers in the Western Indian Ocean region. There are also certification programs developed for MPA practitioners at different levels. WIOMSA and the Coastal Resources Center (CRC) at the University of Rhode Island (USA), in collaboration with other regional partners, initiated the development of a certification program, known by the acronym WIO-COMPAS, for marine protected area professionals in the Western Indian Ocean region . WIO-COMPAS assesses and certifies MPA professionals in the region based on recognized standards of excellence, and, in doing so, maps out a career path for MPA management professionals. Attainment of the various levels of competence within the WIO-COMPAS program provides a skills audit that allows MPA management staff to "move up through the ranks" and at the same time allows them to better market themselves in their chosen career.

Adaptive resource management. KWS uses the adaptive management strategy to manage its marine resources. The strategy involves setting clear and measurable objectives to assess the success of management efforts. Biological parameters and human use patterns in parks are monitored to determine if objectives are being met. The key feature of adaptive management is strong feedback between monitoring (data) and decision-making in a process of "learning by doing."

Management effectiveness monitoring. Kenya has been conducting assessments of management effectiveness of its MPAs. The assessments have helped in revealing serious gaps in MPA management, ranging from problems with threats such as poaching and pollution, infrastructural gaps in management planning, and staffing (Nyawira 2009). The overall objective of the assessments is to identify trends and issues that need to be addressed for improving management effectiveness of MPAs in Kenya. These results are used in improving management (adaptive management), for accountability, in audits for prioritization and resource allocation, and to support budget submissions to government requesting increased allocations.

Species recovery action plans

To address the decline of marine turtle populations, KWS and the Fisheries Department have established a national task force to advise on, among other issues, the development and implementation of a national conservation and management strategy for sea turtles. The main tools for implementing this strategy include advocacy, communication, education, public awareness, targeted research and monitoring, and threat mitigation. Ultimately, the wider participation of local communities and other stakeholders, including scientists, government,

and nongovernmental institutions, is to be realized. The strategy builds on ongoing efforts and initiates changes that will add value to sea turtle conservation efforts. The strategy is also aligned to international and regional conservation conventions and agreements. KWS and key partners have now embarked on the development of the coral reef recovery strategy.

ICZM and state of the coast assessments

Kenya's MPAs are affected by activities outside their boundaries, including industrialization, agriculture and forestry, aquaculture, infrastructure development, and urbanization. These activities may have as great an impact on the MPA as those taking place within its boundaries. The tight connections between MPAs and adjacent land and water, through currents, migratory species, larval dispersal, nutrient exchange, and other processes, require that MPAs are incorporated within an overall coastal management regime for the country. Kenya's MPAs are essential components of an integrated coastal zone management (ICZM) program because they protect biodiversity and ecological processes on which human use of the coastal zone depends. Thus they are a major contributor to sustainable development and have tremendous economic benefit. The management of MPAs is coordinated and integrated with management activities outside the boundaries and linked to development programs that address the needs of local people. Kenya's MPAs are multiple-use areas that allow for different uses of marine and coastal resources, and the involvement of large numbers of stakeholders in the management process. They therefore help catalyze the development of an ICZM program in the area (Government of Kenya 2011).

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Wildlife as a Lifeline to Kenya's Economy: Making Memorable Visitor Experiences

Paul Udoto

Introduction

Usually, harmonizing economic development and environmental stewardship is a delicate balancing act governed by the need to ensure sustainable long-term development. This is nowhere more true than in the poorest parts of the world.

Wildlife fulfills critical ecological functions that are important for the interconnected web of life-supporting systems. Significantly, Kenya's major water towers (i.e., sources) are found in protected areas focused on wildlife. Wildlife also has sociocultural and aesthetic values (Government of Kenya 2007: 5).

In a manner of speaking, wildlife tourism is the proverbial goose that lays the golden egg in the Kenyan economy—it's the lifeline. Indeed, Kenya owes its global reputation as a leading safari destination to its magnificent wildlife and the memorable visitor experiences it provides for tourists. Wildlife conservation is thus inextricably linked to Kenya's economic development and the livelihood of its people. In this context, the Kenya Wildlife Service (KWS) is a key player in the national economy as a custodian of its natural resources.

Historical background

For nearly a century, visitors from around the world have been heading to Kenya for the big-game hunting experience, and more recently to enjoy the spectacular diversity of our flora and fauna. Kenya has hosted noteworthy visitors, such as Theodore Roosevelt, Ernest Hemingway, and Queen Elizabeth II.

Modern wildlife conservation in Kenya dates back to 1898 when a law controlling hunting was first enacted after Kenya became a British protectorate. These laws regulated wildlife off-take, hunting methods, and trade, with some endangered species being protected (Government of Kenya 2007: 7–12).

These origins coincide with the arrival of the railway in 1899 in Nairobi as the hub of the safari industry. One way for the railway to earn its keep was to encourage the wealthy to hunt Kenya's immense game populations. The enthusiasm of the hunters was fired by the writing of adventurers such as E.C. Selous. Following the completion of his terms as US president, Theodore Roosevelt sailed into Kenya's seaport of Mombasa in April 1909 to embark on one of the most elaborate hunting safaris East Africa had seen to date.

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An outstanding legacy of Roosevelt's safari was putting East Africa, especially Kenya, on the global map as a big-game hunting destination (Kenya Wildlife Service 1997: 9). Twenty years later, the American writer and essayist Ernest Hemingway, who made his first safari to Kenya in 1933, notably brought images of Africa and chronicles of his safari exploits to millions of readers across the world through such books as *Green Hills of Africa* and *The Snows of Kilimanjaro*. The latter was made into a film in 1952 starring Gregory Peck, Susan Hayward, and Ava Gardner.

Further interest in Africa's wildlife spectacle was sustained by films, books, and thousands of returning tourists. Other famed writers who thrust Kenya's wildlife into the global spotlight included George and Joy Adamson, whose intimate relationship with Elsa the lioness formed the basis of another feature film, *Born Free*.

America exports the national park idea

The concept of the national park has been variously called America's "best idea," "invention," and "greatest export" because it represents the first such decision by any nation (US Department of State 2008). When Yellowstone National Park was set aside in 1872, it was the first time in history that a federal government had decided that a large tract of land be reserved "unmarred for future generations."

In colonial Kenya, the first game ranger was engaged in 1901, followed six years later with the formation of the Game Department to administer game reserves, enforce the hunting regulations, and protect settler farmer communities' property and crops from wildlife (Government of Kenya 2007: 7). In 1945, the Royal National Parks of Kenya Ordinance was promulgated to provide for the establishment of national parks.

The Yellowstone example was explicitly picked up on December 16, 1946, when the 117-km^2 Nairobi National Park was gazetted. This is Kenya's oldest national park, and the first to be established in East Africa. Indeed, it's the jewel of Kenya's conservation system given its unique opportunities for visitor experience. No other capital city in the world boasts of natural wilderness, teeming with wildlife, barely 10 km from the city center.

Barely two years after the creation of Nairobi, Tsavo National Park was proclaimed in April 1948, and split into East and West Tsavo national parks in May 1949.

Soon to follow were Mount Kenya and Aberdare national parks in December 1949 and May 1950 respectively. Within five years of Kenya's independence from Britain in1963, three areas (Meru, Mount Elgon, and Ol Donyo Sabuk) were declared national parks and two areas, Malindi and Watamu, marine parks.

Since then, Kenya has steadily increased its protected area estate to 65 national parks and reserves, earning Kenya bragging rights as one of the best national park systems in the world (Kenya Wildlife Service 1997). The number of marine protected areas has grown to 10.

The institutions charged with the protection of Kenya's wildlife have evolved from colonial-era Royal National Parks, post-independence Kenya National Parks, the Game Department, the Wildlife and Management Department, and finally the current custodian, KWS.

KWS role in the economy

KWS is a state corporation that was formed in 1990, through the Wildlife (Conservation and

Management) Act of Parliament, Cap 376, with a mandate to conserve and manage wildlife and its habitat in Kenya. This requires multiple roles in various cross-cutting sectors, as follows.

Parks and reserves. KWS manages about 8% of the nation's total landmass. This land contains 22 national parks, 28 national reserves, and five national sanctuaries. Also under KWS management are four marine national parks and six marine national reserves. In addition, KWS manages 125 field stations outside wildlife protected areas.

Tourism. Tourism is the second largest sector of Kenya's economy. Wildlife managed by KWS forms the backbone of the tourism industry, since most visitors come first and foremost to view wildlife.

The tourism industry accounts for about 10% of the gross domestic product (GDP), making it the third largest contributor after agriculture and manufacturing. It is also Kenya's leading foreign exchange earner, generating about Ksh65.4 billion in 2007, up from Ksh21.7 billion in 2002. As an institution, KWS accounts for 90% of safari tourism and about 75% of the total tourism earnings. Within the 65 national parks and reserves spread across the nation, Kenya hosts some of the most ancient, fragile, and diverse wildlife species on earth.

Because of the diversity of the country's ecosystems, Kenya is categorized as a megadiverse country under the Convention on Biological Diversity, along with countries such as Indonesia, Brazil, Congo, Madagascar, and Tanzania (Government of Kenya 2007: 5). A number of factors have combined to make Kenya so rich biologically. These include variability in climate and topography, and the diversity in ecosystems and habitats, ranging from mountain ranges to semi-arid and arid areas to marine and freshwater.

Kenya is endowed with a unique combination of tourist attractions, comprising tropical beaches, abundant wildlife in natural habitats, scenic beauty, and a geographically diverse landscape. Kenya is one of the few destinations in the world to offer such a wide range of different water sports: from wreck-diving to snorkeling, sailing to paragliding, deep-sea fishing to glass-bottom boat safaris, whitewater rafting to fishing.

Kenya's wildlife is one of the richest and most diversified in Africa with a number of its protected areas and wetlands being internationally recognized and protected as World Heritage sites, Ramsar sites, and biosphere reserves. The Ramsar Convention on Wetlands, to which Kenya is a party, provides a framework for the wise use of wetlands. Kenya has five Ramsar-listed sites, namely lakes Nakuru, Naivasha, Bogoria, Baringo, and Elementeita. The Tana Delta is in the process of being listed. These wetlands help to make Kenya an ornithologist's paradise, with at least 1,137 bird species.

Such is the range of diversity in Kenya that it is possible to see patrolling secretary birds, dancing crested cranes, nectar-sipping sunbirds, diving kingfishers, ostriches, and floating rafts of pelicans. On the glittering Rift Valley lakes live over 4 million lesser and greater flamingos.

Kenya's tourism sector has been identified as one of the economic growth areas that can contribute significantly towards poverty alleviation. This is because wildlife conservation provides an alternative and more effective use of marginal areas. Besides, the spatial distribution of tourist attractions contributes to more equitable distribution of economic development. This revenue contribution arising from tourism has the highest multiplier effect

because of its connection with other key sectors of the economy, including the protection of critical water catchments and vast genetic resources. Tourism generates jobs faster than manufacturing or agriculture because of its tremendous trickle-down effect and instant impact on other related sectors (IMC Switzerland 2007: 147).

Tourism is one of the only industries in the world where the "good" or "service" is consumed at the site of production. For this reason, local people are at an advantage to reap the benefits associated with the sector. The import content of the sector is estimated at 20%, meaning that 80% of its earnings are derived from local resources (IMC Switzerland 2007: 155).

This means the sector benefits from a relatively lower capital/output ratio and import content per unit of output compared with most other sectors (Government of Kenya 2007: 27, 2008b: 58).

This gives the sector a higher yield than any other in the economy. Being labor-intensive, any marginal expansion in the sector generates more job opportunities than other similar initiatives.

According to the United Nations Environment Program, travel and tourism are human-resource intensive, employing directly and indirectly 8% of the global workforce. It is estimated that one job in the core tourism industry creates about one-and-a-half additional or indirect jobs in the tourism-related economy (United Nations Environment Program 2011).

KWS also helps communities outside protected areas develop ecotourism and other income-generating ventures, bringing critically needed jobs and income to rural areas.

Water. Besides safeguarding wildlife, KWS is also charged with the responsibility of protecting the environment in general. The organization is responsible for managing and protecting critical water catchments of Mount Kenya, the Aberdares, Mount Elgon, Chyulu Hills, Marsabit and the Mau Forests complex. Given the fact that Mount Elgon National Park is the source of major rivers in East Africa, including Nzoia, Suam, and Turkwell, it serves as a vital source of water for millions of people in eastern Uganda and western Kenya. The mountain also acts as a major water catchment area for lakes Kyoga, Turkana, and Victoria, and eventually for the Nile River. Besides, the mountain is important to people who live around it, who harvest forest products and medicinal herbs there.

Energy. KWS safeguards the source of much of our nation's energy. Some 70% of Kenya's electricity comes from hydroelectric dams. Most of these are sited on the Tana River, which flows from Mount Kenya and Aberdare national parks. The second largest source of hydroelectric power is the Turkwell Gorge, in Nasolot National Reserve. Geothermal power is generated in Hells Gate National Park.

Coastal economy. The 10 marine national parks and reserves that KWS manages are critical breeding areas for delicate sea life, sustaining the country's thriving fishing industry. The industry is a major source of livelihood for communities.

Social services. By visiting national parks, many seek to escape from the superficial distractions that clutter daily life and experience something of a deeper, enduring value. The parks act as places to reduce stress as well as unwind from the drudgeries of life and bond with family and friends. They are also good areas for conservation education.

Genetic resources. As reservoirs of genetic material and islands of naturalness, national parks are veritable "ecological laboratories" and "gene pools." By protecting habitat and wildlife, KWS conserves genetic resources that could be used to develop new or improved food crops, medications, and other products. Wild relatives of crop plants, for instance, may provide genes that increase drought, flood, or salt tolerance. Biotechnologists can use such genes to make food crops more resilient. Besides the scientific value, parks act as repositories of geological and biological diversity and knowledge.

National security. KWS is a disciplined and uniformed force, supplementing national security. KWS protects wildlife, tourists, local communities, and property.

Transport. As an agency of the Kenya Roads Board, KWS is charged with the responsibility of developing and maintaining 9,000 km of roads within the national parks and reserves.

Review of wildlife-related policy and legislation. With its wealth of experience on the ground, KWS contributes to policy on land, tourism, forest conservation, fisheries, and environmental management.

International conventions. Kenya is a signatory to a number of environmental conventions and protocols. As the designated national authority, KWS is called on to interpret international conventions and adapt them to local conditions, policy, and law.

Foreign historical links

Various Kenyan national parks and reserves host historically important sites. Their location in the wild has reinforced Kenya's attraction as a tourist destination.

For instance, Aberdare National Park has a special place in the British monarchy. It has one of the most famous trees in the world: The Treetops, a lookout among the branches of a *mugumo* (wild fig) tree overlooking a water hole. This is the tree hotel where the 25-year-old Princess Elizabeth ascended to her tree bedroom a princess and descended the next morning a queen, for it was here that she learned of the death of her father, King George VI, and became Queen Elizabeth II of the UK. This year marked the 60th commemoration of the coronation of Queen Elizabeth II. Prince Edward visited the hotel in 2002 during the 50th commemoration to the throne as her representative. Its location in the wild and links to the royal family have had a multiplier effect on tourism in Kenya (Mutanu 2012: 3).

The actual news of the ascension was delivered to Queen Elizabeth II the following afternoon at Sagana State Lodge. The fishing lodge at the foot of Mount Kenya was given to Princess Elizabeth by the colonial government as a wedding present.

The Aberdare range was named in 1884 by the Scottish explorer Joseph Thomson, after Lord Delamare, then president of the Royal Geographical Society (Kenya Wildlife Service 2003a: 15). In the neighborhood of the Aberdares is the former home of Lord Baden Powell, the founder of the worldwide Boy Scout Association movement. He first visited Kenya in 1906 and fell in love with the Aberdares and "the wonderful views of the plains to the bold snow peaks of Mt Kenya. Upon his death in 1941, he was buried in Nyeri at St Peter's Anglican Church, 'facing Mount Kenya' in the time-honoured local Kikuyu community tradition" (Kenya Wildlife Service 2003a: 21).

Given its wild beauty and atmospheric landscape, Aberdare National Park has had its share of Hollywood fame. Both Gura Waterfall, the most precipitous falls in Kenya, and the spectacularly lovely and long Karuru Falls, which fall in three steps, were portrayed in the Oscar-winning film *Out of Africa* starring Meryl Streep and Robert Redford. The film was based on the book of the same name written by Karen Blixen in 1937.

The Aberdare Range was also used in the filming of the *Gorillas in the Mist*. The antics and debauchery of the so-called "Happy Valley" set of the 1920s were featured in the novel *White Mischief* by James Fox. This later was made into a film with the same name, starring Greta Scacchi, Charles Dance, and Joss Ackland.

In Ol Donyo Sabuk National Park on the outskirts of Kenya's capital city Nairobi lies the grave of Sir William Northrup McMillan, a wealthy American farmer, whose burial place on the mountain's summit had to be abandoned when the clutches of vehicles accompanying his hearse burned out on the steep slope.

Other national parks such as Sibiloi, which was gazetted in 1973, have been universally recognized as the "Cradle of Mankind" and the most likely site of the biblical Garden of Eden. The park, 800 km north of Nairobi on the shores of Lake Turkana, was created to protect the sites of many remarkable hominid fossil finds revealed by its searing winds.

Sacred sites for pilgrimage

Some national parks in Kenya are more than mere mountains, forests, savannah plains, lakes, and geologic wonders. They represent a piece of the local people's souls; they act as cultural icons of heritage and identity.

In addition to their scientific value as repositories of geological and biological diversity and knowledge, national parks and reserves have profound spiritual and cultural significance for many Kenyan people. Communities attach deep spiritual values to sacred places, beliefs, practices, and traditions to lands that are now within national parks.

Apart from being the nation's namesake and highest mountain, Mount Kenya National Park holds a special place in local people's beliefs and culture. To them, it's the home of their traditional god, Ngai, and the location of their creation mythology. Indeed, many still come on pilgrimages to the mountain for rituals.

In the same breath, the 16,916-ha Mount Elgon National Park, which was gazetted in April 1968, has been long considered a sacred place of worship and home of the gods by people who inhabit its slopes. The unique caves on its lower slopes have long been used for traditional ceremonies by the local Sabaot and Bukusu people.

In the 1940s and 1950s, Mount Elgon was the scene of the first sparks of Kenyan resistance to British colonial rule. The heart of the religious movement, known as "Dini ya Musambwa" (Cult of the Ancestral Spirits), led by a charismatic prophet and folk hero, Elijah Masinde wa Nameme, was based at the foothills of the mountain.

Besides its historical richness, the mountain also hosts unique elephants that have been visiting its caves that have been sheltered from rain showers for millennia. The cave soils and rock aggregates are said to contain up to a hundred times more salt than the leaves of the surrounding forests. The elusive elephants travel deep into the caves usually at night, negotiating steep, rocky terrain to "mine" the caves (Kenya Wildlife Service 2003b: 43).

Vision 2030: The foundation for a prosperous Kenya

The Kenyan government launched the Vision 2030 development blueprint on June 10, 2008, to drive the country's economic growth by 10% by this year. The blueprint identified tourism as one of the six key sectors to deliver on the targets. The country wants to leverage on its endowment with a unique combination of tourist attractions (Government of Kenya 2008b). In this sector, Kenya aims to be one of the top ten long-haul tourist destinations in the world, offering high-end, diverse, and distinctive visitor experienced (Government of Kenya 2007).

Role of KWS in Vision 2030

KWS is implementing a number of initiatives towards realization of Vision 2030:

- Premium parks initiative to provide more high-end tourists with a unique experience in popular destinations, such as Amboseli, Masai Mara, Samburu, and Lake Nakuru.
- Under-utilized parks initiative: To upgrade the standards of attractive but seldom-visited parks such as Meru, Mount Kenya, Tsavo East and West, Mount Elgon, Marsabit, Rimoi, Nasaolot, Sibiloi, Saiwa Swamp, and Ruma to reduce congestion in the premium parks.
- Niche products initiative: Provide 3,000 beds in high-cost accommodation in Kakamega Forest, Ruma, Mount Elgon, Lake Turkana, Marsabit, Tana River, and Lake Victoria for tourists interested in cultural tourism and ecotourism as well as water-based sports. Develop tourism in bird watching, cruise, heritage, and historic sites.
- Water catchment management initiative: Rehabilitation of Kenya's five water towers, namely Mau Forests Complex, Mount Kenya, the Aberdare Ranges, Cherangani Hills, and Mount Elgon.
- Securing wildlife corridors and migratory routes initiative.
- Land cover and land use mapping initiative: Comprehensively map land use patterns.

Parting thoughts

Thanks to its alluring scenery, magnificent wildlife, pleasant year-round climate ,and warmth of its people, Kenya has more than its share of the earth's endowment. From the experience of the world's longest-studied elephants in Amboseli, the thrill of conquering Mount Kenya, the tallest standing structure on the equator, to the drama of the famed man-eaters of Tsavo. From the cave elephants of Mount Elgon to the Cradle of Mankind in Sibiloi on the shores of the world's largest desert water body, Lake Turkana. For historical architecture, the Portuguese legacy in Fort Jesus near Kenya's seaport of Mombasa old town serves the purpose as does old-town Lamu, the longest surviving settlement in Kenya and best-preserved Swahili settlement in East Africa. What's more, with more than 40 fine golf courses dotted across the nation, Kenya stands tall among other countries..

Lovers of travel and tour are spoiled for a choice during a visit to Kenya: sports, beaches, conferences, magnificent wildlife and culture.

Join us in conserving these precious natural treasures while returning with a unique and memorable experience.

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Wildlife Conservation Education

Paul Mbugua

Emerging challenges of wildlife conservation require a multipronged approach in order to have a lasting impact. Conservation of wildlife species, their habitats, and other natural ecosystems such as water catchment areas and wetlands are increasingly coming under intense pressure and threat of extirpation. The pressure is as a result of an increase in human population, changing land uses, and the ever-increasing need for goods and services from the ecosystems. These ecosystems therefore need proactive management. Management interventions are necessary to ensure wise use for sustainable socioeconomic development. Conservation education becomes a necessary management tool to inform and impart knowledge, particularly to local communities, as well as to enhance indigenous and traditional knowledge that is useful for conservation.

Our starting point

Formal conservation education in Kenya started in 1966 when the first education center was established in Nairobi. The establishment of the education center was inspired by the Nairobi Animal Orphanage, which became operational in 1964 (KWS 1996). The goal of the orphanage was to give orphaned wildlife a place to recuperate and a temporary home before being returned to the wild. The education center was to use animals from the orphanage for educational purposes. Prior to this, there was no organized way of imparting wildlife conservation education to the public. Indigenous knowledge on matters of wildlife ruled, with some knowledge passed on in the form of folklore and myths. From one education center in 1966 the number has grown to 15, and more are planned. Education centers have been established in Lake Nakuru, Tsavo East, Tsavo West, and Meru national parks. Smaller information centers exist in Kisite-Mpunguti Marine National Park, and in Arabuko Sokoke, Watamu, Malindi, Aberdare, Hells Gate, Kakamega Forest, Saiwa Swamp, Kisumu Impala, and Ruma national parks.

Through the Wildlife Act Cap 376, conservation education is anchored as one of the core functions of the Kenya Wildlife Service. In order to execute the mandate, more and more education facilities are in the process of being set up across the country. Existing facilities provide high-quality lessons on conservation of wildlife to diverse audiences. The main target, however, remains students of all levels, including tertiary institutions. Communities that co-exist with wildlife, the public, and the tour industry are also included in our education programs.

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Why conservation education?

One challenge facing conservation is changing the way people perceive wildlife. For as long as they can remember, communities living with wildlife have known a great deal about the animals nearby. Some have used them as a source of food since time immemorial and therefore cannot comprehend the fact that wildlife law prohibits any kind of hunting. Since they have always lived with wildlife, they hold indigenous and traditional knowledge which is very useful to contemporary wildlife managers.

The population of Kenya is changing rapidly from rural to urban. With this change, there is a growing population of Kenyans who do not know much about wildlife, national parks, and nature conservation. To them nature happens to be there and they do not see their role in its conservation (Figure 1). The KWS's value statement declares that "At KWS, we conserve and manage Kenya's wildlife scientifically, responsively and professionally. We do this with integrity, recognizing and encouraging staff creativity, continuous learning and teamwork; in partnership with communities and other stakeholders" (KWS 2008). We recognize communities' and other stakeholders' role in conservation and thus their rights to information and knowledge.

Wildlife management decisions are informed by research. Armed with this information on various aspects of wildlife conservation, the KWS education department aims to change the way people view wildlife. With an informed populace, we aim at gaining support for conservation endeavors and to win participation of the public in the conservation agenda as conceptualized in the KWS mission statement: "To sustainably conserve and manage Kenya's wildlife and its habitats in collaboration with other stakeholders for posterity" (KWS 2008).

Figure 1. An ostrich in Nairobi National Park with the city center in the background.

Involvement of communities is also critical in ameliorating the challenge of decreasing space for wildlife in view of human population growth. By creating awareness, we aim at winning more space for wildlife by encouraging, first, land use practices that are compatible with wildlife conservation and, second, conservancies, which also serve as income generation enterprises. KWS concedes that communities' livelihoods are important and hence promotes conservation approaches that enhance their interests and aspirations, such as community wildlife conservancies and the setting up of income generation enterprises. Conservation education plays a central role in this initiative. To achieve this, KWS's conservation education department works with other players on the delivery of conservation education. These players are mainly nongovernmental organizations and government agencies dealing with matters of environment and nature conservation. Many organizations have supported the KWS conservation initiatives, including the provision of equipment and capacity-building.

The challenge of poaching

Poaching poses the greatest challenge that KWS faces in its efforts to conserve Kenya's wildlife heritage, especially endangered species such as the rhino and elephant. Some cats, especially leopards, are also targeted by the poachers for their pelts, which are in great demand. Many other animal species are killed either for their skins, trophies, or other parts. Elephants and rhinos are poached for tusks and horns, respectively. The demand is fueled by the growing market in Asian countries. Prices for tusks and horns are extremely high and thus poaching is tempting, and the number of players involved in the market supply chain is huge.

Other species are killed for their meat and a number of them are threatened by unsustainable offtake. Antelopes for instance are killed usually for the commercial bushmeat trade or for subsistence to provide animal protein to families living in the rural areas (Figure 2).

In earlier days, hunter communities used to kill a few animals for food, and because they used crude weapons, wildlife had higher chances of survival by escaping. Then in came the guns and hunters succeeded more than ever before to kill wildlife. Using their knowledge of the behavior of wildlife under different conditions, they devised ingenious methods of killing antelopes *en masse*. Once meat is obtained it is then transported and sold in town centers where demand is always high. The meat is not always sold openly but customers know where and how to get it and the price is cheap hence more appealling.

Figure 2. A poacher with his catch.

Conservation education addresses this vice by highlighting the negative aspects of uninspected meat, including

the dangers of contracting zoonotic diseases. We also enlighten the people on the importance of wildlife to the economy and hence the need for its conservation. Our education programs emphasizes the values and benefits attached to wildlife, the need for its conservation, and the enhancement of human–wildlife co-existence and tolerance.

Education, therefore, becomes an effective means for KWS and our partners to achieve the target goal of having an informed and involved citizenry on important matters of wildlife conservation. Such as citizenry will understand the value of our wildlife resources as a national heritage, and appreciate that conservation and management of terrestrial and water resources is essential to sustaining healthy aquatic and terrestrial wildlife, the environment in which we live, and the quality of our lives.

Human–wildlife conflicts

Human–wildlife conflicts are a perpetual problem at KWS. The problem is growing by the day as more and more land is brought under cultivation. Human settlements are on the increase, thus reducing areas available to wildlife, and increasing chances of interaction between people and dangerous animals. Most people will report sighting an elephant even if it is innocently foraging. Lions attack livestock especially when prey diminishes due to various factors. These factors could be migration of prey leaving the predators behind, prey number decline due to poaching, and land use changes. The same also occurs due to livestock incursion into protected areas, where they become easy prey. In some instances the encounters between wildlife and humans turn fatal, while in other instances nonfatal injuries occur to either the people or the wildlife. Human death caused by wildlife is always a big issue, irrespective of the circumstances that lead to it.

Destruction of crops is another reason for numerous cases of conflict. In most such cases, retaliatory killings of wildlife occur. Killings may also occur under a pretext of human–wildlife conflict. Other conflicts occur when farmers invade such habitats as wetlands with the aim of cultivation. Where this has occurred, hippos become a menace especially when their habitats are reduced or access to pasture is blocked. To address this issue, we educate communities on various ways of reducing damage to crops and injuries to people.

Wildlife utilization

Wildlife habitats have shrunk drastically over the last four decades. Wildlife, however, remains an important cog in the tourism industry and up to 80% of safaris in Kenya depend on wildlife. Most of the available land is owned by individuals or by groups and very little of it is trust land. To get more land for wildlife, the people must be involved. In order for them to share their land with wildlife, they must reap benefits from wildlife. The KWS education program enlightens the landowners on the benefits to be gained through wildlife enterprises. Attitude change has been drastic and many landowners have organized themselves and formed wildlife conservancies which are now benefiting them through ecotourism ventures. Many other small landholders have started game farming that does not require large tracts of land. Animals farmed include game birds, crocodiles, tortoises, butterflies, chameleons, and

snakes. All these combined have had the intended result of availing more land to wildlife while improving the livelihoods of the local communities.

Over the past 10 years, a total of over 240 game farms have been licensed to keep guinea fowls, quails, tortoises, crocodiles, chameleons, Egyptian geese, doves, pheasants, ostriches, and peacocks for ecotourism, personal, commercial, and educational purposes. The benefits accruing from such operations have resulted in the landowners appreciating wildlife conservation. Through these efforts, more land has been brought under wildlife utilization and the number of people involved is growing. Private sanctuaries on their part are delivering benefits to the people and bringing more land under wildlife conservation. Some of the successful private sanctuaries include but not limited to Lewa Conservancy, Laikipia Ranch, and ranches within the Machakos Wildlife Forum. There are also community conservancies such as Mwaluganje, Shompole, Il Ngwesi, and Kimana, among others. Some wildlife conservancies such as Ol Pajeta have very effective education units that pass on invaluable lessons on wildlife conservation to visitors.

Target audience

Our target for conservation education is the Kenyan public. According to statistics compiled by the United Nations, youth aged 24 and under comprise 32% of Kenya's population. The majority of youths are still in school and most of our education programs target this group. In executing our education mandate, we aim at enriching the students' experiences on every park visit. Our programs are designed to augment what they learn in school, especially in areas of biology, ecology, geography, history, and nature conservation. Various themes are addressed, among them wetlands, climate change, energy, species, and forests. We have in place standard operating procedures that guide implementation of various programs. Among the most popular programs are in-house and outreach. Under the two programs we work with teachers and community leaders in deciding on the topics to be handled during their visits. Mode of delivery is then decided on, as is the venue. For most institutions of higher learning, our national parks are classrooms without walls. In addition to the national parks, we have the Nairobi Safari Walk, a facility designed purposely to address educational needs. Here students have the opportunity of seeing firsthand a simulation of three ecosystems: namely, the wetlands, forest, and savannah. The ecosystems are complete with the relevant plants and animals that inhabit them. Students interested in learning about behavior of various animals have an opportunity at the Nairobi animal orphanage. This facility has animals brought in as orphans and others brought in to receive veterinary treatment.

The education that we offer to all is that of creating awareness on issues related to wildlife conservation. Rarely do we encounter the same group of students twice or thrice in any given year. We occasionally meet students from the same school more than once but almost always they are students from different classes with different requirements. Most of what constitutes conservation education is covered in the school curriculum in subjects such as biology, agriculture, and geography. To have conservation education in the school curriculum requires identification of gaps between conservation education and other subjects, and this is not clear-cut. Instead of pushing for this line, we work with teachers to enrich the

school subjects with information that is relevant to our conservation education needs. Jointly with teachers we have developed guidebooks for some parks to help teachers instruct their students whenever they visit.

The spread of awareness of wildlife conservation is not uniform across the country. The remote areas with poor physical infrastructure are almost always lacking in many things. Education levels are low and exposure to what is happening in the rest of the world is also low. We target these areas with special programs tailored to address unique conservation issues. These issues include, among others, the dangers of charcoal burning and its effects on rainfall patterns and climate change, wildlife movements and distribution, human–wildlife conflicts, and degradation of the environment. Other issues are deforestation, drainage of wetlands, poaching, banditry, farming in the midst of wildlife areas without adequate barriers, and the dangers posed by invasive species of both plants and animals. The negative aspects of each of these are highlighted and wise use of resources advocated.

In other areas the energy plight is addressed. Up to 90% of rural households depend on firewood for cooking and 70% of urban households depend on charcoal. Energy-saving methods are demonstrated with the assistance of local agencies that engage in this field. Similarly, for water we involve agencies that deal with water. Kenya is classified as a water-stressed country. Compared with our neighbor Uganda, for every one liter of water that a Kenyan has, a Ugandan has six liters. Water harnessing and conservation methods are needed urgently to green our nation.

How to benefit from wildlife

Loss of habitats due to various factors, loss of biodiversity, deforestation, soil erosion, the fuel energy crisis and dependency on fuelwood—all of these pose big threats to conservation. The communities need to meet their day-to-day requirements before they can conserve. Tangible benefits are what they want to see. We address the knowledge gap that exists among community members by shedding light on the aspects of nonconsumptive utilization that they can engage in to enable them reap benefits from wildlife conservation. By so doing, we have won the support of the communities living adjacent to the national parks and reserves. These are the people who bear the brunt of livestock predation and crop destruction occasioned by wildlife. They live with wildlife, and unless they get benefits, they may view wildlife as pests and an unbearable burden. In our education programs, we exchange ideas with the communities on ways of minimizing damage to crops and predation. We communicate new research findings on best ways to deal with various wildlife species and the "dos and don'ts" necessary for co-existence between humans and wildlife.

Traditionally, most Kenyan communities valued wildlife as a source of food, medicine, and, occasionally, as totems. As the world becomes a global village, the perspective of looking at wildlife and assigning it a commodity value is now with us. Only a few in our population see the aesthetic value. We make an effort to make them see the greater and broader values of this invaluable resource.

Modes of delivering messages

For effective delivery of messages, we have used a combination of methods. At our education

centers we have used audio-visual equipment to communicate our in-house and outreach programs. In some instances, students are engaged in practical aspects of conservation such as litter collection and mechanical removal of invasive species, while in others students participate in nature games. In order to reach a wider audience, KWS has sponsored some conservation themes to be competed for by schools in the National Music Festival. The festival is one of the most powerful tools for conveying messages to Kenyans (Figure 3).

By sponsoring categories of poetry and song in both English and Swahili, and suggesting conservation themes for these, we effectively engage the students in reciting conservation messages for three months (Figure 4). These messages are rehearsed at home, thereby involving the parents in one way or the other. The themes suggested give the students and their teachers an opportunity to get more information on the topics to aid them in composing winning poems. In the end, students and their families and friends end up learning more about conservation and the need to support its endeavors.

Figure 3 (left). Pupils displaying a KWS-sponsored trophy they won in a recent Kenya Music Festival.

Figure 4 (below). Students passing on conservation messages through poetry.

Figure 5. KWS Education Warden Lucy Makosi plays with "Duse."

Essay competitions are organized from time to time, with the aims of gauging the student's level of understanding of conservation themes to enable us plan our programs, and to pick out workable ideas of conservation from the students.

Radio still remains an important tool for conveying messages. Out in the rural areas, there exist local radio stations that broadcast in vernacular languages. Rural populations listen to these stations and messages passed have ready audiences. Our education department has used these channels effectively. Electronic and print media are also used though the reach of these is rather small and confined mostly to urban areas. Other audiences are reached through exhibitions and fairs held from time to time across the country. For adult groups in the local settings, local meetings (Barazas) and occasional seminars are used.

Over the past 50 years, wildlife numbers and diversity have declined. If we take decisive action now we will be rewarded with a natural environment far richer than it is today (Figure 5). Concerted efforts by all are required to save our wildlife species from extinction. Today we stand at a crossroads, and the challenge facing wildlife is colossal but not insurmountable. Kenya Wildlife Service is up to the task. We believe we can and we will.

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Beyond Philanthropy: Community Nature-based Enterprises as a Basis for Wildlife Conservation

Munira Anyonge-Bashir and Paul Udoto

Introduction

KENYA'S WILDLIFE IS INCREASINGLY UNDER THREAT and consequently opportunities are being lost for it to positively contribute to economic growth, wealth creation, and increased employment. Much of this wildlife occurs outside protected areas on privately owned land. So far, many communities consider the presence of wildlife on their land as a burden rather than an opportunity for gaining benefits.

Kenya's population has increased five-fold since 1963 and is still growing fast. With this, human settlement, farming, industrial development, and fencing of open areas have encroached on age-old wildlife territory, ringed national parks and reserves, as well as blocked migratory routes and dispersal areas.

Some statistics estimate that 70% of Kenya's wildlife lives outside national parks and reserves, resulting in two major difficulties. First, the protected areas are not big enough to sustain the country's wildlife. Second, human–wildlife conflict in migratory corridors and dispersal areas is a recurrent problem.

Besides human-wildlife conflict mitigation measures and community education, the Kenya Wildlife Service (KWS) has over the years been supporting community projects in health, water, and education as part of its corporate social responsibility and community outreach program. However, with the establishment of the KWS Community Enterprise Department in 2009, the main thrust of engaging communities is gradually shifting away from philanthropic donations towards support for sustainable and profit-making nature-based enterprises. This is a paradigm shift away from a paternalistic approach and toward building communities' capacity for empowerment and sustainability.

Parks beyond parks

Whereas protected areas in Kenya have been set aside for purposes of wildlife conservation, areas outside protected areas that serve as dispersal areas and migratory routes are communally or individually owned.

Most of the protected areas were established without due regard to the surrounding landscapes (Republic of Kenya 2011). Consequently, boundaries between protected areas

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and the wider landscapes and communities are becoming distinct through the erection of fences and other barriers. Besides, currently there are inadequate incentives to motivate communities and land owners to adopt land use practices that are compatible with wildlife conservation and management. Indeed, the situation is aggravated by the existence of incentives in other sectoral policies that distort land use decisions (Republic of Kenya 2011).

Thus, most national parks and reserves are heavily dependent on surrounding community and privately owned lands for their ecological integrity. Much of the wildlife rely on such nonprotected lands for migration and dispersion in search of food, water, security, and breeding grounds.

The protected areas are threatened with significant loss of biodiversity due to competing and conflicting land uses. These threats have been attributed to lack of systematic land use planning and incompatible human activities. They have resulted in loss of critical wildlife habitats, land fragmentation, blockage of migratory corridors, and an upsurge in human–wildlife conflicts.

Thus, the cooperation and participation of private landowners and communities is essential to the success of conservation activities since most of these lands are used for activities that are injurious to wildlife conservation (Republic of Kenya 2007).

One particularly innovative method of adapting land for wildlife is the notion of a "voluntary land easement," in which the landowner agrees to restrict its use to be compatible with wildlife conservation for an agreed-upon period. This has been done with land adjacent to Nairobi National Park, and KWS plans to extend this model to other wildlife areas in Kenya.

Unresolved issues

Such cooperation and participation are key to resolving issues that affect conservation outside protected areas, including shrinking space for wildlife, insecurity, human–wildlife conflicts, representation in wildlife management and governance structures and user rights. Other outstanding issues include incentives and benefits-sharing, technical and financial capacity to manage wildlife, limited wildlife education and research, as well as lack of security of land tenure (Baskin 1994; Republic of Kenya 2007).

The lack of implementation of a land use policy has put people and wildlife at cross-purposes where both are competing for food and water. There is also pressure on Kenya's national parks and reserves from encroachment by people and livestock in search of pasture and water. People have also built different types of barriers in lands surrounding national parks and reserves to try to keep animals away from their property.

A good example is Kitengela within the Nairobi National Park ecosystem, which has attracted heavy settlement over the last three decades. Extensive fencing has been done by individual landowners, but predation of livestock by lions and hyenas and other property damage are still serious problems. The fencing has drastically affected seasonal wildlife migrations and reduced the area available to wildlife. In this and other areas, wildlife populations are bound to dwindle and their habitats to shrink when they are in persistent conflict with people (Baskin 1994). Persuading communities to protect wildlife when it deprives

them of their means of livelihood and endangers their lives and property remains a challenge (Baskin 1994).

In such areas, KWS looks for ways and means of formulating workable compromises that promote wildlife conservation and sustainable livelihoods.

To minimize conflicts, appropriate measures—which include fencing, wildlife translocation, elimination of problem animals, land use zoning and maintenance of wildlife corridors and dispersal areas—are assessed, and implemented whenever possible.

Mapping out human-wildlife conflict areas

KWS has mapped out the high-conflict areas, namely, the Laikipia ecosystem, which has a large number of both private and community wildlife/livestock ranches; the Tsavo ecosystem, which is densely populated; Narok within the Maasai Mara ecosystem, which has huge tracts of wheat farms that have sprung up in what had been predominantly wildlife dispersal areas; Mpeketoni in Lamu on the Kenyan Coast, where land use is mainly agricultural; and Rumuruti in Laikipia, where elephants from the forest invade farms and people encroach onto the forest in search of firewood. The situation has called for KWS to establish a rapid response team composed of an elite squad of rangers that beefs up the ground problem-animal control units in the high-conflict areas.

Ranger-based data collection

Currently, KWS is implementing the management information system (MIST) program where training of all the ranger force will be carried out to equip them with knowledge and skills to attend to human–wildlife conflict, among other tasks. Collection of data using the MIST technology will assist the organization put in place proactive actions in dealing with this challenge. This is also expected to generate data that can help KWS develop, implement, and review, as necessary, policies, guidelines, and standard operating procedures to address the problem.

Community outreach

A key function of KWS is to establish linkages and gain support for wildlife conservation and management from stakeholders and communities coexisting with wildlife. The KWS motto of "Reaching Out to the Communities" is implemented through a three-pronged approach: conservation education, extension services activities, and mitigation of human–wildlife conflict.

Corporate social responsibility

Since inception in 1990, KWS priorities have been shifting slightly each year, reflecting the success and commitment of KWS teams in tackling major issues such as security, poaching, human wildlife conflict, donor collaboration and community involvement.

For the last decade, KWS has been implementing a corporate social responsibility program whose aim, is to change community attitudes towards wildlife conservation (Kenya Wildlife Service 1995; Kenya Wildlife Service 2008: 47)

However, the charitable contributions approach has been faulted for lack of accountability, legitimacy, and participation and its "quick-fix" mode of delivery that engenders a dependency syndrome that often acts as an obstacle to community regeneration. This kind of philanthropy does not adequately address issues of community engagement and accountability (Tracey 2005).

However, it's important to note that some donor-funded projects in the 1990s saw the creation of community-based conservation enterprises such as Kimana Elephant Conservancy in Amboseli, Il lngwesi, Tursit Bandas in Laikipia, Mwaluganje Community Elephant Sanctuary, Kitui Honey, and several fishing projects that are all still functional.

Re-engineering community outreach

Toward the end of the second phase of KWS reforms, a new Community Enterprise Department was specifically created within the agency to streamline community involvement in nature-based enterprises. The underlying philosophy is that *if people benefit from wildlife and other natural resources, then they will take care of these resources, using them sustainably.*

The department provides technical assistance and capacity-building to communities and individuals, focusing on business development skills. Emphasis is placed on enterprises that have a clear link to conservation and tourism and show a strong potential for economic viability.

The main goal is to develop the capacity of communities and private landowners to establish and manage economically viable and sustainable nature-based enterprises. It is vital that communities benefit from profit-making nature-based enterprises in order for them to successfully engage in wildlife conservation and management as a land use option.

The creation of a formal unit within KWS to support community enterprises reflects a transition from the traditional corporate social responsibility concept to a more strategic mode, which provides innovative ways of channeling resources that allow social investments to yield long-term benefits. Community enterprise has been observed to have the potential to provide a framework through which corporations can establish reciprocal relationships with local stakeholders that allow for transparency and local accountability.

At inception, the department has been dealing with problems facing established community-based nature enterprises. The problems include governance issues, inadequate community benefits, flawed community–investor contracts, and lack of business management skills.

It is envisaged that partnering with communities to promote nature-based enterprises will promote targeted development within community wildlife areas. This will bring direct financial benefits from wildlife conservation to communities and individuals through the establishment of environmentally sound and complementary businesses. Maintaining community support for conservation is integral to achieving the KWS mandate.

Since the new focus of community enterprise was adopted, KWS has undertaken a number of activities, including developing a *Community Enterprise Strategy 2011–2017* as well as a policy on the establishment of conservancies and training of community rangers. It also has undertaken an inventory of wildlife conservancies and created a database to evaluate community and private capacity to manage wildlife outside protected areas.

Some of the recent achievements under this initiative are developing a 10-year general management plan for the 5000-ha Olerai Community Wildlife Sanctuary and conducting feasibility studies for a number of proposed community sanctuaries, including Empash, Yatta B2 Ranch, Mailua, Kipwa and Blue Post. A memorandum of understanding has also been signed between KWS and Ishaqbin and Ndera community wildlife conservancies.

Learning from experience

KWS has also organized exposure and educational tours for communities in Bonjoge, Iten, Rimoi, Samburu, and Isiolo where wildlife benefits to communities are evident. Similar tours for communities in Ndera, Ishaqbin, and Shimba Hills have been made to Samburu and Laikipia conservancies, where communities were earlier converts to the concept of community enterprise.

Community outreach

Awareness of human–wildlife conflicts is continuous and communities in wildlife areas are encouraged to participate in putting in place mitigation measures to minimize wildlife-related destruction.

KWS deploys resources to address human–wildlife conflicts, including building and maintaining wildlife barriers and enhancing the institutional and technical capacity of local communities to manage the conflicts in their areas. Partnership arrangements with the local communities that surround protected areas are being developed so as to promote commitment and acceptance of wildlife by these communities.

Another key strategy to working with communities and partners is the Corporate Social Citizenship policy. This strategic approach is KWS's guiding principle on how the organization contributes to, and improves the quality of life of, the society that interacts with and bears the cost of wildlife conservation. The policy guides the organization's sensitivity and responsiveness towards the larger community. The objective of the corporate social citizenship policy is to assist the communities to benefit from wildlife conservation. The aim is to change the attitude from viewing wildlife as a menace to seeing it as an economic asset that can improve livelihoods, create wealth, and alleviate poverty.

The key principles of the KWS corporate citizenship and social responsibility policy are (1) public education on wildlife matters and (2) provision of health facilities and clean water to communities who interact with wildlife and bear the cost of its conservation and management. KWS selected these principles after participatory rural appraisals with target beneficiaries. It is important to note that these projects were initiated by the communities to ensure ownership and sustainability.

The policy seeks to achieve equitable distribution of corporate social citizenship funds and provide the criteria to guide funding of community-based projects. It is expected that more land will be set aside for wildlife and at the same time communities will benefit economically from the option. KWS continues to assist in the establishment of private and community conservancies and has put mechanisms in place for their professional management. Training of managers and wildlife rangers for these community-run areas is critical to sustainable wildlife conservation and management outside KWS-administered protected areas.

The essence of this policy is to put in place measures to ensure that wildlife is conserved and managed in an organized and standardized manner both within and outside protected areas. The policy, therefore, entails the implementation of standard procedures for the establishment of conservancies; enforcement of and compliance to wildlife laws and regulations; handling of human–wildlife conflicts; protection of wildlife; development and harmonization of standard operating procedures, codes of ethics and standing orders; and monitoring and evaluation.

Examples of success stories

KWS has secured more than 1 million ha of land for use by wildlife in non-protected areas as part of the benefits of the establishment of conservancies (Kenya Wildlife Service 2011). For instance, in Amboseli the establishment of community-owned and private wildlife sanctuaries has taken off as a way of expanding wildlife habitat and bringing wildlife-based tourism benefits to the people.

However, wildlife-based tourism is a complex business that needs marketing expertise and resources. Even if ecotourism and community conservation initiatives succeed, there are challenges related to sustainability, management, and equitable sharing of benefits among shareholders.

Conclusion

Kenya Wildlife Service's institutionalization of a structure to support nature-based community enterprises promises to be not only an effective tool for managing relationships between people and wildlife, but also a sustainable source of livelihood for communities in wildlife areas. The re-engineering of the KWS community programs and stakeholder engagement — from benevolence toward a more sustainable form of long-term involvement with communities—holds a bright future for Kenya's wildlife conservation efforts. Communities have shifted from being passive recipients of corporate donations to active partners in shaping conservation and social development programs. The new mode of community engagement is providing to be an effective mechanism for community renewal and local capacity-building. Many communities are now seeking opportunities to collaborate with KWS in efforts to conserve wildlife.

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The Role of the Kenya Wildlife Service in Protecting Kenya's Wildlife

David Karanja

KENYA'S UNIQUE LANDSCAPE SUPPORTS ABUNDANT AND VARIED WILDLIFE of scientific, intrinsic, and economic value and has a considerable extent of wildlife habitat (Government of Kenya 2008, 2009; KWS 2008; Western 2008). With a significant population of wildlife living outside protected areas on a seasonal or permanent basis, the country's wildlife resource has suffered from the effects of human economic activities, poaching, human–wildlife conflict, demand for wildlife products in the illegal market, and weak legislation, among other factors (Kamande 2008; KWS 2009). Poaching and other wildlife crimes have been on the increase in the recent past. These crimes have both direct and indirect negative impacts on local communities, including depletion of the resource base on which they depend for their livelihoods and altering of local environmental conditions. Environmental and wildlife crimes pose a great threat to national, regional, and international conservation efforts. Kyale (2006), Murimi (2007), ISS (2008), and Kamweti et al. (2009) point that in Africa the prevention and combating of crime involving natural resources such as water, forests, wildlife, and the environment in general should be of primary concern due to the human population's reliance on natural resources. Thus, according to ISS (2008) and KWS (2011), any crime committed involving natural resources not only degrades the environment, but also deprives the local population of their basic needs. Environmental and wildlife security issues are therefore also vital national security interests in Kenya because most citizens are engaged daily in a struggle to survive, and local people depend on the environment for their livelihoods.

Wildlife-related crimes in Kenya have been evolving over time and continue to present growing challenges to wildlife conservation. In the past, Kenya experienced high levels of elephant and rhino poaching that almost drove their populations to extinction (KWS 2012). Poaching was mainly conducted by armed bandits from Somalia and was prevalent in pastoral areas outside wildlife protected areas. This forced some animal species to abandon their rangeland and territories and seek refuge in parks. The period before the establishment of Kenya Wildlife Service (KWS) in 1989 was characterized by massive poaching, general insecurity in the parks, inefficiency, low staff morale, and inadequate equipping of the agency charged with the responsibility of conserving and managing Kenya's wildlife.

Since the establishment of KWS, there has been a marked improvement in wildlife and tourist security. However, as is the general trend globally, the region and the country are wit-

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nessing emergence of new challenges to wildlife security. The demand for wildlife products in the international market has escalated, and a resurgence of elephant and rhino poaching is causing great concern. There have also been shifts in poaching areas and means, with snaring and poisoning of animals as opposed to use of firearms in some areas that hitherto never experienced poaching. Shifts in trophy trafficking and concealment methods, and in smuggling routes, have occurred. Other emerging issues affecting wildlife security include climate change (which is causing changes in wildlife movement and dispersal patterns), increased human population, biopiracy, terrorism, and cybercrime.

Wildlife crimes in Kenya includes poaching, banditry, encroachment into protected areas, illegal trafficking and trade in live fauna and flora, and destruction of water catchment areas and wildlife habitats. Growing affluence in East and Southeast Asia has increased demand for natural resources, including an increased demand for wildlife and wildlife products. Kenya's wildlife (rhinos, elephants and members of the cat family) are among the contraband products in the illegal wildlife trade.

Some of the factors that contribute to wildlife crime in Kenya include the proliferation of small arms and light weapons from neighboring countries such as Somalia. The porous Kenya–Somalia border in particular has provided opportunity for armed Somali s to cross into Kenya on poaching missions. Well-organized and highly skilled gangs with superior firepower cross over into Kenya to take refuge in largely remote wildlife protected areas, which serve as safe havens. Often, Somalia militias flushed out from their territories of influence and control take refuge in these protected areas as they reorganize; they also become involved in wildlife poaching.

The ever-increasing demand for wildlife trophies and other products from consumer countries (primarily in Asia and the Middle East) stimulate wildlife poaching and the illicit trophy trade. This has also resulted to biopiracy, where East Africa sandalwood (*Osyris lanceolata*) is illegally extracted and shipped to Asian countries through a neighboring country. There is also a high demand for charcoal in Asia markets, which is shipped through Somalia. This demand has accelerated environmental degradation.

The illegal wildlife trade

Trafficking of wildlife is linked to other serious crimes such as drug trafficking, arms trafficking, human smuggling, and document counterfeiting. It is often cited as a means to finance the more violent and destructive activities of criminal and terrorist organizations because of the major financial benefits derived from a relatively minimal time investment, low risks of detection, and lack of serious punishment. The huge profits made from illicit wildlife trade act as incentives to organized crime networks. Some of the possible links of illegal wildlife trade and organized crime include:

- The use of legal shipments of wildlife or their products to conceal drugs. There is likelihood of illegal drug shipments being combined with wildlife.
- The parallel trafficking of drugs and wildlife along shared smuggling routes. Organized criminal gangs involved in wildlife trafficking are using existing smuggling routes for illegal commodities, such as small arms and drugs, to trade in wildlife. The drug cartels

could be using their covert distribution networks to profitably trade in wildlife species as well as drugs.
- The money from wildlife trafficking and drug dealing is also laundered through the setting up of legal enterprises.

Wildlife products are used as a currency to barter for small arms, light weapons, and drugs, and to launder drug trafficking money. For example, ivory and rhino horns have been exchanged for firearms and livestock in Somalia. Proceeds from illegal trade are also believed to support illegitimate activities of militias in Somalia, and this could have a possible link with terrorist organizations.

KWS role in wildlife and national security

Kenya is rich in biodiversity and is both a source and transit route for the illegal wildlife trade, which poses a major challenge to wildlife conservation. Since its inception in 1989, KWS has been working to enforce existing laws and treaties protecting wildlife and has made a tremendous contribution to enhancing wildlife conservation. KWS has the mandate of protecting wildlife and its habitats (Government of Kenya 1999). These functions are particularly important as they lead to enhancement of wildlife conservation, protection, and management in addition to consolidating and stabilizing wildlife and tourism sectors in the country. KWS also has the legal mandate to enforce wildlife laws and regulations. This mandate includes eliminating poaching, providing security to local and international visitors, safeguarding KWS property and assets, and training security personnel.

KWS has put in place specific security measures to address wildlife crime. KWS law enforcement units works with stakeholders such as ranchers, local communities. and other law enforcement agencies in drawing up and implementing area-specific security strategies to counter poaching threats and other wildlife crimes. These measures include holding regular security meetings with private conservancies and ranchers in the vulnerable areas, joint law enforcement efforts, and wildlife security review and operations covering the entire country. Cross-border operations and collaborations between Tanzania and Uganda are also in place to address crimes of a transboundary nature.

KWS has deliberately reached out to local communities to be partners in wildlife law enforcement. This is after our realizing that working with local communities is critical for effectiveness in law enforcement against wildlife crime and ensuring compliance with wildlife law. Specific measures have therefore been put in place to strengthen collaboration and cooperation with local, regional, and international wildlife law enforcement agencies and other stakeholders in order to win the fight against wildlife crime. These efforts have led to significant improvements in security of wildlife and its habitats, and the guaranteeing of visitor security within protected areas.

Wildlife crime threatens sustainable conservation of biodiversity, particularly the illegal wildlife trade, which is driving many species towards extinction. Much of this trade is from developing countries, which contain most of the world's biodiversity, to developed ones, which provide the demand. This illegal taking, trafficking, and trading in wild animals, plants, their parts, and derivatives is a global phenomenon that has serious implications for

biodiversity, ecosystems, and national economies. Illegal wildlife trade is one of the primary threats for the survival of plants and animals in Kenya and thus affects a large number of species.

To prevent and combat wildlife crime, and in particular poaching and trafficking in wildlife species and their products, KWS has established and strengthened specialized security units that are deployed throughout the country. These include the canine unit, which helps to sniff out wildlife products and track wildlife offenders; the horse unit, to ease movement in mountainous terrains; the prosecution unit for wildlife related offences; the security research and analysis unit, to study emerging trends and recommend appropriate solutions; the wildlife investigation, which responds to wildlife crime; the intelligence unit, which gathers information intended to preempt wildlife crime; the emergency management unit to deal with disaster situations; and the security data management unit for information management. As Kenya still remains an important link to international destinations for illicit consignments of wildlife and its products, the strengthening of these units and more collaboration with the Customs Department and other government agencies will be some of the strategies for winning the war against wildlife crime.

KWS also plays an important role in protecting the country's water catchment areas found within parks and reserves. These areas also constitute habitat for wild animals. Three of Kenya's five water towers—the Aberdare ranges, Mount Kenya, and Mount Elgon—are found within protected areas. It's through KWS's efforts to control illegal logging and destruction of these catchment areas that many of the towns in Kenya, including Nairobi and Mombasa, are guaranteed a water supply. The water catchment areas also support vital sectors of the country's economy, such as tourism, agriculture, and energy. In addition, KWS has taken the lead in a joint government effort to protect the Mau ecosystem from further destruction. This is a significant role as this ecosystem comprises the largest closed-canopy forest in the country, and was, until 2008, probably the most endangered habitat in Kenya. KWS has also been very instrumental in enforcing the 2007 presidential decree to protect East Africa sandalwood from exploitation through illegal trade, and has managed to eradicate the illegal harvesting of the plant within the protected areas.

Partnerships with stakeholders

KWS works very closely with other law enforcement agencies in all matters of wildlife security. Engagement with the provincial administration, police, local communities, Customs and Immigration departments, Kenya Airports Authority, private ranches, and other conservation stakeholders has been intensified to address matters of mutual interest. Regionally, cross-border collaborations have yielded results in tackling crime along shared borders. INTERPOL and the Lusaka Agreement Task Force are instrumental in facilitating support when crimes of an international nature occur. Collaboration with courts in many parts of the country has also been intensified.

Training of law enforcement personnel

KWS invests heavily in training and building the capacity of its law enforcement personnel. The Manyani Field Training School, located in Tsavo West National Park, offers paramili-

tary training and other specialized law enforcement courses to KWS law enforcement staff. The school also trains personnel from other stakeholders involved in wildlife conservation and law enforcement, including County Councils, private wildlife sanctuaries, and the Kenya Airport Authority. To meet the training demands of its staff, KWS is planning to upgrade Manyani to make it a center of excellence in wildlife law enforcement training. This will involve redesigning all the courses to address emerging wildlife security issues, as well as expansion of training facilities. KWS has also greatly benefited from training opportunities and other capacity-building programs offered to its law enforcement personnel by other partners both within and outside the country.

Contribution to national security

In addition to wildlife law enforcement, KWS plays an important role in enhancing national security by complimenting other security agencies. Some of these security functions include:

- Securing Kenya's coastline in our area of jurisdiction (marine parks and reserves);
- Monitoring of the flight path over Nairobi National Park;
- Participating in national security programs; e.g., maritime security;
- Undertaking surveillance and monitoring of bandits and gangs around wildlife protected areas and close to Kenya–Somalia border;
- Safeguarding key utility facilities such as railway lines, pipelines, electricity transmission lines, and meteorological stations located in or passing through the parks and which are susceptible to sabotage;
- Ensuring the security of vulnerable target visitors, key attraction sites, visitor facilities, and campsites;
- Securing airstrips within parks and KWS managed reserves;
- Capacity-building in law enforcement;
- Collaborating with local, regional, and international agencies to provide security and enforce relevant laws, including cross-border security operations with Tanzania and Uganda; and
- Exchanging information with other security agencies, including district security and intelligence committees, National Security Intelligence Service, National Counter Terrorism Centre and INTERPOL.

Stepping into the future

As is the trend globally and in the region, wildlife crime in Kenya is projected to increase unless stringent preventive measures are taken. Towards this end, KWS will implement some innovative solutions to strengthen law enforcement to address wildlife security challenges (UNDP 2000; Government of Kenya 2009). These will focus on devising new approaches that address the emerging trends in wildlife security and on the involvement of communities in preventing and combating wildlife crime. Given an environment of decreasing resources, there is a need to change from traditional enforcement practices, which are more reactionary and incident-driven, to a more proactive focus on prevention, problem-solving, and partnerships.

The sophistication of wildlife crime, increased wildlife security challenges, and the need to capitalize on modern law enforcement technology demand that wildlife law enforcement institutions enhance security operations to make them more effective. For its part, KWS is implementing a comprehensive force modernization program that will contribute to the fulfillment of the KWS vision. The focus is modernization of KWS security forces to the point where they are acknowledged as setting world standards for competence, effectiveness, and professionalism.

Force modernization calls for a change of strategy and operational tactics, utilization of post-operation intelligence, constant improvements that integrate "lessons learned" to operational effectiveness, and leveraging information and communication technology. KWS force modernization is based on three principles: force restructuring, changes to the force itself, and equipment acquisition that is aimed at finding an appropriate mixture of personnel, technology, and infrastructure to achieve improved efficiency and effectiveness. It is expected that the implementation of the program will enhance the capacity of our force to deal with ever-increasing wildlife crime and assist law enforcement in line with the KWS strategic plan.

As part of the force modernization program, KWS plans to establish a forensic laboratory to facilitate effective investigations and criminal prosecutions. The forensic laboratory will examine evidence that can be used to help tie criminals to their crimes, and victims to their assailants, and to exonerate innocent suspects. Currently, case evidence presented in courts is often not sufficiently identified due to lack of supporting evidence. The acquitted individuals then continue to engage in wildlife crime, being aware of the weaknesses in the system.

As we move forward, KWS will be involved with other partners and stakeholders in efforts to mitigate the effects of climate change on wildlife and its habitats. Wildlife crime has been exacerbated by the existing vagaries of weather, and it is projected that climate change will pose one of the gravest threats to wildlife and national security as it will cause drastic ecosystem shifts that could change the resource base, contribute to food and water scarcity, and accelerate conflict over resources.

Conclusion

Wildlife crime works against the objective of sustainable wildlife conservation globally. It has driven many species to extinction and continues to pose threats to others. It also works against the spirit of Vision 2030 by jeopardizing our wildlife-based tourism industry. One of the tools to enhance wildlife management is effective law enforcement. However, it is important not to lose sight of the ultimate objective of law enforcement from a resource management point of view: preventing resources from being degraded through illegal activities. Owing to the geographical positioning of the country and the proliferation of illegal firearms in the region, fighting wildlife crime is both a challenging and an expensive undertaking, and KWS law enforcement personnel have been exposed to dangerous encounters with armed and organized gangs that have resulted in loss of lives and injuries to our personnel.

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Challenges and Opportunities for Conserving Some Threatened Species in Kenya

Charles Musyoki, Samuel Andanje, Mohammed Said, Monica Chege, George Anyona, Luke Lukaria, and Bernard Kuloba

Introduction

KENYA HAS OVER 100 SPECIES THAT ARE LISTED AS "THREATENED." In addition, there are many more that are not globally listed but are nationally threatened. The challenges facing the conservation of most species are similar but there are some that are specific to individual species.

Habitat loss and fragmentation affect all species, whereas conflict between people and wildlife, and illegal offtake, affect only some. Reduced prey base affects carnivores, while ignorance and misconception affects hyenas and owls. Disease affects mainly wild dogs and Grevy's zebra, while irresponsible tourism is a factor in the conservation of cheetahs and wild dogs.

This paper examines some species in Kenya, the conservation challenges they face, and efforts to enhance their conservation.

Grevy's zebra

Grevy's zebra has undergone one of the most substantial reductions of range of African mammals, and is found today in only two range states: Kenya and Ethiopia. Historically, the species was also found in Eritrea, Djibouti, and Somalia, and, possibly, Sudan. The species has undergone significant decline, from an estimated 15,000 individuals in the late 1970s to a present-day estimate of 2,400 individuals, an 85% decline over a period of about 30 years (Figure 1). Table 1 shows the causes of population decline of the Grevy's zebra.

As such, Kenya has an enormous national and global responsibility to ensure that this species is protected. This is particularly important because 95% of the current population of Grevy's zebra is found in Kenya.

The sustained decline in numbers and range has been a major concern to stakeholders in Grevy's zebra conservation. It was also recognized that the conservation of Grevy's zebra and its semi-arid ecosystem in Kenya will require commitment and coordination among all stakeholders to ensure the future survival of this species.

The need for a Grevy's zebra conservation strategy for Kenya was suggested in 2002. A meeting involving diverse stakeholders was held in March 2004 to map ways of developing a conservation and management strategy for the species. That meeting led to the formation

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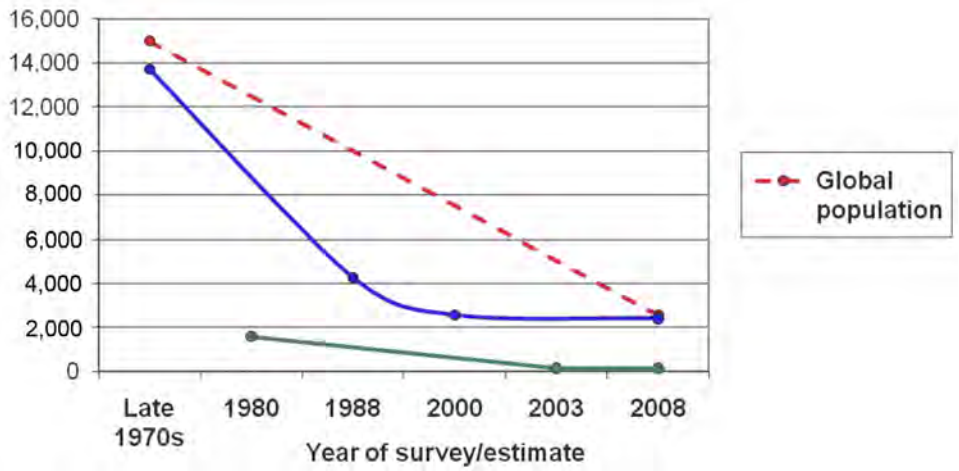

Figure 1. Trend in Grevy's zebra numbers from the late 1970s to 2008.

Threat	Cause	Threatened population(s)
Reduction of water sources	Unsustainable extraction of perennial river water for irrigation in highland areas.	All populations, particularly those dependent on River Ewaso Ng'iro. Affects 60–70% of Kenya's population.
Restricted access to water	Exclusion of wildlife from water sources by pastoral people.	The small and potentially isolated populations in the more arid areas.
Habitat degradation and loss	Heavy, sustained grazing by relatively high densities of domestic livestock.	All lowland populations in the historic range of Grevy's zebra.
Competition for resources	Competition with high densities of livestock for limited resources.	All lowland populations. Competition may result in low juvenile survival.
Hunting	Historically: killed for skins; currently, killed for meat, medicinal and cultural purposes.	The population in general.
Predation	Disproportionate predation, specifically by lions.	Protected areas where lions are abundant.
Disease	Endemic anthrax, particularly from unvaccinated livestock.	Populations in areas with a diffuse wildlife–livestock interface.
Inter-specific hybridization	Hybridization between Grevy's and plains zebra.	Ol Pejeta Conservancy and Tsavo.

Table 1. Summary of threats to Grevy's zebra in Kenya.

of a National Grevy's Zebra Task Force (GZTF), which was mandated to coordinate conservation efforts in Kenya. Since its inception, the National GZTF held several meetings under the direction of the Kenya Wildlife Service (KWS). In its meetings following the 2004 workshop, the task force decided that there was a need to develop a national Grevy's zebra conservation strategy.

As part of the strategy development process, in April 2010 a national workshop was held with all stakeholders to develop a vision, goals, and strategic conservation objectives.

The workshop provided an opportunity to update participants on numbers and distribution of Grevy's zebra in Kenya, as well as incorporate the inputs and views of stakeholders. Activities, indicators, and timelines were outlined against each strategic objective. Timelines for implementing the strategy and a draft implementation structure were also developed.

The strategy development process put emphasis on ensuring the participation of those taking conservation actions on the ground, particularly local communities who are the major stakeholder across the species' range.

The first species of wildlife actually known to have been eliminated by humans is the dodo. This was a bird species that occurred on the island of Mauritius in the Indian Ocean. It went extinct in 1681 due to indiscriminate killing by people. Since extinction is irreversible, we would not like the Grevy's Zebra to go the way of the dodo. The national conservation and management strategy will go a long way toward ensuring that Grevy's zebras are sustainably conserved and managed for the benefit of the people of Kenya and as a part of the world's wildlife heritage.

Grevy's zebra is listed in Appendix I of the Convention on International Trade of Endangered Species of Flora and Fauna (CITES). They are legally protected in Ethiopia and have been protected by a hunting ban in Kenya since 1977.

Large carnivores

Kenya has six species of large carnivores, namely: lions, cheetahs, spotted hyenas, striped hyenas, wild dogs, and leopards.

Lions occur in a number of Kenya's protected areas, with large populations in the Masai Mara and the Tsavo complex. In addition, there are important lion populations outside protected areas in Laikipia, Kajiado, and Narok. Kenya's lion population is estimated at 2,000 individuals.

The cheetah (Figure 2) is one of the most unique and specialized members of the cat family. It can reach speeds of over 100km/hour making it the fastest creature on land. In the past, cheetahs were widely distributed within Kenya. However, cheetahs in Kenya appear to have experienced a reduction of their geographic range. Today, they occupy 23% of their historical range, mainly in the Tsavo, Mara–Serengeti and Laikipia–Samburu ecosystems. The national population is estimated at 1,160 individuals.

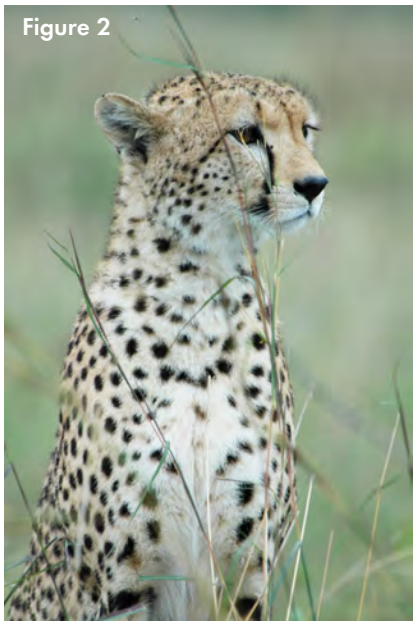
Figure 2

Spotted hyenas are hunters and scavengers, and occur in large numbers in most wildlife areas. Striped hyenas easily constitute the least well known of the six large carnivores native to Kenya. Despite superficial similarities, they differ from spotted hyenas in virtually every aspect of their biology. They are present in some protected areas, but the

vast majority resides outside parks. The national population is estimated at 1,000 individuals.

Wild dogs were widely distributed across Kenya in the past but today occupy just 13% of their historical range. Despite this past decline, wild dog numbers have increased in Kenya in recent years. The largest population, occupying parts of Samburu, Laikipia, and Isiolo districts, colonized this area naturally in the late 1990s; for the preceding 15 years wild dogs had been absent from this area. Likewise, sighting frequencies from the Tsavo ecosystem have increased relative to those in the early 1990s. Wild dogs are also gradually increasing in number and recolonizing the Mara–Serengeti ecosystem following a die-off in 1990–1991. The national population of wild dogs is estimated at approximately 845 individuals.

Leopards remain widespread both inside and outside protected areas, although quantitative data on their numbers and distribution are sparse.

Kenya's large carnivores have an important function in structuring ecological communities and also play a critical role in Kenya's tourism industry. However, the populations of these large carnivores have been on the decline in recent years. The key threats facing large carnivores in Kenya are:

- Habitat loss due to land use changes and human encroachment into areas that were previously occupied by wildlife.
- Human–carnivore conflict: These species are threatened directly and indirectly when they are killed due to threats on humans and livestock.
- Loss or decline of populations of prey species.
- Myths: Carnivores such as hyenas are portrayed in a negative light in Western art and literature, mocked and derided by Hollywood producers, and feared and disliked by many African communities. This dark public image currently represents one of the most serious obstacles to the conservation of hyenas.

The decline in large carnivore numbers and distribution has been a major concern to stakeholders in large carnivore conservation.

The need for national strategies to guide efforts to conserve large carnivores was suggested in 2000 and a National Large Carnivore Task Force constituted to champion the process. The strategies development process put emphasis on ensuring the participation of stakeholders. As part of the strategies development process, national workshops were held with stakeholders. The workshops provided opportunities to update numbers and distribution of large carnivores in Kenya.

The strategy has three critical objectives: achieve viable and functional populations of the carnivores themselves, achieve viable and functional populations of prey species, and eliminate or at least limit the proportion of livestock killed by large carnivores.

Some parts of Kenya can and do support reasonable densities of large carnivores. However, in other areas the presence of large carnivores is incompatible with existing land uses. Given that large carnivores live both inside and outside government-designated protected areas, the populations inside protected areas are almost certainly dependent on adjoining unprotected lands for their long-term viability. Hence, conservation activities outside pro-

tected areas are absolutely critical. Measures such as the designation of carnivore conservation zones on private and community lands are therefore likely to make a substantial contribution. The conservation strategies provide guidance on how this can be attained.

Despite their declining numbers, large carnivores are a serious threat to livestock, taking cattle as well as smaller stock. In Laikipia, for instance, lions are the most important predator of livestock on commercial ranches. Outside protected areas, the negative impact of large carnivores on human livelihoods may be reduced by limiting livestock losses. But a complementary approach is to offset those losses against gains from alternative income sources. An existing source of such alternative income is ecotourism: large carnivores are crucial to wildlife-based tourism, with virtually all tourists wishing to see lions, leopards, and cheetahs, and a high proportion of experienced tourists keen to see wild dogs.

Fostering efforts and developing mechanisms to help local people realize these potential benefits from the presence of large carnivores are a key prescription of the carnivore conservation strategies.

The strategies also call for the development of well-trained, efficient, and responsive Problem-Animal Control Teams within KWS as an important step in assisting local communities to reduce losses occasioned by large carnivores. Such teams have an important educational responsibility, teaching local communities about better and appropriate livestock husbandry practices and other measures that would reduce the vulnerability of livestock to depredation.

The conservation of large carnivores also entails maintaining the interactions between the carnivore species, and between the carnivores and their prey.

Overall, by carefully examining the needs of each of the species, the strategies seek to develop and implement approaches to promote co-existence of large carnivores with people and livestock.

Antelopes (hirola, bongo, sable, roan, and sitatunga)

Hirola has had a restricted range in recent history, although fossil records indicate it had once a pan-African distribution. The species range in Kenya has declined from about 17,900 km^2 in the 1960s to approximately 7,600 km^2 by 1996, and the population has declined from roughly 14,000 animals in the 1970s to between 600 and 2,000 today. A national census held in January 2011 sighted 245 individuals in the natural range. The species is classified as a critically endangered.

The process to develop a Hirola Conservation Strategy was initiated in 1996, and was developed by a large number of institutions and stakeholder groups. The key aim of the strategy is to eliminate poaching, the greatest threat to the survival of the species, in order to allow the remaining populations to grow to viable levels.

Considering the fact that over 90% of the hirola population occurs outside protected areas, efforts have been directed toward the protection and management of the whole range through community hirola management systems, including sanctuaries. The first community hirola sanctuary, covering an area of approximately 20,000 acres, has been established.

The roan antelope was once widely distributed through the savannah woodlands of Africa, but its populations have rapidly declined during the last 40 years throughout much

of its range. The roan originally occupied fairly large areas of southern Kenya, but by the early 1960s the distribution had become much reduced, and the species was declining further in most of the scattered localities in which it persisted. There have been no confirmed reports of roan sightings in all areas of its former range in the last decade, and the last known refuge of the species in Kenya is the Lambwe Valley in Ruma National Park. This population has declined from 202 individuals in 1976 to about 27 individuals currently.

The decline in numbers and shrinkage in distribution of roan antelopes in Kenya has necessitated the development of a national conservation and management strategy. The strategy explores all the options that are available to ensure the species recovers and thrives in perpetuity.

The sitatunga is Africa's only true aquatic antelope, and Kenya is the eastern range of this rare animal. The antelope has continuously suffered loss of habitat and illegal hunting, bringing its population to the verge of regional extinction.

Today, the sitatunga is only found in a few localities. A recent survey confirmed 256 individuals in swamps in different parts of the country. The majority of sitatunga live outside government-designated protected areas and are now facing enormous threats to their survival due to the immense anthropogenic pressure exerted on their habitats. It's only through active intervention that the antelope will be saved from an eminent regional extinction. A task force on sitatunga conservation is currently working on a national conservation strategy.

Sable antelopes have been eliminated from large areas of their former range due to a combination of factors, including disease, drought-caused food shortages, habitat loss and degradation, and interspecies competition. Subsistence hunting poses an additional threat, and its powerful stature and imposing horns have also made this species a prized trophy animal to many big-game hunters.

In Kenya, the sable antelope has declined considerably in its former range in the last 30 years and is only found in Shimba Hills National Reserve. Currently, the population is estimated at 70 individuals, down from 265 in 1960. The population is dwindling and localized. KWS has established a task force to develop a national conservation strategy for the species.

The mountain bongo is on the edge of extinction in the wild mainly due to widespread destruction of forest habitats in Kenya. Kenya hosts the entire global wild population of bongos, estimated at 103 individuals. Aberdare National Park and Forest Reserve is the stronghold for bongos in the country, with an estimated population of 50 individuals. Mau West Forest holds an estimated 30 individuals, Mount Kenya Forest about 15, and Mau Eburru Forest 9. There is also another herd of 68 individuals in a semi-captive facility on the slopes of Mount Kenya. Aberdare National Park has branded the mountain bongo on the park's emblem. It is also a flagship species for indigenous forest conservation.

The mountain bongo is now one of the most threatened antelopes in Kenya. A major initiative is required to accelerate the surveillance program and to strengthen security measures in Kenya's forest ecosystems. A draft national conservation and management strategy has been developed and an official launch is planned during the course of 2012.

Sea turtles

Five species of sea turtles are found in Kenya: the green turtle (*Chelonia mydas*), hawksbill

turtle (*Eretmochelys imbricata*), olive ridley turtle (*Lepidochelys olivacea*), loggerhead (*Caretta caretta*), and leatherback (*Dermochelys coriacea*). The first three live and forage in Kenya, while the last two use Kenya's waters as migratory routes and foraging grounds.

Illegal harvesting of sea turtles for meat, oil, and eggs are a major threat to the species. Degradation of sea turtle habitats is also a major threat. The most exploited species include the green turtle, olive ridley, and hawksbill. Sea turtles face their most critical threat from fisheries through incidental capture in set gillnets and trawl nets. This fishing gear causes either drowning through entanglement, or else the turtles are opportunistically harvested by the fishermen. Other threats include loss and degradation of nesting and foraging grounds from coastal developments, pollution from land-based sources, marine debris, oil spills, oil and gas exploration, predation of hatchlings and juveniles, diseases, and emerging threats related to climate change.

Due to their unique ecology and migratory nature, the myriad of threats sea turtles face has led to drastic global population declines. Two of the species utilizing Kenya's territorial waters are listed as "critically endangered," while three are listed as "endangered." The hawksbill and leatherback are listed as "critically endangered" whereas the green, loggerhead, and olive ridley are listed as "endangered."

Effective management and recovery of Kenya's sea turtle populations will be achieved through implementation of the national sea turtle conservation and management strategy, which was officially launched in 2011. The tools for implementing this strategy include stakeholder engagement, advocacy, communication, education, public awareness, targeted research and monitoring, and threat mitigation. The strategy has been translated into Swahili for use by coastal communities.

Dugongs (sea cows)

Dugongs live in shallow, warm waters that are sheltered by bays and lagoons, and primarily feed on seagrasses. The dugong is the only marine mammal that is entirely herbivorous, and can move 500–600 km in a day. Individuals can live up to 70 years. The conservation challenges of dugongs are due to their long lifespan and slow breeding, their reliance on coastal habitats, the restricted coastal habitats subject to large diebacks, and the fact that they move across jurisdictions at local and regional scales.

The number of dugongs in Kenya was estimated to be 500 in 1967, dropping to 10 in 1994 and then to 6 individuals in 1996. Dugongs are globally listed as "vulnerable" by IUCN, the International Union for the Conservation of Nature. The threats to dugongs are offtake for meat and oil, illegal trade, coastal development, and sensitivity to disturbance by the operation of motorboats and other human activities. Kenya is in the process of constituting a national task force for the conservation of dugong.

Primates

Kenya has a total of about 13 primate species, and harbors some of the world's most endangered ones. These are the Tana River red colobus (*Protocolobus rufomitratus*) and Tana River mangabey (*Cercocebus galeritus galeritus*), both endemic to the lower Tana River forest.

Habitat loss and fragmentation is the greatest threat to primates in Kenya. As the human population continues to grow, primates are pushed into small isolated forest patches, minimizing their chance of survival. Increased interaction with humans is exacerbating the problem of human–nonhuman primate conflict. In addition, unpredictable weather patterns have altered temporal and spatial distribution and availability of food resources, further threatening the survival of these primates.

KWS is in the process of establishing a task force that will steer the process of developing recovery strategies for the threatened primates and management guidelines for the relatively common species.

Giraffe

To many people, giraffes may not seem to be in need of focused conservation attention. However, they are facing increasing pressures that have affected their numbers and distribution in Kenya and elsewhere across the continent. Nine subspecies of giraffes natural occur in the African continent. Kenya is the only country with three of these subspecies present. Other countries have either one or two subspecies. Therefore, Kenya is the epicenter for giraffe speciation.

The number of giraffes in Africa has declined by 30% over the last decade as a direct result of habitat encroachment, habitat loss, habitat fragmentation, severe poaching, increasing human populations, and human–wildlife conflicts.

The Rothschild's giraffe (*Giraffa camelopardalis rothschildi)* is the second most endangered giraffe subspecies, with less than 670 individuals remaining in the wild, 60% of which are in Kenya. Once wide-ranging across western Kenya, Uganda, and southern Sudan, it has been almost totally eliminated from most of its former range and now only survives in a few small, isolated populations in Kenya and Uganda.

In Kenya, all known wild populations of the Rothschild's giraffe outside protected areas have been extirpated by agricultural development, so remnants are confined to national parks, private protected properties, and other protected areas where they have been translocated.

Reticulated giraffe (*Giraffa camelopardalis reticulata;* Figure 3) is found in northern Kenya and in Somalia, with a population estimated at 3,000–5,000 individuals remaining in the wild.

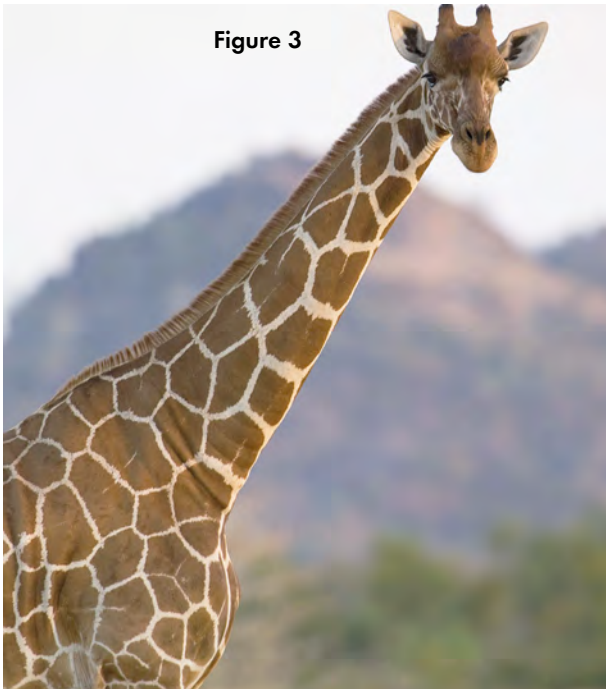

Figure 3

This estimate represents a small fraction of the 28,000 reported to have existed only a decade ago, suggesting that the subspecies has recently suffered a major and rapid decline giving rise to concern about its long-term survival.

Masai giraffe (*Giraffa camelopardalis tippelskirchi*) occur in southern Kenya, i.e., Amboseli, Tsavo, and the Masai Mara ecosystems, and throughout Tanzania. The Masai giraffe has relatively stable populations compared with the other subspecies, although concerns over their declining numbers have been raised. Results of current surveys and recent estimates are being compiled.

Kenya is the first country in Africa to produce a national conservation strategy for giraffes in the continent—a product of the National Giraffe Conservation Task Force that was constituted by KWS. The guidelines define the role of the government, conservation partners, and other stakeholders while raising awareness about the plight of giraffes and highlighting the generally declining population trends occurring within the country.

Synthesis

The challenges facing the conservation of species in Kenya are enormous and complex. Kenya alone cannot address these matters. We believe the international community has a role to play in ensuring sufficient support for the protection, conservation, and management processes needed to maintain healthy and viable populations of these species.

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The National Elephant Conservation and Management Strategy (2012–2021) at a Glance

Patrick Omondi and Shadrack Ngene

Introduction

The future of African elephants is of critical importance to the government of Kenya for several reasons. First, elephants are a species of conservation concern, with numbers having reduced dramatically over the last 100 years, mainly as a consequence of trade in ivory. In Kenya alone the elephant population declined from around 167,000 in 1973 to just 20,000 in 1990. Second, elephants are a flagship species, a highly charismatic animal that can serve as a rallying point for conservation, capturing the attention of people from all over the world and generating significant returns from wildlife-based tourism. Third, elephants are an umbrella species since their conservation depends on large areas of the ecosystems being protected, and therefore serves the objective of wider biodiversity conservation. Fourth, outside of protected areas, the conflict between elephants and people is intense, especially because of crop raiding. This, and related risks to life and livelihoods, have major implications for public support for conservation. Fifth, elephants are keystone species with significant roles in ecological dynamics, and therefore their persistence is important to the conservation of other elements of biodiversity.

The need for a new strategy

The existing framework for the conservation and management of elephants is covered in an annex in the 1991–1996 Kenya Wildlife Service (KWS) policy framework and development program. This largely focused on addressing the high levels of elephant poaching occurring at the time. However, enhanced capacity of the KWS anti-poaching unit and the international ban on trade in ivory has reduced elephant poaching to a reasonable level, enabling population recovery. Kenya's elephant population as of 2010 was estimated at about 35,000 animals, and increasing. Elephants have returned, and continue to return, to parts of their former range where they haven't been seen for nearly 30 years. However, the human population has also grown dramatically over this period, and the challenge of conserving elephants in Kenya today is quite different from what it was 20–30 years ago. Human settlement and cultivation within elephant range areas, human–elephant conflicts, elephants in isolated habitats, and climate change are some of the key problems that threaten the future of elephants in Kenya. These problems are not easy to solve. In addition, recent reports from the field suggest that there is an upsurge in elephant poaching, most probably driven by the demand for

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ivory in Asia. A recent seizure of over 2 tons of ivory at Nairobi's Jomo Kenyatta International Airport by KWS serves to illustrate the scale of the problem. It is for these reasons that KWS has developed a strategy for elephant conservation and management.

How the strategy was formulated

The formulation of this strategy involved the following process:

- Review of KWS 1991–1996 Elephant Conservation and Management Program and other background documentation.
- A series of consultative workshops in all eight KWS conservation areas/regions, with stakeholders invited from a range of backgrounds to assess opinions and priorities.
- A questionnaire circulated to key individuals, conservation nongovernmental organizations, the African Elephant Specialist Group, and other groups with interests in elephant management in Kenya to provide input into the development of the strategy.
- Collation of stakeholder views and review of documents, combined in a draft strategy.
- Presentation of the draft document to the KWS board of trustees.
- Holding of the final national Stakeholder workshop held at Mpala Research Centre to complete the strategy. The stakeholders included neighboring countries who participated in order to discuss transfrontier issues.
- Distribution of the draft strategy document for written comments to stakeholders, including those who could not attend the workshops.
- Finalization and printing of the final strategy document.

An overview of the strategy (2012–2021)

The Elephant Conservation and Management Strategy provides a new framework that will guide elephant conservation and management in Kenya for the next 10 years. The long-term vision for the strategy is "a secure future for elephants and their habitats, based on peaceful and beneficial co-existence with people, now and for generations yet to come." The overall goal is to "maintain and expand elephant distribution and numbers in suitable areas, enhance security of the elephants, reduce human–elephant conflict and increase value of elephants to people and habitat." This will be achieved by focusing efforts and resources on seven broad strategic objectives, each associated with a set of specific actions and measurable targets to gauge performance: protection, population expansion and habitat maintenance, research and monitoring for management, human–elephant conflict, incentives, capacity, and coordination and support. The strategy recognizes that KWS cannot achieve what is set out in this strategy on its own because of the following reasons:

- Much of Kenya's current and future elephant range occurs outside nationally gazetted protected areas and the future of elephants in these places will depend on whether or not they are tolerated by local landowners and communities (Figure 1). Therefore, the strategy seeks to engage and devolve responsibility to these groups in elephant conservation and management, particularly in key strategic locations, such as dispersal areas, corridors, human–elephant conflict hotspots, and places where land use is compatible

Figure 1. A woman expresses her delight as an elephant involved in conflicts with local people is translocated away from her community.

with elephant conservation, such as across the more arid and semi-arid parts of Kenya.

- There are several elephant populations that range beyond Kenya into neighboring countries, requiring close collaboration with Kenya's neighbors.
- Land use planning, a key component of this strategy, requires close collaboration with other government sectors and development partners, whose own plans and priorities may impinge on elephant conservation.
- There is still a lot that needs to be known about elephants for their effective conservation and management, and therefore more focused research and monitoring in partnership with research organizations and individual researchers is important.
- Much of what this strategy sets out to achieve requires resources and capacity that KWS does not have. Thus, this strategy will only be successful if key stakeholders and partners invest in its implementation.

The strategy is bold, ambitious, and forward-looking. It tackles problems far more complex than just the poaching issue, involves different sectors, and proposes interdisciplinary initiatives that take into consideration the potential role of climate change, new and emerging funding opportunities, local livelihoods, and the sensitive balance that is needed in an emerging economy.

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Mega-Translocations: The Kenya Wildlife Service at its Best

Isaac Lekolool

Introduction

The capture and translocation of 220 elephants in just two weeks, the rare translocation of 18 hippos in three weeks, the mass capture and translocation of over 1,000 impalas and 800 zebra in a single month—these are some of the most exciting and unparalleled feats of the Kenya Wildlife Service (KWS). These few examples do not only show the magnitude, but also the efficiency in carrying out such exercises. The capture of a wild animal is an intricate process, requiring great caution to ensure safety of both personnel and the animal.

Translocation, which refers to the physical transfer of an animal from one habitat to another, requires inputs from both science and art. With our current records in wildlife capture and translocation, we believe that we are the best in the region. Today, KWS can capture and translocate any land mammal species in Africa. However, these skills were not attained overnight. The Veterinary and Capture Services Department, which is responsible for these exercises, has undergone major changes. Initially, capture and translocation of wildlife was based on rudimentary methods, mostly relying on instinct, brute strength, and (supposedly) luck. Those were the days of "chase and rope" methods where animals were chased and noosed using a rope, just like in the cowboy movies. Pitfall methods, in which holes were dug along animal trails, were used for some of the mega-herbivores like the rhinos. It is clear that these methods were not only unethical but most likely injurious, with little regard to post-translocation survival.

Therefore, KWS established the Veterinary and Capture Services Department in 1993, which constituted a professional team of veterinarians, animal health technicians, and capture rangers. Since then, the department has progressively improved in efficiency and reduced capture-related mortalities. There were times when it would take a whole day to capture and load an elephant into a transportation crate, let alone translocate it. However, with increased mechanization and veterinary skills, a whole elephant family of 12 individuals can now be captured and loaded in transportation crates in less than 30 minutes!

These improvements came at a great cost with a massive investment from the government of Kenya. Currently, KWS uses both air darting on a helicopter or ground darting either on foot or using a vehicle. The choice depends on several factors, among them habitat condition (e.g., accessibility) or animal behavior (e.g., aggressiveness) or escape flight speed. The capture rangers have paramilitary training and serve two roles: they provide security and also assist in physical restraint of the animals. However, members of the capture team

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have, through experience, acquired knowledge on behavioral responses of different animals after capture. Such experience is quite important in ensuring survival of sedated and recumbent animals.

At KWS, we consider a capture and translocation successful when the animal is captured under acceptable veterinary procedures, ethical considerations, and animal welfare standards, and when the animal is released in a suitable habitat and is fit to feed and protect itself. On this basis, KWS has developed protocols for capture and translocations.

Protocols for animal translocation

Before translocation is carried out, a pre-translocation assessment is conducted. The assessment focuses on both ecological surveys of the habitat (e.g., presence of competitor species, population density), security, and epidemiological data. This is because it is important to ensure that there is adequate feed and water, as well as security, for the highly poached species. An environmental impact assessment (EIA) prior to any animal translocation operation is also undertaken to account for possible effects of the exercise and, in cases where such are anticipated, to institute mitigations. We have so far managed to develop at least seven species-specific immobilization and translocation protocols for our flagship animal species. These have been time tested and must be adhered to during translocation exercises. The significant ones include the black and white rhino, elephant, giraffe, Grevy's zebra, and cheetah.

Further, we have also developed a veterinary manual to be used during capture and translocation. The manual provides guidelines on wildlife immobilizations, with details on recommended types of anaesthesia and revival (antagonist) drugs and dosages for various species, physiological monitoring of anaesthetized animals, suitable positions of recumbence, animal loading and lifting procedures, route surveys, composition of various teams, and feasibility studies, among others.

It is also a requirement that post-release monitoring is done to give information on how the animals have adjusted in their new habitat. This is particularly important for highly territorial and aggressive species, such as the black rhino. Home range acquisition by black rhinos may lead to violent contests among animals, resulting in territorial displacement or severe injuries to individuals. Species that range widely, such as the elephant, may need to be monitored in the new habitat because they may range into human settlements and cause damage to property. Since translocated animals are usually ear-tagged, ear-notched, or fitted with tracking devices such as transponders or radio transmitters, it is easy to locate them in their new habitat.

Capture beyond borders

The expertise of KWS capture and translocation is now well recognized in many parts of Africa. As such, we have been invited, in partnership with the African Union (AU-IBAR) and Food and Agriculture Organization of the United Nations (FAO), to conduct training for wildlife practitioners in West, Central, and East African countries. These trainings involved actual capture and translocation exercises. We have also provided services to Uganda and Burkina Faso for translocation of elephants, giraffes, and a variety of ungulate species. Dur-

ing the Global Eradication of Rinderpest Campaign, we provided successful capture of wildlife for biosampling in war-torn Somalia. Following the collapse of the Somali government, many services, including veterinary health services, disappeared. As such, the country was the remaining global foci where rinderpest survived for many years. However, due to our contribution to sampling wildlife in the country, the disease was finally eradicated worldwide.

Why capture and translocate wild animals?

It is well known that capture and translocation of wildlife is inherently technical, marked with significant risks to personnel and the animal. However, it is still a very important conservation tool when all caution is taken to minimize the known risks. Reasons for wildlife translocations in Kenya are mainly guided by the IUCN (International Union for Conservation of Nature) guidelines which have been modified to achieve our objectives. The main reasons for translocation include:

- Management of populations and the environment. This is usually done to reduce habitat destruction and allow restoration of damaged ones.
- To introduce or reintroduce species into new and former habitats, with the aim of either augmenting endangered wildlife animal populations or increasing species diversity in a locality and hence improving the survival rate.
- Research and species monitoring activities that involve active intervention while investigating important wildlife diseases. Proactive studies are especially carried out on threatened wildlife species to better understand their ecology and biology. These involve the mounting of GPS satellite collars (to try and resolve human–wildlife conflicts by studying animal movement patterns in an area), implantation of transmitters and transponders (microchips), and ear-notching exercises for positive individual body identification of animals for security purposes.
- Passive and active clinical monitoring of the general health of wildlife populations, for both infectious and non-infectious diseases, as well as collection of samples for screening to establish the presence or absence of endemic diseases in an area before a translocation exercise is carried out.
- Habituation of orphaned or disadvantaged animals to captive facilities for education and ecotourism.

Methods of capture used in Kenya

The choice of which particular method to employ is determined on the basis of animal species, reason for restraint, number of individuals to be captured, availability of appropriate drugs and equipment, and personnel. Our experiences over the years have taught us to select the most ideal methods that suit specific situations with an aim of maximizing efficiency and minimizing mortality. Therefore, the economics of the capture options available cannot be ignored, and the adoption of a particular method is done only after a thorough analysis of the available options.

Darting. At the KWS Veterinary Department, we use various drug combinations, such as anaesthetics (opioids) for herbivores such as zebras, elephants, rhinos and a host of

antelopes; alpha-2-agonists (sedatives) in combination with cyclohexylamines (dissociative anaesthetics) for carnivores, primates, suids, reptiles, and some birds; and tranquilizers. The drugs are remotely delivered through darts propelled by use of such projectiles as blowpipes and dart-guns. Others include baiting (primates) and hand-held injections (jab sticks) on extended or projectile syringes.

To achieve a desirable pharmacological response, the correct dose of the drug is administered. This tends to vary between species and is influenced by size, sex, age, state of health, and concomitant use of other drugs. The appropriate drug cocktails have been developed to achieve the primary effect of sedation.

The darting is done either from the air or on the ground. Darting has been adopted as our *modus operandi* for large species such as the elephant, rhino, buffalo, giraffe, and certain antelopes. Helicopter darting, on the other hand, is our method of choice when dealing with large numbers of elephants, rhinos, and buffaloes because it is both efficacious and safe for both the animal and the operators. The method is also commonly employed in tough terrains such as when capturing wild animals near water bodies, thick bushes, cliffs, and rocky or gullied landscapes to minimize mortalities related to drowning or animals straying away to risky unrecoverable locations. We normally reserve ground darting for species with low risk values and especially when immobilizing wildlife for clinical interventions, such as de-snaring and treatment for injuries, examination, and sample collection for diagnosis in disease surveillance.

Plastic corrals/bomas; funnel capture system. This is our method of choice for the mass capture of species such as zebras and impalas. The advantage is that human–animal contact is minimized and a large number of animals (even entire herds) can be captured and transported as a single entity. Developed in South Africa, the system is basically a properly designed large funnel whose mouth is conveniently erected next to a slightly raised ground followed immediately by a gentle descent with a bushy area referred to as "dead ground." This serves to conceal and camouflage it from the animals' view path as they are driven by a helicopter. The plastic walls are made from hessian material that the animals perceive as solid, impenetrable barriers once inside it. In their attempt to escape, they run farther and farther down the funnel into a crush and finally up a ramp into a communal transport crate. Plastic curtains are drawn behind the animals at strategic places down the length of the boma (here, a generic name for a livestock enclosure) to encourage forward movement and to prevent animals from turning around.

Net corrals/bomas; drop nets. These comprise standing linear hessian material made from nylon, cotton, and manila green-dyed material that can withstand a high degree of stretch and wear. We normally inspect them for flaws that may allow animals to escape before erection. The method has been effectively used to capture small groups of impala, hartebeest, Thomson's and Grant's gazelles, reedbuck, and oribi at KWS. The design incorporates drop nets to prevent animal "pile ups," which often results in broken limbs. The net corral is usually erected along animal's trails and in bush land to conceal and camouflage it. The nets are supported by cables, metallic poles, or natural vegetation. Prevailing winds need to be considered and capture should be coordinated by handheld radios to improve on efficiency and minimize escapes. Efficiency is achieved more at night than during day time

and much more so during dark moonless nights, especially for animals that are good jumpers like impalas and nocturnal animals like the bush pig.

Equipment. At least two vehicles, preferably four-wheel drives, are used for capture and one for escort during transportation to the release site. All are mounted with a protective bull bar on the front as the vehicles travel through thick bush at night while driving animals into the corral system. Each capture vehicle normally carries two spotlight operators and a few capture personnel (rangers). The target animals are located by driving along roads in their preferred habitats with the spotlight beam of light being placed on both sides of the vehicle. When the reflecting eyes of the animals are located, the spotlights and the vehicles are used to herd the animals towards the mouth of the corral system and animals pushed into it. Once entrapped within the nets, the assistants (rangers) lying in wait close in on the animals, capture them manually, and take them to a waiting transportation crate.

Cage traps. These are constructed by building a sturdy metal framework and then covering it with suitable wire mesh. Since cage traps are primarily used for the capture of carnivores and primates either for disease surveillance or problem animal control (stock and farm raiders), the mesh should be such that the animals cannot hook their canines onto it and break either the mesh or their teeth. The inside must be free of any protruding parts that could hurt the animals. It is normally designed in such a way that its size is at least twice the size of the animal. The safety catch is very important (guillotine doors preferred) because the great cats and primates are capable of lifting doors and escaping.

Below are some examples of species and reasons for their translocation.

Elephant translocations

These have been conducted to achieve various objectives over the years in Kenya with the main ones being reducing human–elephant conflicts, habitat preservation, and establishing conservation areas.

Elephant translocations were first conducted in Kenya in 1995 with the introduction of a fairly mechanized system. A Volvo Hannibal truck was modified to lift and load an elephant container using a hydraulic system. In this case, only one elephant could be loaded at a time in a time-consuming process that sometimes ended up taking several hours.

The system was improved in 2006 when we acquired some lifting crane trucks and a recovery container for ease of transferring the elephants onto the transportation crate. This process is almost fully mechanized as the elephants are lifted using a hydraulic-propelled lifting crane (Figure 1) and later transferred from the flat bed truck to the recovery container by use of an electric-propelled winch.

In 2001, KWS translocated 57 elephants from Ol Pejeta Conservancy to Meru National Park in one month. In 2005, about 150 elephants were translocated from Shimba Hills National Reserve (Mwaluganje Conservancy) to Tsavo East National Park within a month. In another exercise where the elephants were being translocated over a short distance in Tsavo West National Park (Ngulia Rhino Sanctuary) in 2006, over 220 elephants were moved in a period of about two weeks. The exercise conducted in Shimba Hills and Ngulia were mainly to address the issue of overstocking, mitigate habitat loss in a water reservoir, and promote rhino conservation.

Figure 1. An elephant translocation in progress.

Rhino translocations

In the 1970s, crude methods, such as digging pits on the footpaths of rhinos, were employed in their capture with a success rate that purely depended on luck. The use of helicopter darting has greatly improved this with a success rate of about 10 animals captured in a day for minor procedures like ear notching and 4 to 5 per day for translocation.

With the introduction of immobilization drugs, capture of rhinos has been greatly improved, with success rates of close to 100%. In 2007, a new sanctuary was created with the introduction of 20 black rhinos in Mugie conservancy. In 2010, 10 black rhinos were reintroduced to the Rhino Valley in Tsavo West National Park after a hiatus of 25 years due to poaching and insecurity. Most of these rhinos were captured and then translocated a distance of over 500 km without any mortality. In the last seven years, we have managed to capture over 100 black and 40 white rhinos for various procedures such as translocation, treatment, or ear notching.

Hippo translocations

Capture of hippopotamus requires a lot of patience and determination (Figure 2), as the animals do not respond well to immobilization drugs. In 2010, we managed to capture 18 hippos from a sewage plant by constructing a holding boma over a period of about a month adjacent to one of the ponds and habituating the hippos while enticing them with lucern during the dry period as bait in the area where the boma was being constructed. Once the hippos were comfortable using the boma, a sliding door was used to close them in and another entrance leading into the transportation container was left open. The hippos were then coerced to enter.

Figure 2. A hippo being loaded onto a truck near Nairobi.

Giraffe translocations

This is another very challenging exercise as the anatomy of the giraffe poses significant logistical difficulties due to the long neck and the position of the heart with respect to the brain. In almost all instances, the giraffe requires use of ropes to bring them down after immobilization. In 2006, we managed to rescue about 20 Rothschild giraffes in Soy area and another 15 at Endebes after the land was converted to agricultural use.

Ungulates

In the 1970s and early 1980s, Meru National Park lost most of its wildlife population to poaching; hence, a massive reintroduction of various species was necessary once security improved in the area.

In 2004, we managed to capture and translocate over 1,000 impalas, 800 common zebras, 20 Grevy's zebras, and 50 reticulated giraffes. The zebras and impalas were captured using the funnel system with the help of a helicopter and loaded directly into translocation crates.

In 2010, we translocated over 200 zebras to Amboseli National Park in a capture exercise that involved the use of a helicopter and the funnel system. The main reason was to save the animals that had been affected by the severe drought that hit the area in 2009.

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Medicine in the Wild: Strategies towards Healthy and Breeding Wildlife Populations in Kenya

David Ndeereh, Vincent Obanda, Dominic Mijele, and Francis Gakuya

Introduction

The Kenya Wildlife Service (KWS) has a Veterinary and Capture Services Department at its headquarters in Nairobi, and four satellite clinics strategically located in key conservation areas to ensure quick response and effective monitoring of diseases in wildlife. The department was established in 1990 and has grown from a rudimentary unit to a fully fledged department that is regularly consulted on matters of wildlife health in the eastern Africa region and beyond. It has a staff of 48, comprising 12 veterinarians, 1 ecologist, 1 molecular biologist, 2 animal health technicians, 3 laboratory technicians, 4 drivers, 23 capture rangers, and 2 subordinate staff. The department has been modernizing its operations to meet the ever-evolving challenges in conservation and management of biodiversity.

Strategies applied in managing wildlife diseases

Rapid and accurate diagnosis of conditions and diseases affecting wildlife is essential for facilitating timely treatment, reducing mortalities, and preventing the spread of disease. This also makes it possible to have an early warning of disease outbreaks, including those that could spread to livestock and humans. Besides reducing the cost of such epidemics, such an approach ensures healthy wildlife populations.

The department's main concern is the direct threat of disease epidemics to the survival and health of all wildlife populations, with emphasis on endangered wildlife populations. Also important are issues relating to public health, livestock production, and rural livelihoods, each of which has important consequences for wildlife management.

The approach applied to disease management in wildlife includes diagnosis and treatment of sick animals. Both passive and active surveillance are critical initiatives that mainly focus on diseases that cause mortalities in wildlife, those that have a negative impact on livestock economies and livelihoods, and diseases of public health importance. All outbreaks of diseases are also conclusively investigated and appropriate control and monitoring systems instituted. In addition, KWS undertakes research to better understand disease dynamics in wildlife populations. Holding facilities are used to quarantine animals suspected of harboring infectious diseases before decisions on their fate are made.

In undertaking these initiatives, KWS has a strong network of local, regional, and international partners working in the areas of animal and human health. The network provides

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exciting opportunities to develop innovative, collaborative, and integrated approaches to wildlife management.

KWS has a laboratory with basic diagnostic equipment that can be used for early detection of diseases in wildlife. Further confirmatory diagnoses that require advanced procedures are usually sought from other major reference laboratories within and outside Kenya. There are efforts to enhance the KWS's diagnostic capacity through training of laboratory personnel as well as procurement of laboratory equipment. A molecular laboratory that is expected to be fully operational by mid-2012 will enhance disease diagnosis, control, and management.

Important diseases in wildlife in Kenya

Table 1 lists some of the important diseases in wildlife in Kenya that are being monitored by KWS.

Table 1. Wildlife diseases of national and international importance being monitored by KWS.

Disease; Etiological Agent	Status in Wildlife in Kenya
Rinderpest; Morbillivirus	Previously restricted to the Somali ecosystem (northeastern Kenya, southeastern Ethiopia, and Somalia) due to collapse of surveillance and vaccination programs in Somalia after the disintegration of government in 1990. Disease confirmed eradicated in 2009 through sero-surveillance of cattle and wildlife according to the OIE pathway. Kenya now accredited free from infection. Post-accreditation sampling ongoing, however.
Peste des Petits Ruminants (PPR); Morbillivirus	Emerging after the eradication of rinderpest, possibly due to loss of cross-protection because the two diseases are caused by a virus of the same genus. Serological evidence in wild small ruminants demonstrated.
Rift Valley fever; Phlebovirus	A zoonotic disease, sporadic outbreaks experienced after long inter-epidemic periods. The epidemiological role of wildlife not clearly understood. Reported to have affected gerenuk and gazelles in the 2001 outbreak. Studies in wildlife ongoing. Associated with high rainfall and flooding.
Foot and mouth disease; Aphthovirus	Buffaloes persistent carriers of SAT-1 and SAT-2 serotypes. Endemic in many wildlife populations.
African swine fever; African swine fever virus	Free-ranging porcine species, especially warthogs, are asymptomatic carriers of the virus. Widespread and endemic in wildlife populations.
Malignant catarrhal fever; Alcelaphine herpesvirus-1	Wildebeests are reservoirs. Disease limited to areas where cattle and wildebeests interact. It is an emerging issue in Masai land where there is high interaction of wildebeests and cattle. It is fatal in cattle.
Rabies; Lyssavirus	Outbreaks partially responsible for near-extinction of endangered wild dogs in the Masai Mara–Serengeti ecosystem. Transmitted from wildlife to domestic animals and vice versa. Fatal in all mammalian species. Many wildlife species susceptible. Endemic in many areas.
Trypanosomiasis; *Trypanosoma* species	Wildlife including elephant, rhino, buffalo, warthog, hippo, and various artiodactyls are maintenance hosts and are trypanotolerant but can show high infection rates with various trypanosome species. Confirmed to have caused mortalities in immunologically naive rhinos translocated to tsetse-infested areas such as Meru National Park and Masai Mara National Reserve.
Anthrax; *Bacillus anthracis*	Sporadic cases and outbreaks in wildlife reported in many areas. Diverse species involved.
Brucellosis; *Brucella* species	Low prevalence of antibodies in wild bovids reported. Not thought to be a major problem in wildlife, although subtle impacts on fertility may be easy to miss. Prevalence and incidence studies in wildlife inadequate, however. Need for more studies to determine the impacts in wildlife.
African horse sickness; Orbivirus	Endemic in zebra, the wild maintenance host. Prevalence rate of antibodies in elephants is high but role of elephants as maintenance hosts seems unlikely.
Bovine tuberculosis; *Mycobacterium bovis*	Low prevalence rates in baboons and buffaloes reported. More studies ongoing, particularly in areas of high wildlife and livestock interactions.
Canine distemper virus; Morbillivirus	Disease of wild carnivores and domestic dogs. Important for rare and endangered carnivores such as wild dog. Important co-infection with protozoa causing enhanced pathology and disease in other species such as lions. Increased incidence in felines suggests emergence of this virus in the cat family.

Selected cases of disease management

In the last three years, KWS has undertaken numerous disease management initiatives, often in collaboration with other stakeholders. A few selected cases are discussed below.

Rabies in wildlife. Rabies, which means "rage" or "madness" in Latin, is one of the oldest zoonotic diseases, having been described in hunting dogs as early as 2300 BC. It is caused by global RNA viruses in the genus *Lyssavirus*. Humans are dead-end hosts, infection being always fatal, with just one reported case of human survival following infection (Willoughby et al. 2005). An estimated 55,000 people die every year from rabies worldwide, mostly in Asian and African countries where canine rabies is endemic.

In Kenya, the African wild dog, hyena, jackal (Figure 1), and the domestic dog are the predominant species for rabies infection and transmission. Rabies is a threat to many wildlife species in Kenya, particularly the endangered African wild dog. There were serious outbreaks in different wild dog populations in Kenya in the 1980s that significantly contributed to the species' decline. Vaccination of endangered canids has been proposed as a conservation tool to respond to acute disease outbreaks threatening the survival of critical populations and has been used successfully on a number of occasions. KWS has embarked on rabies vaccine trials in wild dogs in several areas where wildlife interact highly with domestic animals and humans. The objective is to determine the efficacy and safety of existing rabies vaccines in protecting wild dog species in case of any disease outbreak. Domestic dogs and cats have also been vaccinated in areas surrounding national parks and reserves in an attempt to block rabies transmission from domestic dogs to wildlife. Suspected cases of rabies in wildlife are usually acted upon by imposing quarantine, administering euthanasia, and performing confirmatory diagnostic tests before instituting adequate prevention and control measures against the disease.

Avian influenza surveillance in wild birds. Migratory wild birds are reservoirs of low pathogenic avian influenza (LPAI) viruses (Alexander 2000) but their role in transmission of highly pathogenic avian influenza (HPAI) viruses is still not clear and requires further investigation and research (Munster et al. 2005; Normile 2006). Kenya lies on a major wild birds' migratory route linking southern Africa, Europe, and the Middle East, and has several important wetlands for migratory species, hence the risk of HPAI occurrence. Surveillance and research on all the avian influenza viruses (including H5N1) in wild birds is implemented by KWS and other partners following the outbreak in Asia in 2006 (Yingst et al. 2006). KWS is involved in the collection of samples of wild birds and their submission to reference laboratories for analyses. To date, no positive cases have been detected. KWS, however, remains alert and continues with passive and active surveillance of the disease.

Figure 1. A silver-backed jackal suspected of rabies infection in Masai Mara National Reserve, Kenya. Photo by Dominic Mijele, 2008.

Eradication of rinderpest. Rinderpest, also known as cattle plague, is historically the most important disease in African wildlife. In eastern Africa, its impact in wild ungulates was significant and a major contributor to the decline of animals in epidemic areas. The result was a negative effect on biodiversity and environmental stability and health. As of a few years ago, the disease had been eradicated in most parts of the world and the remaining suspected foci of infection was the so-called Somali ecosystem, comprising Somalia, northeastern Kenya, and southeastern Ethiopia. These countries were the last in the world to fulfill the OIE pathway[1] to be declared free from rinderpest in 2009. The presence of the disease in this region was attributed to the breakdown of effective surveillance and vaccination programs in Somalia.

Surveillance was important in identifying infections and preventing spread. Wildlife was an integral component in the eradication efforts and served as valuable sentinels for monitoring remaining virus circulation. KWS was supporting the Ministry of Livestock Development in the control by surveillance in wildlife. KWS was also involved in giving technical support to Ethiopia and Somalia in wildlife capture and sampling in order to have simultaneous and comparable surveillance in the entire Somali ecosystem. Following over 10 years of surveillance in both wildlife and livestock with no positive results, Kenya fulfilled the OIE procedures and was certified free from rinderpest in 2009. The eradication strategies were being coordinated by the Global Rinderpest Eradication Program (GREP) established in 1987 by FAO (the Food and Agriculture Organization of the United Nations) with the target of eradicating the disease in the world by 2010.[2]

Trypanosomiasis in black and white rhinoceroses. The black rhinoceros (*Diceros bicornis michaeli*) was exterminated from Meru National Park in the late 1980s by poachers. As part of a restoration program aimed at restocking the park with several species of wildlife and

Figure 2. A young buffalo immobilized for rinderpest disease surveillance in Tsavo National Park, Kenya. Photo by David Ndeereh, 2006.

improving its ecotourism value, both black and white rhinoceroses have been reintroduced into the park in phases between 2002 and 2006. Twenty-one black rhinos and 33 white rhinos (*Ceratotherium simum*) were released into a well-protected sanctuary of about 38.8 km^2 after a few weeks of holding in the bomas. Meru National Park is within a zone infested by the tsetse fly (*Glossina* spp.) and their control was already initiated long before the translocations. This is because the flies are the main vectors of most of the African trypanosomes that cause chronic wasting disease in livestock, wildlife, and humans. The control method, based on pyrethrin-impregnated targets, was to reduce tsetse fly density, which would eventually reduce transmission of trypanosomes. However, three months after release of the first rhinos in the sanctuary, individuals were observed in poor body conditions followed by deaths.

Trypanosomiasis was suspected to be the cause. Investigation involved immobilizing the sick rhinos, collecting blood, and analyzing the samples using molecular methods. *Trypanosome congolense, T. simiae, and T. godfreyi* were identified from the blood of the sick rhinos. It was concluded that the deaths were induced by multifactorial stressors working in synergy. For instance, capture and translocation as well as trypanosome infection are immune suppressors, which could promote development of clinical trypanosomiasis. Since the rhinos were sourced from areas without tsetse flies, it was likely the rhinos were immunologically naïve to trypanosomes. Trypanosome is therefore a factor that can frustrate recovery efforts for the black rhino, and we now recommend prophylaxis at capture when rhinos are to be released into tsetse-infested areas. The sanctuary was also relocated to a different part of the park with less infestation by tsetse. Fly trapping in this new location is still going on in collaboration with the Kenya Trypanosomiasis Research Institute.

Anthrax in the endangered Grevy's zebra and Rothschild giraffe. Anthrax is a disease caused by the bacterium *Bacillus anthracis* which causes acute and peracute deaths in domestic and wild animals. Anthrax is endemic in sub-Saharan Africa and is one of the diseases that cause significant mortalities of multiple wildlife species across Africa. In 2005–2006, anthrax caused the deaths of about 53 Grevy's zebra (*Equus zebra*). The death of that number was quite significant since the remaining global wild population is just about 2,500, which occupy the arid community lands in northern Kenya.

When the outbreak occurred, both control and preventive measures were taken to contain the disease that was threatening to extirpate this population. For control, all carcasses were searched and buried six feet deep and covered with lime. However in order to protect the surviving herds, for the very first time in Kenya, 650 free-ranging Grevy's zebra were vaccinated. The vaccines were delivered through darts that fell off after discharging the vaccine Blanthrax. After vaccination, the deaths stopped and since then there have been no other deaths in this population. In view of the conservation status of the species, a multidisciplinary disease response committee comprising KWS and other stakeholders has been formed to conduct surveillance, research, and response on diseases affecting it.

In July 2011, anthrax was also confirmed to be the cause of the deaths of 11 Rothschild giraffes (*Giraffa camelopardalis rothschildii*) out of a population of 44 in Mwea National Reserve in eastern Kenya. There are three subspecies of giraffes in Kenya, namely, the Masai, reticulated, and Rothschild. The latter subspecies is endangered, with 650 individuals

remaining in the wild. Anthrax was therefore a great threat to survival of this species. The remaining animals were vaccinated using Blanthrax. Post-vaccination monitoring of the vaccinated herd did not show overt ill effects of the vaccine; notably, the deaths ceased.

Dermatitis in white and black rhinoceroses. An outbreak of dermatitis in both white and black rhinoceroses in Meru National Park occurred in May 2011. Large wounds as wide as 35 cm by 30 cm were seen in some individuals of both species (Figure 3). Black rhinos usually have cutaneous wounds caused by a filarial worm, *Stephanofilaria*. However, the lesions caused by these worms are often superficial and relatively small (<5 cm wide). Although filarial nematodes infect various thick-skinned animals such as hippopotamuses, black rhinos, and buffalo, they have never been reported in white rhinos. The wounds were deep below the epidermis and histopathology analysis indicated eosinophilia, which corresponds to a parasitic infection. The infected individuals were immobilized and injected with Ivermectin, an anti-parasitic drug. Although the wounds of treated individuals healed, new infections emerged in other individuals. One infected rhino that had expansive wounds died, which showed that the infection is a threat to the already-declined population of black rhinos in Kenya. It should be noted that the identity of the causal parasite or its life-cycle remains unknown but investigation is continuing.

Mange in cheetah. Cheetah is one of the most graceful of the large wild cats that attract many tourists in Kenya, yet its population is declining at an alarming rate. Habitat loss is thought to be a key factor that is driving the downward trend of the cheetah population. However, it is likely that the overall decline is multifactorial. Disease is one of the significant factors known to decrease population growth of species globally. In Kenya, the cheetah population in Masai Mara National Reserve is of significant value, being one of the cohesive pop-

Figure 3. Treating a black rhino with cutaneous lesions in Meru National Park, Kenya. KWS photo.

ulations and a major attraction in this globally famous site. Unknown by many, this population is persistently sick, infested by parasitic mites (e.g., *Sarcoptes scabiei)* that cause a skin disease called mange. The population is frequently treated by Ivermectin, which is effective, but the animals are usually reinfected. In a recent study to determine the transmission cycle of the mites, it was noted that the Thomson's gazelle was similarly infested by mites. This was a significant observation because the gazelles are the preferred prey of the cheetahs. It therefore suggests that the mite transmission pathway is sustained by the predator–prey interactions, and points to the source of persistent reinfections. It is therefore fateful that mite infection, if untreated, causes death in cheetahs. The mite is a microscopic parasite, neglected by many, but it is a real threat to the survival of cheetahs in the Masai Mara.

Bovine tuberculosis. Bovine tuberculosis (BTB) is caused by a bacterium, *Mycobacterium bovis*, an infectious organism that is emerging as a threat to diverse wildlife populations in Africa. Ungulates, cheetah, and lion are some of the wild species threatened by BTB infection in South Africa. The prevalence of BTB in domestic and wild animals in Kenya is not known. With the Friedrich Loeffler Institute of Germany, KWS is investigating the prevalence of the disease in cattle and buffalo in key areas where wildlife and livestock interact highly.

Clostridial enterotoxemia in black rhinoceroses. Between May and July 2010, nine eastern black rhinoceroses (*Diceros bicornis michaeli*), a critically endangered species, developed a peracute syndrome characterized by severe abdominal pain manifested by struggling, labored breathing, and sudden death in the Pyramid Black Rhino Sanctuary in Laikipia. Investigation revealed clostridial enterotoxemia, a rare condition reported in free-ranging wildlife as the etiological agent. The condition is caused by production of toxins by *Clostridium perfringens*, a gram-positive and spore-forming bacteria.

Clostridium species are normal gastrointestinal tract (GIT) flora, and the factors that trigger the development of the disease are not well understood. However, it is presumed that some alteration in the normal GIT environment permits excessive multiplication of the bacteria, which produce the toxins capable of causing intestinal damage and systemic effects such as shock. The sanctuary experienced a devastating drought in 2009 which almost wiped out the populations of the grazer species. It was estimated that over 600 impalas and 400 buffalo (representing over 95% of each species) died, but there were no losses of rhinos as a result of the drought. The sanctuary later received higher-than-normal rainfall during the long rains of April 2010, leading to overgrowth of foliage. In the absence of grazers, particularly the buffalo, this resulted in markedly noticeable changes in the diversity of thriving flora in the area. It is presumed that these changes resulted in unusual amounts of green plants in the digestive system of the rhinos. These highly digestible plants with high amounts of proteins and carbohydrates and little fiber, possibly along with other predisposing factors that were not identified, played a role in changing the normal gut environment in the rhinos, triggering the proliferation of *C. perfringens*.

To avert more losses, all breeding females and young rhinos (totaling 10 animals) were removed from the sanctuary, vaccinated with a multivalent bacterin-toxoid, and covered with antibiotics. The objective was to reduce exposure to the trigger factors leading to the disease. Two adult bulls were vaccinated, covered with antibiotics, left on site, and monitored closely. These measures arrested further mortalities.

Emerging issues and challenges in managing diseases in wildlife

There are several challenges that are evolving in management of diseases in wildlife populations. One of these is the emergence of new infections. Although very little is understood about the dynamics of diseases in most wildlife populations, evidence demonstrates that wildlife plays a key role in emergence of many diseases. According to Jones et al. (2008), emerging infectious diseases are dominated by zoonoses (60.3%) and the majority of them (71.8%) have a wildlife origin. There are many possible reasons for disease emergence, such the consumption of wildlife, as well as ecological factors that affect patterns of contact between livestock and humans with wildlife: for example, deforestation, population movements, and intrusion of people and domestic animals into new habitats. Another reason is shifting weather patterns due to climate change that affects host–vector–pathogen dynamics. In these days of rapid human and animal movements, as well as threats of bioterrorism, diseases may spread from one continent to another very fast.

Another emerging challenge is the increasing interactions between domestic animals, humans, and wildlife. Interactions are a key issue in livestock economies in Kenya, where many communities live in close contact with wildlife. These interactions are increasing due to a number of reasons, including rising human population and frequent droughts, which is bringing wild animals, livestock, and humans into closer proximity at watering points and pastures. Because wildlife is generally susceptible to the same disease agents as domestic animals, it is suffering a spillover of diseases from domestic animals.

In order to address these emerging challenges, KWS is expanding the range of diseases under its surveillance programs. Surveillance is intended to act as an early warning system for any disease outbreaks. Focus is mainly on diseases that cause wildlife mortalities, those that impact on livestock, and those of public health importance.

Appropriate management of diseases in wildlife poses major challenges to wildlife veterinarians. There is still inadequate knowledge of disease dynamics in wild animal populations, which limits the development of effective strategies. Options for disease control are also limited and often have implications for wildlife welfare. Many strategies, such as culling and creation of barriers (for example, disease-free zones), invariably results in harm to wild animals. Conventional approaches to animal disease control, such as vaccination or treatment to reduce transmission, also have limitations in wildlife populations. Specific vaccines and treatments are often unavailable or untested for use in wildlife, and delivery in field settings is beset by logistic, financial, and ethical considerations. Disease management in wildlife populations is also an expensive venture in terms of required resources, such as immobilization drugs and darting equipment. Wildlife is also often found in remote areas and difficult terrain. Interventions therefore require immense resources in terms of transport: robust vehicles are needed for use in rugged terrain, and sometimes a helicopter for darting. In addition, laboratory capacity is still limited for diagnosis of most diseases.

Conclusion

The emergence of diseases, coupled by the rapid spread of infectious pathogens across continents, demands revolutionary changes in approach. We envisage use of systems that can detect early or predict emergence of existing, introduced, or novel pathogens. To attain this,

we will need to incorporate advanced molecular diagnostic platforms and create links with institutions that provide remote sensing outputs for use in predicting disease outbreaks. We also realize that our veterinary and laboratory teams need to be constantly honed with current epidemiological skills.

Endnotes

1. The "OIE Pathway" is the common name for FAO's international system that verifies the steps needed to be taken in order to achieve national and global eradication of rinderpest. "OIE" refers to the Office International des Epizooties, which in May 2003 became the World Organization for Animal Health but kept its historical acronym.
2. In June 2011, FAO declared rinderpest to be finally eradicated—only the second time in history (after smallpox) that a disease had been wiped from the face of the earth. The last known case of rinderpest was in a wild buffalo tested in Meru National Park in Kenya in 2001 (McNeil 2011).

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Wildlife Management and Conservation in View of International Conventions

James G. Njogu

WILDLIFE MANAGEMENT AND CONSERVATION TRANSCENDS ECOLOGICAL SYSTEMS because it take place simultaneously on land, in the water, and the air. Likewise, ecological systems transcend international boundaries, and therefore an action on one side can have a significant impact on the other, or even across several boundaries. Further, at international level, trade in wild plants and animals or their parts is known to have decimated populations of many species.

Concerns at the international level over destruction of shared ecosystems, loss of biodiversity, and negative impacts on the environment in general have increasingly necessitated international means of redress. Response has come in form of intergovernmental treaties or other agreements that constitute international environmental law. Such agreements govern cooperation among states on environmental matters of mutual interest or concern that one country cannot address alone. Often these agreements are between more than two countries, and are hence referred to as multilateral environmental agreements (MEAs).

Under the auspices of the United Nations (UN), the progressive development of such legal arrangements has burgeoned (UNEP 2007), and the total number of such MEAs has steadily risen (UNEP 2001). Over the years, the scale of problems to be addressed has widened from local to global, and the number of sovereign states that participate in the negotiation of such legal arrangements has grown. Moreover, new concerns and principles—precaution, inter- and intra-generational equity, scientific uncertainty, and sustainable development—have also arisen in recent years and now need to be factored into negotiation processes. Under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), such negotiations, particularly on elephants and the sale of ivory, have always generated heated debate. Pro-ivory-trade states assert that income generated from such sales will be ploughed back into conservation. Conversely, in view of Kenya's experience and as proven by scientific data, trade in ivory provides incentives for illegal trade and poaching.

Although some international environmental treaties date back to early in the 20th century, it was not until the 1960s that concern about environmental pollution and the depletion of natural resources led to the kind of binding MEAs that we know today (Crossen 2003). Many of the early MEAs focused on the allocation and exploitation of natural resources such as wildlife, air, and the marine environment. MEAs drawn up in the lead-up to and aftermath of the UN Conference on the Human Environment, held in Stockholm in 1972, largely laid an emphasis on conservation. Examples include the 1971 Convention on Wetlands of Inter-

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national Importance Especially as Waterfowl Habitat (known as the Ramsar convention), the 1973 CITES, and the 1979 Convention on the Conservation of Migratory Species of Wild Animals (CMS). All these conventions address biological diversity, and the protection of wild fauna and flora, making biodiversity conservation one of the most developed areas of international environmental law.

Today there are over 500 international treaties and other agreements related to the environment, of which over 320 are regional (Mitchell 2003). Nearly 60% date from 1972, the year of the Stockholm conference, to the present. These agreements can be classified based on geographical coverage and nature. "Primary" agreements are those that are global, such as CMS, CITES and Ramsar; "secondary" agreements are those that are regional, such as the 1992 Lusaka Agreement Task Force (LATF); "tertiary" are those that provide a wider international framework for law, such as the 1992 UN Framework Convention on Climate Change (UNFCCC), the 1992 Convention on Biological Diversity (CBD), and others. They can also be classified based on environmental aspects, such as biodiversity, atmospheric, land, and water.

Kenya is not only a signatory to several MEAs but has been instrumental in negotiations for MEAs such as the CBD, UNFCCC, and the 1994 UN Convention to Combat Desertification. Kenya has also the advantage of hosting the secretariat of the UN Environment Program (UNEP), and therefore plays a major role in negotiations and hosting meetings. Since its inception in 1972, UNEP has played a pivotal role in supporting the development and implementation of environmental laws, particularly those negotiated following the UN Conference on Environment and Development (UNCED) and the Earth Summit, held in Rio de Janeiro in 1992. Further, Kenya has made major strides in incorporating most of the ratified MEAs into national law and policy through re-enactment and incorporation by reference. While recognizing Kenya's sovereignty, the constitution takes cognizance of important regional and international treaties and conventions. Articles 2, 5, and 6 of the constitution of Kenya (2010) state that "The general rules of international law shall form part of the law of Kenya" and "any treaty or convention ratified by Kenya shall form part of the law of Kenya under this Constitution."

Further, redress on environmental matters is enshrined in the constitution, the Environment Management Coordination Act 1999, Conservation and Management Act 1989, government policies, and institutional arrangements. The creation of the Directorate of Conventions at the Ministry of Environment and Mineral Resources, and that of a convention coordination department within the Kenya Wildlife Service (KWS), are notable efforts by the government to ensure effective implementation of Kenya's commitments under MEAs. However, the roles of various focal points or convention administrative authorities need to be enhanced, particularly through training and budgetary allocations, to ensure a proper and meaningful consultative process as well as negotiations at the regional or international levels.

The Ministry of Forestry and Wildlife and its two main parastatals, KWS and the Kenya Forest Service, have a major role in the implementation of several MEAs related to biodiversity. KWS is the focal point for CITES, CMS and its related agreements such as the Agreement on the Conservation of African-Eurasian Migratory Water birds, and nonbinding international memoranda of understanding on the conservation of migratory birds of prey,

dugongs, and turtles, Ramsar convention, World Heritage Convention, and international Whaling Commission. These are some of the major MEAs that have shaped the development of international environmental law. KWS has a major role to play, in conjunction with stakeholders.

KWS implements the above conventions by accomplishing the requirements of, complying with, and enforcing resolutions, as well as executing orders directed to Kenya. KWS, on behalf of the government, budgets for and pays the conventions' membership fees. Further, KWS negotiates resolutions directed to the conventions' respective secretariats and other parties in favor of Kenya's interest. Such interests are arrived at based on the mandate of KWS and through stakeholders' consultative sessions and national technical committee meetings.

KWS is mandated by law to administer and coordinate international protocols and conventions regarding wildlife in all its aspects in consultation with the minister of forestry and wildlife. In this regard, the minister (or a deputy) heads Kenyan delegations to all meetings of the conference of parties to the various conventions (Figure 1). Technical and scientific meetings are attended by relevant experts.

Figure 1. The Kenyan delegation at the 10th Conference of the Parties of the Ramsar international wetlands convention in Changwon, Republic of Korea, 2008. The delegation was headed by the assistant minister of the Ministry of Forestry and Wildlife, Joseph-at K. Nanok (seated front left), the permanent secretary, Mohamed M. Wamwachai (behind the assistant minister to the right), the deputy director of biodiversity research and monitoring, Samuel Kasiki (seated to the right), and the head of conventions, James Njogu (behind Kasiki to the left). Also attending was the wetlands coordinator, Judith Nyunja.

The country and its citizens derive many benefits from these conventions, the most significant being helping KWS to more effectively deliver on its conservation mandate. Additional benefits include ensuring that Kenya's relationship with other states does not become injurious to its interest in wildlife conservation and serves as a mechanism for accessing international financial support for conservation projects.

Example of conventions in which KWS has played a historical role include: CITES with regard to listing of elephant and rhinoceros, the Lusaka Agreement, the Ramsar convention, the CMS, the World Heritage Convention, the CBD, and a host of regional cross-border agreements.

Historical role of KWS in CITES: Ivory and rhino horn controversies

CITES is arguably the largest, and perhaps most important, wildlife conservation agreement in the world, and a vital tool to combat the threat to plants and animals posed by the international wildlife trade. CITES opened for signing in 1973, entered into force in 1975, and currently regulates the trade of approximately 28,000 species of plants and 5,000 species of animals. Every two to three years, the parties to the convention meet to review its implementation and progress towards ensuring that international trade is not a threat to wildlife. Decisions are made at these conferences of parties (COPs) to determine if species should be added to or down-listed from Appendices I and II.

CITES is based on a tiered approach to the achievement of two central objectives: reduce negative impacts of international trade in endangered species, and control international trade that drive species to endangered levels. In this regard, CITES uses a permitting system to regulate trade rather than prohibiting it all together.

KWS is the management authority for CITES and is also the scientific authority for fauna under the treaty. For flora, the scientific authority principally rests with the National Museums of Kenya due to their capacity in botany. Working together with stakeholders, KWS has aggressively enforced the implementation of CITES resolutions.

At the international level, Kenya, through KWS, has stood firm on its position as regards the fauna aspects of CITES, the most notable examples being the case of the elephant and rhinoceros.

While African elephants have been hunted for several centuries, the exploitation of elephant herds on a massive scale began in the 1970s. Organized gangs of poachers used automatic weapons, profited from government corruption, and laundered tons of elephant tusks through several African countries to destinations elsewhere. Threatened with extinction, the elephant has been protected since 1989 from international trade by its listing on Appendix I of CITES. The enforcement of this ban, the level of compliance adhered to by CITES parties, the response of non-CITES members, as well as the policy question as to how trade "interventions" best serve the environmental objective of species preservation, are all key concerns that fuel the dispute over whether to ban trade in elephant ivory.

Kenya's experience in the implementation of CITES has generally been positive, and in the area of megafauna, our capacity and assertiveness in the implementation of CITES has sometimes been viewed as problematic by other range states, particularly those that support ivory trade.

However, Kenya has remained steadfast since 1989 on its position regarding ivory trade. KWS has steered the nonivory trade debate in Africa and lobbied elephant and nonelephant range states to support the position. For instance, at COP13 (October 2004, Bangkok) Kenya lobbied party nations to reject proposals to reopen the commercial ivory trade in Africa and instead to adopt an action plan to monitor unregulated domestic ivory markets. However, Namibia, Botswana, and South Africa gained support for a one-time sale of their existing ivory stocks, only the second such sale during the 15-year ban on ivory trading. At the same COP, a limited hunt of black rhinoceroses (an Appendix I-listed species) was approved, allowing Namibia and South Africa to each kill and export five black rhinoceros per year. It is, however, important to note that CITES listed the rhino on Appendix I in 1976, effectively prohibiting international trade in rhino products, and in 1987 the convention extended the ban to domestic trade in rhino products.

At COP14 (June 2007, The Hague), Kenya together with Mali formed a coalition of 23 state parties from Africa to prevail against allowing trade in ivory. As has been the case at previous COPs, discussions concerning elephants dominated much of the meeting, as negotiations carried on throughout its duration. A landmark regional consensus on ivory trade was eventually reached with African elephant range states, agreeing to a nine-year suspension of ivory trade. This was to take effect after the completion of a one-off sale that was agreed to at COP12, allowing four southern African countries—South Africa, Namibia, Botswana and Zimbabwe—to sell stocks of ivory registered before 31 January 2007. Immediately prior to COP14, the CITES Standing Committee agreed that a scientific system to monitor elephant poaching— known as MIKE, or monitoring illegal killing of elephants—had compiled some baseline data, one of the criteria for moving forward with the one-off sale. Japan was approved by the CITES Standing Committee as a "trading partner" for this limited sale of ivory. China proposed that it also obtain this status, but was rejected. The ivory for the one-off sale was sourced only from registered, government-owned stocks that originate from natural mortality or problem animals. All revenues from the sale were expected to be reinvested in elephant conservation and community development.

At COP 15 (March 2010, Doha, Qatar), the African range states approved the African Elephant Action Plan and the implementation of the African Elephant Fund by the CITES secretariat. At the same time, a proposal submitted by Tanzania and Zimbabwe for down-listing the elephant was rejected. As a bargaining chip, and in an effort to promote consensus, Kenya introduced a draft decision in place of the moratorium proposal, in case it were not agreed to. Kenya, Ghana, Liberia, Mali, Sierra Leone, Togo, the Democratic Republic of Congo, and Rwanda, on behalf of the 23 African range states, urged the African range states not to propose or adopt further proposals to amend the existing listings of African elephants on the CITES appendices, including amendments to existing annotations, for a period of nine years from the single sale that took place in 2008. Kenya, further emphasized that "we need to take this debate on ivory back to the African continent," and withdrew the proposal for a 20-year moratorium.

The ivory trade ban is associated with the rhino trade ban. Both animals face extinction, and methods for detecting the origins of both ivory and rhino horns are being developed simultaneously. The debate between the various African nations in favor of the total ban or

partial ban of ivory trade with legal trade also characterizes the rhino product trade ban. It must, however, be noted that while ivory is perceived as a luxury good, rhino horn and other rhino products are perceived by some to be a curative necessity. This complicates the case for rhinos, as substitutes are often regarded as unacceptable.

Nonetheless, a strong financial incentive drives the ivory and rhinoceros horn trade, making huge profits for individual hunters or poachers. Between 1979 and 1989, the demand for ivory caused the elephant populations to decline and continues to pose a major threat to dwindling population of the African elephant in Africa as a whole. KWS remains committed to conserving the elephant as a flagship species and champions its survival as well as that of the rhinoceros. Recovery plans for these species have been developed and are being implemented.

KWS role in establishing the Lusaka Agreement

The Lusaka Agreement (1994) is an agreement of CITES at the regional level in Africa. It was conceptualized during the first African Wildlife Law Enforcement Co-operation Conference, held under the auspices of CITES in Lusaka in 1992. The agreement establishes a framework of cooperation between enforcement agencies in the trafficking in all species of flora and fauna and thus has a somewhat broader mandate than CITES and has often been used in implementing other agreements such as the CBD. Kenya was designated as the headquarters of the Lusaka Agreement in 1999 and the secretariat is hosted at the KWS headquarters in Nairobi.

Ramsar convention implementation

The Convention on Wetlands of International Importance, known as the Ramsar convention (having been signed at Ramsar, Iran, in 1971), aims at the protection of ecological functions of wetlands as regulators of water regimes and as habitats that support characteristic flora and fauna, especially water birds. The Convention's original emphasis was on the conservation and wise use of wetlands primarily to provide habitat for water birds. This has been broadened to cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are important for biodiversity conservation and the well-being of human communities (Figure 2).

The Convention on Wetlands came into force in Kenya on 5 October 1990. Kenya presently has five sites designated as wetlands of International Importance, with a combined surface area of 101,849 hectares. These sites are Lakes Naivasha, Nakuru, Bogoria, Elementaita, and Baringo.

Lake Naivasha is located in a high-altitude trough of the Rift Valley and is one of the few freshwater areas that comprises a crater lake and river delta. There are more than 350 species of water birds, and hundreds of hippos and buffaloes. The lake provides water for human activities, including tourism, fishing, and agriculture. However, the lake is subjected to pollution from agrochemicals from surrounding flower farms. In response to this, the local community and KWS have produced a management plan for the lake and a farmer's code of conduct to regulate the use and disposal of agrochemicals. This is enforced through the Lake Naivasha Riparian Association, which was one of the Ramsar Wetland Conservation Award winners in 1999.

Figure 2. Kenya Wildlife Service Training Institute staff, headed by George Owiti (left), provided information on the curriculum for the International Course on African Wetland Management at the Ramsar 10th Conference of the Parties in Changwon, Republic of Korea, 2008.

Lake Nakuru is situated in the Rift Valley province and is one of the KWS's premier national parks. It is also an important bird area (IBA) and a World Heritage site through a serial nomination together with Lakes Elementaita and Bogoria. The three lakes are important for bird life, with thousands of flamingoes and pelicans among other important birds, including migratory water birds. Lake Baringo is also located in the Rift Valley and is a national reserve. The lake provides critical habitat and refuge for nearly 500 bird species, and some of the migratory water bird species are of regional and global conservation significance, with more than 20,000 individual species reported.

KWS is the main actor involved in the management, control, and conservation of wetlands and has developed management plans for them. There are also several initiatives at local levels, such as at Lake Nakuru National Park, Lake Bogoria National Reserve, and the Tana Delta, where integrated planning based on a catchment approach are being undertaken.

World Heritage Convention

The nomination and inscription of the Kenya Lakes System in the Great Rift Valley to a coveted place on the World Heritage List one of the KWS's most recent activities, having been completed in June 2011. This was the culmination of a lengthy procedure that took concerted effort by KWS and stakeholders to develop a successful nomination dossier; this included the gazetting of Lake Elementaita as a wildlife sanctuary in July 2010.

The three lakes (Elementaita, Nakuru, and Bogoria) are unique and have been recognized as possessing "outstanding universal value" among other comparable lakes globally. They are located within the East African Rift Valley system, a continental-scale tectonic structure that has evolved through earth history to its present state, which is characterized by the scenic and architectonic beauty of the geomorphological features. It is characterized by steep fault scarps, deep gorges, step-faulted blocks, cinder cones and craters on the rift floor, horst and graben structures, ramps, box faults, gushing geysers, and hot springs.

These sites are unique in the sense that they are hydrologically and hydrogeologically connected as opposed to most other lakes worldwide, and are essential to the hydrological cycle that contributes to geothermal energy. Lake Bogoria has the highest concentration of geysers in Africa. Heated geothermal waters contribute to the lake waters and result in very unique aquatic habitats that support unique assemblages of planktonic and benthic flora and fauna. The East African Rift Valley system acts as a sedimentary trap that is vital for the preservation of fossils and thus provides a rich natural archive for palaeoanthropology (hominin and other faunal materials and artifacts) and palaeoecological study that has only begun to be explored.

The uniqueness and associated features combine to create diverse habitats and opportunities for conservation of globally significant biodiversity. The biodiversity includes many fauna and flora that are endemic, congregatory, range-restricted, biome-restricted, and globally threatened. The three lakes host one of the biggest assemblages of birds in Africa, sustaining 75% of the near- threatened population of the lesser flamingo (*Phoeniconaias minor*). This makes the Kenya lakes system a critical site for the conservation of the species worldwide. The lakes also host globally significant populations of 11 congregatory water bird species. For example, Lake Elementaita supports one of the world's major breeding colonies of the great white pelicans (*Pelecanus onocrotalus*).

As a home to many birds, the three lakes are also part of the network of sites serving as stopover, wintering, and summering sites for millions of over 100 species of migratory water birds, soaring birds, and other terrestrial bird species that use the Great Rift Valley flyway. The migratory birds originate from Europe and northern Asia as well as other parts of Africa. The three lakes also provide a network that constitutes natural habitats for *in situ* conservation of globally and regionally threatened mammal species. These include the critically endangered black rhino (*Diceros bicornis michaeli*) and the near-threatened white rhino (*Ceratotherium simum*), among others.

A famous ornithologist, Sir Peter Scott, on the occasion of officially opening Lake Nakuru National Park in 1961, described the lakes as "a sight of incredible beauty and interest and there can be no more remarkable ornithological spectacle in the world."

Cross-border issues and partnerships in convention implementation

KWS is also the focal point for the CMS and its agreements, including the African–Eurasian Water Bird Agreement. Under this convention several initiatives, including Wings over Wetlands, have been implemented, as well as the development of single-species management plans.

There also several important MEAs that are implemented by other sections of the government of Kenya. These include the CBD and UNFCCC. However, KWS still plays an important role in them. For instance, it coordinated the implementation of CBD's Program of Work on Protected Areas in Kenya.

KWS also participates in implementing several sub-regional initiatives. These include:

- Joint sessions between Kenya, Uganda, and Tanzania within the framework of the Lake Victoria Program—a project whose aim is to improve the lake and restore its ecological, hydrological, biological, economic, and sociocultural values.
- Consultations between Kenya, Ethiopia, and Tanzania on proposed projects (funded by the Global Environment Facility, or GEF) on the conservation of Rift Valley lakes and especially cross-border wetlands.
- A GEF-funded transboundary biodiversity conservation project that supports wise use and conservation of wetlands.
- The UNEP Regional Seas Program for Eastern Africa that addresses marine and coastal conservation programs in Kenya, Somalia, Tanzania, Mozambique, and several Indian Ocean island states.
- A cross-border timber trade monitoring program, which monitors trade in wood and wood products at Kenya and Tanzania border points. The project is funded by the Food and Agriculture Organization of the United Nations.

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Mobilizing Resources for Wildlife Conservation in Kenya beyond the 21st Century

Edwin W. Wanyonyi

Kenya's wildlife is a resource of national pride and a world heritage. It provides the base for the country's tourism industry, wildlife research, and conservation education. The country has set aside over 8% of its land as national parks and reserves to ensure wildlife is protected for posterity.

Conserving viable wildlife populations in the 21st century and beyond is becoming more complex and expensive because of many competing interests and other compounding factors. Conservation work today is supported primarily by tourism revenue. But tourism is notoriously volatile: for instance, visitor numbers plunged 85% in 2008 following Kenya's post-election violence, while in 2010 the global financial crisis and the vagaries of nature saw the revenues slump by 40%.

Kenya's economy and tourism industry

The government has, in its medium-term planning, identified tourism as one of the growth engines for the country's economy. The strategy is designed to contribute to the achievement of the broad national macro-economic objectives as stipulated in the Vision 2030 which aims at making Kenya a "middle income country providing high quality life for all citizens by the year 2030." The plan also incorporates the ongoing policies and programs aimed at attaining development objectives, such as the Millennium Development Goals (MDGs), while sustaining the gains made under the *Economic Recovery Strategy for Wealth and Employment Creation (2003–2007),* especially those relating to the tourism sector.

Tourism currently accounts for about 10% of the gross domestic product (GDP), making it the third largest contributor to GDP after agriculture and manufacturing. It is also Kenya's leading foreign exchange earner, generating about Ksh75.2 billion (about US$1 billion) in 2010. The tourism sector's contribution to employment generation has grown by about 3% annually, and earnings per employee have grown by 18% over the last five years. The sector also generates revenue for the government through taxes, duties, license fees, and park entry fees, among others. The existence of tourist attractions in most parts of the country contributes to equitable distribution of economic and infrastructural development.

Kenya has on average posted a positive economic growth of about 3.6% per annum since 2003, apart from 2008 when growth was interrupted by political instability. Since 2008, economic growth has been supported by a resurgence of activities in the tourism sector and resilience in the building and construction industry. However, a mixture of unfavorable

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weather and sluggish internal and external factors have conspired to restrain growth from attaining its full potential. Kenya aims to be one of the top ten long-haul tourist destinations in the world, offering a high-end, diverse, and distinctive visitor experience. Equally important are intraregional and domestic tourism, which are expected to grow significantly over the planned period.

The Kenya Wildlife Service (KWS) is a key stakeholder and enabler in the implementation of Vision 2030. The organization has broadened its capacity to contribute to national development through initiatives promoting both premier parks and under-utilized parks, niche products, and wildlife corridors and migratory routes. Specific strategies include improved infrastructure in protected areas, increasing the quality of service, reviewing entry fees in the premium parks, improving facilities, marketing under-utilized parks, minimizing human–wildlife conflicts, and strengthening conservation efforts and related enterprises along wildlife corridors and migratory routes.

Conservation challenges

Wildlife conservation in Kenya today is facing many challenges. These include decline in wildlife populations both inside and outside protected areas, illegal trade in wildlife species and products, unplanned settlements in wildlife areas, conversion of wildlife migratory routes into other incompatible uses, encroachment into wildlife habitats due to human population growth, human–wildlife conflicts, climate change, and volatility of the international tourism market. Today, Kenya's cherished wildlife is more endangered than ever before.

The elephant population in Kenya dropped from 167,000 to 20,000 between 1973 and 1989 due to poaching. Recent studies show that Kenya has lost a significant amount of its wildlife over the last 30 years as a result of poaching, habitat destruction, and climate changes. Elephants, lions, cheetahs, rhinos, flamingoes, sea turtles, and other wildlife are in danger and hence the need to step up efforts to ensure their survival. Human–wildlife conflicts have escalated in many parts of the country. Dangerous animals such as elephants and lions move out of the parks and wreak havoc on private property. Sometimes people are injured or killed by wildlife. Existing evidence shows that wildlife populations decline at alarming rates where they are in conflict with people.

Managing these challenges requires a substantial amount of resources. Most of the conservation efforts are labor-intensive, with rangers having to physically patrol the parks to keep off poachers from wildlife. KWS also uses air patrols to supplement ground efforts. Some individual rhinos are monitored daily. In some instances, expensive wildlife translocation operations are done to mitigate against human–wildlife conflicts, or to move animals to safer areas.

Financing conservation

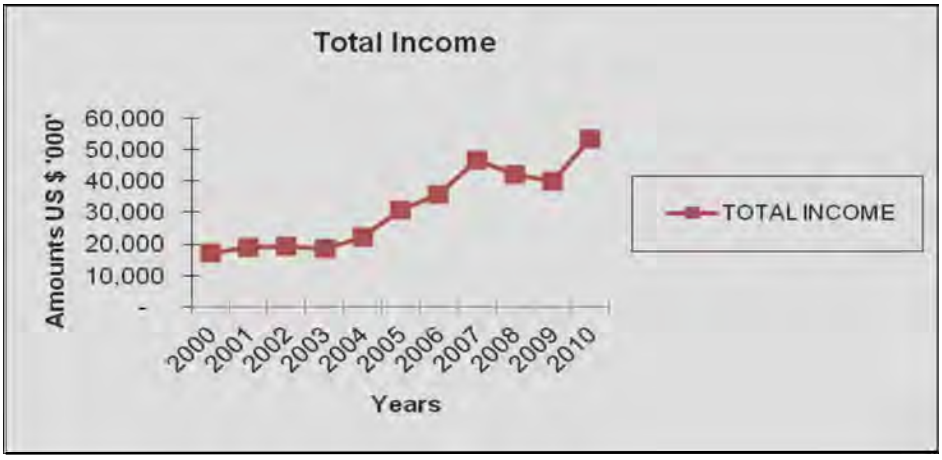
Wildlife conservation in Kenya is primarily financed by income raised from park entry fees (conservation fees), accommodation facilities, rents and leases, government subventions, donors, and fundraising events held in various national parks. The income raised is then used on security of visitors and wildlife, protected areas conservation, biodiversity research and monitoring, management of endangered species, rehabilitation of degraded ecosystems,

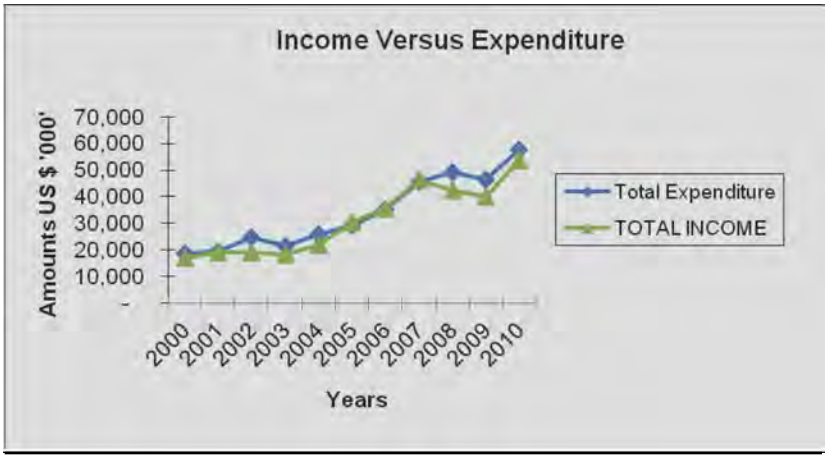
conservation education, and enhancing the visitor experience through marketing and improving infrastructure. The revenue demands for conservation are much higher than what is annually generated.

Figure 1 shows the total revenue collected by KWS over the last ten years. The increase in revenue over this period has been attributed to aggressive international and local marketing, enhanced e-marketing and social media, development of new revenue streams that include corporate fundraising events in parks, and enhanced government support. The revenue versus expenditure trend is shown in Figure 2.

The cost of conservation as reflected on the graph is very high. This is mainly attributed to the vast nature of the protected areas, high costs of providing security for wildlife and visitors, widespread human–wildlife conflict issues, vagaries of weather, and constant needs for infrastructural development and maintenance.

Figure 1 (top). KWS total annual income, 2000–2010.
Figure 2 (bottom). KWS total income versus total expenditure, 2000–2010.





Conservation fees

Park entry fees were renamed "conservation fees" as from January 2011. The change of the name was to reflect the purpose for charging the fee and endear customers and make them feel obligated to support wildlife conservation as a world heritage. The main source of this revenue is the tourist arrivals in Kenya. Tourist arrivals by air and sea for the last 10 years have generally posted an upward trend.

According to the Kenya Tourist Board's annual report for 2009, the highest source market for international arrivals by air and sea have been the United Kingdom, followed by the USA, Italy, Germany, and France. Regionally, the leading sources of tourists are South Africa, Uganda, and Tanzania. From Asian markets, visitors mainly come from India, China, and the United Arab Emirates. Table 1 shows the trend of visitation to national parks over the last 10 years.

As indicated in Table 1, the increased visitation alone does not translate to increased revenue for conservation. There are a number of strategies that have been put in place by KWS to ensure that most of the foreign guests visit at least one national park or reserve. These include review of tariffs based on seasons and park use to give visitors a discount incentive during the low-tourist seasons. Second, KWS has undertaken aggressive marketing both locally and internationally. Marketing campaigns target the World Tourism Exhibitions in United Kingdom, USA, Germany, Italy, United Arab Emirates, South Africa, Tanzania, and Uganda. KWS is also making great efforts to open up less-visited parks that have high tourism potential. This arises from the fact that KWS is responsible for over 59 national parks and reserves, but only 10 of them account for about 90% of the total tourism revenue.

Figure 3 shows the internally generated revenue from park entry (conservation) fees, accommodation facilities, leased properties, license fees, and air-wing.

Government subvention

The government has increased its financial allocation for supporting wildlife conservation programs. In the last 10 years, the government subvention has increased fivefold (Figure 4).

Table 1. KWS parks and reserves visitor statistics, 2001–2010.

Year	Total	Non-Residents	Residents	Citizens
2001	**1,265,301**	485,600	95,635	684,066
2002	**1,467,002**	501,756	92,182	873,064
2003	**1,254,847**	395,090	82,126	777,631
2004	**1,402,293**	526,425	78,067	797,801
2005	**1,674,976**	640,656	76,572	957,748
2006	**1,770,562**	748,355	72,804	949,403
2007	**1,580,052**	538,552	67,806	973,694
2008	**1,597,551**	471,703	73,687	1,052,161
2009	**1,816,591**	628,023	89,308	1,099,260
2010	**2,290,460**	701,240	108,800	1,480,420

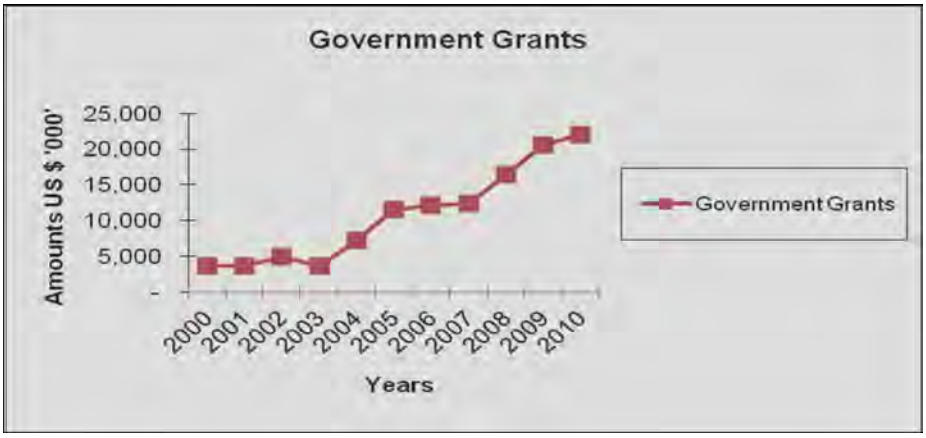


Figure 3 (top). KWS internally generated revenue, 2000–2011.
Figure 4 (bottom). Ten-year government subvention to KWS, 2000–2010.

Development partners

Development partners mainly provide their support in the form of grants and loans to the government of Kenya that is then passed over to KWS to undertake specific projects. The main supporters for conservation in Kenya are the United States Agency for International Development (USAID), Global Environment Facility (GEF), International Fund for Agricultural Development (IFAD), European Union, World Bank, French Development Agency (AFD), and UK's Department for International Development (DFID). Furthermore, we have established memoranda of understanding with specific partners to collaborate in conservation programs and share experiences. The main external agencies with which KWS has developed working partnerships include Parks Canada and bureaus in Brazil and the United States.

The Kenya Wildlife Service Fund

The Kenya Wildlife Service Fund is an endowment fund dedicated to wildlife conservation. The fund is designed to provide reliable support to cushion against fluctuations in tourism income, unpredictable national political environments, or the vagaries of international economics. Therefore, the fund is expected to support wildlife and community conservation efforts over the long term. By definition, the principal investment capital of an endowment fund cannot be used; only the accrued interest and other income may be made available for ongoing operations.

The KWS fund borrows from experiences in North and South America. An example is the Grand Canyon Wildlife Endowment Fund, established by Grand Canyon National Park. It is a special investment that is solely devoted to conserving wildlife in the area, a number of species of which are threatened or endangered.

Substantial funding is required annually for wildlife security operations, monitoring and research, mitigation against human–wildlife conflict, translocations, infrastructure development, and other programs inside Kenya's national parks, reserves, wildlife sanctuaries, marine parks, and KWS-run wildlife stations outside protected areas.

The endowment fund's goal is to raise Ksh7.5 billion (US$100million) over a decade. At an assumed annual interest rate of 10%, Ksh750 million (about US$10 million) will be generated annually for conservation activities. This sum is but a fraction of the cost of conservation countrywide today—but still an invaluable backstopping subsidy, particularly when tourism dips.

A total of US $829,458 has already been raised towards the endowment fund kitty. New initiatives are being put in place to raise more funds for conservation, including having fundraising arms both locally and internationally in the important source markets. Everyone is able to contribute to the fund, including governments, multilateral and bilateral donors, corporations, individuals, and concerned citizens in Kenya and around the world. Table 2 shows the contributions to the funds as of December 2011.

The fund aims to combine grassroots fundraising drives with conservation education to catalyze the culture of giving. In collaboration with KWS and other partners, the fund is

Table 2. Kenya Wildlife Service Endowment Fund contributions as of 30 December 2011. (Ksh = Kenyan shillings.)

Donor / Fundraising Event	Amount, Ksh	Amount, US$
Kenya Wildlife Service / Government of Kenya	60,000,000	750,000
Cycle with the Rhino	2,896,750	36,209
Hell's Gate on a Wheelbarrow	1,800,000	22,500
KLM Royal Dutch Airlines	380,000	4,750
Dr. Scott Rogers	12,500	156
KWS Staff	1,074,000	13,425
Community and Wildlife Service Division	1,900,000	23,750
Honorary Wardens & Groups — Coast Conservation	1,235,000	15,438
Regine Hess — German Embassy Nairobi	30,000	375
Animal Adoption	1,026,676	12,833
Bill Clerk	80,000	1,000
Total	**70,429,926**	**880,437**

developing novel ways—such as mobile phone campaigns, using celebrity spokespeople, and collaborating with wildlife clubs, schools, and drama festivals—to make contributing easy and satisfying.

Other fundraising efforts

KWS also undertakes other fundraising initiatives. The most recent ones include "Kenya Wildlife Adoption," "To Hell's Gate on a Wheelbarrow," and "Cycle with the Rhino." These events raised a total of US $200,000 in the last year. The sponsorship for the events came from corporations such as Standard Chartered Bank, Safaricom, Kenya Electricity Generating Company (Kengen), Kenya Commercial Bank, Resolution Health, Coca Cola, and Kenya Airways, among others.

The KWS wildlife adoption program lets individuals or corporations sponsor an animal at the Nairobi Animal Orphanage. The orphanage is famed for its efforts in caring for abducted, abandoned, and injured wild animals. The adoption program operates on the premise that every animal at our orphanage has specific needs. The support goes directly into the upkeep of the animals by providing food, medicine, toys, translocations, cage construction, maintenance repairs, and other supplies. From every sponsorship received, 50% of the funds go directly to the Kenya Wildlife Service Fund.

KWS also hosts a number of activities in its conservation areas. "To Hell's Gate on a Wheelbarrow," which has been held for the last three years, has continued to gain momentum. This is an annual Corporate Team Building challenge whose primary objective is to raise funds for the construction of a conservation education center in Hell's Gate National Park. The facility, once constructed, will play a key role in the mobilization and sensitization of over 1 million local community members in the Naivasha area on the importance of protecting and conserving wildlife, as well as educating them on alternative enterprise. In 2009, "To Hells Gate on a Wheelbarrow" raised a total of Ksh7million (US$93,000). Another Ksh10 million (US$133,000) was raised in 2010.

"Cycle with the Rhino" is a spectacular and unique cycling event held every September at the Lake Nakuru National Park and part of Nakuru Municipality. The money raised is used to maintain the park's baboon-proof electric fence as well as to support community projects that are linked to the park. The park is highly threatened by the increasing urbanization, pollution, land degradation, decreases in quality and quantity of water in the lake, and loss of biodiversity as a result of deforestation in the Mau, Eburru, and Bahati forests. In 2010 and 2011, "Cycle with the Rhino" raised Ksh7.5 million (US$100,000) and Ksh8million (US$106,000), respectively.

Conclusion

KWS is focusing on making a significant contribution to promoting Kenya's economic growth through wildlife conservation and tourism. By strengthening existing programs and developing new innovative approaches, the organization is well prepared and strategically positioned to face the challenge of financing wildlife conservation despite the volatility of the tourism industry. The responsibility of protecting Kenya's wildlife heritage will remain an expensive endeavor, but KWS will continue to use every resource at its disposal to create a

future for wildlife that is brighter than the present. We will continue to rely on the support of our partners—and the selfless efforts of our staff.

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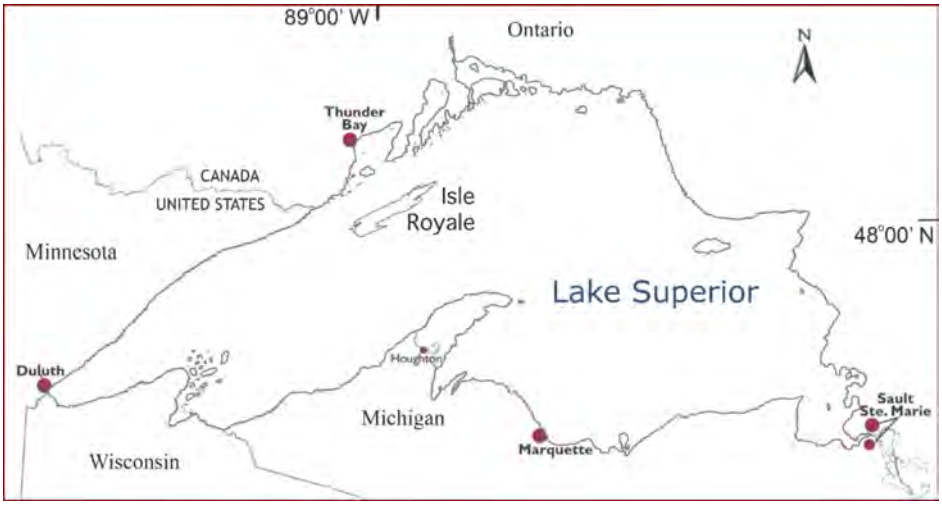
Should Isle Royale Wolves be Reintroduced? A Case Study on Wilderness Management in a Changing World

John A. Vucetich, Michael P. Nelson, and Rolf O. Peterson

Introduction

Isle Royale National Park (IRNP) is a US national park and federally designated wilderness in Lake Superior, Michigan (Figure 1). The park is also inhabited by gray wolves and moose that have been the subject of a long-term research project that celebrated its fiftieth anniversary in 2008 (Nelson et al. 2008; Nelson et al. 2011). In January 2011 it became apparent that the wolves of Isle Royale, with a total population size of 16, were facing a substantial and elevated risk of extinction in the near future.[1] Specifically, the population was reduced to a single breeding pack, and contained no more than two adult females (Vucetich and Peterson 2011). The population is typically composed of three packs, and it has been four decades since the population was reduced to just a single pack. Should the two females die before giving birth to more females, imminent extinction would be almost certain. Even the most optimistic scenarios include an elevated risk of extinction for at least the next several years.

Figure 1. Location of Isle Royale National Park in Lake Superior, North America.



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With these circumstances the question arises: Is it appropriate to intervene on Isle Royale in an effort to prevent wolf extinction? The question is complicated because Isle Royale is a federally designated wilderness and a key point of US wilderness policy is assumed to be the principle of non-intervention. However, wilderness policy is not a simple, unquestioning, and inflexible dictate for non-intervention. A large body of wilderness policy treats the conflict between non-intervention and other wilderness values (Dawson and Hendee 2008; Cole and Yung 2010).

This Isle Royale case as an important example of an increasingly common type of challenge for environmental ethics, the academic field of inquiry aimed at understanding how we should and should not relate to nature and the environment around us. Ethical challenges, including the present Isle Royale case, typically involve conflicting values. Common mistakes in dealing with values include ignoring some, having a dismissive attitude about others, or insisting that only one value matters. The appropriate approach is to acknowledge and understand all of the values at stake, and then develop a perspective or position that would least infringe upon that set of values. We adopt this approach here.

The Isle Royale case also requires understanding the nature of wilderness, which is important because it says much about our relationship with nature in general (Callicott and Nelson 1998; Nelson and Callicott 2008). Our understanding of wilderness has evolved over the past 150 years (Turner 2002), and the Isle Royale case likely represents a new, emerging development in that evolution.

The history of wolves and moose on Isle Royale

Moose arrived on Isle Royale, apparently for the first time, early in the 20th century (Clark 1995). Moose most likely swam to Isle Royale (Mech 1966). However, some staff members of IRNP and long-time residents of Isle Royale believe moose were brought to Isle Royale by humans (see also Scarpino 2011). There is no direct evidence to indicate how moose arrived.

Moose lived on Isle Royale for about five decades in the absence of wolves. Without predation, moose increased to a very high level, perhaps 3,000 or more (>6 moose/km^2) by the late 1920s (Murie 1934). During this population increase, moose browsing dramatically impacted Isle Royale's forest vegetation (Murie 1934). The moose population crashed in 1934 due to an acute lack of food, increased again, and then died back once more in the 1940s (Krefting 1974). Signs of overbrowsing were still apparent in the early 1960s (Mech 1996).

Isle Royale moose were seen as overabundant during the 1920s and 1940s, and that concern was a primary wildlife management issue for the National Park Service in the late 1940s (Allen 1979). The impact of moose browsing during the first half of the 20th century was dramatic enough to motivate Adolph Murie (1934) to urge that moose be culled or removed, or that large carnivores be introduced. A second important argument for introducing wolves to Isle Royale was to provide the only sanctuary from human exploitation for wolves in the central part of North America (unpublished correspondence, Michigan Technological University archives). Aldo Leopold and Sigurd Olson also supported introducing wolves to Isle Royale in the 1940s (unpublished correspondence, University of Wisconsin archives). Durward Allen (US Fish and Wildlife Service) and Victor Cahalane (National Park

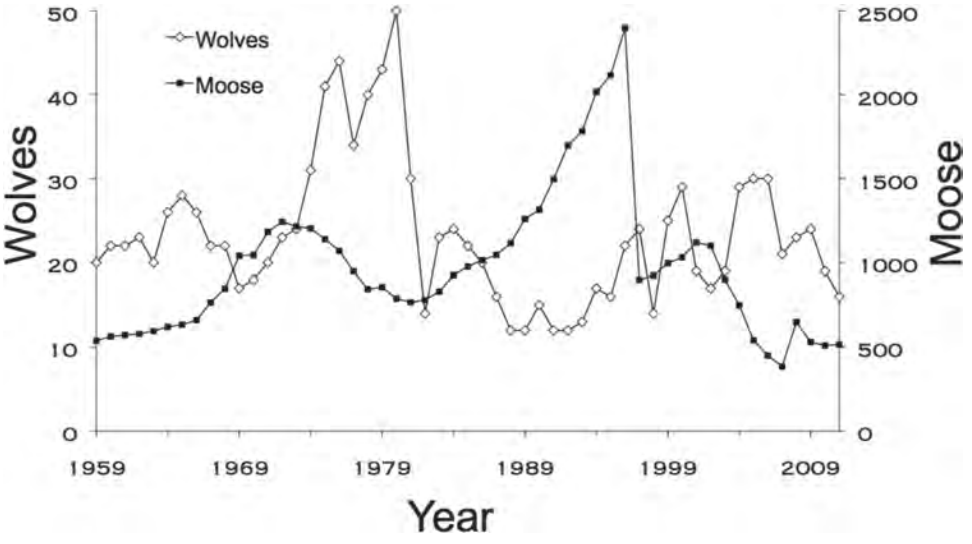
Service) discussed how wolves might be introduced (Allen 1979). These leaders were not only advocating on behalf of Isle Royale's wilderness character, they were also among the intellectual forefathers of our modern concept of wilderness, including the Wilderness Act of 1964.

Lee Smits, a Detroit newspaper editor, strongly advocated wolf reintroduction and led a private effort that in 1952 resulted in the release of four captive-raised wolves on Isle Royale. These plans were carried out even though it was known that wolves had already colonized Isle Royale on their own, most likely by crossing an ice bridge sometime between 1948 and 1950 (unpublished correspondence, Michigan Technological University archives). Three of the wolves that had been introduced by humans were killed or removed after they became a public nuisance and the other disappeared (Mech 1966). Ultimately, wild wolves flourished, and controversy over moose overabundance on Isle Royale largely ceased when wolves colonized the island (Peterson 1995).

Since their establishment on Isle Royale, wolves have been the primary source of moose mortality, and moose have comprised more than 90% of wolves' diet. In 1958, researchers began studying the population dynamics of wolves and moose on Isle Royale. Between 1958 and 1980, wolf predation had a substantial impact on moose abundance and rates of browsing (McLaren and Peterson 1994; Wilmers et al. 2006). Then in the early 1980s, the wolf population crashed after humans inadvertently introduced canine parvovirus (CPV) to the Isle Royale wolf population (Peterson et al. 1998; Figure 2).[2]

By the mid-1980s the wolf population seemed to begin making a quick recovery, but then declined again and remained in the low teens for the better part of a decade. With wolf predation dramatically reduced, moose abundance increased to approximately 5 moose/km^2, a remarkably (perhaps unprecedented) high density for a naturally regulated moose population (Karns 1998). With this high density, the impact of moose on the forest also rose to levels never previously measured.

Figure 2. Wolf and moose fluctuations, Isle Royale National Park, 1959–2011.



The human-introduced disease, CPV, has been the single most significant event in the chronology of wolf–moose dynamics on Isle Royale. Although researchers were unable to detect the presence of CPV after 1990 (Peterson et al. 1998), the disease fundamentally altered wolf population dynamics at least up to the year 1998 (Wilmers et al. 2006). Specifically, the period after the wolf crash was characterized by (1) fewer wolves per moose than the two decades prior to the advent of human-introduced disease, and (2) climatic variation replacing wolves as the dominant influence on moose dynamics (Wilmers et al. 2006). One plausible mechanism for these long-lasting effects is the general tendency for some ecosystems to remain altered for long periods following a major perturbation (Wu and Loucks 1995; Beisner et al. 2003). Another plausible mechanism is that the population bottleneck caused by the disease led to elevated levels of inbreeding, which reduced the wolf population's ability to control the moose population (Räikkönen et al. 2009). One long-lasting effect of the disease-induced wolf reduction during the 1980s was a fivefold increase in moose abundance that ended when the population crashed in 1996 (Figure 2). Approximately 2,000 moose (~75% of the population) starved to death in a four-month period.

The dramatic rise of moose abundance that CPV triggered, and its subsequent collapse in 1996, led to an altered age structure in the moose population that lasted for another 15 years. The altered age structure began with the substantial decline in birth rates for several years following the crash. Those years of low birth rate led to a shortage of old moose by 2009. Because wolves cannot easily kill middle-aged moose, a shortage of old moose is associated with declines in wolf abundance (Vucetich and Peterson 2004). The salient point is that the recent decline in wolf abundance is associated with a chain of events that began with the introduction of CPV by humans in the early 1980s.

In addition to an altered age structure, total moose abundance declined by more than 50% between 2001 and 2011 (from ~1100 to ~500). These are the lowest estimates of moose abundance ever documented on Isle Royale, and they play an important role in the elevated extinction risk now facing wolves. The moose decline was caused largely by a set of three interrelated factors: wolf predation, anthropogenic climate warming, and winter ticks (*Dermacentor albipictus*).

Climate warming is widely regarded as a serious future risk to the survival of moose at the southern edge of its range in North America, that is, at the latitude of Isle Royale (Lenarz et al. 2009, 2010). The reality of this risk became clear to moose managers in the first decade of the 21st century as moose populations in Wyoming, Ontario, and Minnesota showed signs of reduced demographic vigor and even local population collapse (Murray et al. 2006). One impact of climate warming is to reduce time spent foraging in summer, which is critical for moose survival in winter and probably determines female ovulation rates during the autumn breeding season (Frisch 2002). Climate warming also likely favors populations of winter ticks (Wilton and Garner 1993; DelGiudice et al. 1997; Samuels 2004), which can cause a moose to die by reducing its nutritional well-being (Garner and Wilton 1993; Addison et al. 1994; DelGiudice et al. 1997; Lankester and Samuel 1997; Samuel 2004). Tick infestations on Isle Royale had risen to very high levels by 2007, when at winter's end most moose had lost more than 75% of their hair to ticks (Vucetich and Peterson 2011). The summers asso-

ciated with the moose decline in the early 2000s were warm, beginning with an El Niño event of unprecedented strength in 1998 (Vucetich and Peterson 2008).

In 2007, CPV was again detected in the wolf population (along with adenovirus, which causes respiratory infections in human and wildlife, and *Anaplasma phagocytophilum,* a bacterium implicated in human and wildlife tickborne disease). Human introduction is the most likely source of these diseases. Although it is difficult to know the impact of these diseases, we do know the population experienced a substantial decline in abundance, from 30 to 21 wolves, between 2006 and 2007, and declined further to 16 by 2011.

Chances for natural recolonization. Wolves colonized Isle Royale on their own by crossing an ice bridge sometime between 1948 and 1950. Genetic analyses also indicate that lone male wolves immigrated to Isle Royale on one to three occasions between 1950 and 1997 (Adams et al. 2011). However, a single wolf is unable to found a population. Only once in recorded history has a breeding pair of wolves capable of founding a population immigrated to Isle Royale (i.e., when the current population was first established in the late 1940s).

Immigration is, in principle, limited by wolves' access to Lake Superior shoreline on the mainland and the presence of an ice bridge stable enough to allow wolves to walk the 24 kilometers that separate Isle Royale from the mainland (Figure 1). Since wolves first colonized Isle Royale, human activities have limited wolves' access to Lake Superior shoreline because of the development of the Trans-Canada Highway and the expansion of Thunder Bay, Ontario. Climate warming has also greatly reduced the frequency and duration of stable ice bridges. During the 1960s, stable bridges formed in most years and lasted for several weeks to well over a month. Between 1998 and 2011, a suitably stable ice bridge formed only once, in 2008. So far this century, ice bridges have typically lasted just a few days. Natural recolonization would not be impossible, but human action, as manifested in land-use change on the north shore of Lake Superior and global climate change, has significantly reduced the likelihood of what was already an extremely rare event.

It seems that humans have now impacted nearly every landscape on the planet and often in ways that are as significant as they are subtle. The history of human influence on the wolves and moose of Isle Royale is an important example.

Analysis: Wolf reintroduction

In principle there are three cases of intervention that could be considered. The first case, hereafter referred to as "wolf reintroduction," would involve reintroducing wolves if the wolf population were to go extinct. A second case, "genetic rescue," is motivated by concern that some conservation scientists have for the high rate of inbreeding that Isle Royale wolves exhibit (unpublished correspondence with the editor of the journal *Biological Conservation*). A third case, which we term "female reintroduction," would involve reintroducing female wolves if all the females were to go extinct.

Here we provide a detailed analysis for the ethics of wolf reintroduction. Afterward we present a briefer description of how the cases for genetic rescue and female reintroduction compare and contrast with the wolf reintroduction case. Next, we identify and describe the values involved in deciding whether to reintroduce wolves. Afterward we evaluate whether these values are more likely overridden by reintroducing or by not reintroducing wolves.

The value of non-intervention. A central management principle of wilderness policy is the principle of non-intervention, which is sometimes casually characterized as "not intervening, so that nature can take its course." As a central principle of wilderness, non-intervention is not valuable for its own sake; instead it is valuable as a means toward two critical ends. First, it can prompt an attitude of humility that mitigates pathological obsessions to control nature (Meffe and Holling 1996; Landres 2010). Second, using language of the US Wilderness Act 1964, non-intervention can help maintain natural conditions and the primeval character of landscapes that have not already been influenced by human activities.[3] According to well-established wilderness policy, non-intervention is not, in general, a preferred management option when "nature's course" has been altered by humans. In such cases, intervention is commonly adopted in an effort to mitigate human influence (Dawson and Hendee 2008; Cole and Yung 2010).

During the past three decades the wolf population has been affected by disease and moose population decline, which was influenced by predation, ticks, and climate warming. Humans had a hand in all of these influences. If wolves were to go extinct, it would be plausible to conclude that humans had exacerbated the extinction risk of wolves during the past three decades and that humans have significantly reduced the chances of natural recolonization. As such, non-intervention would override the wilderness values of Isle Royale while intervention would enhance and honor wilderness values of Isle Royale.

One might object and suggest, hypothetically, that Isle Royale wolves would go extinct due to inbreeding and chance demographic events (e.g., skewed sex ratio) that are likely to occur naturally and inevitably on a small island. However, a fundamental principle of extinction is that it is not in general the result of a single cause. Extinction is almost always the result of an interrelated web of both proximate and ultimate causes. Even if inbreeding or natural random chance occurrences were part of the extinction process, the salient conclusion remains: Human actions importantly increased extinction risk and decreased the chance of re-colonization.

The value of wilderness character. Preserving the "wilderness character" of a landscape is another fundamental value of wilderness management, particularly for Isle Royale National Park (USNPS 1999). Wilderness character arises from the properties of a landscape that evoke a feeling or emotion that the landscape is wild and primeval. Wilderness character is also a special kind of "sense of place," which is formed when the natural history, culture, and geography of a place commingle in our minds and form the stories—lyrical stories and scientific stories—that define a place. Sense of place and wilderness character are critical because they provide the points of connection between a place and a person's knowledge, emotions, and values.

Wolves are a critical component of Isle Royale's wilderness character—not merely the presence of wolves, but the interactions among wolves, moose, and the forest, all in the absence of any hunting or logging by humans (Appendix 1; see below, p. 144). This condition is, on our planet today, rare, special, and critical for evoking a feeling that Isle Royale's landscape is wild and primeval.[4] Wolves and their connections provide the most important and widely appreciated narratives that create a wilderness sense of place for this island. This importance is reflected in NPS policy, interpretive activities, and widespread interest among

park visitors, scientists, and supporters of wild places (see Appendix 2, pp. 145–147, for details).

For Isle Royale, wolves are the icons of wilderness culture. Therefore, allowing wolves to remain extinct on Isle Royale would significantly wound Isle Royale's wilderness character and important points of connection between people and Isle Royale. It may seem odd that non-intervention would conflict with the preservation of a land's wilderness character. However, this ironic juxtaposition is not odd, so much as it is the result of a tragedy: humans have reduced the planet's unexploited landscapes to small remnants in remote places.

The value of ecosystem health. In the United States, the preservation of ecosystem health is also broadly appreciated as a central value of wilderness (Nelson 2009a, 2009b). Ecosystem health has been defined, roughly, as the structure, function, composition, and resilience of an ecosystem that was native prior to the modern era (Rapport et al. 2002). Ecosystem health is a coherent blend of normative and objective concepts (Nelson 2009a). That is, society, led by the voices of conservation leaders, has indicated that structure, function, composition, and resilience are the ecosystem properties that have moral value; and, science is able to objectively measure and evaluate these properties. The meaning of ecosystem health is both flexible enough to be applied to any particular place or time and concrete enough to make it a useful platform for management.

A great deal of conservation science affirms that ungulate overabundance is a widespread and severe threat to ecosystem health, and that top predators, like wolves, are vital components of ecosystem health for limiting ungulate abundance (Miller et al. 2001; Beschta and Ripple 2009; Estes et al. 2011). North American national parks, in particular, have been challenged by this fact (e.g., Rocky Mountain, Great Smoky Mountains, and Yellowstone national parks). In Canada's Gros Morne National Park, the loss of wolves resulted in moose overabundance that degraded 44% of that park's forests (Woodley 2010). The health of island ecosystems seems particularly vulnerable to ungulate overabundance in the absence of predators, for example at Anticosti Island, Quebec (Potvin et al. 2003) and North Manitou Island of Sleeping Bear Dunes National Lakeshore (Case and McCullough 1987). In several parks where wolves have (or had) been excluded, hunting or culling of ungulates has been, with great controversy, considered or mandated (e.g., Rocky Mountain and Yellowstone national parks). Unless possibly very high rates of moose harvest were mandated,[5] allowing wolves to be lost from Isle Royale would significantly diminish its ecosystem health.

A detractor of this perspective might suggest that using "ecosystem health" in this way to justify wolf reintroduction disguises a romantic and outdated desire to preserve "vignettes of primitive America," and that wolves were a critical part of IRNP's ecosystem health from ca. 1950 until the time of their extinction, but not afterward. Certainly, top carnivores were an important aspect of historic conditions. This does not mean, however, that maintaining and restoring top carnivores to places where large herbivores live represents maintaining "vignettes of primitive America." Instead, top predators are a basic principle of ecosystem health (Estes et al. 2011).

A detractor might also object by first citing NPS management policies (2006) which mandates "maintain[ing] all the components and processes of *naturally* evolving park ecosystems, including the *natural* abundance, diversity, and genetic and ecological integrity

of the plant and animal species native to those ecosystems [and recognize] *natural* change … as an integral part of the functioning of *natural* systems" [italics added]. With this policy in mind, a detractor might assert that the defining characteristic of Isle Royale's ecosystem health is its small, isolated nature, where colonization by wolves and moose are rare "accidents" and extinction is a *natural* process. Isle Royale is a dynamic place, and wolves and moose have been a part of Isle Royale's history for only a short time. For these reasons, the argument would go, losing wolves from Isle Royale leaves the place no less healthy than it had been before their arrival.

The weakness of this argument may be first recognized by noting that wolf–ungulate–vegetation interactions used to be a dominant set of ecological relationships throughout much of North America. By the 21st century, however, humans have restricted such relationships, operating in the absence of human exploitation, to very rare and small remnants. The detractor's perspective pits the value of one natural process—extinction on small islands—against another—predation (Peterson and Krumenaker 1989; Peterson 1995). The detractor's position overlooks the process of wolf predation, which is essential to the health of Isle Royale's ecosystem.

The weakness of the detractor's position arises from the concept of *natural* being fraught with debilitating dilemmas that have remained intractable despite being considered for more than two millennia (Desjardins 2000; Cole and Yung 2010). The concept of "natural" is increasingly difficult to make sense of because of human impact on the planet.

Because of these problems with the concept of "natural," Parks Canada recently replaced "naturalness" with "ecological integrity"[6] as a general management objective for their natural areas (Woodley et al. 2010). A specific example of this attitude is likewise reflected in the general management plan for IRNP (1999), which indicates that "preserving and protecting the park's wilderness character … natural resources … and ecological processes" is one of the park's purposes and that to "preserve ecological integrity of Isle Royale" is one of the park's priorities (USNPS 1999).

Again it seems ironic to pit the value of non-intervention and natural processes (like extinction on small islands) against the value of ecosystem health. However, the tragedy is having reduced the planet's unexploited areas to small remnants, resulting in the need to actively maintain ecosystem health in these tiny remnants. This concern is aptly captured by the ecologist Daniel H. Janzen: "What escapes the eye … is a much more insidious kind of extinction: the extinction of ecological interactions" (Janzen 1974).

The value of science. The primary scientific mission of the Isle Royale wolf–moose project is to document and understand predation and herbivory—two of the most important ecological relationships on the planet. Isle Royale's biogeography is critically unique for this mission. The island's isolation means that fluctuations of wolves and moose are caused almost entirely by births and deaths, not immigration and emigration. Isle Royale is also the only location on the planet where wolves and moose interact in the absence of other important predators and prey, such as coyotes, deer, and bears. Studying simplified food webs is critical to ecologists' understanding of nature. Perhaps most importantly, the wolves and moose on Isle Royale are not hunted, nor is the vegetation logged or otherwise harvested. This circumstance is very rare on the planet today.

Wilderness areas are uniquely valuable to science as places for establishing baselines of ecosystem health that can be applied in areas far beyond wilderness. These baselines cannot be established overnight, as they require long-term research. Long-term research is not only rare, it is valuable for its distinctive ability to help us better understand how ecosystems are affected by unexpected events, rare events, and multicausal relationships (Turner et al. 2003).

The Isle Royale wolf–moose project is the longest study of any predator–prey system in the world. The project has made valuable scholarly contributions on a wide range of topics, including population biology of wolves (e.g., Vucetich and Peterson 2004), effect of wolf predation on moose (e.g., McLaren and Peterson 1994; Vucetich et al. 2011), effect of climate and disease on population dynamics (e.g., Post et al. 1999; Wilmers et al. 2006), the nature of extinction risk (e.g., Vucetich et al. 1997, 2009), the effect of genetic rescue on population dynamics (e.g., Adams et al. 2011), the nature of inbreeding depression (e.g., Räikkönen et al. 2009), connections between individual life history and population dynamics (Peterson et al. 1984), social behavior of wolves (Vucetich et al. 2004), the effect of the US clean air and water legislation on mercury pollution (Vucetich et al. 2009), the role of predation in nutrient cycling (Bump et al. 2009), the ecology of arthritis in moose (Peterson et al. 2011), the relationship between ecological science and environmental ethics (Nelson et al. 2010; Vucetich et al. 2010), and the relationship between ecological science and sociology (Gore et al. 2011). Papers from the wolf–moose project have been cited more than 1,200 times during the past ten years. The scientific value of the wolf–moose project was recently affirmed by an independent panel of scientists commissioned by the National Park Service who reviewed the state of science in Isle Royale National Park (Schlesinger et al. 2009).[7]

Allowing wolves to be excluded from Isle Royale would cause the end of wolf–moose research and its extensive outreach program. Superficially, one might think the loss of wolves would simply cause the wolf–moose project to become a moose–vegetation study. While studies focusing on three trophic levels are rare, studies focusing on ungulate herbivory in the absence of top predators are extremely common. Moreover, the approach and methods used to conduct state-of-the-art herbivory research are very different from the methods appropriate for studying interactions across three trophic levels. As such, without wolves the Isle Royale wolf–moose project would be in no position to effectively compete for funding from the US National Science Foundation, the loss of which would be the death of the project. In 2009 and 2010, the wolf–moose project proposed research to NPS that would expand the moose–vegetation component of the research. NPS chose to not fund that research. There is little reason to think that the longest study of any predator–prey system in the world would survive the loss of wolves from Isle Royale.

Should science ever, in principle, trump wilderness values in a wilderness area? Well-established wilderness policy clearly indicates the answer to this question is, "yes."[8] The question at stake here is: Should one of the longest and most prominent research projects to ever take place in a federally designated wilderness be sacrificed for the far-from-solid claim that doing so might affirm the value of non-intervention?

The value of education. Wilderness policy also recognizes the vital role that education about "wilderness character, resources, and ethics" play in maintaining values that promote healthy relationships with nature (§6.4.2 in NPS 2006). The educational mission of the Isle

Royale wolf–moose project is to use scientific discoveries about the wolves and moose of Isle Royale as a basis for "generat[ing] a sense of wonder toward nature in as many people as possible," a sense of wonder that would inspire a caring relationship with nature (Vucetich 2010). The mission is not only true to the project's science, but it is informed by inclusion of an environmental philosopher (MPN) as part of the wolf–moose project.

To this end, associates of the wolf–moose project disseminate knowledge to the general public through a vigorous outreach program that includes books, DVDs, annual reports, a website, pieces of art, museum exhibit displays, and public presentations delivered to thousands annually by the project principal investigators and other associates, and opportunities for members of the general public to volunteer for the research project (see Appendix 3 for details). The extent of outreach associated with the wolf–moose project and sophistication of its purpose is rare among research projects of any kind.

Wilderness policy also recognizes that recreation is an important value that is sometimes associated with compromising the wilderness value of non-intervention (§6.4.3 in NPS 2006). Hiking trails, boat docks, and sleeping shelters (and the machinery and infrastructure necessary to maintain them) are examples of such concessions. The wolf–moose project also represents an important form of recreation. For many people, participating in the wolf–moose project's outreach activities represent a particularly deep kind of recreation, an opportunity to re-evaluate and subsequently re-create their relationship with nature.

Synthesis. Should the wolves of Isle Royale go extinct, human response involves five principal values: non-intervention, wilderness character, ecosystem health, science, and education. Failing to reintroduce wolves would:

- Dismiss the value of *science* and *education* by resulting in the end of a long-term research project that is globally significant, unique, and irreplaceable.
- More likely denigrate the value of *non-intervention* because this value is contingent on humans not having impaired the wolf population's viability or the chances for subsequent recolonization; human activities have impaired these processes.
- Diminish the island's *wilderness character* and *ecosystem health*.

For these reasons, failing to reintroduce wolves would degrade the wilderness value of Isle Royale, and wolf reintroduction is an appropriate way to honor that value. Lingering concerns about the inappropriateness of intervening in a wilderness are further mollified by the evolution of our understanding of wilderness. That is, ecosystem health may well be superseding non-intervention as the central value of wilderness (Cole and Yung 2010).

These perspectives are complemented by sociological research indicating that an "overwhelming majority" of Michigan residents do not believe that allowing "nature to take its course" is an adequate reason to allow the extinction of Isle Royale wolves and support the belief that Isle Royale wolves should be maintained should they begin to disappear from the park.[9]

Would reintroducing Isle Royale wolves because of their contributions to ecosystem health in boreal forests open a kind of Pandora's box requiring one to consider introducing black bears, which also prey upon moose in many boreal forest ecosystems, and consider

reintroducing lynx and caribou to IRNP for their contributions to ecosystem health? Perhaps. There would be nothing wrong with conducting an analysis like that presented here to consider the appropriateness of introducing or reintroducing these species to Isle Royale. The development of such arguments is beyond the scope of this essay, except to mention a few considerations. First, the ecology of black bear predation on moose differs substantially from the ecology of wolf predation. If wolf predation is essential for ecosystem health where moose live, then bear predation is unlikely a substitute for wolf predation. Consequently, if a robust argument could be developed for black bear introduction,[10] it is difficult to imagine how that would end up being an argument against wolf reintroduction. Similarly, if a robust argument could be developed for establishing a lynx population, such an argument is unlikely to be an argument against wolf reintroduction.

Caribou persistence on Isle Royale is unlikely in the presence of wolves (Cochrane 1996). As such, an argument for caribou reintroduction may well be an argument against wolf reintroduction. If so, one would have to assess whether the value of caribou on Isle Royale would outweigh the value of wolves. Both species probably have similar value in terms of wilderness character. However, the scientific and educational value of caribou on Isle Royale is likely less than the scientific value of wolves on Isle Royale (because the wolves have been studied for half a century). Introducing caribou, rather than wolves, would add a second large ungulate to an ecosystem lacking a top predator. While these considerations do not represent a complete argument, they do suggest, at least *prima facie*, that a complete argument would support wolf reintroduction.

Genetic rescue

The appropriateness of genetic rescue (i.e., introducing wolves to Isle Royale while male and female wolves are still present) would also be judged by evaluating the same values described above. However, assessing the appropriateness of rescue might also require three additional considerations.

First, a case can be made that population health ought to be promoted in wilderness populations, and that a population is not healthy if it suffers from inbreeding depression.

Second, the inbreeding depression observed on Isle Royale involves malformations in the spinal column that are known to cause pain and suffering in some domestic dogs that suffer from the same condition (Räikkönen et al. 2009). Genetic rescue might alleviate that suffering. The unresolved relationship between conservation ethics and animal welfare ethics, in general, is evidence that this value should not be dismissed without consideration (Vucetich and Nelson 2007).

The third concern is represented by asking, how would genetic rescue affect scientific values? Many population geneticists would likely make the case that more would be learned from monitoring genetic rescue than from monitoring the continued effect of inbreeding; because there exist several hundred very well documented cases of monitoring the effects of inbreeding (Hedrick and Kalinowski 2000). However, genetic rescue has been monitored carefully in fewer than about seven instances (Adams et al. 2011). One would also have to consider how the importance of this value compared with other competing (non-scientific) values.

These additional considerations make the development of judgments about whether genetic rescue is or is not appropriate a substantially more difficult task.

Female reintroduction

Understanding the appropriateness of taking management action to reintroduce females in the event that all existing females go extinct would also require similar considerations. From a genetic perspective, reintroducing females would represent genetic rescue. This circumstance would also be characterized by brief period of time. That is, if females went extinct, the period of time during which the population would exist without females would be brief (no more than approximately seven years before the males would also go extinct).

General lessons

We hope this analysis represents a useful and general framework for approaching any decision that involves values that compete in complex ways. The wolves of Isle Royale also represent an important case study of a more general policy concern. Our ideas about what wilderness is, and why wilderness is valuable, change over time. During the first half of the 20th century, wilderness philosophy focused on woodcraft, a principle of self-sufficient living in the wilderness characterized by experiences like utilizing trees for temporary structures and fires. By the mid-20th century, wilderness leaders grew to realize that the growing number of people wishing to have this kind of wilderness experience in a diminishing number of wilderness areas would result in a devastating loss of wilderness. From this concern grew a new philosophy of wilderness, a philosophy associated with the principles of "leave no trace," and along with it the principle of non-intervention (Turner 2002).

Now, in the early 21st century, wilderness areas have been reduced even further and human impacts on those areas have become pervasive. Anthropogenic climate change and exotic species have altered the course of nature in nearly every protected area. Consequently, the principle of managing for naturalness is becoming less coherent, and the value of non-intervention as a means of preserving naturalness is becoming less useful. The transition from naturalness to ecosystem health as a basis for understanding the value of wilderness was reflected in the life-long development of Leopold's thought on wilderness (Nelson 2009b). This transition was fully articulated by wilderness scholars from the 1980s to 2000s (Callicott and Nelson 1998; Nelson and Callicott 2008). By 2010, these ideas were being appreciated by land management agencies, including the US National Park Service (Cole and Yung 2010; Harmon 2010; Parsons 2011). The emerging challenge is to better understand the meaning of ecosystem health in a world that appears committed to anthropogenic climate change, species invasions and extinctions, and increasing resource extraction (Vucetich and Nelson, in press).

We hope this analysis motivates broader discussions that deepen understanding of the specifics on Isle Royale and the associated underlying principles. Broader discussion is well justified because the meanings of wilderness and ecosystem health are powerful reflections on our overall relationship with nature.[11]

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Endnotes

1. As this article goes to press, the 2012 winter study has just been completed; with high mortality and low reproduction, the population has declined to nine wolves.
2. After CPV was suspected to be the cause of the crash, NPS staff decided not to vaccinate Isle Royale wolves because doing so would have made it impossible to know if the disease was still present (antibody levels would be similar in response to disease exposure or vaccination) . The decision was based on the value of scientific knowledge, not the wilderness value of non-intervention.
3. The US Wilderness Act of 1964 says: "An area of wilderness is further defined to mean … an area of undeveloped Federal land retaining its primeval character and influence … which is protected and managed so as to preserve its natural conditions."
4. This value is related to another traditional value of wilderness, i.e., wilderness as a sanctuary for nature (see Leopold 1949; Sanders 2008). Wolves on Isle Royale have been and continue to be the only wolves in North America who can live their lives without the risk of being legally hunted or poached. That Isle Royale might be a sanctuary for wolves had also been a motivation for those who had originally considered reintroducing wolves to Isle Royale in 1940s and 1950s (unpublished correspondence, Michigan Technological University archives).
5. Although non-extraction is an important principle of wilderness, hunting (and fishing) is permitted in many federally designated wilderness areas. While it may seem farfetched to be concerned that the loss of wolves would lead to the hunting of Isle Royale moose, that prospect has been enacted or considered in cases where the absence of top predators led to ungulate overabundance in a national park (e.g., Theodore Roosevelt National Park, Rocky Mountain National Park).
6. "Ecosystem integrity" and "ecosystem health" are essentially synonymous.
7. The number two "Priority Recommendation" of this panel was "Maintain financial support for and expansion of ongoing studies of moose–wolf dynamics at Isle Royale."
8. "Scientific activities are to be encouraged in wilderness. Even those scientific activities (including inventory, monitoring, and research) that involve a potential impact to wilderness resources or values (including access, ground disturbance, use of equipment, and animal welfare) should be allowed when the benefits of what can be learned outweigh the impacts on wilderness resources or values" (§6.3.6.1 of USNPS 2006). Additionally, Isle Royale's general management plan (1999) states that two of the park's five purposes are not only to "preserve and protect the park's … natural resources and ecological processes" but also to "provide opportunities for scientific study of ecosystem components and processes."
9. Specifically, 62% of surveyed residents strongly or moderately disagreed with the state-

ment, "We should let nature take its course even if wolves start to disappear from Isle Royale National Park," and 73% of respondents strongly or moderately agreed with the statement, "Wolf numbers should be maintained in Isle Royale National Park if they start to disappear from the park" (Kellert 1990: 57, 61).

10. Other considerations, beyond the scope of this essay, suggest it is doubtful that a robust argument could be developed.
11. Research on the wolves and moose of Isle Royale is supported in part by the US National Science Foundation and the National Park Service. The views expressed here do not necessary reflect the views of these institutions.

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Appendix 1
Evidence that wolves are an important part of Isle Royale's wilderness character

The general management plan (GMP) for Isle Royale offers important evidence that NPS has a responsibility to preserve Isle Royale's wilderness character and ecological integrity, and that wolves are an important element of that wilderness character (USNPS 1999). Specifically, one of the park's five purposes is to "preserve and protect the park's wilderness character." Moreover, two of the three characteristics of Isle Royale that make it significant are (a) the wolves and moose of Isle Royale, and (b) Isle Royale's remote biogeography. (The third characteristic of significance refers to the fisheries of Isle Royale.) The GMP explains how the "purpose" and "significance" of the park are derived from the park's enabling legislation. Moreover, the GMP states that the "primary goal of natural resource management is to preserve the ecological integrity of Isle Royale" and the second-highest priority is to "convene a panel of NPS and other subject matter experts to identify and evaluate potential actions for managing the wolf population if viability becomes a concern."

Other evidence suggesting that wolves are an important component of Isle Royale's wilderness character include the following.

- Two of the most prominent artistic depictions of Isle Royale depict Isle Royale wolves. Specifically, wolves and moose are the central figures in a well-known poster by the artist Charlie Harper depicting the wildlife of Isle Royale, and in the cover image of the free map of Isle Royale made available to every park visitor.
- The public has demonstrated a continuing interest in learning more about the wolves and moose of Isle Royale, which is indicated by the success of the Isle Royale wolf–moose project's outreach program (see Appendix 2), and by the fact that the most prominent displays in the Isle Royale visitor center at Windigo feature wolves and moose.
- The NPS staff led the organization of a multi-day event to celebrate the 50th anniversary of the wolf-moose project. The celebration was repeated at three venues (Duluth, Minnesota; Houghton, Michigan; Isle Royale National Park). More than 3,000 people were present for some portion of these celebrations, including US Senator Carl Levin's senior aide, the NPS associate director for science and natural resource management, the Midwest regional director of the NPS, and the assistant secretary of the interior.

Appendix 2
Summary of outreach activities associated with Isle Royale wolf–moose research

Below is an annotated list of recent outreach activities associated with the Isle Royale wolf–moose project:

Film

- *Fortunate Wilderness* (www.fortunatewilderness.com) is a feature-length film by George Desort that describes the Isle Royale wolf–moose project. It premiered in July 2008, has been shown at 20 venues throughout the Midwest and Canada (more than 2,500 in attendance) and broadcast on 30 different public TV stations, with an estimated total audience of 10,000. *Fortunate Wilderness* was released on DVD in June 2009, and has since sold more than 1,000 copies.
- *Alces alces: Uncut* is a short film that was shown at film festivals and art galleries in Houghton and Ann Arbor, Michigan, and Washburn, Wisconsin. Both films feature wolf–moose research.

Books and other print media for popular audiences

- *The Wolves of Isle Royale: A Broken Balance* (Peterson 1995) by R. Peterson is a popular account of the project's research findings.
- *A View from the Wolf's Eye* (Peterson 2008) by C. Peterson is a memoir that expresses reverence for Isle Royale and gratitude for opportunities to serve wolf–moose research and park visitors.
- *Winter Study* (Barr 2008) by N. Barr is a fictionalized, though informative, account of the annual winter study at Isle Royale. In April 2008, *Winter Study* made the *New York Times* bestseller list at no. 10 for hardcover fiction.
- *Notes from the Field,* presented in journal format, details the work and observations of each annual winter field season. *Notes from the Field* shares with the general public how observations are transformed into discoveries, and describes how at least one scientist relates research on nature with a broader relationship to nature. *Notes from the Field* are first presented as a daily blog (www.isleroyalewolf.org) and later in the year in hard-copy.
- *The Wolves of Isle Royale, Annual Report.* The annual reports, produced by J. Vucetich and R. Peterson, present each year's scientific findings for a general audience.

Web-based outreach

The wolves and moose of Isle Royale website (www.isleroyalewolf.org) is aimed at a general audience and continues to be visited by more than 10,000 people annually. More than 1,100 people have signed up to receive occasional research updates via email.

Public involvement in research

- Members of the public have an opportunity each year to work with the Isle Royale wolf–moose project during week-long research expeditions. Participants learn about the

project and help collect vital data. In the past five years, 170 people (many of them teachers) have participated in the expeditions.
- For more than three decades, two to four undergraduate students are selected as interns or field assistants from among dozens that apply from three continents. These undergraduates live in the field for one to three months with project leaders. Former assistants include Douglas Smith (director of wolf research in Yellowstone National Park) and Michael Phillips (director of the Turner Endangered Species Fund).

Science museum exhibits

- Since 2007, a 1,000-square-foot exhibit featuring the project's scientific discoveries has been viewed by over 5,000 people during 12 months of display at three different venues (Carnegie Museum, Houghton, Michigan; library of the University of Minnesota at Duluth; Hartley Nature Center, Duluth, Minnesota).
- Since 2000, the project's summer field station at the historic Bangsund cabin on Isle Royale has served as a field museum featuring the world's largest collection of antlered skulls of bull moose, other displays, and informal presentations by the principal investigators. During 2009–2011, this field site was visited by more than 3,200 visitors.

The arts

- The wolf-moose study has been a means to connect the arts and sciences.
- In October and November 2008, the Omphale Gallery (Calumet, Michigan) featured *Thinking Like an Island,* a collection of 38 still images depicting wolf–moose research from an artistic perspective. A portion of this exhibit was also shown at The Gallery Project (Ann Arbor, Michigan; October 2008) for an exhibit designed to connect science and art. More than 2,000 people visited one of these venues. The exhibit was also viewed by more than 30,000 visitors to the International Wolf Center (Ely, Minnesota) during 2010–2011.
- The moose bones collected during wolf–moose research have been featured in work by at least four professional artists and in a major art exhibition in Minneapolis. Two internationally recognized artists, R. Bateman and G. Jensen, have each associated one of their pieces with the wolf–moose research at Isle Royale.
- In fall 2007, there was a nationwide art contest for high school students. The contest theme was to depict, in art, some scientific lesson from wolf–moose research.

Public presentations

In the past five years (2007–2011), associates of the wolf–moose project have delivered more than 200 talks to more than 7,500 members of the general public, mostly national park visitors and K–12 students.

Journalism

In the past five years, wolf–moose research on Isle Royale was featured by national media on over 75 occasions (e.g., *Washington Post,* Associated Press, *Audubon* magazine), and by local or regional media on more than 25 occasions.

Conservation and management

To promote wolf conservation, the Isle Royale project was featured on the 2008 wolf awareness poster, of which 35,000 copies were distributed nationally.

US *Congressional Record*

On 21 July 2008, Senator Carl Levin entered into the *Congressional Record* a statement of gratitude for the Isle Royale wolf–moose project.

Other educational venues

Wolf–moose research findings are also featured in: (a) at least 12 books used as texts for university courses; (b) lecture material for graduate and undergraduate courses taught in at least 20 universities; (c) popular education software such as *Ecobeaker* (Simbiotic Software, Ithaca, New York) and *Wolf Adventures* (Bowling Green State University, Ohio); and (d) more than 12 books or book chapters published by scientific presses (e.g., Chicago, Princeton, Blackwell, Sinauer, etc.).

The World Heritage Convention and the National Park Service: The First Two Decades, 1972–1992

Peter H. Stott

Introduction

As recounted in the first essay of this three-part series,[1] the Convention Concerning the Protection of the World Cultural and Natural Heritage (the "World Heritage Convention"), was adopted by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) in 1972. The United States, and the National Park Service (NPS) in particular, had important roles in its development and in negotiations leading to its adoption. The NPS Office of International Affairs (OIA), which celebrated its 50th anniversary last year, participated in all phases of that development. This essay, published in the 40th anniversary year of the convention, recounts the US role in the first two decades of the convention's existence, culminating in its 20th anniversary session in 1992 in Santa Fe, New Mexico.

The United States was the first nation to ratify the new convention, and when it came into force in 1975, the US was on its governing body, the World Heritage Committee, for all but four of the sixteen committee sessions in the period through 1992. The US played a key role in the convention's development: in addition to hosting the session of the committee at which the first sites were inscribed on the World Heritage List, at subsequent sessions it was a vocal advocate for the more problematic issues that began to appear almost immediately: the integrity of the list and the conservation of sites already inscribed. David Hales, the US Committee chair at that 1978 session in Washington, voiced the dominant sentiment of the period:

> We viewed the Convention as—in many ways—a US initiative and an initiative that we wanted to help parent early on and bring it up the right way; that we felt it should be incredibly objective and unimpeachable in its judgements; that it needed to rely on professional expertise, not consensual votes as often dominated in some other international institutions. . . . And so we had a very strong interest in trying to create both a World Heritage List and the concept of World Heritage in Danger that would promote the conservation of precious resources that really belonged to more than a single country just because of their impact on the World.[2]

Division of International Park Affairs

The NPS Division of International Park Affairs (until July 1971, the Division of International Affairs) passed through its own changes in leadership immediately following ratification of the convention. After the death of international affairs chief Chet Brown, only a few months

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after Senate ratification of the convention he had helped to negotiate, NPS Director Ron Walker named Robert C. Milne as director of the division in 1974. Milne, only the second staff ecologist in the Park Service, had been the first director of the International Seminar on the Administration of National Parks and Equivalent Reserves. His former associate, Richard Cook, attributed to Milne much of the success of the division in this era:

> The thing that Rob brought most effectively was a credibility, his own international credentials, a very kind of smooth, polished person, as well as field experience in the Park Service—and he knew how to talk to managers and get them enthusiastic.[3]

Throughout the 1980s, International Affairs ran active bilateral aid programs to other national park systems, with a substantial Peace Corps program and a wide variety of US Agency for International Development (USAID) projects. In 1987, the division was elevated to an "Office," reporting directly to the director of the National Park Service. Milne, himself, attributes the change to the intense interest as well as the personal friendship of Director William Penn Mott (1909–1992), who had come to the National Park Service in Reagan's second term:

> [Bill Mott] was intensely curious about most anything new to him. I had organized a Committee of NGO leaders, State, USAID and Voice of America reps and a few others to give their thoughts on how NPS could contribute more effectively in international conservation, and among their recommendations was one that suggested that the Division be elevated to an Office reporting directly to him to put the weight of the Director and his office behind activities, direction and commitments. It was accepted....
>
> [Mott] had believed NPS had an appropriate leadership role in World Heritage and urged more involvement and participation at every turn as long as I could find the money to do it. With his backing and that of [the] State [Department], we were able move to the front row with the Committee. Ray Wanner [Bureau of International Organizations, State Department] was a key to that and had managed to convince Congress to continue to appropriate the US voluntary contribution to the Fund, even without US membership in UNESCO at the time which held us in good stead. With the reactivation of NPS and [the Department of the Interior] in World Heritage, it was the groundwork and it was possible to negotiate the Santa Fe hosting and take the Committee chair.[4]

But for a more complete picture of the road to Santa Fe, we need to return to the early days of the convention.

The convention enters into force: Preparing for Nairobi

The convention came into force in December 1975. Under its terms, the first World Heritage Committee, initially composed of delegates from 15 countries that had ratified the convention (the "states parties"), would be elected from the first General Assembly of States Parties, called to coincide with the next UNESCO General Conference, to be held in Nairobi in

November 1976. A few weeks before the Nairobi meeting, the State Department organized an all-day meeting to formulate positions.

The meeting was Richard J. Cook's first involvement in World Heritage. Just a month before, Cook, a former Georgetown graduate student with a new degree in international relations, had been detailed to join Milne to support his work on the World Heritage Convention. His experience in developing position papers in a format useful to the State Department made him a rarity in the National Park Service, and Cook would become the staff professional of the US delegation at committee meetings for most of the next 15 years. The first thing he was asked to do, he recalled, was to develop a draft US position statement for the Nairobi meeting. "There seemed to be a logjam," he remembered, "and for some reason what we sent up was well received.... It was my initiation into the importance of getting something in a format that the State Department needs and required."[5] The final statement was over a dozen pages long, covering issues ranging from the need to see the US elected to the committee, to the inclusion of "experts" in both natural and cultural heritage on each delegation, to issues of funding, organization and documentation.[6] In the end, the US was elected comfortably, winning the support of 23 of the 25 delegations voting.

The debate over World Heritage responsibility, Cook said, "was a real contentious issue when I first started being involved. I remember meetings at CEQ [Council on Environmental Quality], when it was [Deputy Assistant Secretary] Buff Bohlen fighting for Interior's lead role. And the State Department was kind of inclined, 'well, let's give it to Garvey.'"[7] Robert R. Garvey (1921–1996), then the first executive director of the Advisory Council on Historic Preservation, and a vice president of the International Council on Monuments and Sites (ICOMOS) with close associations with UNESCO, had been a key figure in the negotiation of the convention in 1972. In the end, it was Garvey who attended the Nairobi General Assembly session, and it was he who would represent cultural expertise on the US World Heritage Committee delegation for the next four years. Ultimately, it was not until the passage of the 1980 amendments to the National Historic Preservation Act that the Department of the Interior was unambiguously given the responsibility for the World Heritage Convention.[8]

The Carter years and HCRS (1977–1981)

Within the National Park Service, however, the agency was facing its own contests. In January 1978, the Carter Administration created the Heritage Conservation and Recreation Service (HCRS)[9] out of the NPS historic preservation programs and the Bureau of Outdoor Recreation.

Among the consequences for the World Heritage program were divided responsibilities: because of HCRS's domestic heritage inventory programs, the new agency assumed "the primary role of meeting U.S. responsibility under the convention."[10] Jim Orr, who would later move to OIA when HCRS was abolished, was the lead on World Heritage for HCRS. He was assisted by Jim Charleton (1946–2008), newly installed as a writer–editor in the National Historic Landmarks Program at HCRS. Beginning with the 1979 nomination of Independence Hall, Charleton prepared or helped develop most of the World Heritage cultural nominations over the next 15 years. With Ernest Connally (1921–1999), Charleton devel-

oped the first US tentative list and during his retirement, worked with OIA to complete the second tentative list issued in 2008.

Another legacy of HCRS is the role of the assistant secretary of the interior for fish and wildlife and parks in World Heritage. E.U. Curtis ("Buff") Bohlen, deputy assistant secretary during the Nixon and Ford administrations, had already established a role for the assistant secretary's office in World Heritage. David Hales, deputy assistant secretary during the Carter Administration, had a keen interest in international activities and saw his office as a means of coordinating HCRS and NPS participation in World Heritage—a means of avoiding "interagency feuding.... So you kind of had to go up to that Assistant Secretarial level to get someone to put it all together."[11] The assistant secretary for fish and wildlife and parks has retained this role ever since, codified in the 1982 regulations.

Hales also set up the first interagency committee to review proposed nominations, formally called the US World Heritage Committee, but often referred to as the "Hales Committee." The Hales Committee would become the model for the Federal Interagency Panel on World Heritage.

The first session of the World Heritage Committee, Paris, 1977. Hales led the US delegation to the first session of the World Heritage Committee, held in Paris at UNESCO headquarters, supported by Robert Milne, representing natural heritage, and Robert Garvey, representing cultural heritage. Interleaved through almost all of the prepared position papers was the theme of building and retaining the authority of the World Heritage Committee to make decisions, rather than the secretariat or the advisory bodies. The committee would therefore need to depend on the expertise of the individual member delegations: "experts, not diplomats" had been a strong US theme since the earliest negotiations over the convention. In the first committee session, all 15 committee members were represented by experts. Over the years, however, as committee sessions became more routine, experts became increasingly rare as heads of delegations, replaced by politicians or UNESCO permanent representatives.

Criteria for inscription. The primary business of the first committee session was the adoption of the first *Operational Guidelines for the Implementation of the World Heritage Convention*, including criteria for inscription developed by the advisory bodies named in the convention to review natural and cultural heritage, IUCN (the International Union on the Conservation of Nature and Natural Resources) and ICOMOS (the International Council on Monuments and Sites).

The inscription criteria for both cultural and natural properties had significant involvement from senior Park Service staff. Associate Director Ernest Connally had recently been elected secretary-general of ICOMOS, and Theodor ("Ted") Swem (1917–2006), formerly director of the Office of Cooperative Activities under which the Division of International Park Affairs was placed, was then chair of IUCN's Commission on National Parks and Protected Areas (CNPPA) and had charge of preparing the natural criteria.[12]

Connally had been founding chief of the NPS Office of Archaeology and Historic Preservation, and prior to the establishment of HCRS had put in place the first procedure for identifying cultural properties for nomination to the World Heritage List (Figure 1). His personal experience in the development of the criteria for the National Register of Historic

Figure 1. Ernest Connally (1921–1999), first chief of the NPS Office of Archaeology and Historic Preservation, at St Andrews by-the-Sea, New Brunswick, 1989. As ICOMOS secretary general (1975–1981), Connally was responsible for drafting the cultural criteria for the World Heritage Committee in 1976–1977. Photo courtesy of Janice Connally.

Places is evident in the formulation of cultural criteria for World Heritage. World Heritage cultural criterion (i) ("Represent a unique artistic or aesthetic achievement, a masterpiece of the creative genius") is mirrored in National Register criterion "C," property that "represents the work of a master." Writing of World Heritage cultural criterion (iv) as it was adopted in 1977 ("among the most characteristic examples of a type of structure… "), Connally recalled that it "was expressly constructed to provide for inscription on the World Heritage List of transcendentally significant structures that would not classify as buildings. We were thinking primarily of engineering structures, such as bridges, tunnels, canals, etc."[13] (This intention was lost, perhaps unintentionally, when the committee revised the criterion in 1984, substituting the words "building or architectural ensemble" for "structure.") Cultural criterion (vi), combining the associative aspects of events, persons, and ideas, was less persuasive to ICOMOS, then dominated by Europeans who felt that properties that did not have the physical features associated with the person or event being commemorated could not, by themselves, be recognized. It would soon be tested when the US nominated three sites under criterion (vi) by itself, associated, respectively, with a person and with events: the Edison National Historic Site and Independence Hall, both submitted in 1979; and the Wright Brothers National Memorial, submitted in 1980.

Milne and Hales already knew that the first proposal for a natural site would be Yellowstone. At the committee session "many representatives clearly indicated that the early submission of the nomination of Yellowstone National Park would be a valuable model."[14] A

decision on the cultural property was not made until later. But it was clear from the start that for this first round of nominations there would be two, one natural and one cultural. "We wanted it to be even," Milne recalled, "cultural and natural—a modest two."[15] Mesa Verde, the Colorado cliff dwellings built by the Ancestral Pueblo people beginning in the 12th century, was ultimately chosen as the cultural submission.

The second session of the World Heritage Committee, Washington, 1978. The first three sessions of the World Heritage Committee (Paris, Washington, and Cairo/Luxor) were all distinctive in their ways, but none more so than that held in Washington in early September 1978, It was the first meeting at which sites were actually inscribed on the World Heritage List. It was also the first to be held outside of UNESCO, and the first in which the committee chair, elected by acclamation, would represent the host government.

The 1978 session was unusual in other respects: the number of sites being proposed (12) was quite small, all but two were nominations from members of the committee, and there was a serious attempt by most states to provide a balance of natural and cultural heritage nominations. There was a general feeling among all the committee members that the first designated World Heritage sites should be chosen with great care, since they would probably serve as precedents for subsequent additions and would thus set the course of the list for some time to come. The modest response to the committee's call for nominations was interpreted by many as an opportunity to watch the first round and draw lessons on procedures and standards for later nominations.

Hales was elected to chair the committee session, establishing (as planned) the precedent that the host country would chair the session. Chris Delaporte, chief of HCRS, led the US delegation in Hales' absence as chair, supported by Robert Garvey and Robert Milne, representing cultural and natural expertise, respectively.

In a recent interview, Milne recalled the optimism the committee felt about the work it was commencing:

> There was a genuine feeling that international cooperation would focus global attention, funding, technical expertise, in situations that would warrant it. And the intent was the World Heritage sites were so significant that they couldn't help but be magnets, focusing attention, developing mechanisms in addressing certain situations that could be replicated, a collaborative interchange between state parties.[16]

In the first inscriptions, the committee relied on the recommendations of its six-member executive bureau, read out by its rapporteur, the Canadian Peter Bennett. Unlike the practice today, no presentations were made by ICOMOS or IUCN. The committee inscribed as a group the nominations that had been recommended by the bureau. Only the day following their decision, as the committee was concluding work on the agenda items, did it reconsider its procedure and decide that in the future, nominations would be inscribed separately.

The committee expressed a willingness to make a one-year temporary assistance grant to the secretariat but drew the UNESCO director-general's attention to the need for permanent staff with support financed by the regular program and budget of the organization. At

future sessions, this need would often be expressed by the US and other committee members.

The third session of the World Heritage Committee, Cairo and Luxor, 1979. With the committee's third session, which held its opening meeting in Cairo before traveling to its working sessions in Luxor (Figure 2), many of the procedures that have come to characterize committee sessions in the years since began to fall into place. Both IUCN and ICOMOS made brief presentations on nominated properties (although without slides) before the committee made its separate decisions; the number of sites proposed was far greater than at the Washington meeting, and the imbalance of natural and cultural properties, only hinted at in the earlier meeting, was much more pronounced. Seventy-four new nominations had been examined by the bureau the preceding May, as well as 15 that had previously been deferred. The committee eventually inscribed 45, including six new "serial properties" (a property type that the bureau had recommended the preceding June), seven urban centers; the first transboundary property, a proposal from the US and Canada for Kluane/Wrangell–St. Elias on the Alaska–Yukon border; and the first two "mixed" natural and cultural sites.

The session also saw the first application for inscription on the List of World Heritage in Danger. Kotor in Montenegro (at the time in Yugoslavia) had been badly damaged by a destructive earthquake the previous April. Notably, the inscription was also the first "double" inscription, simultaneously placing the site on both the World Heritage List and the List in Danger. Not until 1982 would the Committee decide that it needed criteria to approve a site for the List in Danger, and the Yugoslav request was approved without substantive debate.

Edison, Independence Hall, and criterion (vi). For its second round of nominations, the US proposed two natural properties, Grand Canyon and Everglades national parks; and two cultural properties, Edison National His-

Figure 2. Chairpersons of the 1978 and 1979 sessions of the World Heritage Committee. Left: Shehata Adam, director of the Egyptian Antiquities Organization; right: David Hales, deputy assistant secretary of the interior for fish, wildlife, and parks, outside the Temple of Hatshepsut, Deir el-Bahari, at the third session of the World Heritage Committee, Cairo and Luxor, Egypt, October 1979. The temple is part of Ancient Thebes with its Necropolis World Heritage Site, inscribed in 1979. Photo courtesy of David Hales.

toric Site and Independence Hall.[17] While the bureau had approved without question IUCN's positive recommendations for the two natural nominations, the two cultural properties, both nominated under cultural criterion (vi) alone, proved more problematic. ICOMOS had recommended both, but concerning Edison, the bureau demurred: "Examination of this nomination had brought to light the difficulty of applying that criterion. In fact, the Bureau considered that its present wording could lead to an inordinate number of nominations. The decision on this nomination was consequently deferred pending revision of criterion (vi) which seemed necessary."[18]

"The criticism," Cook wrote afterward in a position paper, "centered not so much on the importance of Thomas Edison or his contributions, but rather on the acceptability of commemorative or associative sites where significance is based upon the persons, events, or ideas with which the site is most closely associated. Apparently, Europeans do not readily accept this as a basic principle in their preservation efforts." However, he went on, "such commemorative sites provide an important rationale for historic preservation in the U.S. experience, and we believe that they can be shown to have played an equally important role in other geographic and cultural regions of the world."[19] The US would resubmit the nomination for the 1980 session, but by that time, the committee had revised criterion (vi) to exclude association with persons, and the site was not recommended by ICOMOS or the bureau.

The nomination of Independence Hall was a different story. The bureau had recommended that the committee inscribe Independence Hall, but Hales and the US delegation were cautious. "Because of the disagreements among Bureau members regarding criteria VI for the evaluation of cultural areas, and because of possible political considerations, there is some possibility of opposition to the Independence Hall nomination," Cook wrote a few weeks before the committee session.[20]

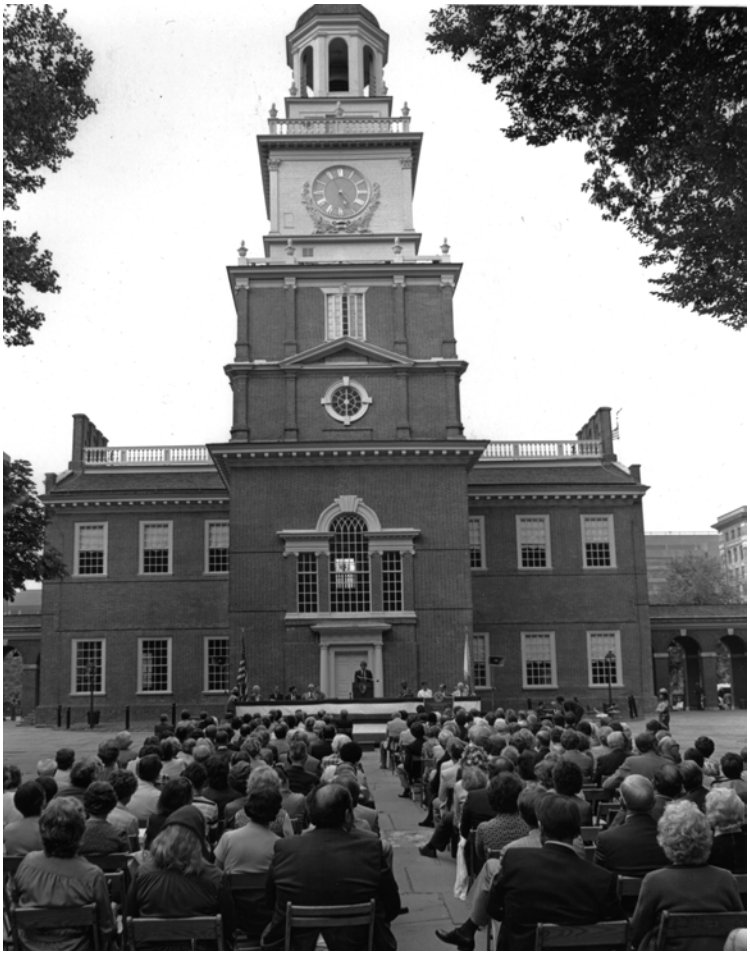
William H. Eddy, a consulting Park Service documentary filmmaker who traveled with the delegation to film portions of the meeting, recalled the drama surrounding the Independence Hall nomination:

> Independence Hall was a very controversial thing.... There was a fairly strong feeling among some of the delegates that the signing of a Declaration of Independence for an African country in 1963 in a grass hut someplace, was not the same thing as the Declaration of Independence signed in Philadelphia two hundred years ago, in a building that no question was of spectacular architecture. But they felt that if it was nominated, it would exclude the thatched huts. The Africans didn't like that idea.... I remember being moved by the debate that took place. And I was impressed by David Hales' articulation.... "It's one thing to consider the Independence Hall as an outstanding example of architecture and not consider it as a turning point in human history. But if it isn't considered as a turning point in human history, none of these nominations are turning points of that kind." So, he said, 'I withdraw the nomination.' ... Very impressive. And a silence sort of fell on the room, and there was a sort of an 'oh, boy' [moment].... David Hales didn't want it to go in as a piece of architecture. It was very impressive.... I thought it was one of the absolute critical points of the conference.[21]

In the end, the committee conceded the US perspective, and inscribed Independence Hall under criterion (vi) by itself (Figure 3).

Auschwitz. The nomination of Auschwitz Concentration Camp was also the subject of debate, both within the National Park Service and in the committee. Some, like Milne, were totally against it: "It just wasn't the purpose of the List. And I felt the same way about war sites—battlefield sites. It was a misplacement of values."[22] The Canadian delegate, Peter Bennett, wrote that "even though in the opinion of ICOMOS, it may technically qualify … the intent of the convention on the cultural side has always been to commemorate man's great creative activities and not his negative accomplishments." He saw no objection to Auschwitz being listed once there was a good representation of cultural sites all over the globe, but it was too early for inscription, he felt.[23] Cook and Hales took the opposite stance: "I think that the convention," Cook wrote in a memo to his chief, "at this point, with forty plus member states and a viable W.H. List, is strong enough to truly reflect man's heritage in

Figure 3. Dedication of Independence Hall as a World Heritage Site, 1980. NPS photo courtesy of David Hales.



all its manifestations. The lessons of history are sometimes more effective because they are drawn from tragic examples of human error."[24]

Bill Eddy remembered Hales' participation in the committee debate:

> The debate came up about Auschwitz and about World Heritage in general: should it reflect only the best? Or should it reflect also the worst? That's a hell of a question … it's a *wonderful* question! And David concurred: yes, it should reflect the worst, that we can draw lessons from the negative as well as the positive.[25]

Hales himself gave credit to the committee's careful analysis of the question:

> [W]e had some very serious, wonderful issues, like Auschwitz, that we were dealing with. And you would expect those to be contentious. But they weren't particularly contentious; they were very thoughtful. There were broad differences of opinion on those, but they certainly weren't contentious.[26]

Ultimately, the committee agreed to inscription, but decided to "restrict the inscription of other sites of a similar nature."[27] The French delegate Michel Parent had argued that "in order to preserve its symbolic status as a monument to all the victims, Auschwitz should, it seems, remain in isolation. In other words, we recommend that it should stand alone among cultural properties as bearing witness to the depth of horror and of suffering, and the height of heroism, and that all other sites of the same nature be symbolized through it."[28]

With its decision to inscribe 34 new cultural properties, nine new natural sites and two mixed properties, it was difficult to ignore the imbalance of cultural and natural sites. At the start of the meeting, in his address to the committee as outgoing chair, Hales had reminded it of its responsibility for the credibility of the list. "[T]he increasing imbalance between cultural and natural representation on the Committee" should be addressed "so that the credibility of the World Heritage List should not be put in doubt." Furthermore, he reminded the committee that its own credibility "would be judged by the composition of the List."[29] The committee established two working groups to review the natural and cultural criteria and review whether they were being applied sufficiently rigorously.

The most important recommendation to come out of these criteria evaluation meetings was the recognition that the advisory bodies and the committee needed to have a picture of the universe of possible nominations in order to "better define the selection criteria."[30] It called for activating the convention's Article 11(1), calling for "an inventory of property forming part of the cultural and natural heritage, situated in its territory and suitable for inclusion in the List." These inventories, called "Tentative Lists," were built into the revised *Operational Guidelines* when it was reissued by the committee a year later. In addition, both working groups found problems with particular criteria and suggested amendments to the *Operational Guidelines* that would further define and clarify these criteria.[31]

The fourth session of the World Heritage Committee, Paris, 1980. The committee's fourth session was hosted by France at the Hotel de Sully in Paris. As before, David Hales led the US delegation, supported by Bob Garvey and Robert Ritsch, HCRS associate direc-

tor of natural programs. The meeting was notable for its close review of the proposed first revision of the *Operational Guidelines*, requested by the committee in Luxor. Changes included revisions to both natural and cultural criteria (the US delegation supported the removal of "persons" from cultural criterion (vi)), a new requirement for the completion of tentative lists, and a new section addressing the balance between nature and culture.

The new section was the result of a second attempt by the US to get the committee to address the growing imbalance between the number of natural and cultural properties inscribed. "How many cities, how many cathedrals, how many mosques" would be sufficient, Hales asked.[32] At the US delegation's request, the committee established a working group, chaired by Hales. The text of the working group's report, contained in the report of the committee, was incorporated into a new *Operational Guidelines* section titled "Balance Between the Cultural and Natural Heritage in the Implementation of the Convention." The five recommendations would remain in the *Operational Guidelines* unaltered until 2005. However, it is not evident that any of the five recommendations were ever (knowingly) implemented by the committee. In particular, the working group had hoped to improve the balance of natural and cultural properties by assuring that the chair was not held by persons with expertise in the same field (cultural or natural) for more than two successive years; and that at least two "cultural" and two "natural" experts were present at all bureau meetings to ensure balance in the review of nominations.

The committee's fourth session was also notable for the first example of international politicization. For over a decade, Arab states had been insisting that UNESCO condemn Israel for what it saw as destructive archaeological excavations within the city of Jerusalem. In 1980, Jordan submitted to the committee a nomination file for the Old City of Jerusalem and its Walls. The discussion was extraordinarily charged. Much of the debate centered around the disputed sovereignty of Jerusalem. Jordan argued, and some committee members accepted, that World Heritage should be divorced from politics. Pointing to the convention's Article 11(3),[33] they noted that inscription merely recognizes outstanding universal value, not sovereignty or jurisdiction. While the US and all committee members agreed on the outstanding value of Jerusalem, the US argued that to ignore sovereignty was to ignore the pledge to preserve and protect. Ultimately, the committee agreed to examine a formal nomination at its regular Bureau meeting the following June.

Implementing the convention: Regulations and tentative lists. The 1980 amendments to the National Historic Preservation Act, signed by President Carter in December, included an addendum that gave domestic legislative authority to the World Heritage Convention. The new provisions gave the Department of the Interior authority to coordinate World Heritage activities, working with the Department of State and other federal agencies; it directed Interior to periodically nominate properties of international significance on the condition that they included sufficient legal protection; and, significantly, prohibited nominations of nonfederal property without the written concurrence of the owner of the property.

The task of preparing the regulations to implement the new provisions fell on Jim Orr, World Heritage focal point at HCRS. However, within weeks of the directive, HCRS was abolished by the new Interior secretary, James Watt, and HCRS programs returned to the

National Park Service. Orr joined the Division of International Affairs where he continued to be the focal point for World Heritage.

The regulations also formalized the "Hales Committee" as the Federal Interagency Panel for World Heritage, charged with development of policy and procedures, evaluation of draft nominations, and promotion of awareness of the convention generally. The panel consisted of representatives from Interior (assistant secretary, NPS, and Fish and Wildlife Service), the Smithsonian, the Council on Environmental Quality, the Advisory Council on Historic Preservation, and the departments of Commerce (NOAA), and State, and was to be chaired by the assistant secretary or his/her designee.

Although no official archive of the interagency panel meetings has been found, Ernest Connally's papers in the National Trust Library at the University of Maryland contain partial records and occasionally handwritten notes for 26 of the panel sessions from the decade 1981–1991.[34] Surviving participant lists (six survive for the period 1981–1986) show an average of 14 attendees, with usually about half that number made up of NPS staff. Usually the meetings were chaired by Assistant Secretary G. Ray Arnett or his successor, Deputy Assistant Secretary Susan Recce, and, during the first Bush administration, Knute Knudson. Occasionally OIA Chief Rob Milne or Rick Cook presided. Presentations to the panel on sites proposed were often made by staff from one of the landmarks programs, either Frank Ugolini for the National Natural Landmarks Program, or Jim Charleton or Chief Historian Edwin Bearss for the National Historic Landmarks Program, and their recommendations figure significantly in the decisions by the panel on which nominations should be pursued. Outside visitors to the panel included a chair of the World Heritage Committee, the Australian Ralph Slatyer, who spoke to the panel's session in June 1982, and Anne Raidl of the UNESCO secretariat, who participated in the July 1984 panel meeting.

The surviving minutes record many of the issues raised and a wide variety of potential nominations. Some of those that were approved by the panel and reached the stage of publication for comment in the *Federal Register* included the Brooklyn Bridge; Nan Madol, an ancient city of the eastern Caroline Islands (then a US trust territory) that was designated a national historic landmark before becoming part of the newly sovereign territory of the Federated States of Micronesia in 1986; Katmai National Park, Alaska; the Wainwright Building, Missouri; and several natural parks in the American Southwest. The panel also discussed issues raised by recent and upcoming committee sessions.

The preparation of the US tentative list (called an "Indicative List," to avoid any impression than a nomination might automatically ensue) had a very similar history to that of the regulations. Although the tentative list had been planned in the last days of HCRS, it was probably not until some weeks after the transfer of offices to the Park Service in the spring of 1981 that serious work was undertaken.[35]

It seems likely that the first few weeks of the tentative list process were a mad scramble, as staff merged old lists and tried to winnow down the list to something manageable. The National Historic Landmarks office was given responsibility for assembling the cultural properties, and much of the work fell on Charleton. In an interview decades later, Charleton recalled the early phase of the tentative list process:

> There was so much confusion and debate and discussion and dissension and disagreement over what ought to be nominated, that the only way in which it could be organized was to take the list of 275 cultural sites, reduce it to what seems in somebody's judgement the most important sites, send them in and then continue going on from there.[36]

Between them, Charleton, Bearss, and Connally (by then NPS chief appeals officer for tax-act certification) brought the list of cultural sites down to about 50, excluding all sites without national historic landmark or national park status. Connally's own professional background, Charleton remembered, "influenced the inclusion of seventeen sites that relate to architecture—divided into three themes, early United States, modern, and Wright school architecture. At the same time, two persons in the field of natural heritage selected about forty natural sites."[37]

The draft indicative list, published for comment in the *Federal Register* in September 1981, included 37 cultural properties grouped in themes and 29 natural areas grouped by physiographic province. The Park Service received 43 comments on the draft list, with several suggestions for additional listings, or other modifications to themes. Only four comments were construed as raising concerns about the regulatory impact of having a property listed. The final list, formally submitted to the UNESCO secretariat in April 1982, contained 47 cultural properties and 34 natural properties. Of those, one, the Aleutian Islands unit of the Alaska Maritime National Wildlife Refuge, was considered a mixed site.[38]

By chance, Leon Pressouyre (1935–2009), the ICOMOS World Heritage coordinator in the 1980s, was visiting Washington in May. In company with NPS staff, including Connally, Pressouyre reviewed each of the cultural sites on the new list. His comments, surviving as Connally's penciled notes on a copy of the list, were supportive of many of the proposals. Examples from Pressouyre's comments included his proposal to submit the Chicago School buildings as a thematic group (Unity Temple, Oak Park, Illinois, and Taliesin, Wisconsin, he indicated, would be "key noms"); Brooklyn Bridge ("Why not?"); Washington Monument ("Consider the whole city plan as a monumental core"); New Harmony Historic District, Indiana ("National significance only").[39] Ben Levy, in a memo to the associate director, further summarized Pressouyre's key findings:

- The outlook for San Juan–La Forteleza (submitted later that year) was "favorable" if the nomination included a careful "comparative international context."
- Statue of Liberty (submitted in 1983): "very promising."
- Edison National Historic Site: Pressouyre had written the original rejection, but in discussions with Levy and Connally, thought that a recast nomination might be well received.
- Wright Brothers National Memorial: "ICOMOS is distinctly unfriendly to sites such as this one, that lack spectacular remains or have less than pristine historic integrity."
- Battle sites: nomination is "virtually futile."[40]

Reagan Administration (1981–1989)

The arrival of Ronald Reagan in the White House in January 1981 signaled a major shift in

domestic and international policies. Opposition to the United Nations and UNESCO in particular was already strong among conservative organizations supporting Reagan's election, and in 1984 the president announced the formal withdrawal of the US from the organization over perceived threats to the free flow of information and organizational mismanagement. (The US rejoined UNESCO in 2003.) Despite its withdrawal, however, the US continued to play an active role in the convention, arguing that it allowed the US to show continued interest and leadership in international cultural activities.

Within a month of assuming office, Reagan announced the appointment as assistant secretary for fish and wildlife and parks of G. Ray Arnett, a Californian who had served as director of the California Department of Fish and Game during Reagan's term as governor. Arnett and Jim Orr would together attend the committee's fifth session in Sydney the following October.

As noted above, one of the new administration's first acts was to undo the Heritage Conservation and Recreation Service, returning the cultural heritage programs to the National Park Service. By the time the Federal Interagency Panel met at the end of June 1981, responsibility for preparing nominations had passed back to the NPS international affairs branch, "drawing on other offices, agencies and levels of government as needed."[41] Charleton and the National Historic Landmarks Program were relocated in the History Division, headed by Bearss, the new chief historian.

"Monitoring." To the NPS International Affairs Division in this period, it was increasingly clear that the World Heritage Committee needed a better means of tracking the state of conservation of the sites it inscribed on the list. Prior to the fifth session of the World Heritage Committee, hosted by the Australian government in the Sydney Opera House, the division had flagged two natural nominations as causes for special concern: Djoudj National Bird Sanctuary (Senegal) and Nimba Strict Nature Reserve (Guinea). The delegation had been given the specific direction to "emphasize the importance of protecting sites nominated for inscription … especially in cases where some question had been raised regarding a site's integrity or condition."[42] Despite concerns that had been raised by IUCN since the site was first proposed in 1978, Djoudj was inscribed by the committee in 1981 "in the hope" that the Senegalese authorities "would take the protective measures necessary."[43] After Orr returned to Washington, he and the division drafted the first proposal for systematic monitoring of World Heritage sites. The proposal, made in January 1982 under Arnett's signature, proposed that the committee develop "a brief standardized form for use by each country in reporting on properties which they had nominated."[44] The proposed monitoring program would allow the committee to better evaluate requests for technical assistance, warn of possible need for inscription on the List of World Heritage in Danger, and in general "allow the Committee to more effectively fulfill its responsibilities." Such a system, Arnett added, was already in use in the US national park system. "Reporting," Milne recalled, "was intended not to give 'score cards' but to develop a genuine interchange" between states parties with technical capacity and those without that capacity.[45]

Although both the secretariat and the committee chairman, Australia's Ralph Slatyer, expressed support and interest in the idea, the bureau's response, when it met the following June, was less than enthusiastic and considered that the proposal was "premature, given the

current state of infrastructures in the majority of countries concerned."[46] Additionally, some countries saw monitoring as interference. It did not help that the description of existing US monitoring practice, translated into French as "*système de contrôle*," was interpreted by some committee members as "surveillance." Over a decade later the concept would be approved by the committee as "periodic reporting."

Department of State views of the World Heritage Convention. The State Department's Bureau of International Organization Affairs (IO) provided the coordination of US foreign policy interests as it related to the convention; it was also responsible for paying the dues both to UNESCO and to the World Heritage Fund. Established in 1949 in the post-war enthusiasm for internationalism, IO often played a low-profile role, as domestic political support for international organizations waned during the McCarthy era and the Cold War climate of distrust. In most administrations, bilateral actions were preferred over multilateral activities.

Rick Cook recalled the State Department's view of the World Heritage Convention at that time:

> I think politically the Department saw the World Heritage as a harmless thing … but a useful thing that they could be involved in, maybe to just counterbalance all the negative stuff they were getting in the Press and from the conservation community following our withdrawal from UNESCO.… They didn't mean it to have any teeth (and I think that's still true), but I think they saw it as a useful exercise to counterbalance another part of their agenda.[47]

Into this vacuum of interest by IO stepped another State Department office, the Bureau of Oceans and International Environmental and Scientific Affairs (OES). OES had been established under congressional authorization in 1974, consolidating State Department review over a growing number of international environmental instruments and agreements. It was primarily concerned with regulatory instruments, like the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), adopted shortly after the World Heritage Convention and six months before Congress passed the OES authorization in 1973.

In the early 1980s, the bureau was following the CITES Convention, and in particular, the conservation of the white rhino. When Garamba National Park in the Democratic Republic of the Congo (then Zaïre) was inscribed on the World Heritage List in 1980, OES took notice. Sharon Cleary, who would follow Milne as chief of OIA in the 1990s, had joined OES early in the Reagan administration. Cleary recalled OES interest in the conventions:

> We had both CITES and World Heritage under our purview in my office. We were watching what the other agencies were doing; and we were engaged, because we were following the treaties from the substantive point of view rather than the budgetary (which is what IO did). And while the Interior Department implemented it, State Department wanted to know exactly what was going on in the environmental realm in terms of World Heritage. The crossover was things like in CITES where you had the protection of the rhino, but you didn't have the

> habitat being protected or reaffirmed by the Committee as needing protection. And so you were decimating the rhinoceros because no one was protecting the habitat.[48]

Rick Cook remembered Cleary's first contacts with the Park Service:

> As I recall, I first started hearing from her because she was reading some cables, and she came over and met with us. She was seeking out the information.... And I think that we just judged that it couldn't do us anything but good to have them focusing on this. And I think that's something she deserves credit for. She did a lot of good at times in that Convention when there was nobody else in the State Department paying attention to it.[49]

Jerusalem, 1981–1982. The State Department's most substantial involvement in the World Heritage Convention up to this time was over the controversial inscriptions of the Old City of Jerusalem and its Walls in 1981 and 1982. Following the contentious meeting of the committee in September 1980, Jordan submitted a revised nomination to the UNESCO secretariat for review by ICOMOS and the World Heritage bureau. When the bureau met in early May 1981, the US delegation was led by the State Department's director of UNESCO affairs, David Rowe, the first time that the State Department had led the US delegation. No Park Service advisors accompanied Rowe.

As expected, Jerusalem dominated the meeting. Pressure on committee members was also being applied by UNESCO's governing body, the UNESCO General Conference, which at its 1980 session had asked that the committee "speed up the procedure for the inscription of the City of Jerusalem on the World Heritage List and envisage its inscription on the List of World Heritage in Danger."[50] The discussion continued for over two days, ending in a decision not to decide but to pass the nomination onto the full committee. In his report of the meeting, the IUCN representative, Jeff McNeely, reported that the US delegate privately mentioned that there was "a strong likelihood of American withdrawal from the World Heritage Fund if the Jordanian nomination is approved by the Committee." "Politics," McNeely wrote, "have come to the World Heritage."[51]

Rather than discuss the issue at its regular session in Sydney in October, the secretariat ultimately decided to convene an "extraordinary" session (the committee's first) at UNESCO headquarters on 10–11 September. During the debate, the United States delegation, again led by Rowe, objected explicitly to the nomination by Jordan as not conforming with the articles of the convention, which provide that the nominating state submit only those sites which are "situated in its territory," require that the consent of "the State concerned" be obtained, and require that the nominating state provide an effective plan for the protection and management of the site. Nevertheless, by a vote of 14 to 1 with 5 abstentions, the committee decided to inscribe the Old City of Jerusalem and its Walls on the World Heritage List.

The following June (1982), the Jordanians brought to the bureau their proposal to list the Old City on the List of World Heritage in Danger. Again unable to agree, the bureau asked ICOMOS and IUCN to draft criteria for the inscription of sites on the danger list, and passed the decision on Jerusalem to the committee without a recommendation.

At its session in December 1982, the committee did adopt the criteria for inscription on the List in Danger, which have remained part of the *Operational Guidelines* since. After a lengthy discussion, the committee decided, by the same margin as the previous vote for inscription, to place the Old City of Jerusalem and its Walls on the List of World Heritage in Danger.

Whether there was a connection between the committee decisions concerning Jerusalem and the subsequent elimination of US funding for World Heritage remains conjecture. One journalist reported that "congressional aides mention 'the Jerusalem issue' as one reason why American funding of World Heritage ($330,000 in 1981) was eliminated in 1982 and 1983."[52] At the same time, others credited budget cuts in a time of austerity. "'Not enough people know about World Heritage to lobby for it,'" a State Department official was reported as saying in the same paper.

At stake for the US was its position on the committee, elections for which would take place at the forthcoming general assembly in October 1983. At the Interagency Panel meeting in early May 1983, Milne laid out the difficulties over funding. While the panel agreed that "from a professional view point, U.S. re-election to the Committee was desirable," the candidacy would not be allowable if the US was still in arrears.[53] Assistant Secretary Arnett had already written to his counterpart at State, Assistant Secretary for International Organizations Gregory Newell, the year before. He had written again, just prior to the panel meeting, to remind Newell of the positive influence the US had had on policy and procedural questions. "It has, therefore, been our intention to urge an active U.S. candidacy for re-election at the time of the General Conference.... [H]owever, countries which are in arrears with the payment of dues for the current year and the calendar year preceding it will not be eligible for membership on the Committee...."[54] Newell was not persuaded.

Once off the committee, it seems likely that the NPS International Affairs Division had not intended to field a delegation to attend the session in Florence at the beginning of December. However, a cable in November from the permanent delegation in Paris urged the US to attend: "UNESCO Secretariat officials are most anxious to have US observers attend the meeting as a sign of our interest in World Heritage, especially in light of the status of our contributions, and the fact that we did not run for the Committee."[55] As a result, with probably only 48 hours' notice, Recce and Cook arrived in Florence the evening before the meeting.

Although the decision to withdraw from UNESCO had not yet been publicly announced, it must have been clear to most observers what was coming. "We weren't the most popular people at the '83 meeting," Cook recalled. And the administration's decision not to pay its dues haunted the committee. "That was the whole issue," Recce remembered. "We weren't going to pay the dues. That's when everything started unraveling in terms of being off the committee."[56] At the opening of the session, the UNESCO director-general's representative, Michel Batisse, called attention to the deteriorating condition of the World Heritage Fund: "There were still delays in the payments of voluntary contributions, some of which represent considerable amounts." Almost all discussions involving expenditures were "liberally laced with references to 'certain significant voluntary contributors who have made no payments at all recently.'"[57]

Following the Florence session, no State or Interior representatives attended either of the next two committee sessions, held in Buenos Aires and Paris in 1984 and 1985, respectively.

However, the US soon began making efforts to reinstate funding. In a letter to Secretary of State George Shultz in April 1984, Interior Secretary William P. Clark argued that continued US participation in World Heritage would demonstrate "our continued support of such international program objectives when they are not subject to perceptions of UNESCO mismanagement and politicization." Acceptance of the rationale would "justify State Department reprogramming of UNESCO support funds or requests for additional appropriations…."[58]

The turning point in restarting US funding of the convention came following the official withdrawal of the US from UNESCO in December 1984. In a formal exchange of letters in 1985, the new secretary of the interior, Donald P. Hodel, and Secretary of State Shultz agreed that membership in the committee was in "the national interest."[59] Membership in the committee would demonstrate the nation's continued interest and leadership in international cultural activities despite its withdrawal from UNESCO. At the 1985 General Assembly, the US representative, the State Department's director of UNESCO affairs, Martin Jacobs, made a strong statement of continued interest and support in the convention, noting that US financial contributions had resumed and that the US would seek re-election to the committee at the 1987 General Assembly.[60]

The return of the US to the World Heritage Committee, Deputy Assistant Secretary Recce wrote in 1987, was "a renewed opportunity to influence by example, comment and technical contribution the importance of sending professionally competent participants to the session." "U.S. actions and comments," the delegation's final report noted, "led to a reversal of previous tendencies not to question or oppose major proposals before it." The absence of technical experts among delegations left the Committee hostage to the recommendations of both the secretariat and the advisory bodies. "Generalist representation," the delegation noted, "tends to assign an unrealistic level of professional competence to ICOMOS and IUCN, and a reluctance to question their statements."[61]

Gaps in the list

By the mid-1980s, most of the US properties nominated to the World Heritage List had been natural sites or National Park Service sites. In an attempt to nominate more architecture, the Park Service commissioned the US Committee of ICOMOS to produce a study of architectural properties on the US indicative list suitable for nomination.[62] The study, by Antoinette J. Lee, was presented to the Interagency Panel by Chief Historian Ed Bearss in August 1986. It recommended three categories of sites: properties built by Thomas Jefferson, buildings of the Chicago School, and buildings by Frank Lloyd Wright. Lee concluded that there was more scholarly agreement on Jefferson's work, especially the University of Virginia and Monticello, than on the other two themes, and the panel recommended that a nomination for Monticello and the University of Virginia should be pursued. The nomination was completed in 1986, submitted to UNESCO, and inscibed on the list in 1987. In 1988, NPS engaged

Frank Lloyd Wright protégé Charles Montooth to develop a nomination for Wright's Taliesin studio in Wisconsin and Taliesin West in Arizona (with additional Wright properties to follow in subsequent nominations), but on the nomination's submission, ICOMOS considered that only a comparative study of Wright's work would allow an adequate evaluation of the properties, and the nomination was deferred.

NPS undertook another theme study in anticipation of the forthcoming Columbian Quincentennial, the 500th anniversary of Columbus's first voyage. Early in 1988, following informal discussions, the Mexican permanent delegate to UNESCO had responded encouragingly to a US proposal for a joint nomination of Spanish Colonial missions in the US and Mexico.[63] Lee was again engaged to undertake a study of US missions, and her report was reviewed favorably by the panel in August, when it decided that a nomination for four US missions should be prepared. At the committee's 1988 session, the delegation publicly praised Lee's study, with the hope that it would stimulate both interest in nominations on the Quincentennial theme and also assist the committee in its approach to thematic nominations.[64] However, at the same session, the deferral of the US nomination for Taos Pueblo in order to conduct a binational comparative study suggested that a Spanish missions proposal limited to US sites would suffer a similar fate without evidence of Mexican consultation.[65] But, although OIA would later sponsor other binational cultural resource projects with Mexican authorities, by the summer of 1991 transboundary World Heritage nominations no longer had high priority for Mexico.

The road to Santa Fe, 1989–1992

In February 1989, the new administration of George H.W. Bush brought Manuel Lujan, Jr., from New Mexico as the new secretary of the interior. Knute Knudson, a planner and former state representative from South Dakota, was named as the new deputy assistant secretary for fish and wildlife and parks. Knudson's presence at all committee meetings, and his chairing of all interagency panel meetings during his tenure, testifies to his keen interest in a visible and active role for the US in the convention, a role he continued even after being named the department's deputy chief of staff a year after taking office. Discussions had already been taking place on means to recognize the Columbian Quincentennial in 1992. With a still-pending nomination for the New Mexican site of Taos Pueblo and a secretary of the interior from New Mexico, it is not hard to see the conclusion, probably by the second half of 1990, that the US should seek to host the 1992 meeting, celebrating not only the Quincentennial, but the 20th anniversary of the convention, the Fourth World Parks Congress (held in Caracas, Venezuela, that year), and what was expected to be the end of the US term on the committee. The US delegation informally discussed the proposal at the committee session in early December, and by the end of the year an exchange of letters between Secretary Lujan and Secretary of State George Baker gave the US government's official approval to the proposal.

In the meantime, other new initiatives were now also bearing fruit. "One thing I think we were always trying to do, and encourage in others," Rick Cook recalled recently, was to focus on "the emphasis the convention puts on bilateral cooperation among the states parties."[66] At the 1990 committee session in Banff, Alberta, the US and Soviet delegations together announced the completion of a joint report on the shared cultural and natural her-

itage of "Beringia," the Russian and US territory on either side of the Bering Strait between Siberia and Alaska. Begun in the mid-1980s under the auspices of OIA, the project had the enthusiastic endorsement of local officials on both sides of the strait. At a summit meeting in 1990, Presidents Bush and Gorbachev signed an agreement encouraging further cooperation. Ultimately, it was hoped that a joint US–Soviet World Heritage nomination would be presented to the committee. Although the plans for a larger park would be stalled by local political demands, the 1990 agreement resulted in an ongoing Shared Beringian Heritage Program established by the National Park Service with local communities in 1991.[67]

The committee's fifteenth session in Carthage, Tunisia, opened in the second week of December 1991. Heavy shelling by the Yugoslav Army of the Old City of Dubrovnik had started only three days before the session opened, and the committee was affronted at this deliberate action against a World Heritage site. In an equally deliberate statement, "the Committee decided, in accordance with the provisions of Article 11, paragraph 4 of the convention, to inscribe Dubrovnik on the List of World Heritage in Danger and to publicize this entry immediately."[68] As if recognizing the significance of this action, taken without consulting the state party concerned, several delegates noted that the step was not an accusation, but an "affirmation that all States Parties to the convention are involved in this situation where a World Heritage city was seriously damaged by an armed conflict."[69] Commenting approvingly on the significance of this action a year later, during the debate over the inscription of another site on the Danger List, Adul Wichiencharoen, head of the Thailand delegation, noted that "prior to the Carthage meeting, there had been a great reluctance to place sites on the Danger list without the consent of the State Party. Since the listing of Dubrovnik a year ago, there had been a sea change in attitude."[70]

Strategic orientations. One of the most important and potentially far-reaching initiatives undertaken was the development of recommendations to improve the working of the convention. In 1992, the committee held two expert group meetings to discuss "strategic orientations," a 20th-anniversary activity proposed three years before as an opportunity to assess the convention's operation and make recommendations for its future. The opening meeting was held in late June at the Department of the Interior in Washington, two weeks before the bureau's regular session. At UNESCO's request, a summary evaluation report of the comments of states parties had been prepared. At the same time, the US had circulated to all committee members, via its embassies in the member states, an 11-page working paper outlining a series of 24 recommendations and discussion points focusing on improving the technical competence of the Committee, assuring the integrity of the list, strengthening site monitoring provisions, and improving public information activities.[71] By the time of the second meeting in October, the expert group had developed a list of 45 recommendations, in large part based on the original 24 proposed by the US.[72] Perhaps the most radical of these recommendations was number 24, which called for inclusion in the Operational Guidelines of "the possibility of inscribing a site on the List of World Heritage in Danger, without a prior-request from the State concerned."

Unquestionably, the mood of the expert group, as well as that of the committee, was influenced by the shelling of Dubrovnik the year before. With little discussion and minor changes, the committee in Santa Fe adopted all 45 of the recommendations. In addition, the

US and Italy had proposed specific revisions to the *Operational Guidelines*, based on the recommendations. The US revisions included revised *Guidelines* text for 19 of the 45 recommendations. Concerning recommendation 24, the US suggested the addition of a parenthetical clause to the *Operational Guidelines*:

> (the Committee is of the view that its assistance in certain cases may most effectively be limited to messages of its concern, including the message sent by inclusion of a site on the List of World Heritage in Danger and that such assistance may be requested by any Committee member).[73]

In other words, in some cases, the most effective assistance the committee could offer would be inscription on the List of World Heritage in Danger, which could be requested by any member of the committee—not just the state party in which the site was located.

From the beginning, the US had argued, in the words of recommendation number 23, that "inscription on the List of World Heritage in Danger should not be seen as a sanction, but as the acknowledgement of a condition that calls for safeguarding measures, and as a means of securing resources for that purpose."[74]

The final text was adopted by the committee at its session in 1993, with the addition to the end of the paragraph of the words "or the Secretariat."[75] The paragraph, with its modified wording, has remained in the *Operational Guidelines* since.

The twentieth anniversary session, Santa Fe, New Mexico

The 1992 session in Santa Fe must be considered one of the highlights of the decade. It was attended by both Interior Secretary Lujan and the new UNESCO director-general, Federico Mayor. At the opening session, the delegates heard addresses from Lujan, Mayor, New Mexico Governor Bruce King, and the "grandfather of the convention," as he was introduced, Russell Train.

Jennifer Salisbury, deputy assistant secretary for fish and wildlife and parks, was elected to chair the session, one of the most activist in recent memory. With the previous year's Dubrovnik attack fresh in everyone's memory, and the 45 recommendations for strategic change ready to be adopted, the committee seemed to be acting with a new authority. In reviewing reports of the state of conservation of inscribed sites, the committee inscribed seven sites on the List of World Heritage in Danger, four without the consent of the state party.[76] The new authority of the committee and the advisory bodies was particularly noteworthy with respect to the nomination of Angkor (Cambodia), a personal imperative of the director-general's. The newly appointed ICOMOS World Heritage coordinator, Henry Cleere, argued convincingly and at length that despite its clear merits, Angkor could not be inscribed on the World Heritage List without violating the committee's own *Operational Guidelines*, in large part due to existing political instability: there was no adequate legal protection for the site, nor was there any governmental agency capable of carrying out conservation and management. Nevertheless, the committee felt politically obliged to inscribe the site. The compromise reached acknowledged the technical weaknesses of the nomination but called for waiving the *Operational Guidelines* requirements in this instance. The decision

was not to be taken as a precedent, but as a response to a unique situation; and furthermore, the committee would immediately inscribe the site on the List of World Heritage in Danger. Both the Thai and US delegations had agreed with the ICOMOS position, but both were persuaded by the compromise reached. In a formal written statement annexed to the committee's report, the US delegate laid out the reasons for his country's acceptance of the compromise, while at the same time congratulating ICOMOS "for the integrity of their position and advice to the Committee."[77]

The meeting was also notable for the inscription of Taos Pueblo, the first Native American cultural site to be recognized as a living cultural site on the World Heritage List (Figure 4). At a special ceremony immediately following the inscription, NPS Regional Director John Cook introduced the lieutenant governor of the Taos Pueblo Tribal Council, Vincent J. Lujan, who spoke movingly of the past and future generations of his people who were so honored.

OIA also took the occasion to organize the first meeting of US World Heritage site managers. That of Mammoth Cave National Park, Superintendent Dave Mihalic, remembers the meeting as an eye-opener. "The best thing about the meeting, he recalled, "was the fact that all the managers were able to get in one place—including the [non-NPS] managers—the Cahokia Mounds, Monticello managers. And it was great not only to understand things all at the same time, but it was a great way to start thinking in a bigger picture, more strategic manner.... But what was interesting was that there were a lot of Superintendents themselves who went back and took action."[78] Following the Santa Fe meeting, and in response to the disastrous Hurricane Andrew that had hit South Florida the previous August, Everglades Superintendent Dick Ring returned to the park and built a new visitor center with a special

Figure 4. Taos Pueblo, inscribed on the World Heritage List at the 20th anniversary session of the World Heritage Convention, September 1992. Photo courtesy of David E. Ruppert.

exhibit on the international designations of the park. Mihalic himself, after the Santa Fe session, would move from Mammoth to Glacier National Park, and, with OIA's support, set about reactivating the stalled World Heritage nomination for the park, a story that will be picked up in part 3 of this series.

The new, forward-looking environment was also a moment for stronger support for the fledgling World Heritage Centre in Paris. Earlier in 1992, in a meeting with the US observer to UNESCO two weeks after the center had been established, its new director, Bernd von Droste, described the critical financial situation, with no budget, as yet no office space, and three professional staff. Despite his optimism for the center's potential, its creation "could not have occurred at a more inopportune time, given the financial situation at UNESCO."[79] The Santa Fe meeting, with Director-General Mayor and senior Park Service staff present, provided an opportune moment to finalize a joint US–Canadian secondment to support the new secretariat. Hal Eidsvik, Parks Canada's planning director and former chair of the IUCN Commission on National Parks and Protected Areas, was recruited to fill the position. Former OIA Director Milne recalled the UNESCO director-general's enthusiasm when the idea was proposed to him:

> One evening, we sat around, Russ Train, Mayor, and I, and we said, 'We have an idea: U.S. Park Service will fund, and Hal Eidsvik will be provided by Parks Canada, if you'll agree.' Mayor said 'Give me a piece of paper; I'll sign it.' It was done over one evening and one dinner. That's how Hal got there.[80]

The final essay in this series will follow the rising tide of hostility toward international programs that shadowed the US efforts, both on the committee and off, as well as the US reengagement with UNESCO and World Heritage over the last decade.

Endnotes

1. This essay is the second in a series of three on the role of the National Park Service in the World Heritage Convention. The first was published in *The George Wright Forum* 28:3 (2011), pp. 279–290. The essay is principally informed by the substantial archive of position papers, reports, and copies of State Department cables retained by the NPS Office of International Affairs at its offices at 1201 I Street NW, Washington, DC, and by a series of extensive interviews with Robert C. Milne, Richard Cook, David Hales, Edwin C. Bearss, Sharon Cleary, Blaine Cliver, William H. Eddy, Antoinette Lee, Dave Mihalic, Susan Recce, Ray Wanner, and Christina Cameron. OIA Chief Stephen Morris and staffers Jonathan Putnam and Phyllis Ellin have also provided advice and comment. I am also indebted to Janice Connally for her guidance and review of the manuscripts and papers of her late husband, Ernest Allen Connally. His papers, at the NPS Harpers Ferry Center (RG53) and at the National Trust Library at the University of Maryland's Hornbake Library, have also been important for this study.
2. David Hales, interview, 6 August 2009.
3. Richard J. Cook, interview, 25 February 2010.
4. Robert C. Milne, personal communication,11 February 2012.

5. Cook interview.
6. "U.S. Position Statement, Final Draft, October 27, 1976, First General Assembly of States Parties. . . ." OIA archives.
7. Cook interview.
8. Section 401(a) of the NHPA amendments required that "The Secretary of the Interior shall direct and coordinate United States participation in the Convention Concerning the Protection of the World Cultural and Natural Heritage, approved by the Senate on October 26, 1973, in cooperation with the Secretary of State, the Smithsonian Institution, and the Advisory Council on Historic Preservation."
9. An acronym pronounced "hookers" by old-time NPS staffers.
10. The distribution of responsibilities was spelled out in an August 1979 letter informing the State Department of the composition of the US delegation to the 1979 World Heritage Committee meeting. Letter, Bob Herbst, assistant secretary of the interior for fish and wildlife and parks, Department of the Interior, to Charles William Maynes, assistant secretary for international organization affairs, Department of State, 15 August 1979. OIA archives.
11. Hales interview.
12. Memorandum, Lee Talbot (CEQ) to Robert Milne, "Points to cover in US Position Paper," 27 September 1976. Talbot noted that the proposed criteria and other materials "are in good shape and should allow rapid implementation of the Convention." OIA Archives.
13. "ICOMOS was quite aware of the new discipline of industrial archaeology which had taken rise in the 1950s." Ernest Allen Connally, draft typescript notes for "Universal Value," courtesy of Janice Connally, Alexandria, VA.
14. "Report of the United States Delegation to the First Session of the Intergovernmental Committee … Submitted to the Secretary of State, David F. Hales, Chairman of the Delegation." Prepared by Robert C. Milne, advisor, National Park Service, 1 August 1977. OIA Archives.
15. Milne, interview, 6–7 June 2009.
16. Ibid.
17. The Division of International Affairs prepared the two natural nominations; the cultural nominations were prepared by Charleton, then with the National Historic Landmarks Program. The cultural nominations originally included the Wainwright Building, Connally's choice as the pre-eminent example of American skyscrapers (St. Louis, MO, 1899, by Adler and Sullivan). This choice must already have been on the draft list of proposed sites developed under Connally's guidance in 1976–1977. A full nomination was prepared and presented to the Hales Committee for approval. Only when Hales asked the question, "Has anyone consulted the State?" did staff realize that the building's owner, the state of Missouri, had not been consulted, and ultimately was not in agreement with the proposal. Cook interview; Memorandum, Jim Charleton to associate director, preservation of historic properties [Ernest Connally], "World Heritage Nominations for 1980," 22 October 1979. Connally Papers, Box 6.
18. "Report of the Bureau of the World Heritage Committee, 1979," Annex II. UNESCO

Doc. CC-79/CONF.005/6.

19. Position Paper, Agenda Item 6, "Amendments to the criteria for additions to the World Heritage List," October 10, 1979. OIA Archives.
20. Ibid.
21. William L. Eddy, interview, 16 April 2011.
22. Milne interview.
23. Letter, Peter H. Bennett, coordinator, liaison and consultation, Parks Canada, to Mrs. M. Raletich-Rajicic, UNESCO Desk, Cultural Affairs Division, Department of External Affairs, Ottawa, 24 November 1978. OIA Archives.
24. Memorandum, Rick Cook to Rob Milne, 16 January 1979, "Peter Bennett's Correspondence Re: Auschwitz Nomination." OIA Archives.
25. Eddy interview.
26. Hales Interview.
27. Report of the World Heritage Committee 1979, para. 46. UNESCO Doc. CC-79/CONF.003/13.
28. Michel Parent, "Principles and Criteria for Inclusion of Properties on World Heritage List" World Heritage Committee working document CC-79/CONF.003/11, Paris, 11 October 1979, p. 21.
29. "Report of the World Heritage Committee, 1979," para. 12. The nomination was withdrawn, pending the revision to criterion (vi).
30. Ibid., para. 34.
31. David F. Hales and Robert C. Milne, "Report of the United States Delegation to the Third Session of the Intergovernmental Committee for the Protection of the World Cultural and Natural Heritage of Outstanding Universal Value, Cairo and Luxor, Egypt, October 22–27, 1979," p. 5. OIA Archives,.
32. Connally notes of meeting, Box 6, Connally Papers, Library of the National Trust for Historic Preservation, University of Maryland (hereafter, "Connally Papers").
33. Article 11(3): "… The inclusion of a property situated in a territory, sovereignty or jurisdiction which is claimed by more than one state shall in no way prejudice the rights of the parties to the dispute."
34. As referenced in note 13 above, Connally had been collecting materials for a planned history of World Heritage, to be titled "Universal Value: The World Heritage Convention and its Historical Background," which was left unfinished at the time of his death. His close association with Bearss and Charleton kept him informed of the work of the interagency panel even when he may not have attended many of the sessions (Bearss, personal communication).
35. "Preparation of a Tentative List of Future U.S. World Heritage Nominations," 22 June 1981. Connally Papers, Box 6.
36. March 2003 interview with Charleton, reported in Bart J.M. van der Aa, "Preserving the heritage of humanity? Obtaining world heritage status and the impacts of listing," PhD dissertation, University of Groningen, The Netherlands, 2005, p. 52.
37. J.H. Charleton, "Selecting America's World Class Treasures: The Indicative List of Potential World Heritage Nominations," *Trends* 26, no. 1 (1989): 15; cited in van der Aa,

p. 52. The selection of natural sites was coordinated by OIA's Jim Orr.

38. UNESCO Doc. CLT-82/CH/CONF.015/2. The final list was published in the *Federal Register*, 6 May 1982 (47 FR 19648–19655).
39. Connally Papers, Box 6.
40. Memorandum, senior historian, Division of History [Benjamin Levy] through chief historian [Edwin C. Bearss] to associate director, cultural resources management, "Meeting with Mr. Leon Pressouyre, International Council on Monuments and Sites (ICOMOS)"; 26 May 1982. The memo was drafted by Charleton. Connally Papers, Box 6.
41. "Summary Report: June 30, 1981 Meeting of the Federal Interagency Panel for World Heritage." Connally Papers, Box 6.
42. "World Heritage Committee, Fifth Ordinary Session, Sydney (Australia), October 26–30, 1981. United States Position," 16 October 1981, p. 2. OIA Archives.
43. "Report of the World Heritage Committee, 1981," para. 15. UNESCO Doc. CC-81/CONF/003/6. Only a year later, after the approval of a request for technical cooperation, the committee encouraged the Senegal government to request inscription on the List in Danger, which took place in 1984.
44. Letter, G. Ray Arnett, assistant secretary for fish and wildlife and parks, Department of the Interior, to Gérard Bolla, deputy assistant director-general for culture and communication, 5 January 1982. OIA Archives. Reproduced by UNESCO for the Bureau as UNESCO Doc. CLT-82/CH/CONF.014/2
45. Milne interview.
46. "Report of the Bureau of the World Heritage Committee, 1982," para. 17. UNESCO Doc. CLT-82/CONF.014/6.
47. Cook interview.
48. Sharon Cleary, interview, 4 April 2011.
49. Cook Interview.
50. 21C/Resolution 4/14, (21st General Conference, Belgrade, 23 September–28 October 1980), published in Records of the General Conference, vol. 1.
51. Jeffrey A. McNeely, executive officer, CNPPA, "Trip Report, World Heritage Bureau, Paris, 4–7 May 1981." OIA Archives.
52. David Douglas, "Saving the world's heritage—minus the US?" *Christian Science Monitor,* 31 January 1983, p. 23. Photocopy in Connally Papers, Box 6.
53. "Summary of Discussions and Recommendations, Federal interagency Panel for World Heritage, May 4, 1983 Meeting." Connally Papers, Box 6.
54. Letter, G. Ray Arnett, assistant secretary for fish and wildlife and parks, Department of the Interior, to Gregory Newell, assistant secretary, international organization affairs, Department of State, 3 May 1983. Connally Papers, Box 6.
55. State Department Cable Paris 44916, November 1983. "UNESCO: World Heritage Committee Meeting, 5–9 December Florence." OIA Archives.
56. Susan Recce, interview, 8 April 2011.
57. State Department Cable Paris 47200, December 1983. "UNESCO: World Heritage Committee Meeting, December 5-9, 1983. OIA Archives.
58. Letter, William Clark, [secretary of the interior] to George P. Schultz, secretary of state,

6 April 1984. Connally Papers, Box 6.

59. "Scope Paper, Thirteenth Session: World Heritage Committee, Paris, December 11–15, 1989." OIA Archives.
60. "Minutes, Federal Interagency Panel for World Heritage, November 22, 1985 Meeting." Connally Papers, Box 5.
61. "Summary, World Heritage Committee, Eleventh Session, Paris December 7–11, 1987," p, 4. OIA Archives.
62. Antoinette J. Lee, interview, 30 March 2011.
63. Letter, Miguel Leon-Portilla, permanent delegate of Mexico to UNESCO, to Richard J. Cook, OIA, 14 February 1988. OIA Archives.
64. "Report of the World Heritage Committee, 1988," para. 72. UNESCO Doc. SC-88/CONF.001/13
65. "Briefing Statement, Issue: Coordination with Mexican Delegation," Thirteenth Session, World Heritage Committee, Paris, December 11–15, 1989. OIA Archives.
66. Cook, personal communication, February 2012.
67. See www.nps.gov/akso/beringia/.
68. "Report of the World Heritage Committee, 1991," para 29–30. UNESCO Doc. SC-91/CONF.002/15.
69. Ibid., para. 30.
70. Peter Stott, "Santa Fe-92," [E-mail] Newsletter #4, pp. 1–2 (author's collection).
71. State Department Cable 138284, May 1992, drafted by Jim Chamberlin of OES and Rick Cook of OIA. OIA Archives.
72. "Item 6 of the Provisional Agenda: Strategic Guidelines for the Future," World Heritage Committee, 7–14 December 1992, Working Document WHC-92/CONF.002/4 (16 November 1992). See also Annex II, "Report of the Sixteenth Session of the World Heritage Committee, 7–14 December 1992," Document WHC-92/CONF.002/12.
73. "Revisions of the Operational Guidelines Proposed by the United States of America." OIA Archives.
74. Recommendation 23, item 6 of the provisional agenda.
75. No discussion of the modification has been found in the published reports of the committee or bureau. However, it seems probable that the words were inserted based on UNESCO's reading of an outside legal opinion of Professor Patrick J. Boylan, provided to the committee at its 1993 session. See "Review of the Operational Guidelines for the Implementation of the World Heritage Convention: Revision of Provisions Relating to World Heritage in Danger and Emergency Assistance," UNESCO Information Document WHC-93/CONF.002/INF.6.) In it (at para. 16), Boylan argued that under "exceptional circumstances or special urgency, the Committee or Secretariat … may on their own initiative approach the State Party concerned … asking if it wishes the Secretariat to examine the situation with a view to possible international assistance and/or inscription on the List of World Heritage in Danger." The new words appear to tie interpretation of the US's original text to Boylan's view of the committee's authority.
76. Srebarna Nature Reserve (Bulgaria), Angkor (Cambodia), Plitvice Lakes National Park (Croatia), Sangay National Park (Ecuador), Mount Nimba Strict Nature Reserve

(Guinea/Côte d'Ivoire), Manas Wildlife Sanctuary (India), and Air and Ténéré Natural Reserves (Niger). Of the seven, Angkor, Sangay, Mount Nimba, and Manas were inscribed on the danger list without state party consent.

77. "Report of the World Heritage Committee, 1992," Annex 6. UNESCO Doc. WHC-92/CONF.002/12
78. Dave Mihalic, interview, 18 February 2010.
79. Cable Paris 13807, May 1992. OIA Archives.
80. Milne interview.

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