

# An attempt to coalesce with change

Herbert Anungazuk

## **Abstract**

This paper was part of a panel that included J. Terrence McCabe, a University of Colorado anthropology professor; lawyer Jeanette Wolfley and Idaho State University instructor Drusilla Gould, both members of the Shoshone-Bannock Tribes; NPS anthropologist Don Callaway; and Herb Anungazuk, an NPS anthropologist and Native Alaskan. The panel was submitted under the following abstract:

*The creation of national parks in the Greater Yellowstone Area (GYA) and East Africa displaced mobile, indigenous tenants. Over a century has passed since Native Americans historically associated with the GYA were removed to reservations and ceased practicing traditional livelihoods, though many traditions associated with their identities, and some with their livelihoods, continue to survive. In contrast, Maasai pastoralists continue to live in protected areas such as the Ngorongoro Conservation Area in Tanzania (adjacent to Serengeti National Park), but conservation policy has changed their land use practices, among other things. They cannot hunt lions or graze their livestock in Kenyan and Tanzanian national parks/reserves, most of which are located inside Maasailand. Eligible rural native and non-native residents of most Alaskan parks, on the other hand, by federal law can continue to engage in a subsistence way of life. Fishing, hunting, and plant gathering for Alaska natives is considered integral to their cultural, economic, and physical existence. In the course of this panel, presenters will explore historical reasons for these differences; identify some examples of traditional ecological knowledge and management regimes; define "traditional;" address some commonly-held misconceptions about mobile peoples and conservation; speak to the role of ethnographic research in informing policy decisions; and explore ideas and models for ethical conservation strategies that protect wildlife as well as the interests of indigenous peoples.*

The Arctic and its people have received undue attention since the onset of intrusion by man and machine from many sections of the earth. New land was instant news in far off lands, and news laundered with exaggeration spread like wildfire. In years, or in decades, were affected animal or fish populations, and the people who used them saw change but they were not heard, and the land surrendered itself without opposition to human and non-human influences. Change arrived in many forms, and the encounters included warfare between world powers, the face of exploration to map the vast Arctic realm of its mineral potential, and excessive commercial

exploitation of renewable resources from the land and the sea. The Arctic is distant from industrial nations, yet pollutants not used in this great land are found in extremes known unsafe. Many flags lay guardian to purportedly untouched lands, little realizing that countless generations of hardy groups of people have resided in the land without so much as damaging even a part of the land, since dawn immemorial.

In less than two centuries, the new ways have altered the ways of indigenous people tremendously, and in a manner never realized by our ancestors. Change has been extreme in many, many ways, and in the case of some encounters humor has been added, in pantomime or change of voice, to enhance the story. A hunter related his first encounter with an airplane in witty prose and story, much to the delight of the listeners. The hunter believed an airplane to be the entity whom everyone was being taught to worship, descending from the heavens with arms extended, amid thunderous noise, thus fulfilling what the missionaries had prophesied. The sails of tall ships that filled the horizons inspired fear in many people relating about stories of first encounters with the West.

Most rural populations are small in northern communities, and the loss of any man or woman can have a severe impact on the whole of the people. An exodus of people has been occurring from small villages that are situated throughout this vast land. Many are young men and women already possessing traditional skills taught to them by the parents and elders who in time they must replace as the leaders of their societies. The movement away from the traditional community caused the loss of men and women with the knowledge needed to rally together as hunting and family units. The warrior, the hunter, has been reduced to mull in silence within four lifeless walls, but as they are people of ancestry, the spirit will return, and the men can be absorbed back into the society of hunters. In all regard, indigenous people remain who they are because we have never cast asunder the wisdom possessed by the elders. The elders carry the wisdom of nature, the wisdom of the environment, and the knowledge of the true and right learning we needed to know about the animal and bird kingdom. To us, the elders are not just old men and old women. The men and women are our teachers, and they continue to teach us in the way of our ancestors.

Time is an important element in the heart, mind, and soul of the people, and remains so, as we are a people of season. We receive our sustenance from the land and the sea, as from the mammals, birds, and fish we receive our gift of survival. Our most profound season is that of the short spring months. The season of spring ignites the will of the hunter to perform in the duty that is expected of him. It is astounding, even to a seasoned hunter, to see the movement of the animals as they pass through our hunting territories into summer grounds and seas far beyond our boundaries. The animals follow the sunset,

ever northward, into the horizon, and for them we wait as our ancestors first learned to wait for them. It is fortunate that someone had the foresight to continue the opportunity to use lands in the manner of the hunter when rule of unfamiliar law written far from our traditional boundaries was to become a barrier to the hunter. Without the inclusion of the right to continue in the manner of the ancient hunter, dire straits would have been occasionally encountered in an effort to create a positive buffer zone between parties.

The inclusion of the right to hunt was the most suitable course inserted in recent acts of law. The land and the sea contain a wealth of animals that are hunted seasonally by the hunter, and to have ceased the ancient right of hunting would have created an undue hardship if the right to hunt were ended by an act of law. We wait from our places of origin, but steadily we have been pressed into witness that we must prove, under the prevalence of law, that we are actually of the land. Generations after ancient generations of elders have ordained themselves to share what they have learned to all who came to learn. The new ways of learning have been to learn from someone who is illiterate in our ways, and this method has begun new generations that are as illiterate as the newcomers. In an ancient system where there is only one way to survival, with few exceptions, disastrous results are occurring within the fabric of nations in the Arctic. We must learn to teach in the ways of our ancestors; otherwise my generation, too, shall pass without teaching our descendants of our ancient ways. The indigenous way is the most complex of cultures in this universe, and others who are continuing to come to us cannot teach us in the manner of our ancestors. Teaching and learning are allies, yet they have been separated without realizing that the teacher also must continue to learn even from those he is teaching.

Arctic research has gone through various stages of interest. Since the onset of ethnographic studies began over a century ago, Arctic people very quickly became some of the most studied in the field of human studies. Indigenous people are tied to land, as each and every one of them is tied by birthright to the land. A scholarly record separated the Inupiat into nations, as we are indeed nations among our own ways. Many Alaska Native interests, and not only the Inupiaq community, will be in whole agreement on this conclusion, (Burch 1994). At the onset of studies, a lot of the published material was biased, insensitive, and contained information that was not compliant with the ways of the people. Only in the last several decades, with the emergence of a new generation of anthropologists, has information been documented that is pliant with the traditions and culture of the people. The Inupiaq elder is quick to share, as he is bound to share what he has learned with others who come forward to him. Everyone—the elders, and the young—is representative of the people, as our lives depend on what we know. Our ways are based on original concepts founded by our ancestors.

Our ways are unique. Others who are unaware of who we are cannot grasp the realities we have established within our universe amid an environment otherwise known as inhospitable to others. The ways of survival pry into the realm of the animal species we hunt for our sustenance as we place an effort to learn and form a bond with them, thus increasing our chances of harvest. We understand some of the mammals and bird species of the Arctic to be messengers in our interest as hunters. To see and observe the activities of birds or mammals announces the arrival of specific species, and the hunters prepare when they are seen. The growth of some plants or berries can prophesy the success of the hunters. In August 2003, Faye Ongtowsruk, who actively pursues her role as an elder in my community, stated that some elders decline to acknowledge the growth of the kipmiq, or cranberry, because to see them grow predicts an unsuccessful whaling season (Ongtowsruk 2003).

I bear the profound pride of having heard Ken Isaacson, of Australia, state that the indigenous elder is the “professor of the world” (Isaacson 2003). His statement bears truth and merit among the indigenous community, as our elders are indeed learned in our ways, and in the manner of the land and the sea that provides for our well-being. I am testimony, among many others, to being graced with the knowledge bestowed upon us by the elders so unselfishly. “The sea is our garden,” is an apt comment from an elder from St. Lawrence Island (Tungiyen 1999). Conrad Oozeva made this comment to portray from his heart our lasting alliance with the sea and its creatures. Rapid change has been seen or encountered by many people in a short time, and change has had a life-and-death influence upon the people since the first dawn. There is an adage that states that if you use a resource to its fullest extent, more of that resource used would return to you in the coming years. Our resources are the mammals, birds, and fish that ply into the reins of the observant hunter during the course of their seasonal migration.

We are a sharing nation. Other groups within my cultural group are sharing nations; all indigenous people are. The Inupiat inhabits the largest land, in area, of any indigenous group in the world. Our land stretches from Ongalaliq (Unalakleet) on Alaska’s Norton Sound clear into Greenland. We are coastal people; we are river people; we are mountain people. We share the same language, although distance has made the language so extreme that we find ourselves in utter loss when we fail to understand differences in dialects created by separation from one another through distance and the passage of time.

The culture and traditions of the people are alive, as our ways were established on the virtue, wisdom, and compassion of our ancestors. Culture is learned phenomena, and it is an element among people that is important. The traditions and customs of indigenous people contain intense standards, and they cannot flourish successfully without language. It is difficult to talk

about culture in the manner as it is lived by people. Language is the most critical component among people, and with its demise, we begin to find whole groups of people fade away. The elders are under constant trial in their attempt to communicate with the new generations. The young generations cannot see the difficulty that the elders encounter in their effort to communicate with them. The loss of song and dance occurred under the influencing direction of various sects of missionaries. Some religious groups allowed the continuance, but others adamantly believed that they must be stopped as the people came under forced spiritual separation from the onset of the arrival of the missionary. The missionary overthrew the ancient beliefs, rituals, and ceremonies that were observed by the people on the pretense that undue suffering of the human soul would ensue following death. The revival of song and dance has produced a unifying effect in my country, and many people are living proof that the qualities of traditions are strong and that they are important to the human soul.

The people who accepted the challenges of making their residency in the frigid north are a class of people incorrectly called Eskimos. We are the Inupiat, and we define ourselves as “Real People.” Several distinct groups fall under the “Eskimo” category, and they are the Inupiat of Alaska, the Inuit of Canada, and other groups who stretch into the far reaches of Labrador and Greenland. This group includes the Yupiaq of southwest Alaska, plus the distinctive Bering Strait Yupiq of St. Lawrence Island. There are several meanings that can be applied to the term Inupiaq. Inupiaq is a singular term for a person, while it also defines the language spoken by the people. As stated, the term translates as “Real People,” “Genuine People,” or “Original People.” We are not the only people who define themselves as real, genuine, or original. Others, such as the Ojibway (Chippewa), Lenape (Delaware), and the Iroquois, and surely many other groups bear the distinction of calling themselves “Real People” (Bruchac 2003).

There are two types of settlements found in Alaska: urban and rural. The rural settlement is the least known, and yet this settlement is found throughout Alaska. The history of each village will be profound, yet when most were founded is generally unknown because the history of the settlement is so ancient. The village will, by tradition, be bounded nearest the flyway of migratory birds, coastal sites, rivers, or mountain passes, and the settlements and the surrounding countryside within the boundaries of the people will be alive in place names.

Will the Arctic continue to be sustainable to both man and mammal if global warming is considered over? I doubt that anyone can ever attempt a prediction, as no one can guess what the consequences to global warming can be. Our story tells that there was a period in our unwritten history when summer failed to return, and it has not yet come to pass. This prophecy is yet to be

fulfilled, and it is still ahead of us. It is told also that man and mammal lived together in our timeless period with no want for clothing. Our story includes all auspices of a perfect world that mankind now strives for today, but at much expense to the environment. No one knows how long the warming trend can continue. Coastal people started to see unnatural change beginning to occur as far back as three decades ago, and possibly even sooner. Thirty years is a long time, but in considering how long we have been in the land, this is but a tiny hash mark in our unwritten history. Change can occur overnight, and to see continual change in a span of three decades is certainly not beyond the eye of the resident, as change in the sequences of time and what happened has never been invisible. The seas are noticeably rising, and in a land where most villages are situated in coastal lands rarely exceeding 25 feet in elevation, you see and feel the effects of flood waters that are cast upon you by winds not normal to season. You become a lesser being very easily when you see the ponderous strength of the environment as she expends her massive power through earth, wind, or fire. The international reports that global warming may be occurring is no longer an unknown thing of the high Arctic. Industrial interests had an understanding that the Arctic was beyond the reach of pollutants that were unceremoniously released into the atmosphere in far off industrial points, and yet lethal, dangerous byproducts were found in unsafe levels in Arctic lands.

Conservation is preservation, and it noticeably harbors a human element that is usually brushed aside in the guise of philanthropic interest, or political contributions. It is an alliance between man and the earth, and continues to remain an alliance in the north country despite the imbalances that have been applied upon it in this day and age. Among indigenous people it is an unwritten measure to insure that change alone can occur from the powers within. The environment is sovereign, it is an empire within itself, and life in the north cannot be sustained adequately without the forces of this natural state while the indigenous resident has learned to live with it instead of altering it in the manner that it is being done today. The term has been sustained into many varying levels of definitions, as may be outlined into natural resource management issues, or development of sensitive or sacred lands despite continual opposition from indigenous people. In a hunter/gatherer society it is the will of the people to hunt to survive, and it is the only alternative for survival in the harshest region on earth with no resources as seen by Western means. It is astounding that my ancestors found the ways and means to survive in a land that others see as barren. Let it remain barren in their eye, while to us the land remains a gift from the Creator. Everyone has faith in land, and I believe that a person needs not to be born into the land to have any form of faith of land. Why would someone clash over land if their ancestry is not of the land? It is from such faith that place names are bestowed upon land. The land and

the sea are Beings, and that may be why science and organizations call them ecosystems, inadvertently citing that they are indeed a part of life.

What is conservation in the mode of environments that appear noticeably unchanged in the mind of an indigenous person? In the heart and mind of the hunter, it is a routine understanding that very little change occurs as it would apply with the changes of season, and what each season ponders in the mind of the hunter to support his people. Change in northern climes is extremely noticeable, as change in season never fails, and as it is obvious that winter will be followed by summer after a period of pristine spring. The Arctic spring is always pristine; although almost always, “pristine” is a favored expression, as change in wind or ice condition can occur very quickly. The seasons are always in place, and virtual faith rests in the mind of the hunters—virtual faith as in the polar star that has never moved since our first ancestors. The stars disappear, and they fade from the view of the people for many months during the spring and summer months. The sun spinning above you for weeks on end is a virtual reality for northern people during the spring and summer.

In very recent times, my ancestors understood that if more of a resource is used, the resource would increase and just one sustaining thought needed to be observed. This thought was a commandment that you shall observe respect to the animal forms that you harvested, down to the minute forms that inhabit the earth with us. The levels of respect that were observed by the people before the advent of foreign beliefs were indeed many, and many of these intricate systems were considered abnormal to the roving eye of the missionary. Our ancestors, and we, the new generations, readily grasp the new. We accept the new as it will enhance our harvest effort, even amid thought from those who do not favor that we should change. Whenever we found a new weapon, or an instrument that could increase our opportunity as hunters, we accepted it. Some newcomers of narrow disposition feel that we should not accept the use of firearms, outboard motors, or snow machines, but we take them because in doing so we can harvest beyond the range of our harpoons, or go vast distances, thus increasing our chances of harvest. The whale and the seal; the swan, and other avian species; and the noble king salmon are creatures whose arrival we anticipate as they are species given to us by the Creator to sustain us, and for generation after ancient generation we have been sustained by their substance. There are possibly no people who have witnessed more change than the traditional hunter, but we will continue to remain reliant on the ancient standards as determined for us by our ancestors. No one speaks for a people unless they have been properly designated to do so. As an Inupiaq, I will always be hesitant to make any expression for the Kingikmiut of Wales, Alaska, of whom I am member, unless a proper induction as someone who may speak is applied in proper form occurs. Designation as a leader is an elaborate process, and in the traditional manner,



it cannot occur without the people gathering together to apply the right as a speaker. The new way says that Arctic lands were never capable of taking care of multitudes of people. Why were there countless numbers of birds that obliterated the skies? Why were there [such] countless numbers of walrus and other sea mammals that the hunters had to temporarily halt their seaward journey until they pass? Vast numbers of mammals, birds, and fish had to be in the land and sea to support vast numbers of people. We knew, that is why we were on the land when we were “found” to be there.

Are some of Arctic cultures placed into a senescent state so that they can in time fade away? It has been over two centuries for some, and over a century for others, but everyone has persevered. There have been dark ages encountered by the people, but we continue to yearn to breathe in the cold, crisp air that freezes the cilia in your nostrils. We tend to dive into a stream that robs you of your breath after testing the water, little realizing that just below was water just at the point of freezing. The chilled air is warmth, and much warmer than the water you sped from to the fire. The distant mountains are sapphire hue from the effects of distance, and not from the poisons of industry supposedly far, far away. In terms of description, the Arctic lands are of knightly serenity, known for brazen harshness, yet known for their aura of splendor. Our grandparents lacked the treasure of speaking the tongues of others that would have offset the plight that our fathers confronted in the face of meeting authority from afar. The generation of my father met in honor some of the sometimes rancid decisions made for us without just consultation, yet meeting the barriers in the same honorable manner as our grandfathers. My generation continues on with hopes that suitable consultation processes currently being used between the Native American and various federal agencies will pave justifiable solutions to the seemingly never-ending bureaucracy.

In this day and age, you can no longer pursue an issue without consulting at the onset of intent with organizations that may be likely to show concern in areas that were never confided with in the recent past. Conservation is an additive to defray loss of habitat, assisting in the return of animals, avian, or fish, or resisting the will of industry to continue plundering delicate land without knowledge of any lasting effects that can occur without simple environmental impact statements. Indigenous people are no longer standing still when mechanisms of industry persist in continuing their rape, ruin, and run tactics. Large government departments are now confronted to clean environmental damage that has occurred at the expense of world peace. It is slow, but it is occurring, and yet the lasting impact will be that the land cannot ever return to what it was during the time of our ancestors. As recent as five years ago, President Clinton signed Executive Order 13084, which stated that a unique legal relationship exists with Indian tribal governments as defined in the Constitution of the United States, treaties, statutes, executive orders,



and court decisions. This executive order has had a substantial impact on furthering the requirements of consultation with the indigenous community nationwide.

The will to survive is a cause, and in the most sincere cases, the will to survive becomes an advocate of the people when the people become hard-pressed to preserve their ways. Changes in the least suspected areas are the most noticeable. Abnormalities in skins, hides, or internal organs of mammals, birds, or fish are telltale evidence that something in our land or seas is amiss. The hunters will reveal what has been seen or found through word of mouth between hunters, but we bear only so much strength in the world community between hunter and science and the media. It can take years for science to react, but hunter and media bears great strength when they unite in similar interest, and although animals, plants, and insects may be silent in their pain, the world begins to listen. The world is beginning to wait through the eyes of the hunter, and yet, the hunter hopes silently that it is not too late.

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# Long distance migrations: Yellowstone in a global context

Joel Berger

## **Abstract**

*Among our planet's most striking but imperiled ecological phenomena is long distance migration (LDM). Although scientists attempt to understand how and why animals migrate, few long-term conservation strategies have been implemented to maintain LDM for terrestrial species. I collated information on migration for 29 mammals representing 103 populations from five continents. The goal of this paper is to summarize information on species and migration distances, and to outline a relatively simple plan to conserve migration in at least a part of the Greater Yellowstone Ecosystem. In the western hemisphere, south of the subarctic, the migrations that traverse the greatest distances are all situated in the Greater Yellowstone region. These include mule deer, pronghorn, bison, elk, and moose. The pronghorn migration, up to 550 km roundtrip annually, is the longest for any mammal between Tierra del Fuego and subarctic Canada, and it (1) requires use of historic, exceptionally narrow corridors (0.1–0.8 km wide) that have existed for at least 5,800 years, (2) exceeds that of elephants and zebra, and (3) is on par with the LDMs of Asian chiru and African wildebeest. Nevertheless, the accelerated leasing of public lands for energy development has the potential to sever this migration and ultimately cause the extinction of this species from Grand Teton National Park. One way to prevent this is for government agencies to develop a landscape-level solution by creating a national migration corridor. Strategies developed for the Yellowstone region may, however, not work in other parts of the world. In the absence of a more generalized conservation approach, site-specific tactics may have to be applied on a regional and species or population-by-population basis. Otherwise, many truly stunning long distance migrations will be lost within many of our lifetimes.*

## **Introduction**

Despite increasing attention to biological treasures, much of Earth remains unprotected. One such treasure is not the land itself, nor even the diversity of species, but instead, the extraordinary events and processes that play out across vast landscapes. Long distance migration (LDM) is among these, serving to capture the public imagination. LDMs involve not only birds and butterflies that move from and well beyond boreal or arctic landscapes, but also the journeys of whales that navigate seas from Arctic to Mexican waters (Baker 1978).

Nevertheless, massive changes characterize many regions of the world, and among the ecological casualties have been overland treks by herd-dwelling mammals. Well-known losses include those by bison, springbok, wilde-

beest, elephants, and saiga from Asian steppes, African savannas, and North American grasslands. Problematic for today's conservation is the development of effective strategies to maintain these events. While a well-known goal of national parks and other protected areas is to retain some semblance of biological diversity that includes "natural" processes, events beyond protected borders alter the efficacy of reserves (Newmark 1987; 1995), and changing environments impede knowledge about the relative importance of fixed areas on species persistence (Wilcove 1999). Although LDMs are far from the centerpiece of conservation biology, in areas like Yellowstone, Serengeti, and central Asiatic steppes, it is still possible to observe remnants of mega-wildlife and the processes needed to sustain them.

The larger challenge today, however, is not to chronicle the change nor loss of wildlife processes, but to find ways to sustain it. In this paper, I (1) summarize analyses of where and what mammalian LDMs have been lost and remain, and (2) offer a simple, site-specific plan to retain the longest LDMs in the Western Hemisphere that involve species other than caribou. A more detailed analysis is available from Berger (2004).

### *Methods*

**Rationale and definitions.** Although migration has been defined in various ways (Sinclair 1983), I use here a simple operational definition: seasonal round-trip movement between discrete areas not used at other times of the year. Therefore, a wolverine covering a 1,000-km<sup>2</sup> region between mountain ranges throughout the year would not be migratory, because it fails to show seasonal use of discrete ranges. On the other hand, if two discrete regions were used, one in summer and another in winter, and the same patterns of regional use characterized multiple years, these movements would be considered migratory.

Many researchers have discerned between distinct areas of seasonal use and formal geometric centers of seasonally-discrete home ranges. I have relied on these and additional values from the peer-reviewed and gray literature to evaluate migration in terrestrial mammals (Berger in press). The definition, however, of LDM remains problematic, because what may be "long" to some people is not to others. For instance, both European and North American biologists studying moose have suggested a provisional definition that infers "long distance" when one-way movements exceed 10–12 km (Fuller and Keith 1981; Sandgren and Sweanor 1988). Rather than suggesting a one-definition-fits-all approach, I suggest that readers decide for themselves what is "long," and what is not pertinent relative to their own conservation objectives.

**Data and species limitations.** I used information on migration from both published and gray literature. The latter were included because of the many state agency reports and bulletins that contain information on the

movement of radio-collared animals. Nevertheless, the data I report are limited because I have not attempted to summarize all data from all agencies. The measurements I report are average distances for round-trip migrations and, where possible, for the distances traversed by the migratory portions of populations. Data are reported as species' mean (Figure 1) and, when relevant, standard errors (SEm) and 95% confidence intervals (CI).

For the ~10.8-million-ha Greater Yellowstone Ecosystem (GYE) (Noss et al. 2002), the number of migration routes that have changed or been lost during the last 100 years were estimated by relying on recent historical records and published and agency data. There are limitations to the accuracy of some of these data, specified by Schullery and Whittlesey (1995). It is possible, at some fairly coarse level, to indicate what losses in migration have occurred because interest in migration has been great, yielding analyses of track counts, sightings, and estimates of travel routes since the 1950s (Anderson 1958; Craighead et al. 1972; Smith and Robbins 1994; B.L. Smith personal communication). Although pronghorn and bison remain less studied, I have based my estimates of routes lost or retained on point counts of discrete win-

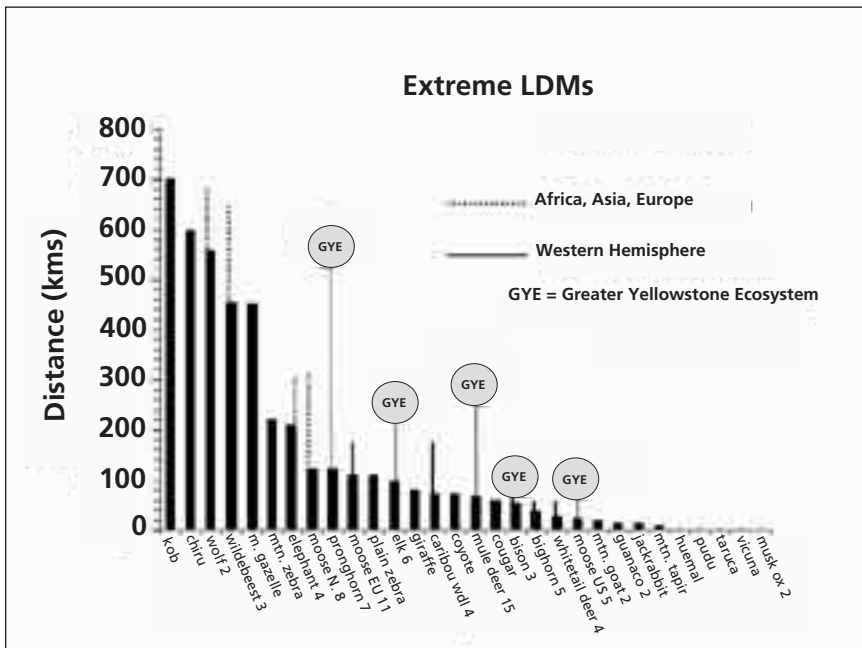


Figure 1. Mean and extreme (extended lines) long distance migration (LDM) round-trip distances for terrestrial mammals (excluding barren-ground caribou). Numbers after name represent studies/species. If un-numbered, data are based on one study (see Berger in press for full references). Moose from geographically disparate regions are: Northern Alaska and Yukon; EU, Scandinavia; U.S., south of Canada.

ter and summer ranges, which in turn were derived from past known locations coupled with landscape-level analyses (see Berger in press).

### ***Results and discussion***

**The geography of extant long distance migrations.** Not surprisingly, there is much variation in the distances that mammals migrate (Figure 1). Although wildebeest and Mongolian gazelles migrate more than 450 km (round-trip), for species that may differ in size by more than 40-fold, distances can be both small and similar. Mountain tapirs and black-tailed jackrabbits both move <12 km, but within-species variability can also be great [e.g., mule deer average 66 km ( $\pm 12.7$  [SEm]; 95% CI = 38–93;  $n = 15$  studies), but in the Upper Green River Basin of Wyoming, distances exceed 285 km (Figure 1)]. At a broader level are barren-ground caribou, with extreme LDMs that average 673 kms ( $\pm 491$ ;  $n = 3$ ; longest = 2,500). By contrast, woodland caribou move far less (km = 71;  $\pm 28$ ;  $n = 4$ ; see Figure 1).

If caribou were to be excluded, of 57 remaining populations representing 17 species, the five with the extreme LDMs rely on lands within or adjacent to the GYE. These include the longest movements for five respective species—pronghorn, elk, mule deer, moose, and bison in North America, and the longest for a terrestrial mammal, pronghorn, between subarctic Canada and Tierra del Fuego.

**The challenge of maintaining ancient bottlenecks in a modern world.** The application of site-specific conservation measures is highly relevant for the sustenance of long distance migrations. Globally, as well as in the GYE, many spectacular LDMs have been lost. Although causes vary, the routes lost by migratory bison, elk, and pronghorn from the GYE can be traced to four primary factors: (1) little tolerance for bison outside protected areas; (2) concentrations of elk on 23 winter feeding grounds in Wyoming; (3) a 20% increase in human population size since the 1990s in the last decade to currently; and (4) associated habitat loss. This last point is central if extreme and highly fragile LDMs are to be retained in the southern part of this ecosystem.

Energy extraction on public lands in southwestern Wyoming, coupled with animal movements through narrow natural bottlenecks, has the capability of disrupting or severing the distinct pronghorn migration that connects the Upper Green River Basin to Grand Teton National Park. This migration has passed through at least some of the same geographically narrow points for at least 6,000 years (Sawyer and Lindzey 2000; Miller and Saunders 2000), but with the recent development of the natural gas industry, hundreds of wells have been constructed, with at least 3,000 more requested during the next few years. Most of the development has occurred so far on pronghorn wintering ranges, but neither these regions nor the bottlenecks have any formal protection. The migration route winds through at least four narrow

corridors that vary in width from a 0.8-km constriction at an elevation of 2,226 m, to a 5-km-long sagebrush gap between floodplain and forest that narrows to a strip only 100–400 m wide. And, before reaching summering ranges in Grand Teton National Park, the migrating herds must pass through a 100- to 200-m constriction between sandstone cliffs, a road, and the Gros Ventre River.

### *A simple plan for conservation*

Conservation efforts beyond the formal Yellowstone National Park boundary emerged well before the ecosystem concept did. In 1898, a plan was advocated to protect important wintering habitats some 300 km to the south (Dunham 1898). Perhaps a more modest plan to protect the migration of pronghorn is to enhance protection for highly sensitive wintering regions, as well as the bottlenecks. These migration routes traverse existing U.S. public lands under the jurisdiction of the Bureau of Land Management and U.S. Forest Service, and can receive true protection if a broader and more formally-designated national wildlife migration corridor is instituted. Although precedent in the U.S. exists for some form of national designation (e.g., scenic highways, historic trails, and rivers), the conservation of an ecological process such as migration, coupled with land and habitat, will remain challenging. It should not. If we wish to sustain treasures that have operated for millennia and have compassion for species other than our own, we will have to do more. Otherwise, we will marvel at another passing event and have little other than stories to share with our children about what our precious heritage once contained.

### *Acknowledgments*

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# Uncommon properties: the historical ecology of cooperation in a ranching valley

Alison Bidwell Pearce

## *Abstract*

*As in many areas of the New West, the environmental and social character of southwest Montana's Madison Valley are changing rapidly as traditional ranchers are replaced on the landscape by retirees, vacationers, and hobby ranchers. Characterizations of ranchers and their relationship to the land vary widely, pointing to the need for an ethnography that addresses what is at stake in the transformation from a ranching economy to a tourist one. I describe the development of land use and tenure patterns in the valley after European settlement in order to situate the family ranch of southwestern Montana within the spectrum of pastoral societies in terms of its use of physical and human resources. I then explore the disturbances to the ranching lifestyle that have led to the competitive replacement of ranchland with recreational development. Finally, I examine how ranching families have reacted to these disturbances and the strategies they have employed to maintain their lifestyle. In particular, I discuss the emergence of cooperative structures among ranchers and compare them with theoretical models of common property institutions.*

Conservation efforts around the world have been patterned after the "Yellowstone model" of natural resource management. Particularly after the 1970s, innumerable parks were established to serve as refuges of biodiversity, with few or no human residents. These efforts have resulted in significant protections for many threatened species. However, anthropologists have documented a spectrum of problems related to parks managed with a strictly top-down, autocratic approach. Too often, parks are created without full consideration of the rights, knowledge, and informal institutions of local people, making them socially unsustainable. At the same time, ecologists have noted that many ecological processes cannot be adequately managed within parks, even those as large as Yellowstone. In response to these limitations of the park model, the conservation community has searched for ways to involve local people in conservation efforts, as well as to link the management of parks with the matrix of land uses that surround them.

The theme selected for the Seventh Biennial Scientific Conference on the Greater Yellowstone Ecosystem indicates an eagerness to bring some of the lessons gained through implementation of the Yellowstone model abroad, quite literally, back home. Indeed, the importance of ecosystem management underlies the entire Greater Yellowstone Ecosystem (GYE) concept. In recent years, conservationists have been searching for ways to manage the collage

of public and private lands outside Yellowstone National Park in a way that addresses their ecological unity. The challenge facing the conservation community in the GYE is to determine how the interests of people living and recreating in the park's ecosystem can be reconciled with the maintenance of wildlife habitat and ecosystems services across this landscape. In short, the question is how broad cooperation in natural resource management can be promoted and facilitated.

In Greater Yellowstone, East Africa, and many other settings around the world, livestock grazing is an important land use in the areas surrounding parks. Parks tend to be found in remote, marginal lands incompatible with crop agriculture, but suited to either ranching or pastoralism. There is much literature, therefore, about the relationship of livestock-raising people to conservation interests, both within and outside parks. It is time that we bring lessons home from that literature, given the often vitriolic debate about livestock grazing in the United States. Since the West did not become "cow free" in '93 [under the Clinton administration's "Rangeland Reform" program] or even 2003, it would seem appropriate to examine how cattle ranchers in the GYE could be brought into the conservation fold. To do so, we must ask all of the same questions we pose about local communities around the world. What types of practices and institutions can minimize the negative environmental impacts of ranching? In what ways do the values of ranchers and environmentalists overlap? What types of incentives would convince ranchers to modify their practices for conservation benefit? And finally, what role does ranching currently play in the maintenance of ecological and landscape qualities?

Environmental historian Donald Worster (1992) made a similar observation in an essay titled "Cowboy Ecology," in which he called for a history that would place U.S. ranchers into a broad context of human ecology. Worster invoked Robert Netting's (1981) study of a pastoral corporate community in Törbel, Switzerland, as a model that could inform the evolution of sustainable ranching in the United States. Netting described a system of pastoral transhumance, in which herds are moved seasonally to take advantage of altitudinal variations in climate. Diverse examples of this adaptation are still found in Europe and throughout the world. In Törbel, dairy cows grazed communal pastures of the high elevation alp during the summer, under the supervision of a small group of shepherds. The majority of the population, meanwhile, made intensive use of lower-elevation private lands during the short growing season to raise grains, vegetables, and winter feed for livestock. Only members of the corporate community, established as early as 1224 A.D., had rights to graze their livestock on the alp. Any animal that was grazed on the alp during the summer had to be supported through the winter on private land in Törbel, or its owner would be subject to community-imposed fines. This simple rule, and the community pressure associated with it, linked

the use of common land with the use of private land, lending social and ecological stability to livestock production.

The case study of Törbel has become a classic example of a well managed common property regime. In response to Garrett Hardin's (1968) essay "The Tragedy of the Commons," an enormous literature has addressed the gap between individual rationality and collective outcomes inherent in shared resources (Knudsen 1995). Cases have been documented from around the world of communities that have established and enforced rules to prevent individuals from overexploiting resources to the detriment of the common good. Common property theorists have worked to understand the conditions under which such cooperation emerges, the resilience of common property institutions under changing conditions, and the potential relevance of "traditional" common property institutions to increasingly complex environmental conflicts. Because of its broad applicability to environmental issues, common property theory has become a popular framework for understanding the challenges facing conservation efforts.

Worster (1992) used the case study of Törbel and the lens of common property theory to examine the implications of tenure relationships for the sustainability of livestock grazing in the United States. He noted that various surveys have shown that range conditions have historically been superior on national forest lands, as opposed to private lands or unregulated public domain. He argues that the "community" of stakeholders interested in range health on the national forests (public resource managers, ranchers, and environmentalists) may guide grazing toward sustainable levels of use in a way similar to the corporate community of Törbel. Worster's application of common property theory to rangeland management in the U.S. is an important step toward employing comparative human ecology in our understanding of domestic environmental issues. However, as Worster recognized, the analogy between a corporate community and stakeholder groups in national forest management is imperfect. In his broad analysis, Worster attempted to extract "big picture" lessons for conservation by focusing upon the ways in which these two situations were similar. However, there may be as much to learn from a careful analysis of how resource management in the West departs from classic common property regimes. In order to truly understand the implications of different institutional arrangements, detailed studies of particular resource "communities" in the West must be undertaken with an eye toward underlying tenure relationships and cooperative strategies.

My dissertation, in part, takes up this challenge by comparing the development of land tenure, grazing systems, and social institutions in a valley of southwestern Montana with those that Netting observed in Törbel. The Madison Valley sits within the northwestern part of the Greater Yellowstone Ecosystem. With a valley floor at about 6,000 feet above sea level, and alpine

meadows above 8,000 feet, the Madison Valley is physiographically similar to Törbel. The social history of these locales, however, has differed in various ways that have important implications for patterns of cooperation in resource management. The focus of my study are the family ranchers who own, work, and gain their living from land in the valley, as opposed to the hobby ranchers who are largely nonresidents. Netting (1981) speculated that the degree of social and ecological stability evident in Törbel was maintained because no one had an interest in turning the place into a ski resort. The Madison Valley case study, where family ranchers share the landscape with hobby ranchers, flyfishers, and assorted others speaks to how cooperative strategies may change as demographic and land use patterns shift.

Netting made the key insight that the resources in Törbel that were controlled as private property and those held communally differed in ecological characteristics, such as density and predictability of resource production, as well as difficulty of enclosure. Patent data from the General Land Office shows that this ecological logic of resource control also held true in

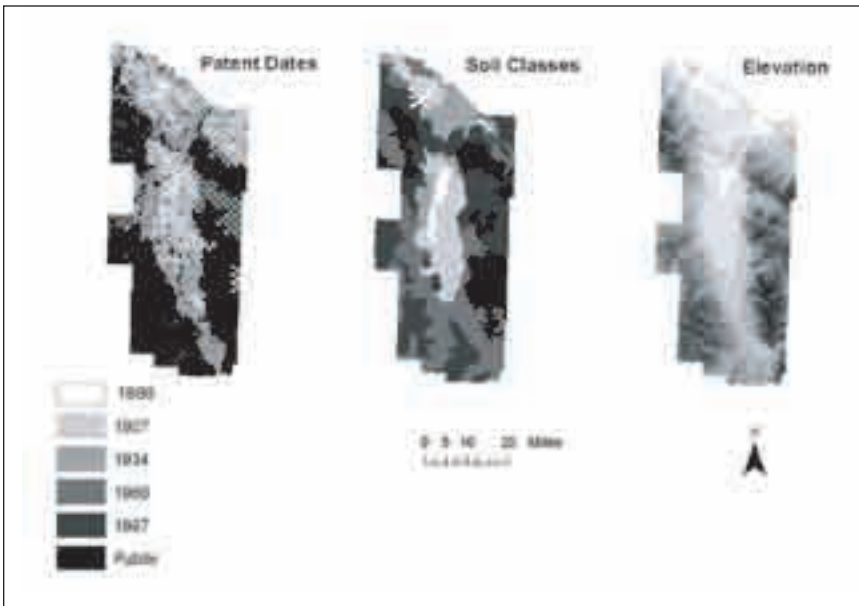


Figure 1. The map on the left shows land parcels as they were historically patented with the General Land Office. The parcels depicted in the lightest shades were patented earliest, and the darkest shade patented last. The soil classes in the center map were generated using the National Resource Conservation Service land use capability classes. The darkest shades indicate soils that are most compatible with agricultural uses. The map of elevation on the right was generated using the National Elevation Dataset. The dark shades indicate the lowest elevations, from 1,280–1,495 meters; the white indicates the highest elevations, from 3,221–3,437 meters.

the Madison Valley. The lefthand side of Figure 1 is a map of parcels in the Madison Valley as they were patented from the public domain. When this land patent map is compared with maps of soil classes and elevation, it is clear that the lands patented before 1880 by the first agricultural settlers were in the low elevation areas with the best soils, making them suitable for intensive agriculture. In contrast, the public domain that remained after lands were closed to homesteading is at high elevation with poor soils. Much of the land with intermediate ecological characteristics was not patented directly to ranchers or farmers, but to the Northern Pacific Railroad by an act of Congress. The company would then sell these lands in order to finance their capital investment in the railroad. The tendency for lands at lower elevations with better soils to be patented first is still evident in these railroad lands, however at a coarser scale. It is worth noting that much of the land patented to the Northern Pacific at the highest elevations was never purchased from the railway by ranchers or farmers. Instead, this acreage was eventually purchased by real estate development corporations.

Aside from land ownership, the development of seasonal grazing patterns in the Madison Valley also mirrored the pattern of transhumance common in Europe. As the beef cattle industry took hold in the Madison Valley in the 1860s and 1870s, the land remaining in the public domain was used seasonally as a grazing commons. In late spring, ranchers drove herds into the upper Madison, where the cooler microclimate provided ideal summer grazing conditions. As more people and animals entered the valley, ranchers began to trail their livestock up into the mountain foothills and eventually to alpine meadows for summer grazing (Wyckoff and Hansen 1991). Associations of ranchers hired a couple of riders to supervise the combined herds of cattle on the summer pastures. In late fall, the ranchers cooperatively rounded up the cattle and cut them from the large herd by brands. Each rancher drove his cattle to a home ranch, where they could be more closely cared for through the winter.

It is not surprising that much of the ground in the upper valley and the mountains tended to remain in the public domain. Heavy snow and low winter temperatures made these areas unsuitable for year-round livestock husbandry. With such a short growing season, these areas were also not conducive to raising crops. However, the summer forage available in the upper valley and alpine meadows was instrumental in the success of ranch operations. By herding their livestock into the public domain in late spring, ranchers freed up their private land for intensive use during the summer growing season to raise winter feed. As early as 1864, the settlers of the Madison Valley were cutting and stacking hay for their cattle (Yeckel 1966). This precaution would prove critical in years of drought and harsh winters.

It is important to note the very significant differences between the system

of transhumance that characterized the beef cattle industry in the Madison Valley from its inception and the open range “beef bonanza” that has received so much attention in Western literature. Many authors have described the pattern of private land claims on the northern plains that served to control access to water in order to monopolize use of vast areas of rangeland in the adjoining public domain. In this type of operation, cattle were essentially left to roam freely year-round, and the uses of private land and public land were indistinguishable. In contrast, the use of private and public domain land in the mountain valleys of southwest Montana were coordinated seasonally in order to produce diverse commodities and to reduce the risks associated with an unpredictable environment.

It almost seems that the early mountain ranchers foresaw the devastation that would grip the plains two decades later, in the 1880s, when ranch operations were not prepared to feed their cattle through a bitter winter. Their practices of establishing significant private lands, investing in improvements on those lands, and feeding hay through the winter would eventually become standard throughout the U.S. livestock industry. There are no historical documents that explain why these settlers chose to take such precautions. However, most of those who took up land in Madison County during this period had been raised on farms either in the East, Midwest, or in Europe, and had teamed overland across the plains to reach Montana (Bancroft 1885). It is reasonable to speculate that these settlers were imitating traditions of pastoralism passed down from Europe, such as those that Netting observed in Törbel. They certainly did not carry the tradition of open range grazing that would characterize the later migration of stockmen from Texas and the Southwest to the northern plains. The local market in Virginia City also encouraged early settlers to focus livestock raising on dairy production, because milk and cheese were scarce, wild game still plentiful. Due to the nutritional requirements of lactating cows and the labor requirements of milking them, dairy cows must be kept close to the home ranch and fed hay. It is likely that the practice of feeding hay naturally carried over to beef cattle as settlers gradually converted their dairy stock to beef herds.

Finally, although the early ranchers of the Madison Valley were certainly market-oriented entrepreneurs, they were not speculators. Most of the early ranches in the Madison Valley were owned, operated, and lived on by families. By comparison, the owners of livestock operations on the northern plains were the nineteenth-century equivalent of venture capitalists. They were seduced by the notion of easy profits requiring little investment. These owners were widely separated from the hired labor that ran their livestock operations, both in terms of geography and information flow. Like the tulip craze or any other bubble in international markets, the beef bonanza would also bust, with severe economic and ecological consequences. During the



harsh winter of 1886–1887, the cattle barons on the plains lost up to 75% of their herds. However, the more conservative ranchers in the Madison Valley only suffered losses of about 6% during these years (Montana Livestock Journal 1887).

Despite these differences, there were also important similarities between the transhumant pattern of early ranch operations in the Madison and the open range livestock industry. Unlike the corporate community in Törbel, neither the ranchers in the Madison Valley nor the cattle barons of the plains had any legitimate means of excluding other users from the public domain, since the land was by law federal property. Nor could they regulate how many animals each rancher sent to the summer pastures. Because both the mountain and plains ranchers were market-oriented, periods of low beef prices encouraged them to hold over animals for another year rather than selling. Indeed, low prices in 1885 and 1886 contributed to the overstocking of the northern plains and left the herds there more vulnerable to the harsh weather of 1886 and 1887. The public domain in the Madison Valley may have been somewhat less susceptible to this phenomenon because the early ranchers knew they could only support a certain number of cattle through the winter on their home places. However, crowding of the public domain became a problem in the valley as settlement progressed.

While federal tenure precluded community regulation of a grazing commons in the Madison Valley, the government also initially did little to actively manage the public domain. Although a leasing program was initiated in the early twentieth century, federal policies favored the disposal of land and wide distribution of public lands benefits for many decades thereafter. Hence, the public lands in the valleys were more open access lands than commons, just as they were on the plains. At the same time, the public domain continued to shrink as new private claims were made under the Homestead Act. While early Madison Valley ranchers may have cooperated in order to mix, care for, and later round up their animals with a minimum of social conflict, they could neither enclose nor regulate a grazing commons as did the herdsmen in Törbel. While they never saw the kind of devastation that occurred on the northern plains in the 1880s, there were significant ecological consequences of this weak tenure system. Beginning in 1919, and with increasing frequency after 1923, the U.S. Forest Service (USFS) reported chronic overgrazing of the Madison ranges.

Faced with irrefutable evidence of resource damage across the West, the USFS suspended further distributions of grazing privileges after World War II. The agency arrived at a rule of use similar to the one in effect in Törbel through its commensurate property policies. The particular commensurability rule in use differs among the various USFS regions. In Region One, ranchers with USFS leases must demonstrate that they own enough private land



in the immediate area to provide at least two-thirds of the forage and hay requirements of their herd during the nine months of the year that the forest is closed to grazing. The similarity of this rule to the governing of the commons in Törbel is striking. However, the privilege to graze public land in the U.S. extends from the government, rather than from community membership. The USFS arrived at a pragmatic sharing of tenure with local populations that Leigh Raymond (2000) has called “refined property.” Ranchers enjoy secure long-term leases with very moderate fees. However, their use of the public ranges is subject to being revoked or altered at the discretion of USFS land managers. In practice, the USFS typically shortens the length of the grazing season when resource damage is apparent, but rarely revokes permits.

The development of public lands grazing in the Madison Valley essentially mimicked a common property regime in its use of physical resources, but not in its social relations. Third party management has had important implications for patterns of cooperation in the management of the USFS ranges. During my fieldwork in the Madison Valley, I observed that most ranchers view cheating by their fellow ranchers on public ranges (sending too many animals, for example) as something to be handled by the USFS. There is very little peer pressure, or what Hardin (1968) called “mutual coercion,” among ranchers who share the public domain, although they recognize the potential for resource damage when their cohorts cheat. Despite this lack of peer control among ranchers, there is much evidence that USFS regulations have improved range health since World War II in most national forests.

These improvements, however, have been enormously costly when the infrastructure of the USFS bureaucracy is compared to the simple and direct social controls employed in Törbel. The management of the national forests has become increasingly costly since the 1970s, as more people nationwide take an interest in these lands for a variety of reasons. USFS land managers must not only ensure adequate production of forage for livestock, but also healthy streams, abundant game animals, access to trails and campsites, and innumerable other conditions that the public demands.

The ability of the federal bureaucracy to address a large sphere of interests is certainly an advantage for ecosystem management that traditional common property regimes lack. We hear nothing from Netting (1968), for example, about the impact of highly cooperative pastoralists on the wolf population of Törbel. Yet, in the Madison Valley and nationwide, USFS employees complain that their resources are wearing thin. Range specialists report that they spend so much time processing paperwork related to public comments, environmental impact statements, and lawsuits that they cannot keep up with the monitoring tasks that are vital for good management. There are few incentives or models for how various stakeholder groups might cooperate and negotiate with each other in order to reduce the burden on the fed-

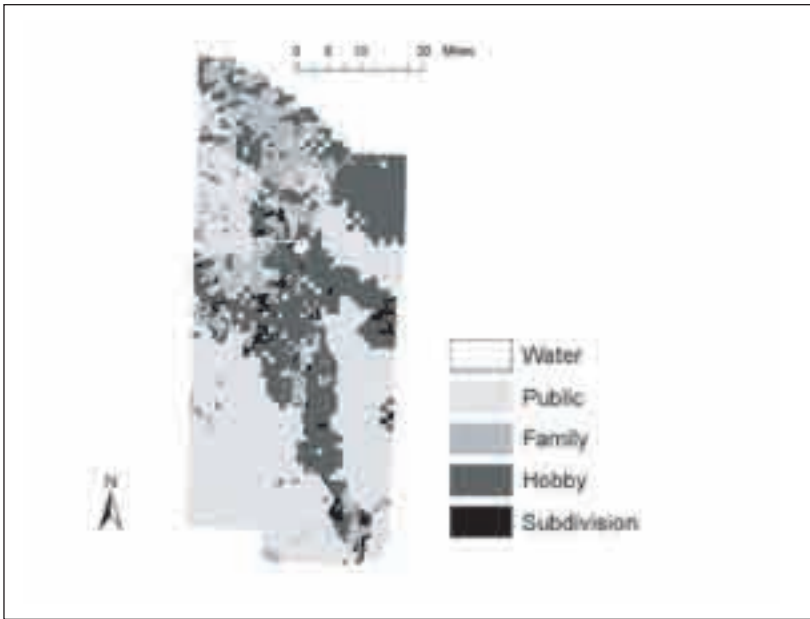


Figure 2. Land ownership patterns in the Madison Valley for the year 2002. Family ranches are those lands owned and operated by families who gain a significant portion of household income from ranching. Hobby ranches are properties larger than 40 acres that do not qualify as family ranches. Subdivisions are residential properties that are less than 40 acres. Most of the public lands at elevation are managed by the USFS, with some Bureau of Land Management and State of Montana lands in the valley floor. The base data of parcels and owner names is from the Montana Cadastral Mapping Project and the Sonoran Institute. Information for classifying the parcels was obtained through interviews with Madison Valley residents.

eral bureaucracy. Efforts to do this have often been challenged in the courts as attempts to undermine the public interest in federal lands. However, there may still be ways to infuse resource management in the West with some of the direct and personal methods of cooperation and control of a traditional common property regime.

In fact, the same demographic changes that have made USFS management more costly have motivated new types of cooperation among family ranchers in the Madison Valley. Since the 1970s, the economics of ranching have been deteriorating, while land prices have risen sharply as vacationers, retirees, and hobby ranchers buy property in the valley. The map in Figure 2 depicts land ownership patterns in the Madison Valley in 2002. Family ranches only account for 33% of the private land area, while hobby ranches make up 59% of private lands and subdivisions account for 8%. The conversion of family ranchland to hobby ranches, and especially to subdivisions, has

various negative impacts for the family ranchers that remain. Socially, these land use changes represent the deterioration of a community that values and supports a ranching lifestyle. The transition also has economic implications for family ranchers, such as a scarcity of pasture land available for lease. Ecologically, new land development contributes to the spread of noxious weeds that degrade the forage value of grasslands. However, my interviews with ranchers reveal that the most profound impact of family ranch conversion may be an aesthetic one. While not essential for ranching as an economic pursuit, the open space provided by an agricultural landscape appears to be vital to the persistence of ranching as a preferred lifestyle.

Many authors have noted that people choose to become or remain ranchers for quality of life reasons, rather than to maximize their income. However, unlike hobby ranchers, the family ranchers of the Madison Valley cannot afford to operate without an eye toward profitability. The calculus of how much economic sacrifice is worth the lifestyle amenities of ranching obviously differs among individuals. Some have opted out of ranching more quickly as landscape conditions change and the potential profits of selling their land increase. Their choice almost inevitably results in the conversion of family ranchland to either subdivision or hobby ranching. Each rancher who opts out, particularly those who sell to developers, makes the landscape that much less attractive for remaining family ranchers.

The viability of the ranching lifestyle, then, depends upon social, economic, and ecological conditions on a landscape scale. Even those ranchers who operate entirely through the use of private land have an interest in the patterns of land use that surround their ranch. Essentially, family ranchers share a common pool resource, made up of the landscape conditions generated through their private ownership of ranchland. However, while ranchers might prefer to return to a landscape populated exclusively by fellow family operations, this is clearly impossible. Much land has already been converted to hobby ranches and subdivision, and there is virtually no way for family ranching to recover ground. The only possible solution to the cycle of ranchland conversion lies in increasing the compatibility of other land uses with the maintenance of family ranches.

Family ranchers in the Madison Valley, then, find themselves embedded within a double commons. They have an interest in the commons of remaining family ranches, but also in the "mixed commons" of landscape-scale conditions generated by all types of land ownership and use. It is easy to imagine a common property institution that ranchers might devise to prohibit each other from subdividing their land or selling to outsiders. Family ranchers are reluctant, however, to impose limitations on each other's use of private land in a setting where they have limited economic and political power. The viability of their ranching lifestyle is already highly dependent upon the conditions

generated by other land uses. For example, much of the open space in the valley that family ranchers value is currently provided by large hobby ranches. It would make little sense to limit their own land use flexibility if they could not also influence their other neighbors.

A traditional common property regime, made up of peers who use and value resources similarly, is not an option for the preservation of family ranches in the Madison Valley. Instead, family ranchers must create institutions that address the maintenance of family ranches through cooperation with other types of landowners. The actors in this mixed commons tend to share some of the same interests as ranchers, but not others. Most notably, almost all landowners in the Madison Valley express a concern for the maintenance of open space as an aesthetic value. In other cases, the values of family ranchers may complement, but not precisely overlap with, the values of other landowners. For example, many “newcomers” are concerned about the maintenance of wildlife habitat in the valley. The family rancher’s strong interest in rangeland health for forage production may allow for cooperation on this front.

A group of family ranchers, called the Madison Valley Ranchlands Group (MVRG), has been experimenting with an eclectic set of strategies to negotiate the imperatives of this mixed commons. Their efforts are aimed at lobbying for the value of preserving family ranchland and the conditions that support it in the valley. In order to do this, they communicate the ways in which family ranches address the values of other landowners, most notably through the maintenance of open space and wildlife habitat (see Table 1). This group also tries to encourage newcomers to adopt some of the attitudes and values of family ranchers. The strategies of MVRG establish direct personal responsibility between family ranchers and other landowners in working toward common or complementary goals.

**Table 1: Examples of prevalent family rancher and hobby rancher values in a variety of domains.**

	Social	Economic	Ecological	Aesthetic
Family rancher	rural community	ranch profit	forage production	open space
Hobby rancher	quiet retreat	tax concerns	wildlife habitat	open space

The clearest example of this is the Collaborative Land Stewardship (CLS) program, in which MVRG facilitates land leases between family ranchers and hobby ranchers with available pastures. The program addresses the economic concerns of family ranchers who are finding it more difficult to lease land when they are short on spring or fall pasture. The financial aspects of the lease are left to the two parties. However, MVRG develops stewardship plans for the leased land, as well as for the family rancher’s home ranch, with the help of a range advisory board that includes resource managers from the

public and private spheres. The success of the program is dependent upon convincing hobby ranchers that family ranches are an important part of the landscape, and that a grazing program can improve the ecological condition of their own land. For their part, family ranchers agree to expose their operations to outside scrutiny and make management changes based on ecological values that may have little to do with putting pounds on cattle.

Through strategies like the CLS program, MVRG has made significant progress toward bridging the values of family ranchers and other landowners. They have convinced many landowners in the Madison Valley of the benefits of preserving family ranches. As the group has evolved, several hobby ranchers and subdivision residents have become actively involved in the group's work. The family ranchers involved with MVRG have also increasingly come to perceive themselves as stewards of whole ecosystems, rather than simply livestock husbands. While most farmers and ranchers take pride in caring for their land, the family ranchers of MVRG are steadily incorporating a broader range of ecological conditions in their assessment of land health. Of course gaps still remain, but it is notable that MVRG has not made any kind of overt protests about the recovery of wolves in the Madison Valley. While underlying values may be slow to change, opportunities for collaboration like the CLS program provide incentives for family ranchers to modify their practices in ways that benefit ecosystem management. These locally-brokered modes of cooperation involve very few transaction costs, making them an efficient way to promote conservation.

Despite its successes at promoting cooperation, MVRG cannot be called a true common property institution. The family ranchers and their collaborators cannot enclose the landscape-scale conditions that they seek to influence. Because of this inability to establish strong tenure arrangements, most of MVRG's strategies rely on voluntary cooperation, rather than enforced rules. The one program sponsored by MVRG that is rule-based and most resembles a common property institution has been slow to progress. MVRG has sponsored a series of meetings and studies aimed at developing a community-initiated land use plan for the North Meadow Creek area, where several family ranches have been subdivided in recent decades. So far, the mix of family ranchers, hobby ranchers, and subdivision residents have not been able to arrive at any consensus about where the boundary of the land use planning district should be drawn, nor what specific rules should govern growth within it. Ironically, although the program was spearheaded by MVRG, the family ranchers within the North Meadow Creek area are most reluctant to sign off on a plan.

It is tempting to say that a difference in cultural values separates the family ranchers from the newcomers in the North Meadow Creek area. It would be easy to write them off as private property-crazed Sagebrush Rebels with no

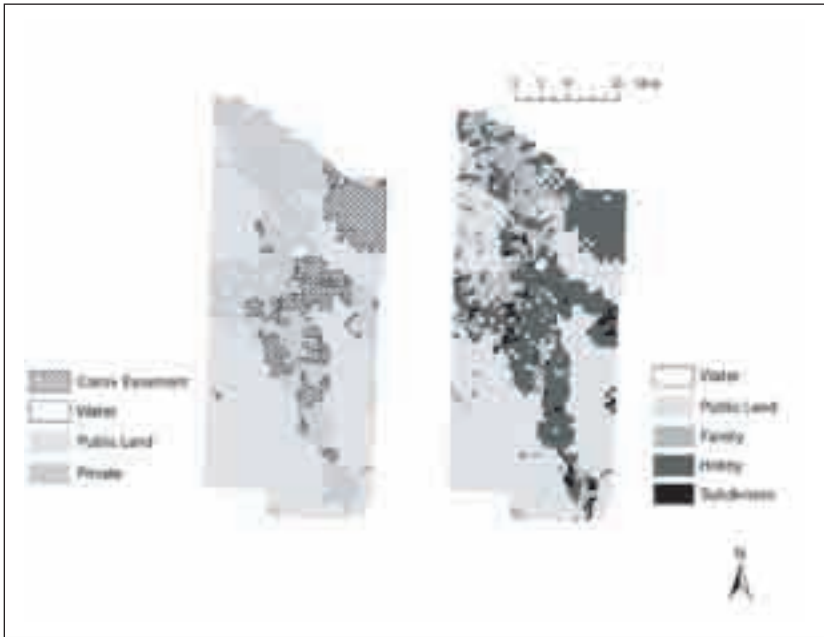


Figure 3. The land ownership map from Figure 2 is compared with a map of conservation easements in the Madison Valley. Data was obtained from the Montana Cadastral Mapping Project, the Sonoran Institute, and the Madison County Planning Office.

interest in conservation. However, I think that the preoccupation with property rights among family ranchers in the Madison Valley can be better understood as a result of their position within the mixed commons. Land and the flexibility to make decisions about its use represent something very different for family ranchers—not in cultural terms, but in political economic terms. While family ranchers enjoy many amenities of rural land ownership, their land typically represents the sum total of all the capital they accumulate in their lives. For most other landowners, their property represents a decision to purchase a luxury good. For those with large hobby ranches, it may even be a way to address a tax problem. Family ranchers face more risk than their other neighbors in giving up rights to development through land use planning.

Few conservation tools have addressed this reality of family ranches. Conservation easements have often been touted as a way of preserving family lands. However, Figure 3 shows that this is not the case in the Madison Valley. Conservation easements are used almost exclusively by hobby ranchers, typically as donations that generate tax write-offs. With so many hobby ranchers willing to donate easements, there are few incentives for conservation groups to purchase easements from the family ranchers who cannot afford to donate them. While Figure 3 shows a large amount of “protected” land in the

Madison Valley, lessons from around the world impel us to investigate that classification in greater depth. The most resilient environmental protections appear to come from the strong local interests of people whose livelihood is rooted to the land. The fact that family ranchers have been the most active in promoting cooperation in ecosystem management in the Madison Valley attests to the importance of working landscapes for conservation.

The type of “mixed commons” found in the private lands of the Madison Valley and countless other settings in the New West could be very useful to ecosystem management efforts across working landscapes. If we can arrive at institutions to govern mixed commons, they could combine the best aspects of our public lands with the advantages of traditional common property institutions. The assemblage of landowners represented in the Madison Valley reflects the broad interest groups that clamor for attention in the management of public land like national forests. However, because these individuals share a particular landscape, there may be sufficient incentives for them to negotiate and cooperate with each other in the direct and personal way that makes traditional common property institutions so effective. In this way, we might devise models of community-based conservation that address ecosystem services and integrity, rather than merely the abundance of a particular resource.

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# Landscapes of tradition, landscapes of resistance

Don Callaway

## **Abstract**

This paper was part of a panel that included J. Terrence McCabe, a University of Colorado anthropology professor; lawyer Jeanette Wolfley and Idaho State University instructor Drusilla Gould, both members of the Shoshone-Bannock Tribes; NPS anthropologist Don Callaway; and Herb Anungazuk, an NPS anthropologist and Native Alaskan. The panel was submitted under the following abstract:

*The creation of national parks in the Greater Yellowstone Area (GYA) and East Africa displaced mobile, indigenous tenants. Over a century has passed since Native Americans historically associated with the GYA were removed to reservations and ceased practicing traditional livelihoods, though many traditions associated with their identities, and some with their livelihoods, continue to survive. In contrast, Maasai pastoralists continue to live in protected areas such as the Ngorongoro Conservation Area in Tanzania (adjacent to Serengeti National Park), but conservation policy has changed their land use practices, among other things. They cannot hunt lions or graze their livestock in Kenyan and Tanzanian national parks/reserves, most of which are located inside Maasailand. Eligible rural native and non-native residents of most Alaskan parks, on the other hand, by federal law can continue to engage in a subsistence way of life. Fishing, hunting, and plant gathering for Alaska natives is considered integral to their cultural, economic, and physical existence. In the course of this panel, presenters will explore historical reasons for these differences; identify some examples of traditional ecological knowledge and management regimes; define “traditional;” address some commonly-held misconceptions about mobile peoples and conservation; speak to the role of ethnographic research in informing policy decisions; and explore ideas and models for ethical conservation strategies that protect wildlife as well as the interests of indigenous peoples.*

## **Introduction**

This paper has two objectives. The proximate goal is to present a case study on the cooperative management plan for the Western Arctic Caribou Herd (WACH) in Alaska. It is hoped that the details from this case study will provide guarded optimism for answering the question, “Can Conservation and Cultural Agendas Co-exist?” This issue arises from the considerable tension between the formation of “protected areas” and the status of indigenous populations that are, or were formerly, affiliated with these protected areas.

This paper will also suggest that conservation goals and the legitimate rights of indigenous people are not only compatible, but also intrinsically related. Justifying this assertion is not entirely clear cut. Conservation ethics

span a broad range of constituencies, and it might be difficult, for example, to see how proponents of “wilderness” values can be reconciled with indigenous entities that wish to reconnect with their traditional lands. However, it is hoped that an awareness of the underlying commonalities between these positions will prevail over the existing tensions and suspicions. The following brief digression with an example from Alaska of “traditional” versus “commodity” views of the environment will indicate an ethical, political, and cultural solidarity between the conservation values espoused by the National Park Service and many indigenous groups, particularly those in North America.

*Conservationists and indigenous entities: a shared ethic of non-commodity values of the landscape*

One aspect of a multi-method research methodology designed to study the social and cultural impacts of the Exxon Valdez oil spill involved the interviewing (and re-interview) of some 2,728 informants from communities in the Gulf of Alaska. This research indicated that personal, psychological, and community impacts resulting from the spill varied dramatically depending upon values imputed to the landscape.

Jorgensen (1995), in a telling analysis of the consequences of the Exxon Valdez oil spill, demonstrated empirically that Natives and non-Natives, with respect to environmental ethics (among other ethics), are organized very differently on key social features—ideas, sentiments, and acts. These differences had important effects on how the outcomes of the spill were perceived. Jorgensen noted that in the same environment, Natives had greater knowledge about species within the landscape than do non-Natives, and that Natives more frequently identified spiritual values rather than commodity values as the environment’s preeminent attribute (Table 1).

**Table 1. Ethics and significant symbols associated with environment.**

	Natives	non-Natives
Environment or its features (rivers, forests, coal seams, oil deposits, fish, sea mammals) are viewed as commodities, i.e., items whose value is established in the marketplace and are available for purchase or sale.	0%	31%
Environment or its features are viewed as being endowed with spirits with which significant cultural symbols are associated. The general environment is not conceptualized as a commodity.	46%	9%
Combination of commodity and spiritual views.	54%	60%

The frequency responses in different cells of the table indicate that no culture exhibits a homogenous response from all its members. What is clear from the survey research results is that nearly half the indigenous respon-

dents viewed the landscape as solely possessing spiritual and non-commodity values, whereas less than 6% of the non-natives felt the same way. One might speculate that the minority 6% of non-natives held values similar to those of wilderness advocates.

*Conservationists and indigenous entities: other reasons for solidarity*

The pragmatic justification for such solidarity in Alaska is substantiated by a number of facts, including the size of Alaska's conservation areas, the presence of regulatory incentives (ANILCA, to be discussed below), modest enforcement budgets, and a lack of political support for enforcement actions. All these factors contribute to a situation where the actual management of natural resources often devolves to local rural communities. These communities use traditional knowledge and values to create an indigenous management regime. Thus, the absence of a formal western management regime does not mean the absence of resource management.

In Alaska, many rural/indigenous communities actually hold the NPS in high regard. They believe the NPS holds values similar to their own concerning the non-commodity and spiritual values of the resources they depend on. In addition, many (but not all) regard the NPS and its bureaucratic infrastructure as a buffer between themselves and the competition for resources from other interest groups, such as sports hunters. The legislative structure of the Alaska National Interest Lands Conservation Act (ANILCA) provides access to parks only for rural, traditionally-affiliated, subsistence users. Parks can thus be a kind of refuge for natural resources harvested by indigenous communities in Alaska. Under ANILCA, sports hunters have access only to preserves. The resource management issues in Alaska between indigenous communities and western management regimes provide an exceptional testing ground for the NPS to develop its skills in creating partnerships, in consensus building, and to engage in what has been termed "ecosystem management."

*Ecosystem management*

The proximate goal of this paper is also embedded in a larger intent, a polemic in support of "ecosystem management." In 1994, as part of the Vail Agenda, a draft report entitled "Ecosystem Management in the National Park Service" was published (Dennis 1994). This report defined ecosystem management as "a collaborative approach to natural and cultural resource management that integrates scientific knowledge of ecological relationships with resource stewardship practices for the goal of sustainable ecological, cultural, and socioeconomic systems." The report outlines nine principles of ecosystem management for the NPS:

- Multiple boundaries and scale;
- Natural resources, biodiversity, and conservation biology;
- Cultural resources and traditions;

- Social, cultural, economic, and political factors;
- Information management/scientific basis for decisions;
- Partnerships;
- Interdisciplinary management approaches;
- Long-term ecosystem management foci; and
- Adaptive and flexible management.

These principles appeal because they convey the complexity involved in resource stewardship. For example, although Alaska is blessed with parks, preserves and wildlife refuges of considerable scope, many of the species that call Alaska parks home are migratory. Neo-tropical migrants form a huge proportion of Alaska's avian inventory, and the status of their winter habitat (and stopover areas) is of enormous, intrinsic concern for Alaska parks. For the state as a whole, 60% of the subsistence harvest biomass comes from anadromous fish.

With respect to caribou, the subject of this paper's case study, many herds migrate across park boundaries. In fact, some caribou herds traverse international, state, private, native, various federal, and multiple park jurisdictions. In many cases, the actions of no single park can insure the conservation of a resource. Effective management depends on negotiation and facilitation of a consensus among multiple actors. Such cooperation is often difficult to obtain as different actors have different mandates, values, and attitudes.

In addition to conflicts over the goals and values of resource management, many differences exist as to the interpretation and meaning of seemingly straightforward concepts. Whereas the park service may view the concept, "natural and healthy," in terms of biological processes leading to an equilibrium state or carrying capacity (independent of human manipulation), local indigenous communities may view some resources, e.g., brown bears, as historically being "natural and healthy" at levels far below carrying capacity. In addition, they may prefer to maintain this lower threshold through means of human harvest.

Other facts point to the permeability of Alaska's park boundaries. The impact of global warming in Alaska is profound. A one-degree rise in the mean temperature at the equator becomes a three-degree rise in subarctic and arctic latitudes. Park ecologies are literally changing under the feet of resource managers as the discontinuous permafrost melts and boreal forests move north. Profound changes in the pack ice impact access to and the availability of marine mammal species for subsistence hunters and place increasing pressure on park-managed land mammals (see Callaway 1999). As habitat rapidly changes, even the Western Arctic Caribou Herd is moving south and west into areas in which it has not been seen for centuries.

Integral to all this discussion is the awareness that management of natural resources is a process framed by social attitudes, cultural beliefs, multiple

jurisdictions and a variety of vested economic and political interests. The NPS has long realized that catalyzing the sub rosa values of stewardship inherent in our neighbors is critical for the survival of protected areas, as was ably enunciated in a draft report generated for the Vail Agenda: “The most troublesome complication to the National Park Service stewardship efforts is the increasing number and severity of human-induced threats to NPS resource stewardship. Widespread land development, increasing human population and global demand for natural resources, and changing dynamics of communities and economies place enormous stress on natural and cultural resources” (Dennis 1994). With respect to ameliorating the tensions between indigenous cultures and the conservation ethic of protected areas, the draft, “Ecosystem Management in the National Park Service,” Dennis (1994) makes a number of suggestions:

- Reduce the barriers to ecosystem approaches that result from artificially separating cultural and natural resources and strive to replace them with collaborative planning, research, and resource management efforts that reflect real-world integration of material, human, and natural features;
- Gather intimate knowledge of traditional resource use that will allow NPS managers to respond to stakeholders in culturally appropriate ways;
- Initiate broader data collection to assess better the needs, attitudes, and values of local communities;
- Develop an ethnographic information base, in collaboration with traditional resource users, to help NPS managers understand the cultural dynamics that affect the resource goals and decisions of peoples with traditional associations with park resources;
- Develop the capacity of employees and partners to understand the social, economic, and political factors influencing ecosystem stakeholders and resources; and
- Develop a broad training program to assist managers in initiating and maintaining partnerships, including social learning, conflict management techniques, legal requirements, and capacity to understand cultural values and traditions, including ethnography.

This paper contends that the principles of ecosystem management form a grounded philosophy for many of the major issues faced by protected areas in Alaska, Yellowstone, East Africa, and beyond. The paper also contends that cooperative management, decision analysis, and value-based decisionmaking are important tools in implementing this philosophy.

#### *Alaska parks versus national parks in the lower 48*

Protected areas have become, in many regions of the world, synonymous

with what is now termed the “Yellowstone model.” That model, as described by Stan Stevens (1997, 28), consists of protected areas where strict nature protection is the primary goal, and where settlement is prohibited and both subsistence and commercial uses of natural resources are banned. A contrast to this “exclusionary model” is the theme “benefits beyond boundaries,” from the IUCN World’s Parks Congress, the goals of which range from ensuring that communities living around protected areas receive economic benefits from those areas (South Africa) to those communities’ getting their land and resources back (Koro 2003).

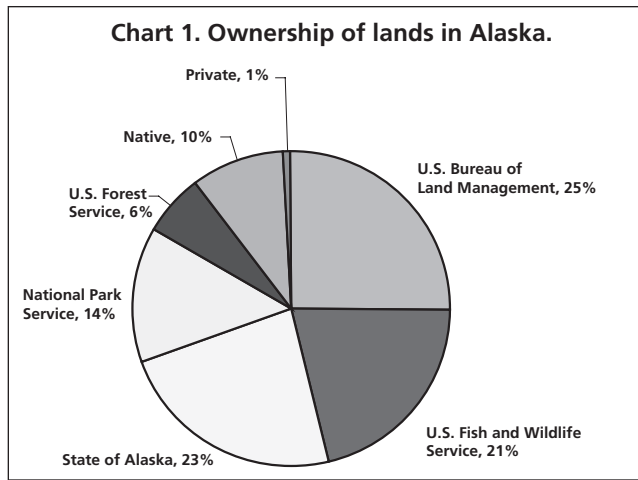
To understand the details of the Alaska case study, it is crucial to realize the historical and legal circumstances that make “benefits beyond boundaries” integral to the Alaska conservation experience. As Jim Igoe (2004, 48) has noted, “The NPS in Alaska is dealing with large areas of wilderness from which people have never been removed. With a few exceptions, Native Alaskans (*sic*) were never placed on reservations.” This historical fact, coupled with the legislative background of the disposal of Alaska lands, provides the context for this case study.

### ***Background***

Two thirds of Alaska’s 364 million acres are in conservation units (Chart 1). With respect to National Park Service (NPS) lands, one park, Wrangell-St. Elias, is over 13 million acres. Seven additional parks and preserves are larger than Yellowstone’s 2.2 million acres (Table 2). Total park lands in Alaska are triple the acreage of the 16 million acre Greater Yellowstone Ecosystem. Serengeti National Park is about 3.7 million acres, not including the biosphere reserve or other contiguous conservation areas such as Ngorongoro.

**Table 2. National Park Service-administered acreage in Alaska.**

<b>Major national parks/ preserves</b>	<b>Park acreage</b>	<b>Preserve</b>	<b>Total</b>
Aniakchak NM & Preserve	137,176	465,603	602,779
Bering Land Bridge National Preserve		2,784,960	2,784,960
Cape Krusenstern NM	649,711		649,711
Denali NP & Preserve	4,741,910	1,334,618	6,076,528
Gates of the Arctic NP & Preserve	7,523,888	948,629	8,472,517
Glacier Bay NP & Preserve	3,225,284	57,884	3,283,168
Katmai NP & Preserve	3,674,540	418,699	4,093,239
Kenai Fjords NP	670,642		670,642
Kobuk Valley NP	1,750,736		1,750,736
Lake Clark NP & Preserve	2,636,839	1,407,293	4,044,132
Noatak National Preserve		6,569,904	6,569,904
Wrangell–St. Elias NP & Preserve	8,323,617	4,852,773	13,176,390
Yukon–Charley Rivers National Preserve		2,526,509	2,526,509
<b>Total</b>	<b>33,334,343</b>	<b>21,366,872</b>	<b>54,701,215</b>



Despite their prodigious size, parks in Alaska receive less than 5% of the total National Park Service budget. The NPS in Alaska has nearly 1,000 permanent and seasonal employees, with an annual operating budget of over \$115 million. Yellowstone's budget is about \$32.5 million, and its full-time equivalent employment of 556 individuals is about half that of the entire Alaska region. While not flush, Alaska's (and Yellowstone's) fiscal resources and dedicated staff are still at the very high end of the distribution of human and fiscal resources for the world's conservation areas. Parks in Alaska differ from most similar lands in the contiguous U.S. in their allowance of human harvest and consumption of wildlife populations. The considerable park acreage in Alaska supports a variety of flora and fauna that have been harvested for subsistence purposes for millennia. Rural communities continue to depend on these resources, and the continuity of their harvest practices on NPS-managed lands are guaranteed under ANILCA.

### *The Alaska National Interest Lands Conservation Act*

A key component in developing the huge oil deposits on the North Slope of Alaska was the construction of a 700-mile pipeline that would bring the oil to Valdez, an open water port. Critical to these construction plans was closure and "quit claim" to existing or pending land claims. Under the statehood act of the 1950s, Congress provided for the selection of 104 million acres by the state of Alaska, but did not resolve native aboriginal claims. The Alaska Native Claims Settlement Act (ANCSA) of 1971 addressed the issue of native claims, providing a cash settlement of nearly one billion dollars and the right to select some 44 million acres. The distribution of money and the selection of lands was to be conveyed to 200 villages and 12 regional corporations established by the Act. ANCSA terminated existing land freezes resulting from litigation, and permitted further filing of state selections, and the development of the



North Slope oil fields. Because conservation and environmental groups were concerned about the disposition of lands within Alaska, section 17(d)(2) of ANCSA authorized the Secretary of the Interior to withdraw up to 80 million acres for parks, wildlife refuges, forests, and wild and scenic river systems.

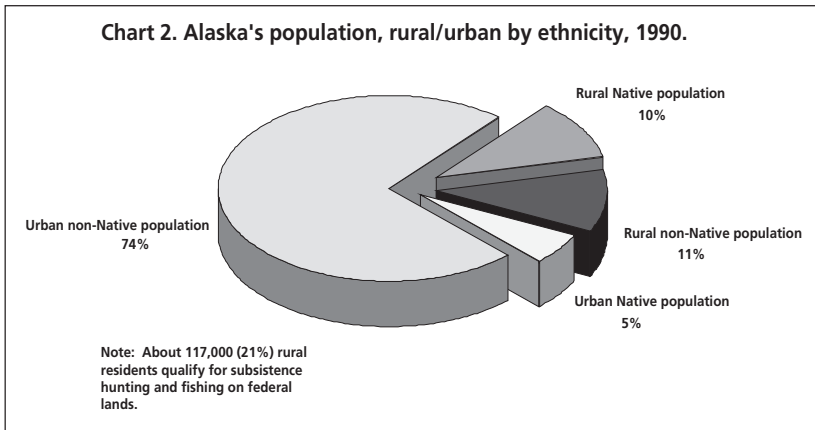
The Alaska National Interest Lands Conservation Act (ANILCA) of 1980 was a negotiated Congressional compromise between Native, state, mining, sports, and environmental interest groups. Environmental groups saw a doubling of the National Park and Wildlife Refuge systems and a tripling of the National Wilderness Preservation system. Mining interests saw the opening of Prudhoe Bay with concomitant huge profits. The state benefited from development of oil; 85% of its revenues currently come from royalties and taxes on North Slope oil development. Native groups were allowed to continue hunting and fishing for subsistence purposes in any area traditionally used in the past, regardless of whether that area now existed as a “conservation system unit” (CSU). CSUs include parks, wildlife refuges, wilderness areas, and forests. Sports hunting interests also benefited from ANILCA, which amended the National Park Service Organic Act of 1916 to permit hunting in areas designated as national preserves.

Critical to all of this was an accommodation between the federal and state governments as to who would manage fish and game on federal lands. Key to Native negotiations in ANILCA was the provision for a subsistence priority (over sports and commercial activities) for rural (not just Native) residents in the harvest of fish and game on public lands. Under ANILCA, the State of Alaska could manage wildlife resources on all public lands, as long as it granted a subsistence priority to rural residents. In 1982, the State Boards of Fisheries and Game adopted regulations creating a rural subsistence priority.

Sports hunting interests, mostly drawn from urban areas, were unhappy with the priority given to rural residents. For a variety of reasons, they classified rural residents as being essentially similar to themselves, and framed their self-interest as a debate over civil rights. Thus, despite the many compromises inherent in the negotiation of ANILCA, this interest group wished to reopen discussions about who had the right to harvest resources, especially limited resources. Based on a lawsuit strongly supported by sports hunting groups, e.g., the Alaska Outdoor Council, the State Supreme Court in 1989, in *McDowell v. State*, ruled that state laws granting a subsistence priority based solely on residency were unconstitutional under Alaska’s constitution. In July of 1990, as a result of the *McDowell* decision, the federal government assumed management of subsistence activities on federal public lands.

### ***What is subsistence?***

Alaska’s population of 550,000 is extremely skewed with respect to residence (Chart 2). About 80% of the population lives in urban areas, and around 120,000 rural residents qualify for subsistence hunting and fishing on federal

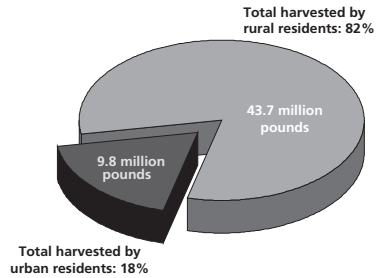


lands. Thus, the State Supreme Court's decision to enfranchise both rural and urban residents has the potential to exert tremendous harvesting pressures on wildlife populations. Section 803 of ANILCA defines subsistence as "the customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools or transportation; ...or sharing for personal family consumption." The current harvest of fish, game, and other wildlife resources by both sports and subsistence entities in Alaska is considerable (Chart 3). And while sports interests usually focus on a few species such as the high profile land mammals of moose, caribou, and trophy species such as brown bear, Dall sheep, and mountain goat; subsistence harvesters, as documented below, take resources from a wide variety of species, with fish (including salmon and various non-anadromous species) being the keystone resource category. Chart 4 documents the resource composition of subsistence harvests for the state.

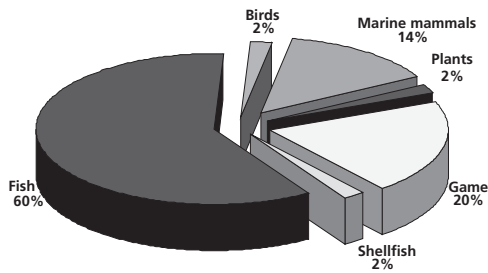
The contribution of wildlife resources, both from the standpoint of nutrition and economics, to rural individuals within Alaska is enormous. Chart 5 indicates the per capita contribution, in pounds, for various regions of Alaska. Note the average U.S. per capita consumption of meat, fish, and poultry is about 225 pounds per year. Chart 5 also shows the high dependence on wildlife resources for regions within Alaska. Consumption of wildlife resources in the Arctic region, primary residence of the Western Arctic Caribou Herd, averages about 650 pounds per person per year. It is apparent that the most substantial part of an individual's diet comes from subsistence products.

Rural Northwest Arctic communities are accessible only by air. Bulk items such as food are extremely expensive to transport. Anchorage's food costs are about 25% greater than food costs for an average city in the U.S., and food costs in the rural communities of Northwest Alaska are more than twice those of Anchorage. With per capita incomes ranging from \$5,000 to

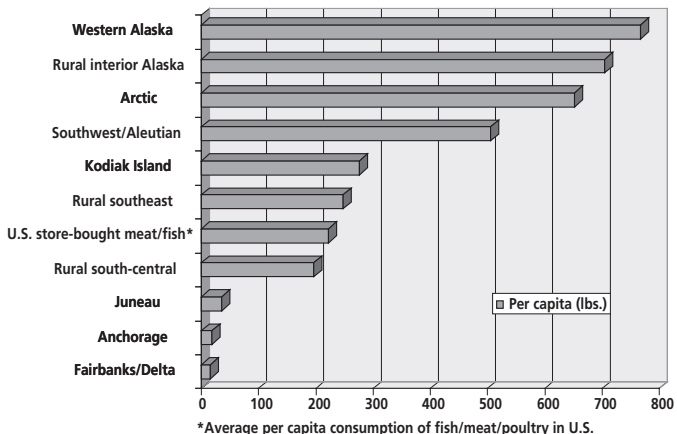
**Chart 3. Wild resource harvest by Alaska residents, 1994.**



**Chart 4. Composition of wildlife harvests by rural Alaskan households, 1990s.**



**Chart 5. Per capita wild resource harvest (lbs.) for selected Alaska regions.**



\$14,000, the total replacement cost of wildlife resources in the four communities detailed ranges from 13% to 77% of the total per capita income of those communities (Table 3). However, while the nutrition and economic aspects of wildlife harvests seem the critical issue, in fact, it is the social relations in the harvest, processing, and sharing of these resources that are of paramount concern to the rural Native Alaskans of the region.

**Table 3. Substitution costs of wildlife resources in northwest Alaska.**

	<b>Kotzebue</b>	<b>Deering</b>	<b>Noatak</b>	<b>Kivalina</b>
Per capita income	\$13,906	\$7,272	\$7,089	\$4,968
Replacement cost @\$3/lb.	\$1,779	\$2,016	\$1,383	\$2,283
percentage of per capita income	13%	28%	20%	46%
Replacement cost @\$5/lb.	\$2,965	\$3,360	\$2,305	\$3,805
percentage of per capita income	21%	46%	33%	77%

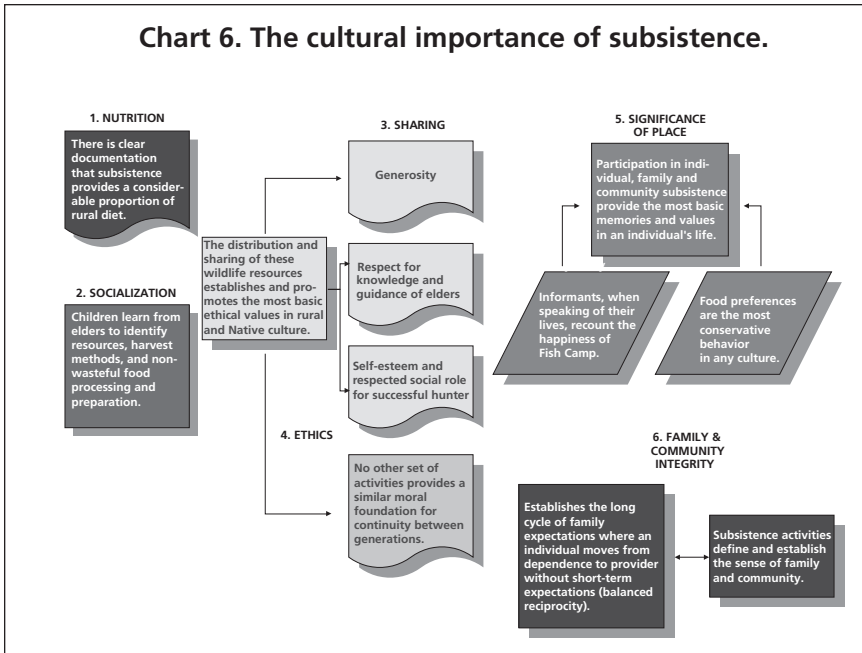
Subsistence resources and the activities associated with the harvest of these resources provide more than food. Participation in family and community subsistence activities, whether it be clamming, processing fish at a fish camp, or seal hunting with a father or brother, provides the most basic memories and values in an individual's life. These activities define and establish the sense of family and community, and teach how a resource can be identified, harvested, processed in an efficient and non-wasteful manner, and prepared as a variety of food items.

The distribution of resources establishes and promotes the most basic ethical values in Native and rural culture—generosity, respect for the knowledge and guidance of elders, self-esteem, and family and public appreciation through the distribution of the harvest. No other set of activities provides a similar moral foundation for continuity between generations. The single most respected and reinforced role for young men in the community is to be a successful hunter who distributes the fruits of his success widely within the community.

Food preferences are the most conservative behaviors in any culture. The unique preparation and special taste of foods encountered by children as they grow up stays with them forever. Years later, the taste and smell of certain foods evoke memories of family and belonging (Chart 6).

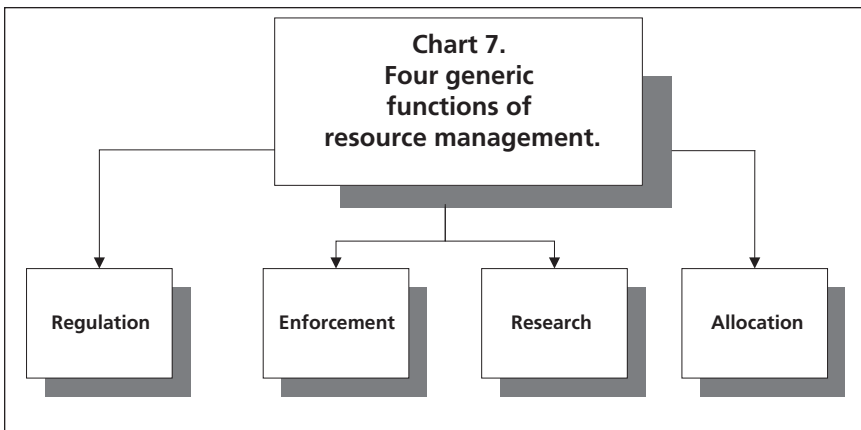
### ***Basic concepts in cooperative management***

The terms “cooperative management,” and especially “co-management,” often cause a sense of uneasiness among agency land managers. Some of this may be attributable to the perception that co-management is the culminating step in a loss of control for the agency. The expectation of such a loss is viewed by agencies as an abdication of their fiduciary responsibilities. These concerns are often captured by the statement, “by statute or regulation we are

**Chart 6. The cultural importance of subsistence.**

unable to delegate these responsibilities.” Nothing could be further from the truth, for several reasons.

First, management is not one single strand of power and authority, but rather a complex rope woven from a number of different functions and activities. These functions may be independent, and the “level” of community authority may vary between each function. In a perceptive analysis, Eric Smith postulates four major management functions—regulation, enforcement, research, and allocation (Chart 7). Mixing and matching the scale of



“control” for these four management functions (or any of the subsidiary activities subsumed under these broad categories) can lead to a multidimensional co-management regime that is far less threatening to the perceived prerogatives of agency land managers whose main concerns are often allocation and enforcement. In fact, the Western Arctic Caribou Herd management plan mirrors this distribution of authority.

Second, few if any co-management agreements abdicate the right of final approval, i.e., the power of the state as manifested in its ministries or bureaucracies, to management boards or local communities. Of course, recommendations from management boards or other local entities are seldom overturned because of the political costs associated with abrogating the often hard-fought negotiated settlement among the regional or local entities vested with this responsibility.

Finally, in Alaska, the on-the-ground impacts of agency control and authority can be nebulous at best. In some cases, the regulations, allocation, and enforcement prerogatives of the land managing agency represent a sort of virtual reality. In the huge areas of the subarctic and arctic regions, few land management agencies have the personnel or political will to enforce their own regulatory schemes. With respect to the harvesting of wildlife resources in these areas, management, on a day-to-day basis, often devolves to local communities and their customary and traditional practices. The issue of whose management regime actually controls practices such as access or hunting is of key significance. It is the contention of this essay that overall agency objectives—the conservation of healthy resource populations—are best met by negotiating co-management regimes that integrate agency and local perspectives into a legitimate, self-regulating system.

An important component of such a system in rural Native communities is the awareness and utilization of traditional ecological knowledge (TEK). TEK is important because it is often required by local communities as part of a co-management process; in addition, any management regime must incorporate the consequences of local perceptions and behaviors to be effective in their management objectives.

Any resource management agency, at some level, has to count on the public understanding and sharing some of their conservation values and objectives. A management regime that relies on enforcement as the sole avenue to resource protection is doomed. Whether it is former pastoralists harvesting bush meat for economic or nutritional purposes, or ranchers and small businesses reacting to NPS policy and regulations, the threat of sanctions, by themselves, is not sufficient to deter behavior. A key factor in any discussion of values is the need to be sure the cognitive categories of both actors are understood, even if not agreed to, by both parties.

The social and cultural categories with which indigenous people and

others organize and understand their environment are critical for any agency involved in ecological stewardship. An understanding of how other cultures categorize the natural world and their relationship to it is crucial for communication and legitimate dialogue on resource management issues. Most importantly for the caribou case study, it is crucial for the conservation of the resource.

There are innumerable examples in Alaska where agency personnel and local community members talk past each other. One brief example shows how the conservation values and practices of one actor can be interpreted as an environmental disaster by another. In our culture, it seems indubitably clear that catch-and-release fishing is a conservation practice. Setting aside the issue of some fish mortality from this activity, it seems unassailable that letting fish live helps ensure the survival of the fish population. However, in the Togiak drainage of Alaska, local Yup'ik communities are incensed at this practice, because it is disrespectful—literally refusing a gift. In their view, this refusal will lead to the eventual disappearance of the fish, as the rejected, sentient fish tell relatives of their treatment and discourage them from returning.

In Alaska, federal agencies are charged with managing consumptive uses of natural resources on federal lands. The regulatory framework, including the determination of eligibility, access, seasons, and bag limits, may have little overlap with traditional practices. In fact, research conducted by Georgette (1994) and others indicates that rural communities located on or adjacent to federal lands continue to harvest resources in a manner that largely ignores the federal regulatory framework. This discrepancy between the virtual reality of the regulatory framework and actual behavior has serious consequences for all parties involved. This paper provides description and analysis of some traditional behaviors, and the knowledge, values and attitudes that underlie these behaviors. It is hoped that an understanding of these behaviors and values will create an awareness that allows for a constructive dialogue between land managers and local community members. In turn, this dialogue may help to bridge the gap between regulation and practice and provide a legitimate process for ensuring the health of the resources in which we all share a vested interest.

### *What is Traditional Ecological Knowledge (TEK)?*

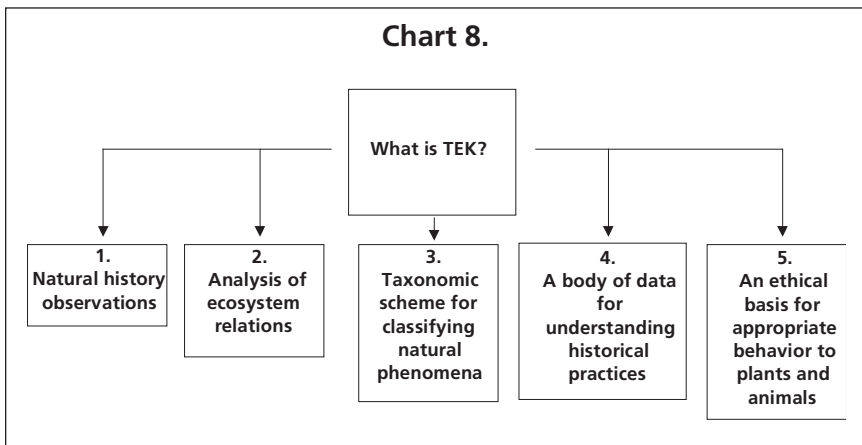
Traditional Ecological [or Environmental] Knowledge (TEK) is a term used to describe any organizing epistemology as it relates to Native (i.e., traditional) cultures, although Western cultures obviously have their own traditions (e.g., Linnaean classificatory schemes). An extensive literature has developed on the issue of TEK. For example, a recent annotated bibliography concentrating on the arctic and subarctic regions of North America has over 200 citations (see Johnson et al. 1995).



Barry Lopez has defined TEK as a “vast and particular knowledge ...garnered from hundreds of years of...patient interrogation of the landscape.” Martha Johnson (1992), from the Dene Cultural Institute in Canada’s Northwest Territories and editor of a book entitled *Lore: Capturing Traditional Environmental Knowledge*, has offered the following definition: “Traditional Environmental Knowledge, or TEK, can generally be defined as a body of knowledge built up by a group of people through generations of living in close contact with nature. It includes a system of classification, a set of empirical observations about the local environment, and a system of self-management that governs resource use. The quantity and quality of traditional environmental knowledge varies among community members, depending upon gender, age, social status, intellectual capability, and profession (hunter, spiritual leader, healer, etc.)” Additional insight comes from the Alaska Native Community. In September 1994, an Alaska Native Traditional Knowledge Workshop considered TEK to have these aspects:

1. It is a goal for cultural survival; elders must pass it down to children.
2. It is wisdom—the passing of knowledge from generation to generation.
3. It is for others; it is to be shared with others, including Russian and Alaskan Inuit.
4. It is Native education; it creates a set of standards for the community for dealing with the world.
5. It provides life values, allowing the individual to appreciate the world.

Numerous other definitions exist for TEK; however, for the purposes of this discussion, a general taxonomy has been developed (Chart 8). This taxonomy is heuristic; it does not pretend to be exhaustive, nor are the taxa necessarily mutually exclusive. The rest of this paper will focus on two of the



topics: 1) TEK as natural history observations, and 5) TEK as an ethical basis for appropriate behavior.

### *TEK as natural history*

Native hunters have extraordinarily detailed knowledge of their environment, derived from extensive experience on the land. For example, in a critical debate between Native whaling captains and western biologists, estimates of existent bowhead whale populations varied by a factor of 500%. Using survey techniques that included overflights, sonar readings, and visual enumeration, western biologists estimated the bowhead whale population to be between 600–2,000 whales. Native whaling captains were dumbfounded, pointing out that the biologists had surveyed only in near-shore open leads. These trenchant observers noted that in their experience, bowhead whales, unlike gray whales, traveled on a front at least 10 miles wide. Far out on the pack ice (familiar territory to Inupiat hunters), bowhead whales used their huge mass and rounded heads to create breathing holes in the meter-deep ice far from the open leads. These observations came from individuals camped out on the ice who observed and heard this phenomenon. In addition, traditional observations noted that there were two whale populations, one that traveled west to the Chukchi sea, and one that traveled east in the Beaufort. Traditional knowledge indicated that there might be over 8,000 whales in total from both populations.

This was not a trivial debate; using western biologists' figures, regulatory commissions were prepared to shut down traditional whaling, which formed an activity intrinsic to Inupiat culture. Not only was the whale meat crucial to an economy distant from markets, but the meat itself was viewed as more healthful than western foods. In addition, sharing of the meat was a crucial factor in social relations in the community (e.g., between hunters and elders). It also provided the foundation for task groups and legitimacy for social and political leadership, and was the lynchpin for ceremonial activities. Subsequently, the biologists, after they set up their sonar and acoustical microphones away from the shore fast open lead, confirmed the TEK estimates.

### *TEK as an ethical basis for appropriate behavior to plants and animals*

In her essay, "Original Ecologist? The Relationship between Yup'ik Eskimos and Animals" (Fienup-Riordan 1990), Ann Fienup-Riordan offers a concise and powerful distillation of Central Yup'ik views on the ethical relationship between man and animals. Of course, a limitation of such a concise summary is that it provides an idealized view of such a relationship, especially when one considers the dynamic nature of these beliefs and views. In one household that I talked with in the Yukon/Kuskokwim region of Alaska the values discussed by Fienup-Riordan were held to (in the main) by the senior

members of the household, respected but not necessarily practiced or agreed to by some middle aged and younger adults and hardly reflected upon by the majority of teenage and younger members. It is important to keep this caveat in mind when the discussion in this section talks of the “Yup’ik” cultural view. According to Fienup-Riordan, the essence of Yup’ik beliefs about animals is that they are “persons” in their own right. Both humans and animals possess souls that are not affected when either sheds its corporeal body. Animals, when faced with respectful and appropriate behavior by humans, will give their flesh. Thus, humans and animal persons engage in a balanced reciprocity with one another.

This belief in a profound reciprocal relationship between human and animal persons has important implications for western game management. Many Yup’ik believe that the more animals that are killed, i.e., that have offered themselves to humans, the greater the number that will be available. When animal persons offer themselves in great numbers, it is a clear indication that humans are fulfilling their side of the bargain by showing respect. Therefore, in the Yup’ik belief system, there is no relationship between a decline in an animal population and overkill. This contrasts dramatically with western concepts of game management. In fact, many Yup’ik hunters are often conflicted in their decisions when they come across any animal, including those species whose populations have declined in the view of western biologists. Federal management practice encourages the recovery of such animal populations by imposing seasons and bag limits, i.e., only a specific class of animal (e.g., young males) may be harvested in limited quantities during a specific short season (e.g., September to November).

A Yup’ik hunter who is out looking for caribou but comes across an older male moose out of season is required by Yup’ik belief to harvest that animal. Failure to do so—failure to avail oneself of the gift presented—is a profound mark of disrespect, which will be noted by the animal person and then communicated to other animal persons (moose), eventually leading to the unavailability of that species in the future. Thus, to harvest the moose under western precepts is to put pressure on the moose population and ensure its continual decline. Failure to harvest the moose under Yup’ik precepts leads to the same outcome.

The key and crucial chasm between these views is the influence that humans have on animal persons. The Yup’ik view is that “only the availability, not their existence, is within the range of human influence” (Fienup-Riordan 1990, 173). However, from a traditional perspective, one overriding ethic—harvest only what you need—mitigates the impact of these other beliefs. Thus, a hunter encountering a moose is not required to harvest the animal if sufficient stores of wildlife resources already exist within the community. Respect, in the Yup’ik view, is demonstrated not only by right thought and

speech, but also by right behavior. For example, right behavior requires that as much of an animal as possible must be consumed, and last year's stores consumed, prior to the beginning of a new season. In addition, animal bones must be treated with respect.

*Case study: the Western Arctic Caribou Herd (WACH)*

**The WACH Cooperative Management Plan (CMP).** The WACH CMP was signed in March 2003. The plan, written by a working group that included state and federal land managers, subsistence hunters, sport hunters, conservationists, hunting guides, reindeer herders, and outfitters, was financially supported by the Alaska Department of Fish and Game (ADFG), and three U.S. Department of Interior agencies: the National Park Service (NPS), Bureau of Land Management, and Fish and Wildlife Service.

The reasons for the plan's development were complex, but were in part due to recent conflicts between local (subsistence) and non-local (sports) hunters who currently harvest between 15,000 and 20,000 caribou per year from a herd of about 450,000 animals. In addition, individuals seeking a wilderness experience sought opportunities to view and photograph the caribou. All stakeholders were also concerned about the long-term effects of industrial development and environmental pollution. However, the main catalyst for the plan was the historic experience of land managers trying to deal with cyclical crashes of caribou populations. Events in the 1970s indicated tremendous divergence between local communities, who harvested the caribou, and the management entities responsible for their regulation. Wishing to avoid the conflicts and communications breakdown experienced during the last crash, John Trent of ADFG and Dave Spirtes of the NPS helped find the fiscal resources for the plan, and guided its development. That they succeeded, in the absence of a pressing management crisis, is remarkable, and unique in the Alaska literature.

The purpose of the plan is to ensure the long-term conservation of the WACH, and to maintain traditional and other uses of this important species. The plan itself, endorsed by some 24 signatories, provides for joint management actions at three threshold points. At the lowest threshold point, when herd size is below 200,000 animals, a variety of recommendations go into effect, including bans on the harvest of cows or calves, maintenance of a minimum bull:cow ratio, and the restriction of harvest to local residents only. Several plan elements dealing with research, allocation, and regulation will be discussed below. The whole plan itself, including detailed maps, graphs and charts is available on the internet at <[http://www.wildlife.alaska.gov/management/planning/Caribou\\_web.pdf](http://www.wildlife.alaska.gov/management/planning/Caribou_web.pdf)>.

**Historical circumstances of the WACH CMP.** As in the bowhead whale case, there was also a dramatic difference of opinion between local hunters' estimations of the WACH herd size versus those of western biologists.

As a result, the hunters, acting on their own experience and observations, continued to harvest animals while ignoring the newly-established western game regulations, i.e., a dramatic drop in the bag limit. The reaction of local harvesters to what ADFG biologists believed was a precipitous decline of the WACH in the mid-1970s provides an important example of the difficulties of managing wildlife when harvesters and managers have divergent perceptions of how many animals populate the landscape. In the 1970s, caribou were counted via aerial surveys. However, these surveys were conducted without the benefit of recent enumeration techniques such as the use of radio-collared caribou to help find large aggregations, or photo census techniques to help improve the accuracy of the counts.

Agency managers and biologists not only believed that the herd was in a precipitous decline; they also believed that they understood the mechanism responsible for this decline. From data now available, it is apparent that the WACH has declined to its present size because of excessive use of caribou by humans, in combination with the significant impact of natural mortality including predation, especially by wolves (ADFG 1977). Working from this density-dependent model of the landscape, biologists responded to what they believed to be a crashing population by severely restricting harvest. Managers attempted to set a regional harvest quota on the basis of what little harvest data they could obtain from local residents (some of whom they paid \$50/month to act as village reporters), or assessments from pilots and area biologists. As a result of what biologists describe as an “educated guess,” human harvest was determined to be approximately 25,000 caribou per year between the years 1952–73 (Davis et al. 1978). Harvest from the WACH, a herd that had had no seasons or bag limits placed on it during the previous 17 years, was abruptly limited by the Board of Game to a total of 3,000 bull caribou for the 1976–77 season (Davis et al. 1978).

Soon after these restrictions were in place, relations between harvesters and the ADFG reached a crisis point. Local people did not believe the biologists’ assertion that caribou had sharply declined, because many Native residents saw large numbers of caribou populating the landscape and even pass through their village. In response, ADFG biologists explained, “the major portion of the caribou that were located during our surveys this fall had moved along the coast from Pt. Lay all the way to south of Selawick or to the Kiana hills. Consequently, most of the coastal villages and those on the lower Kobuk River have had as many or more caribou available than ever in the past decade. This has created a credibility problem when the Department [ADFG] has suggested a reduced population” (Davis et al. 1978). To this day, most local residents do not believe that a significant caribou decline occurred during this period. When, during a recent survey, residents were asked if the caribou population had declined since 1970, 78% of villagers believed the

TABLE 4: Characteristics of western resource management science and traditional ecological knowledge (TEK) systems.

Characteristic	Resource Management Science	TEK
Mode of data collection	Based on experimentation and systematic direct and indirect observations. Knowledge base and management framework seen to be ahistoric and value-free.	Based on less systematic, ground-based observations. Ecological knowledge linked to myths/place-based narratives.
Temporal scale of knowledge	Short-term population surveys providing a synchronic perspective.	Long-term observations coupled with intergenerational knowledge, providing a diachronic perspective.
Spatial scale of knowledge	Large-scale (e.g., for moose, entire watershed; for caribou, herd range).	Smaller-scale (e.g., traditional subsistence harvesting zones; for some big game species, large portions of a watershed.
Locus of knowledge	Knowledge held by wildlife professionals. Management system hierarchically organized.	Knowledge diffuse, seen to increase with harvesting experience.
Goal of knowledge base	To establish generalizable principles explaining and predicting the status and behavior of wildlife.	To understand the dynamics and behavior of wildlife in the local area.
Assumptions about system dynamics	Populations can be maintained at or around a stable equilibrium point. Populations can be controlled by harvest, predation, and habitat enhancement. Population models emphasize density-dependent variables.	Many species seen to have population cycles. Populations can be affected by harvest and predation, though animal population dynamics remain largely autonomous.
Goal of management and harvesting activities	To manipulate or control species to achieve sustainable yield.	To respond and adapt to system surprise (uncertainty).
Ecological systems structured by:	Biophysical forces.	Biophysical forces and unseen supernatural forces.
Preferred conservation strategies	Regulate uses, control means, methods, seasons, and bag limits; open access to all user groups.	Control (limit) access to traditional use territories.

Shared goals and perceptions

- Commitment to the conservation and continued utilization of wildlife.
- Common belief in the need to regulate harvest by means of local or non-local institutions or through co-management.
- Belief that harvest impacts the size and distribution of wildlife populations.

population had *not* declined; in contrast, 77% of wildlife managers believed that the herd had declined (Kruse 1995).

Despite new regulations and the threat of arrest, the local harvest of caribou during this crisis period probably exceeded the quota established by the Alaska Board of Game. ADFG biologists acknowledged the ineffectiveness of the severely restricted season and bag limits, estimating that although the reported harvest for the entire herd was only 451 animals, the total harvest was closer to 850 animals (ADFG 1977, 1). Agency staff also believed that Kivalina residents had taken caribou in numbers at least equaling, and possibly exceeding, the number of permits issued; Noatak residents likely also took more than reported (ADFG 1977, 2–3). Agency biologists stated, “Although a liberal extrapolation of the total [1977–78] harvest would be 1,932, we believe that the actual harvest may have been considerably larger because of apparently widespread noncompliance with regulations” (Davis et al. 1978). In addition, the vast majority of harvesters evaded compliance with “compulsory” harvest reporting provisions. In 1977, ADFG reported that for the entire range of the herd, only 19% of the hunters had returned permits as required by law (ADFG 1977). This is the landscape of resistance, as local perceptions of the landscape resist western interpretations through noncompliance.

It is not completely clear as to what degree the 1970s caribou crash reflected a precipitous decline of the magnitude asserted by ADFG, or whether it resulted from incomplete surveys that omitted a significant portion of the herd. For example, in 1978, ADFG biologists found 106,000 caribou in the herd—almost twice the number of animals that agency biologists had believed were present two years before (Kruse 1995). Since it is unlikely that the herd size would double in two years, it appears that inaccurate data manipulated in an inappropriate model led to a distorted perception of what was really happening on the landscape.

Today, indigenous people in the region are no more inclined to believe biologists’ perceptions of the landscape than they were 20 years ago. When in a recent survey (Kruse 1995), local residents were asked if they were more likely to believe biologists now than in the 1970s, 77% of the local Native residents said no. In contrast, over 60% of the resource managers believe that their credibility has increased during this period. In the report, “The Western Arctic Caribou Herd (WACH): Barriers and Bridges to Cooperative Management,” J. Spaeder et al. (2003) found that most respondents did not appear to view human harvest as a key factor controlling the overall size and distribution of a wildlife species. This was evidenced in the widely-reported belief that if local people harvest only to meet their needs, without waste, animal populations will be maintained. In Table 4, Spaeder et al. (2003, 66) summarize differences between western and indigenous knowledge as it



relates to “management” practices.

Respondents in Northwest Alaska, much like their Yup’ik speaking congeners in the southwest, reiterated their belief in the autonomy of animals. Spaeder notes:

...animals are understood to increase and decrease largely according to their own patterns or cycles. Humans can neither predict nor closely control animal populations. To attempt to do so is inappropriate as it assumes possession of a power that humans don’t possess. For example, when responding to this question, one older active hunter from Kiana stated that many animals go in cycles, but...“follow their own laws.” Related to this some respondents stated that wildlife managers cannot control animals, they can only try to control people... The perceptions of Native residents regarding the cyclical dynamics of certain species and the relative lack of impact from human harvest are shaped by direct observation and accumulated local knowledge. For example, over the past seventy years, Native people have observed a number of species in the region increase exponentially while others have greatly declined, both trends being independent of hunting pressure (Spaeder et al. 2003, 67).

### *Development of the WACH Cooperative Management Plan*

The discussion of TEK and local perceptions indicates that the art of achieving a conservation objective is not to insist on the priority of any view *in toto*. This paper has identified a number of mechanisms and processes that allow selective overlap or acceptance of multiple viewpoints. Chief among these has been the introduction of cooperative management techniques. Three aspects of resource management—research, allocation, and regulation—were singled out by the WACH co-management working group as initiatives for the development of the draft co-management document.

**Research.** There has been very little agreement between land managers and local communities as to the actual size of the WACH at any one point in time. To overcome the impasse, a number of cooperative research arrangements have been put into place. Two efforts stand out. First, photographic surveys of caribou are now carried out with hunters on board the planes. Hunters regularly complain that transects flown by observer planes often miss pockets of caribou. Local hunters who have carefully monitored the migration of the caribou in their area now fly with the observers to point out these pockets. Both sides benefit from this process; the biologists attain more

valid estimates of herd size, and local hunters are more likely to believe these estimates, because their input is now an integral part of the process.

In addition, under a variety of grants, biologists are now recruiting hunters to collect key information about the health of the herd—in part, by collecting a series of measurements and observations on the individual caribou they kill. These measurements include proportion of body fat, condition of bone marrow, presence of parasites, and gross body weight. Local hunters using aspects of traditional knowledge maintain a dialogue with the biologists (who input these measurements into a variety of models) as they jointly assess the health of the herd. Efforts such as these lead to a convergence of estimates on both herd size and the health of the herd, although both parties may still maintain substantial divergence as to why and how these outcomes have occurred.

**Allocation.** The WACH draft co-management plan sets up an equitable allocation process among communities that harvest from the herd. The allocation process was based upon the Kilbuck agreement, an earlier caribou co-management plan from southeast Alaska. Because the numbers of caribou in the WACH are at historic highs, the need to initiate this allocation process has not yet been enacted. When the eventual crash does occur, the process will probably unfold along lines similar to the Kilbuck agreement.

The Kilbuck herd is a non-migratory herd of barren-ground caribou (numbering about 7,000) whose home range lies mainly within the Yukon Delta National Wildlife Refuge in eastern Alaska. In 1990, the Kilbuck Caribou Herd Co-Management Regime was jointly established. The participants included 18 Yup'ik Eskimo villages, the U.S. Fish and Wildlife Service, and the Alaska Department of Fish and Game (Spaeder 1995). The Kilbuck Caribou Working Group, using a density-dependent model of herd dynamics, agreed to a permit-based harvest, bulls only, limited to 5% of the total herd. The working group next addressed the potentially difficult issue of how to divide the initial annual harvest quota of 125 animals among 18 villages. These 18 villages differed in their populations (70–550 people), proximity to the herd, and in the customary use of this resource for their communities.

After the allocation limit was established, the Native representatives in the working group were assigned to craft a process for distributing the permits. Instead of engaging in equity arguments around need (i.e., our community is larger, and thus needs a higher proportion of the permits) or precedence (i.e., our community has harvested these animals for hundreds of years, while you have never hunted them) it was decided to divide the permits equally among the 18 communities.

The Native membership of the working group opted for this egalitarian solution because it reflected the Yup'ik view of the landscape. Interviews with Native respondents suggest that this decision can be seen as an expression of

the Yup'ik value of sharing. Respondents stated that they felt it was important to share things over which one cannot extend ownership, such as big game. No one "owns" the caribou, respondents asserted, just as one cannot own the fish in the ocean. This decision also serves as an example of one way that Native groups attempt, where possible, to embed their own values within a regime whose character and structure is decidedly non-Native (Spaeder 1995).

**Regulation.** Section 805 of ANILCA mandates the implementation of Regional Advisory Councils (RACs) composed of local subsistence hunters who develop proposals that are forwarded to the Federal Subsistence Board. These proposals suggest who should be eligible to hunt, when the hunt should occur (seasons), and what is a reasonable amount to meet community and household needs (bag limits). Proposals from RACs carry considerable weight with the Federal Subsistence Board. In fact, the board is under substantial constraints if it should choose to reject these proposals. Grounds for rejection include potential harm to the resource. Thus, Section 805 provides for the incorporation of local experience and perspective of the landscape into western management practices. The WACH planning committee intends to utilize the RAC process to submit proposals for reasonable and equitable bag limits to the Federal Subsistence Board.

### *Decision analysis*

The draft cooperative management plan for the Western Arctic Caribou Herd is a particular outcome to a vexing resource management issue, in this case how to manage the WACH when (not if) the caribou population crashes. The experience of resource managers during the crash of the 1970s was that local communities ignored or actively resisted a variety of management initiatives, including a regulation that required a nearly 90% reduction in human harvests. The management plan developed during the last several years encourages community buy-in by having active hunters become part of the research and decision process. The development of this co-management process is reflective of a larger endeavor, referred to variously as "decision analysis," "risk perception," and "value-based decisionmaking." These techniques are important because protected areas are only a stop gap measure; whether it's indigenous peoples in Alaska, tribal peoples in East Africa, or ranchers, miners, developers, and the recreation industry in Greater Yellowstone, the long-term viability of national parks and the conservation of biodiversity requires the active support of a variety of regional constituencies beyond park boundaries.

Decision analysis provides some formal techniques for integrating constituencies, maybe into a greater vision. The outcomes of these processes may be painful, and parks as they are currently constructed may look quite different after such negotiations are completed. Achieving biodiversity con-

servation may require compromises on deeply-held park values. What are the lessons from decision analysis? First, one of the keys to successful interaction with parties that have vested interests is involving them early and often in the decisionmaking process. Outside entities and constituencies are far more likely to respect decisions that involve rather than exclude them, and interest groups are much more likely to accept decisions when they have played some role in the decisionmaking process. Decisions made without “stakeholder” participation can not be legitimized no matter how much scientific data is provided after the fact. Second, people are unlikely to accept risks without a perception of some accrued benefit. The NPS should take no significant action without some informal bilateral consultations with affected stakeholders. This means talking with both supporters and detractors, especially the latter.

It is crucial to develop alternatives to current models of public input. Agency staffs often turn to public hearings, in part, because this forum is institutionalized. However, if agencies rely on public hearings and formal meetings for community input, citizens’ concerns will usually be heard too late in the agency’s decisionmaking process to be meaningful. In general:

- Hold routine, informal meetings with representatives of community and other interest groups.
- Accept and involve the public as a legitimate partner.
- Involve all parties that have an interest or stake in the issue.

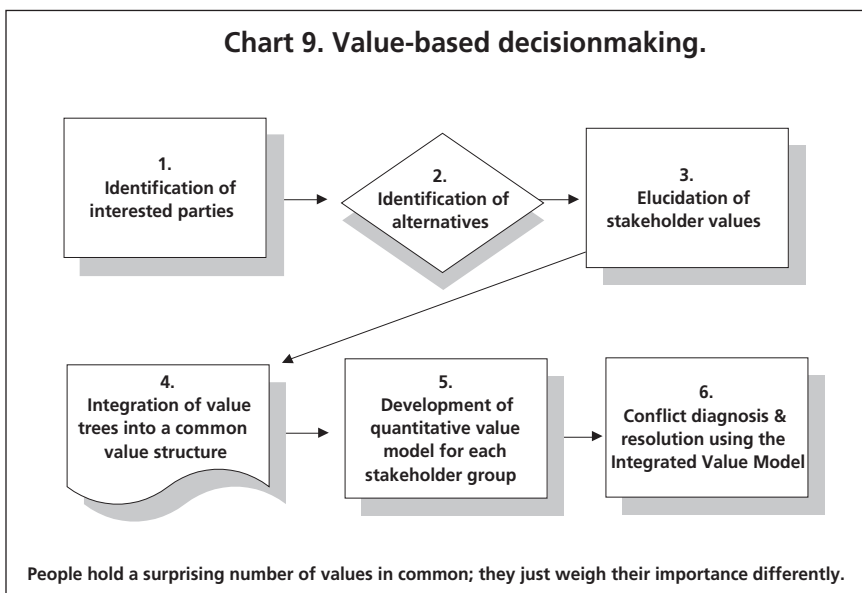
There are several drawbacks to the decision analysis, or value-based decisionmaking process. First, it is expensive and labor intensive. In the case of the Kilbuck caribou cooperative management process, transportation and labor costs ran into the hundreds of thousands of dollars. Of course, if these issues are not solved cooperatively, legal challenges, court costs, and other “normal” public processes such as scoping meetings will probably cost substantially more.

If a significant number of stakeholders are associated with a particular issue, “transaction costs” can be prohibitive. The combination and permutations of interactions between 10 stakeholders is exponentially higher than those between four. To some extent, these costs are contained by including only one representative from a class of stakeholders. In nearly every instance, there is a tension between limiting stakeholder representation and obtaining a significant buy-in to the decision. For example, should one select only one representative from a class of stakeholders, e.g., environmental groups, given the variance existing within this class? That is, would the Sierra Club accept the Audubon Society to represent its deeply-held values? This is not an academic issue; there is the risk that a hard won consensus could be challenged by a lawsuit from a specific stakeholder who, while not participating, was nonetheless “represented” by the process.

The greater risk comes from stakeholders who are participants and initially agree to be bound by the outcome of the process, but who, after the fact, renege on the agreement. This renegeing may take the form of a lawsuit or an activation of their constituents to lobby against the outcome in the social and political arena. This latter reversal is particularly destructive, as it has the ability to destroy the trust generated by all participants in the process. Trust is of paramount import, because the most significant long-term outcome of the decision analysis process is often not the agreement on a specific issue, but the level of trust invested by the participants in their relationships with the other stakeholders.

No agency would want to invoke the decision analysis process for every issue on its plate. However, positive residual effects can come from working through the process at least once. Some term this residual “social capital,” a kind of trust account upon which you can draw when another issue develops that affects the same stakeholders. Rather than beginning from an adversarial position, all parties expect that the other stakeholders will be reasonable, and that some compromise, perhaps informal, will provide resolution. In the case of the WACH cooperative management plan, the institutionalized structure of the working group provided a forum for ongoing communication across a whole range of issues. Chart 9 provides a graphic overview of the “value-based decisionmaking,” “risk perception,” or “decision analysis” process.

*Conclusion: linking indigenous peoples to conservation areas in Alaska, and deeper problems*



The most salient reason for optimism in Alaska's effort to conserve biological diversity is the integration of indigenous peoples within the landscape of its conservation units. In the final analysis, park managers' struggle to achieve their objectives is not simply an issue of ecology, but is intrinsically a social, economic, and political endeavor. Alaska's combination of political and historical circumstances has provided a crucible where management options, decision processes, and negotiations with outside constituencies (including the profoundly disaffected) may be and have been tested.

Finally, the phrase "intrinsically related" describing the NPS and indigenous groups may seem to some to be hyperbole. Many parks in the contiguous U.S. can, and have, ignored historically-affiliated indigenous groups, despite the fact that the NPS is charged with interpreting these historical and contemporary connections. Ultimately, the justification linking conservation and indigenous groups "intrinsically" is connected to an understanding that social justice is an intrinsic element of environmental justice.

This paper advocates increased cooperation between parks and indigenous entities. In addition, it makes the argument that protected area/indigenous relationships are but a subset of a larger domain—the relationship between protected areas and the matrix of regional and international economic, social, and cultural forces and entities that impact them. Two additional concerns need to be mentioned. The world's demand for energy is expected to rise by 60% by 2020, as China and India industrialize. Oil is expected to remain the world's dominant source of energy, accounting for about 40% of all energy consumption. Total carbon dioxide emissions are projected to increase by 62% between 1999 and 2020. Protected areas with energy resources on or near their land will be put under increasing pressure for direct development. Indirect outcomes such as air pollution, contaminated aquifers, acid rain, and climate change will all be exacerbated.

Beyond this are some very pessimistic and radical analysis concerning the basic contradictions of the world's underlying economic engine (e.g., Meszaros 2001). The essential argument is that current levels of exploitation of the world's natural resources are simply not sustainable. Moreover, the vicious cycle (or "contradiction") of economic "development" requires the development of new markets and higher levels of production, while decreasing the world's finite natural resource capital at increasing rates. Under these conditions, conserving biodiversity may be a secondary outcome of the world's protected areas. More important might be a burgeoning social capital whose roots lie at the struggles and experiences of protected areas to deal equitably with affiliated indigenous entities and the development of tools for cooperatively managing natural resources at regional and international levels, allowing for a sustainable future for us all. In the end, natural resources govern themselves, but their destiny is linked to the quality and

nature of relationships between people. Protected areas will not be the last stand for biodiversity, but absent their engagement in a just and sustainable human vision, they may be our last stand.

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# Issues in carnivore and ungulate conservation in the Yellowstone and Selous ecosystems

Scott Creel and Douglas W. Smith

## **Abstract**

*Yellowstone National Park is frequently compared to the large protected areas of East Africa, mainly because Yellowstone is the only protected area in the continental U.S. that holds the full complement of large carnivores and their ungulate prey, as most East African protected areas do. In addition, Yellowstone is one of few parks in highly developed countries that rivals East African protected areas in size. In an effort to identify underlying similarities and critical differences, we compare the conservation concerns and management issues facing African wild dogs in the Selous Game Reserve (Tanzania) and wolves in the Greater Yellowstone Ecosystem. While some similarities emerge, the dominant conclusion is that anthropogenic factors predominate for wolves in the Yellowstone area, while ecological factors predominate for wild dogs in Selous. We discuss the implications of this distinction for conservation and management policies.*

## **Paper summary**

Yellowstone National Park is often compared to other natural areas in Africa, especially the Serengeti. Reasons for this comparison are not entirely clear, but some are that Yellowstone is one of the few parks to rival the typically much larger African parks in size, and has its full complement of large carnivores and ungulate prey. Some would argue that African parks still have twice as many carnivores and ungulates; nonetheless, the comparison has persisted. Perhaps more appropriately, the comparison between the two largest canids, African wild dogs and wolves, offers more parallels and lessons for carnivore management. Both typically prey on one or two ungulate species, have large home ranges, and interact with a large number of other carnivores. Therefore, we felt it reasonable to focus our comparison more finely, evaluating commonalities and differences between these two canids in order to shed light on two of the more enigmatic species with which humans interact.

The main objective of our comparison was to evaluate how humans affect wild dogs and wolves. For both species, interactions with humans essentially define their ecological story. This has caused widespread declines in the abundance and distribution of both species on their respective continents.

The Selous Game Reserve, at 43,600 km<sup>2</sup>, is several orders of magnitude larger than Yellowstone National Park (8,991 km<sup>2</sup>). Despite this difference in protected area size, the Greater Yellowstone Ecosystem, which is mostly public land, does rival Selous in size, in that this area covers 57,000 km<sup>2</sup>. Both parks, however, have a long history of preservation, as Yellowstone

was established in 1872 and Selous in 1905. The combined size and preservation history have combined to give each area a degree of pristineness that is hard to find elsewhere in the world. Unlike Selous, wolves were present in Yellowstone, eradicated, then reintroduced. Wild dogs have been continuously present in Selous.

The primary prey for wolves in Yellowstone is elk, although all of the ungulates present have been taken (seven others). In Africa, wild dogs prey primarily on two species, impala and wildebeest, with impala the most selected prey item. Both canids have similar hunting styles; described as coursing predators, they pursue prey enough that the predator can evaluate condition, selecting for the kill the easiest and most vulnerable animal. In both areas, prey are probably not limiting to either carnivore.

Besides geographic similarities, the biology of the two species is quite similar. Both travel widely and often leave the protective confines of the reserves. Each species is capable of dispersing hundreds of miles over a varied landscape. What happens to them when they do this? We feel the answer to this question lies in how the humans living in the area respond to the presence of wild dogs and wolves.

For one, human population density in Selous is much higher than it is for the Yellowstone ecosystem. Surprisingly, wild dogs are killed less often by humans than are wolves in Yellowstone. Approximately half of all wolves that die in the Yellowstone area die as the result of human-caused mortality, as compared to less than half in Selous. Survival rates are slightly higher for wild dogs in Selous (often >90%) than for wolves in Greater Yellowstone (~80%). When Yellowstone National Park is excluded from analysis, wolf survival rates for the Yellowstone area are significantly less (<50%).

This leads, inescapably, to the conclusion that humans in the Yellowstone area are much less tolerant of wolves than humans in the Selous are of wild dogs, despite the generally poorer economic conditions of the people living in Africa. We calculated a per capita effect of humans on each carnivore using data on the likelihood of human-caused mortality and human population density, and found the impact of humans on wolves in Yellowstone to be 700 times greater than it is for humans on wild dogs.

Reasons for this great disparity in tolerance are unknown, and counterintuitive, given the economic circumstances of the respective human populations. Possibly the period of absence that wolves experienced in the Yellowstone area effectively eliminated the cultural knowledge (or tolerance) needed to coexist with large carnivores. Most other studies have shown the future of carnivores anywhere to be largely determined by humans and our results support this finding. The debate in Yellowstone over habitat availability may be less important than education and public outreach to quell the reluctance to live with wolves.

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# Cross-border insecurity: national parks and human security in East Africa

Kevin C. Dunn

## *Abstract*

*Many of the national parks in East Africa are contiguous; that is, one nation's park often borders another nation's park. Given many African states' inability to effectively control their formal borders, the parks' contiguous character hints at the central (but largely unrecognized) role they play in the ecological, economic, and political development of East Africa.*

*For the past several decades, the national parks of East Africa have helped contribute to the tremendous political strife that has beset the region—most recently reflected in the 1994 Rwandan genocide and the regional war in Congo that has claimed over two million lives since 1998. These national parks have often become unpoliced spaces where rebels and guerrillas have taken refuge or served as conduits for infiltration and invasion. Societies in the region, particularly around the national parks, also endure high levels of economic and environmental insecurity.*

*As centrally-controlled landscapes where local human use is often forbidden, national parks produce enormous and conflicting economic consequences. While generating valuable hard currency from Western tourists, the parks have also displaced thousands of rural people, most of whom live on the margins of the protected areas from which they were evicted. As a result, a regional "insecurity complex" has emerged in East Africa, composed of a set of states whose security concerns are multiple, varied, and so interlinked that they cannot reasonably be analyzed apart from one another. This paper explores the complex ways in which national parks operate as sources and obstacles for human security and development in Africa.*

## *Introduction*

One of the more striking characteristics of a map of the African Great Lakes region (Uganda, Rwanda, Burundi, eastern Congo, Kenya, and northern Tanzania), besides the arbitrariness of the postcolonial states that compose it, is the large number and significant locations of the national parks, forests, and game reserves. Largely colonial creations, these national parks, forests, and game reserves vary in size and shape, and are spread rather unevenly across the region. The map of the region shows how these parks are often contiguous, with one nation's park bordering another nation's park. Given many African states' inability to effectively control their formal borders, the contiguousness of many of the region's parks, forests, and game reserves hints at the important (but often unrecognized) impact they have on human

security and development of the African Great Lakes region. This essay examines the ways in which national parks operate as sources and obstacles for human security and for economic, ecological, and political development in Africa, and suggests that the multiple and often conflictual ways in which state officials, local residents, and armed insurgents utilize specific national parks in the African Great Lakes region have helped create an “insecurity complex” in the region. For the past several decades, the countries in the region have experienced tremendous political strife—most recently reflected in the 1994 Rwandan genocide and the regional war in Congo that has claimed over two million lives since 1998. Societies in the region also continue to endure high levels of economic and environmental insecurity. As a result, a regional “insecurity complex” has emerged. In this context, the term “insecurity complex” is used to characterize a region composed of a set of states whose security concerns are multiple, varied, and so interlinked that they cannot reasonably be analyzed apart from one another. This essay suggests that the creation, maintenance, and utilization of the national parks as part of specific state-making processes have helped engender a regional “insecurity complex.” I employ the term “processes of state-making” to highlight that states are not static, ahistoric entities, but emerge out of the interaction of social forces and become repeated patterns of human practice. The next section articulates the essay’s theoretical arguments. The following section provides empirical examples of how the region’s national parks are related to the development of an insecurity complex.

*Human security and development within a “new regionalisms” framework*

Within the study of International Relations/International Political Economy (IR/IPE), two recent branches of analysis have proven to be quite fruitful: “new regionalisms” and “human security and development.” The connections between the two, however, have largely been unexamined (Grant and Söderbaum forthcoming). This essay combines these two approaches in order to better understand how the African Great Lakes region’s national parks are contested political spaces and how the dynamics involved in that contestation affect regional security concerns.

At the end of the last millennium, the “new regionalisms” approach offered a new and innovative way to conceptualize and analyze processes that were occurring in the post-Cold War era. The recent work on new regionalisms distances itself from earlier approaches to regional integration (such as functionalism, neofunctionalism, institutionalism, and neoinstitutionalism) by emphasizing informal as well as formal types of regional economic integration (Marchand, Boås, and Shaw 1999; Hettne, Inotai, and Sunkel 1999). Such an emphasis provides a potentially rewarding alternative to the numerous IR/IPE paradigms that despite their continuing currency in Western scholarly

discussions, are too limited to be of much use for discussing the trends taking place across the African continent. One of the most significant promises that the new regionalisms approach offers is the move beyond the state-centrism that seemingly strait-jackets many traditional IR/IPE theories. As Daniel Bach quite correctly points out, “Max Weber’s classical definition of the state cannot apply in numerous parts of the continent...the state is no longer the sole agency which, within society, possesses the monopoly of legitimate violence” (Bach 1999, 5). Because we can no longer assume the centrality of the state in our analysis, we must look beyond simplistic, state-centric approaches. The new regionalisms paradigm opens fertile ground for just such types of analyses. Following this line of thought, Björn Hettne argues that, with regard to security, “the predominance of the nation-state and a Westphalian political rationality prevents rational solutions, whereas the regional level opens up previously untapped possibilities for solving conflicts built into the state formation” (Hettne 1999, 18).

Recent work on “human security and development” has also gained increased prominence within the IR/IPE field (see Buzan 1983, 1998). The work in this field is largely credited with expanding what is included in a discussion of “security.” No longer is security strictly defined in terms of state or regime survival, but now must incorporate the multiple threats posed against human beings and their ecological, cultural, social, and economic environments. The human security approach proposes that states and regimes are not the only (or even the primary) entities being threatened; rather, people and their environments are of central importance.

One of the conceptual links between the new regionalism and human security approaches is the notion of the “complex:” a set of states whose concerns are so interlinked that their problems cannot be analyzed in isolation. While a certain degree of interdependence is often cited as a characteristic of the current state system in general, a “complex” is distinguished by the intensity of that interdependence. Barry Buzan et al. point out that “[s]ecurity interdependence is markedly more intense between the states inside such complexes than it is between states inside the complex and those outside it” (Buzan et al. 1990). Yet, as Morten Bøås (2000) has pointed out, until recently the “complex” framework has been essentially statist and has ignored whose security is being pursued. For many, the notion of the complex or, more specifically, of “insecurity complexes,” seems most useful in analyzing Africa’s current political and economic problems when it is simultaneously framed within a new regionalisms approach. For example, the dominant security issues facing many African societies today—migration and refugee flows, AIDS and other health epidemics, drug- and gun-running, ecological distress, and poverty—tend to be beyond the scope of traditional state-centric analyses and solutions. That is to say, the theoretical Westphalian



nation-state model does not fit the African reality (Marchand, Bøås, and Shaw 1999; Hettne 1999; Swatuk and Omari 1997; Southall 1995).

Informed by the theoretical developments discussed above, this essay explores the connections and disjunctures between national parks and regional human security and development with an examination of the process of state-making in the Great Lakes region. There are two primary reasons for focusing on state-making. First, the creation and maintenance of the parks, forests, and game reserves was the work of colonial and postcolonial states. Therefore, the existence of the national parks is intimately intertwined with the nation-state, and the realization and utilization of the national parks has been a pronounced element within the process of state-making in the region. Second, traditional IP/IPE theories and practices have assumed that the state is the primary provider for its citizens' security and development. While there is considerable disagreement over exactly what role the state should play (particularly regarding a society's economic development), it is safe to say that the state does impact human security and development, for good and ill.

By taking a "new regionalisms" approach, this essay contextualizes the state, particularly by examining the social forces that have shaped the state and its evolution. It is this essay's assumption that there have been multiple social forces shaping the process of state-making in the African Great Lakes region, and these have affected the region's human security and development. Focusing on the national parks provides a unique and profitable angle for analyzing these social forces and their impacts. For example, a study of the national parks can offer rich insights into how globalization, regionalization, ethnic stratification, economic class conflict, contestation over land, the "criminalization of the state," environmental crises, and the emergence of political economies of violence have all directly impacted the security and development of individuals living in the Great Lakes region. Focusing on the region's national parks and forests allows one to see that a regional perspective is necessary for understanding how development, security, and the process of state-making are intimately intertwined.

Thus, approaching the state as a unit of analysis means raising several questions: What social forces have contributed to the construction of the state as an entity? How have these domestic and international social factors interacted to produce the state? How is the state being currently defined? Who is defining and employing the state, and to what ends? Asking these and similar questions allows us to examine the plurality and contradictions of the state, particularly with regards to its relation to the "insecurity complex" in the African Great Lakes region. The national parks offer a useful vantage point from which to examine these processes, disjunctures, and coincidences on multiple levels.

*National parks and human insecurity*

The fact that many of the parks of the Great Lakes region are either contiguous or serve as a boundary between states makes them fruitful units of analysis for examining the interstices of political, environmental, and economic obstacles for security and development. In this section, I will briefly illustrate some examples of how national parks are interrelated to security and development concerns in the region.

**Political insecurity.** One important feature of the national parks of the Great Lakes region is that many of them are either contiguous—crossing over nation-state borders—or serve as a boundary between states. For example, Tanzania’s Burigi Game Reserve delineates Rwanda’s southeastern border, while Uganda’s Queen Elizabeth National Park continues almost seamlessly into eastern Congo as the Parc Nacional des Virunga. In fact, Uganda, Rwanda, and Congo all converge at the intersection of the Parc Nacional des Virunga, Parc Nacional des Volcans, and Mgahinga National Park. For many decades, this situation has provided unique political problems for the process of state-making in the region. These national parks have often become unpoliced/unpoliceable spaces where rebels and guerrillas have taken refuge. Yet, more than providing safe haven for armed insurgents, the region’s national parks have frequently served as conduits for infiltration and invasion. Virtually every regime has faced (or continues to face) armed insurrection. In almost every case, these armed groups have used the national parks as safe havens and transit routes. Where national parks are contiguous with a neighboring state’s national parks, the neighbor is intractably drawn into the fray as the armed insurrection becomes regionalized. In this way, the national parks illustrate most clearly how the political insecurity complex is a regional problem within the Great Lakes region.

For example, the Lord’s Resistance Army (LRA) in Uganda continues to use Murchison Falls National Park as a safe haven in its 17-year struggle against the central government. In June 2003, LRA rebels launched several raids from their territory in Murchison Falls National Park, and it is generally held that the entire northern section of the park (north of the Nile River) is effectively a “no-man’s zone” where the LRA operates freely. The 1994 Rwandan genocide was originally sparked when Rwandan Patriotic Front (RPF) guerillas invaded from Uganda via the Parc Nacional des Volcans. As the RPF rebels gained control of Rwanda, the former Rwandan army and their Interahamwe (the militia primarily responsible for structuring the genocide) allies sought refuge in neighboring eastern Congo. From there, these forces would frequently use the national parks (most significantly the Nyungwe Forest and the Parc Nacional des Virunga) to launch further attacks on Rwanda. These attacks have become so destabilizing in recent months that the Rwandan government announced that it would be placing military posts

throughout the main road through the Nyungwe Forest, which personal observation places at roughly every 500 meters.

These attacks, however, cannot be understood narrowly as domestic issues. In fact, it was inside Uganda's Bwindi National Park (which also borders Congo's Parc National des Virunga) that Rwandan Interahamwe forces infamously attacked, kidnapped, and murdered several Western tourists in March 1999. In Burundi, Interahamwe elements joined Burundian rebels to launch numerous and sustained attacks on civilians. One important zone of instability for Burundi is the Parc National de la Kibira, which lies close to the Democratic of Republic of Congo and borders southwestern Rwanda. Rebels and armed bandits have so successfully utilized this park that the main road between Rwanda and Bujumbura is virtually a no-go zone, where buses and vehicles are attacked with fatal regularity. In the northwest of Burundi is Parc National de la Rurubu, which actually forms part of the northwestern border with Tanzania; it looks like a finger, stabbing into the center of that country. Recently, Burundian rebels have successfully been using the park as a safe haven and transit route, to the extent that the Burundian government is currently charging Tanzania with complicity in the rebel attacks. While there is no evidence supporting such claims, they illustrate the fact that the park helps make the border between the two states virtually uncontrollable.

**Ecological insecurity.** Often created to serve as environmental protection/preservation zones, national parks are perhaps the ultimate units of analysis for examining the region's ecological interconnectedness and ecological biodiversity. Within Uganda's Bwindi National Park alone, there are at least 120 species of mammals, including mountain gorillas, chimpanzees, and eight other primate species. Within this rich ecosystem are elephants, bush pigs, giant forest hogs, at least 346 species of birds, at least 14 species of snakes, 27 species of frogs and toads, and over 200 species of butterflies. All of the "Big Five" animals (black rhinos, buffaloes, elephants, leopards, and lions) can be found in a number of the region's national parks. But the region's reputation is usually earned by the presence of endangered mountain gorillas (*Gorilla beringei*). There are thought to be just 600 mountain gorillas left in the world, and their plight was famously publicized by the work of Dian Fossey and the book and film, *Gorillas in the Mist*. Importantly, all of the remaining mountain gorillas are found in a contiguous zone made up of certain of Uganda's, Rwanda's, and Congo's national parks. As the families of mountain gorillas move from park to park across nation-state borders (sometimes fleeing poachers and/or armed insurgents), they illustrate the problems and complexities that characterize the existence of a regional ecological insecurity complex.

Simply put, the Great Lakes region is intimately interconnected ecologically. The human societies of the area live in a rich but fragile ecosystem

characterized both by its biodiversity and recent environmental degradation. The numbers of species, flora and fauna, has decreased over the past several decades, leaving a region that is perilously close to ecological disaster. In Rwanda, the high human population density has left the land largely over-cultivated, and the country's large tea plantations have wrought untold environmental damage through pesticide use and soil depletion.

Since 1925, when the Belgian colonial government established Africa's first protected area, the creation, maintenance, and control over the region's national parks have been intimately connected to the process of state-making. The inability of the state to effectively exert control over the parks has given rise to poaching and guerilla activities that have had numerous disruptive environmental impacts. Likewise, the settlements of refugees in Parc Nacional de l'Akagera are the direct result of state-making dynamics in the wake of the 1994 Rwandan genocide. Facing a return of thousands of refugees who would have put unsustainable pressure on the country's over-cultivated land, the government in Kigali decided to degazette more than two-thirds of the 2,500 square miles of Akagera. Permanent settlements have been established, and the once-protected land has now become increasingly cultivated, resulting in the dispersal of many of the park's wild animals into neighboring communities, especially in northern Tanzania. As the case of Akagera suggests, the environmental impacts of state actions have regional repercussions. Mountain gorillas, Colobus monkeys, and other wildlife ignore international borders, as does pollution. What has emerged is a region that is ecologically connected, for better and for worse.

The links between the environment and the process of state-making in the region are numerous, often manifesting themselves in the tensions between local versus governmental needs, indigenous knowledge and practices versus western environmentalism, and developmental "expertise" and local land usage versus ecotourism and government's desire for foreign capital (see Neumann 1998; Kaufman, Chapman and Chapman 1996; McClanahan and Young 1996). This becomes especially clear when one recognizes that the land demarcated as protected parkland traditionally supplied local inhabitants with valuable resources from cultivated land, wild animals, medicinal plants, and clean water. In most cases, the creation of the national park required the removal of its traditional human inhabitants. In the case of Bwindi, Mgahinga, and Lake Mburo national parks, this was often done with force and extreme violence. In all three cases, local inhabitants were denied access to the vital resources now found inside the parks. In the case of Bwindi and Mgahinga, the Ugandan Wildlife Authorities are now running a test program that allows local inhabitants into the park to access clean drinking water. However, the BaTwa people, for example, are still denied access to collect wild resources, such as honey and medicinal plants, from within the park.

Lake Mburo National Park provides an interesting example of how state-making processes affected human insecurity via the production of national parks. In 1983, the government of Milton Obote converted the area (traditionally a controlled hunting ground of the Ankole king) into a national park. To do so, the government officially and violently evicted the many local inhabitants, with several people dying. For most observers, the creation of the national park and the forced eviction of its inhabitants were a response to the fact that the region was supporting Yoweri Museveni's rebellion against the government. As Obote's government slowly collapsed, the evicted inhabitants and others moved back into the park, destroying park buildings, re-cultivating the land, and grazing their cattle. As part of a negotiated settlement, the new Museveni government re-established the park, but at 40% of its previous size. However, some residents of the neighboring community continue to poach in the park and illegally graze their cattle there. Moreover, neighboring communities are critical of the park because the wild animals protected there often attack their domesticated animals and destroy their crops.

**Economic insecurity.** The creation of national parks often reflects a Western opposition between humans and environment. National parks and game reserves are thus centrally-controlled landscapes where local human use is often forbidden, a dynamic consistent with the colonialist representation of Africa as a primordial "natural" space. As Anderson and Grove have observed: "Much of the emotional as distinct from the economic investment which Europe made in Africa has manifested itself in a wish to protect the natural environment as a special kind of 'Eden' for the purposes of the European psyche, rather than as a complex and changing environment in which people have actually had to live" (Anderson and Grove 1988, 4). This situation has had enormous and conflicting economic consequences. Westerners provide valuable hard currency for their "safaris" into these parks and reserves, where they are able to see African wildlife. Yet the creation of these parks and reserves has displaced thousands of rural people, most of whom live on the margins of the protected areas from which they were evicted. In many cases, their previous daily economic activities are now criminalized.

One example of this situation is the Tarangire National Park, located in the Simanjiro district of northern Tanzania. The area first became a game reserve in 1957, and the Maasai pastoralists were allowed to remain in the Tarangire Game Reserve for 13 years, their ecosystem largely unaffected. However, in 1970, the area was converted into a national park, and it was announced that people living to the west of it would be evicted (Igoe 1999, 11). The creation of these "closed" spaces is problematic because the parks and reserves are not self-contained ecosystems. The park is centered on watering sites traditionally used during dry seasons by rural pastoralists as well as the region's wildlife. In the wet season, the animals disperse, usually

beyond the park's borders. Since the creation of the park, the Maasai pastoralists have been kept out of the park, away from its much-needed permanent water sources. As Jim Igoe has noted, "the main effect of the park was (and still is) the interruption of local resource management systems" (Igoe 1999, 4). The conservation and development ideologies behind the park's creation and maintenance are based on the assumption of the inferiority of African resource management and production systems. The local community does not perceive the park to be a public resource, but a commodity controlled by an elite for the benefit of foreign tourists. Igoe elaborates, "They say that they should not have to pay for protected areas so that rich white people could come from Europe and America to look at animals. They are aware that the tourist industry has benefited a wealthy elite while bringing few or no benefits to the people who have been most directly effected by large-scale appropriations of natural resources by the Tanzanian state" (Igoe 1999, 12).

In general, tourism has become a major generator of foreign capital for countries in the region. According to the World Travel and Tourism Council, tourism and travel contributed 10% of the GDP in sub-Saharan Africa in 2000, growing at a rate of over 5% annually in real terms (Christie and Crompton 2001). As such, ecotourism has become a pronounced part of the development strategies employed by these states. The region's national parks have been the primary destination for tourists in the region, particularly for those engaging in wildlife safaris or tracking mountain gorillas.

In the case of gorilla tourism, each visitor to the parks (Bwindi NP, Mgahinga NP, and Parc Nacional des Volcans; Parc Nacional des Virunga is currently closed) pays \$250 (USD) for a permit, plus park entry fees. Because the mountain gorillas move freely across nation-state borders due to the contiguousness of the parks, their transiency has direct economic impact on the states and societies in the region. The closure of the parks in western Uganda due to Allied Democratic Forces attacks has been estimated to have cost the government millions in revenue—to say nothing of the local economies. Taken together, the national parks represent a regional source of valued foreign capital. Yet because of the contiguousness of the parks and the transiency of the wildlife, the region must be regarded as an ecotourist "complex" where the costs and benefits of that economic activity cannot adequately be reduced to individual states.

Moreover, within the Great Lakes region, as within other parts of Africa, there has been a decrease in the coverage of the national territory by a government that has resulted in highly porous borders where the flow of people, weapons, goods, and resources is largely unrestricted. Smuggling goods (everything from milk and cigarettes to handguns and precious minerals) across nation-state borders in the region is rampant and represents a major aspect of the informal economy (Nugent and Asiwaju 1996). The national



parks frequently exist as conduits between states and local economies, particularly for smuggling. Personal observation suggests a rich and profitable smuggling network in the greater Virunga ecosystem that connects the informal economies of Uganda, Rwanda, and Congo. Because state-making processes affect human economic security and development in complex ways, national parks operate simultaneously as sources and obstacles for economic development in the region. By taking a regional approach to these issues, the project will examine how the Great Lakes communities and economies are intimately interrelated and, therefore, how development schemes need to reflect the realities of regionalization.

### Conclusion

By focusing on the national parks of the African Great Lakes region, this essay has sought to illustrate the interconnectedness between human security, state security, and development. The political, economic, and ecological forces that contribute to human security/insecurity cannot adequately be separated. Moreover, these issues of security and development cannot be reduced to individual nation states. The essay's employment of the "insecurity complex" concept is used to illustrate that the region is composed of a set of states whose security concerns are multiple, varied, and so interlinked that they cannot reasonably be analyzed apart from one another. Moreover, this essay has sought to illustrate that specific state-making processes from a range of actors involved in the creation, maintenance, and utilization of the national parks have helped engender a regional insecurity complex. As such, this essay suggests that any successful attempt to strengthen human security and development in the region must take a multi-layered and regional approach. The goal, one would hope, is to begin to convert the regional insecurity complex into a regional "security community." Successfully doing so will require recognition of the interrelatedness of human security and development and the state-making processes on the regional level. Thus, successful schemes should include state-making processes while looking beyond the narrow scope of individual nation-states to the interaction of social forces and repeated patterns of human practice.

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# Approaching the table: transforming conservation–community conflicts into opportunities

Christina Ellis, Izabella Koziell, Brian McQuinn, and Julie Stein

## **Abstract**

*With a goal of protecting and conserving natural resources, the approaches used by conservationists working with local communities can nonetheless create or exacerbate conflict. Conservation practitioners may expect communities living near key species or spaces of conservation interest to participate in programs that garner little benefit for their own identified livelihood and development needs. Our purpose, during this one-year study, was to gain a greater understanding of existing conservation–community conflicts, how they are addressed by conservation projects, and how the principles and approaches of a discipline such as community reconciliation could contribute to forming a more productive relationship between conservation practitioners and locally-affected communities. Semi-structured interviews and focal observations were conducted with participants in six conservation projects in sub-Saharan Africa. Analysis of the data elicited lessons learned and key factors affecting conservation activities, as well as relationships with government institutions and the country's citizens. Four themes—enabling environment, the role of NGOs, food security, and identity—exhibited important influence in the success of conservation initiatives and in shaping the outlook of affected communities. By coupling these results with concepts from community reconciliation, this study developed a conservation conflict transformation framework (CCTF), which focuses on transforming the conflict relationship between conservation practitioners and communities into opportunity. This framework for conservation was then tested in an alternate context through semi-structured community interviews with the Nez Perce Tribe's Gray Wolf Recovery Program in Idaho, USA. By presenting three basic areas of inquiry and action, conservationists are given methods and models through which to comprehend and analyze their project's situation, to create a new vision for the future, and to develop a strategy for creating new principles and approaches for a more effective relationship with communities.*

## **Methodology**

We employed an evolving, comparative case study research design to analyze the conflicts, as well as the philosophy, approach, and tools used to address conflicts and the social, political, and economic factors affecting a community's reception of conservation activities. Through project selection criteria and preliminary surveys, we chose six projects in Africa to generate lessons learned, and one project in North America to test the resulting model. Our field activities primarily consisted of participant observation and semi-

structured interviews with project managers and staff, government officials, and community stakeholder groups.

### *African case studies*

Project	Mount Cameroon Project (MCP)
Organizations	Mount Cameroon Project (MCP)
Project location	Mokoko Wildlife Management Authority (MWMA), Cameroon
Model	Community natural resource management
Start date	1989

**Summary.** MCP was a feasibility test to implement Forest and Wildlife Law 1994 for community natural resource management. The MWMA is a community-generated association resulting from MCP implementation, and addresses the influx of immigrant resource exploiters and large-scale commercial hunters. MCP is a pilot project of the Ministry of Environment and Forests (MINEF), working to improve biodiversity conservation and local livelihoods across the Mount Cameroon region. MINEF introduced new legislation in 1994, and the project was established to test new approaches for making the laws work. The goal of MCP is to maintain the biodiversity of the Mount Cameroon area by developing a strategy with local communities, governments, and industry, for the sustainable management and conservation of natural resources. Testing and implementing participatory approaches is central to the partnership.

Project	The BaMbuti of Eastern Democratic of Congo (DRC)
Organizations	Dian Fossey Gorilla Fund Europe (DFGFE) and Entreprise Communautaire Pour Une Action Allocentrique (EcoAction—Congolese non-governmental organization)
Project location	Kashwa II, DRC
Model	Livelihoods, displaced and resettled traditional forest peoples, protected areas
Start date	1996

**Summary.** Implemented by a local Congolese non-governmental organization, EcoAction, with support from the Dian Fossey Gorilla Fund Europe, this project focuses on culturally-appropriate settlement of BaMbuti pygmies who were evicted from their traditional land that became the Virungas National Park without any compensation or resettlement. Later, in the 1980s, they were further banned from entering the park for hunting or obtaining forest products. There are an estimated 2,500 “pygmies” living around the Virungas, home to the last 650 mountain gorillas. Large numbers of BaMbuti continue to live traditionally through illegal activities such as hunting and gathering and selling of firewood from within the park. Their skills as hunters

and rich knowledge of the forest resulted in many being recruited by illegal poachers. DFGFE supports 20 different local conservation, research, education and development projects around the Virunga Mountains. In addition, this project is designed to deal with the problems of adaptation and integration of “pygmies” in the eastern Congo.

Project Organizations	Zoning of the Okapi Faunal Reserve Wildlife Conservation Society (WCS), Institut Congolais pour la Conservation de la Nature (ICCN), Centre de Formation et de Recherche en Conservation Forestière (CEFRECOP)
Project location	Ituri Forest, Democratic Republic of Congo (DRC)
Model	Zonation
Start date	Okapi Faunal Reserve, 1992; Zoning Program 2000

**Summary.** The Okapi Faunal Reserve, created in 1992 in recognition of its biological significance, spans 1,362,625 hectares and covers approximately 18% of the Ituri Forest. Located in northeastern DRC, the Ituri forest is of particular interest in that it contains the greatest diversity of mammalian fauna of DRC forests, most notably the Okapi (*Okapia johnstoni*), a rare and endemic forest giraffe. Originally focused on zoning the Okapi Faunal Reserve, this project adapted to address community development needs and policy formation in the face of diminished government infrastructure in this remote region of Democratic Republic of Congo. The continuing civil war in this region has affected conservation feasibility with large numbers of soldiers, commercial hunting, and mining.

Project Organizations	Tsavo Conservancy African Wildlife Foundation (AWF)– Conservation Service Centers; U.S. Agency for International Development (USAID)
Project location	Taita Taveta District, Kenya
Model	“Business” model for conservation
Start date	November 1999

**Summary.** The Tsavo Conservancies were created in response to existing conflicts in the area. Funding received through USAID focuses on the business approach to conservation. Several principles guide this approach, all emphasizing the importance of community involvement, fairness, valuing partnership, and providing transparency. As a model of conservation community businesses, the African Wildlife Foundation sought to provide environmental tourism-focused business opportunities for communities living in Kenya’s Tsavo National Park system.

Project	International Gorilla Conservation Program (IGCP) Organizations African Wildlife Foundation (AWF), Fauna and Flora International (FFI), World Wildlife Fund (WWF)
Project location	Bwindi Impenetrable Forest National Park, Uganda
Model	Partnerships with existing organizations; ecotourism
Start date	1991

**Summary.** As an international consortium addressing an internationally-important conservation crisis, the IGCP works as a liaison between local communities and the national park. The goal of this collaboration is to establish effective conservation and management of the afromontane forest shared by Uganda, Rwanda, and Democratic Republic of Congo, and to improve protection of mountain gorillas as a flagship species for this habitat and source of tourist-based revenue for this region.

Project	Administrative Management Design (ADMADE) Organizations, Wildlife Conservation Society (WCS), Zambian Wildlife Authority (ZAWA), African College for Community-Based Natural Resource Management (CBNRM)
Project location	South Luangwa, Zambia
Model	Community-based natural resource management

**Summary.** ADMADE is an integrated wildlife conservation and community development program operating in 30 of Zambia's 34 game management areas. ADMADE tests two main hypotheses: that community participation in, and its derivation of tangible benefits from wildlife management is a more effective way of conserving the wildlife and the ecological state of Zambia, and that sustainable wildlife utilization is a viable and profitable land use option for local communities to pursue. Through facilitation of community-based natural resource management legislation implementation in Zambia, ADMADE provides training and skill building opportunities at the College for CBNRM at Nyamaluma. Important issues in the area are tourism, game management areas, food security, and government–community cooperation.

### *Conflict categories*

**Human/wildlife conflicts.** We extracted and compared the types of conservation and community conflict evident in the reviewed projects. The most conflictual relationship was that between communities and neighboring protected areas. In these instances, disputes focused on issues such as crop raiding, human safety, and access to water. A high profile example was human–elephant conflict, which has been traditionally addressed through technical prevention and mitigation tools such as solar fencing, elephant

grids, string fencing, and noisemakers. The Tsavo Conservancy case study in Kenya showed that while such solutions may have reduced the incidence of crop raiding, they also seemed to increase tensions, because while the Kenya Wildlife Service is attentive to elephant migration, there is no comparable body that focuses on human needs around the most visited national park system (Tsavo East and West national parks) in the country. Recurring disputes illustrated the need to move away from solely technical solutions and toward a relationship-based framework for the resolution of conservation and community conflicts.

**Human-human conflicts.** Another conflict category involved the formation, administration, and management of national parks themselves, including issues of access and revenue sharing. The poorest communities often shared a boundary with national parks and received the highest incidence of livelihood loss due to crop raiding and constrained resource exploitation activities with no compensation or tourism revenues. Human-human conflicts were also evident between different stakeholders. Government authorities did not always respect community institutions. Within communities, there were conflicts between short- and long-term residents, from political instability, and from industrial interests. There were also significant conflicts resulting from NGO activities such as voluntary committees, and from general misconceptions of NGO intentions, lack of transparency, and misunderstandings of tourism revenues and their distribution.

#### *Four factors for success*

We extracted key theme areas where lessons learned, conflicts, and approaches to resolving conflicts were nested. These are framed as four factors for success because each of these core categories can be re-framed to generate project objectives for more productive relationships between conservation practitioners and communities (Figure 1).

**Enabling environment.** The first factor for success is to assess how a conservation project enables the social, political, and economic environment surrounding its activities and local communities. This could include lobbying for new policies and legislations that provide the opportunity or ability for community empowerment, such as training opportunities for community leaders through the ADMADE project in Zambia.

**Role of non-governmental organizations (NGOs).** The role that NGOs play is directly determined by the capacity of other institutions, such as governments and communities. Communities in Africa in general are not organized, empowered, or equipped to address their own needs or speak with a unified voice. As such, NGOs need to clarify their mandates and ensure they have permission to engage in participatory community activities.

**Food security.** In Zambia, we noted that food insecurity occurs in the dry season, when maize flour resources begin to diminish. At that time,





Figure 1. Four factors for success.

community members may engage in illegal hunting and trapping of wildlife. Interestingly, the captured game is not eaten, but rather sold to buy maize flour. With this insight, ADMADE was able to integrate food security activities into larger CBNRM and training opportunities.

**Identity.** Identity issues are deep-rooted, and can only be addressed with a respectful focus on process and relationship building. Identity sur-

### Envisioning the future: reconciliation principles

- **Dignity and respect foster trust (CICR 1995).** Where dignity and respect exist, trust will follow. How dignity and respect are created within a process will be different in each context. Yet the concepts of respect and dignity usually begin with profound listening.
- **Profound listening.** How does a person listen in a way that creates a sense of dignity and respect? How does listening to gain insight into the cultural, social, or identity facets impacted by a situation change the nature of the interaction?
- **Conflict as opportunity.** The expression of conflict represents an opportunity not only to address the underlying conflicts driving a dispute, but also serves as a window into the values and beliefs central to the identity of the individuals and communities involved.
- **Focus on process and content.** How one addresses an issue is often as important as the content of the final solution. Why was a particular area chosen? How was funding procured? The need to create dignity and respect requires greater attention be paid to the process of conservation—how it engages and works with stakeholders. This application of conservation involves a new set of skills and processes.

faced in all reviewed projects through land tenure and access rights, ethnic group relationships, and other areas such as the lack of identity cards recognizing the existence of BaMbuti traditional forest peoples in DRC.

### *The conservation conflict transformation framework (CCTF)*

As a step toward creating a more pragmatic process for integrating concepts from community reconciliation (see box, previous page) into conservation practice, we synthesized several tools, approaches, and principles into the conservation conflict transformation framework diagrammed and outlined in Figure 2.

The first step is to assess the current situation of a conservation project. Tools to assist this analysis include the levels of conflict model, transitions model (explained below), and the four factors for success outlined above. The second step is to envision the future. We challenge conservation projects to focus more on process and relationship building, thereby integrating principles from reconciliation to re-envision the future. The final step is to create a new action plan. Tools here include how to move from a forum to a platform for action.

### *Levels of conflict*

The first analytical tool is the levels of conflict model (CICR 1995), which differentiates between three different levels of conflict: disputes, underlying conflicts, and deep-rooted (identity) conflicts (Figure 3). Not every situation involves all three levels of conflict, but most intense conflicts do. The first level of conflict that conservation practitioners customarily address is the dispute level, which represents visible problems, issues, or objects of contention. These are the tangible issues parties seem to be fighting over. In the

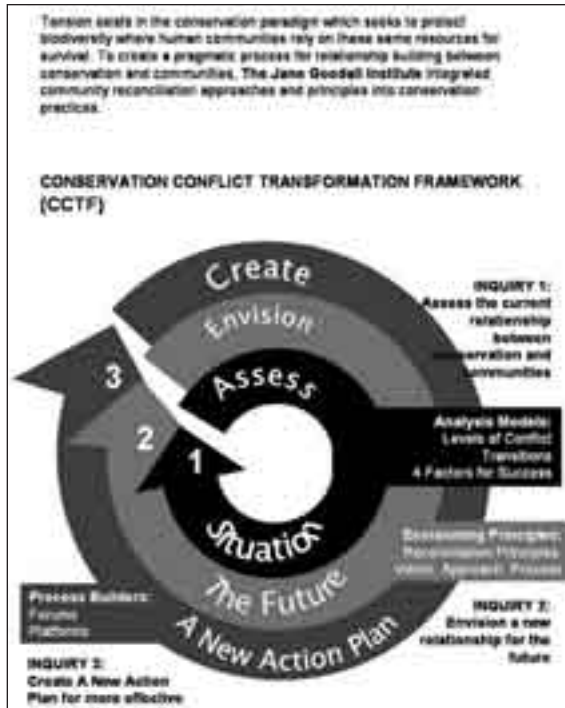


Figure 2. Conservation conflict transformation framework (CCTF).

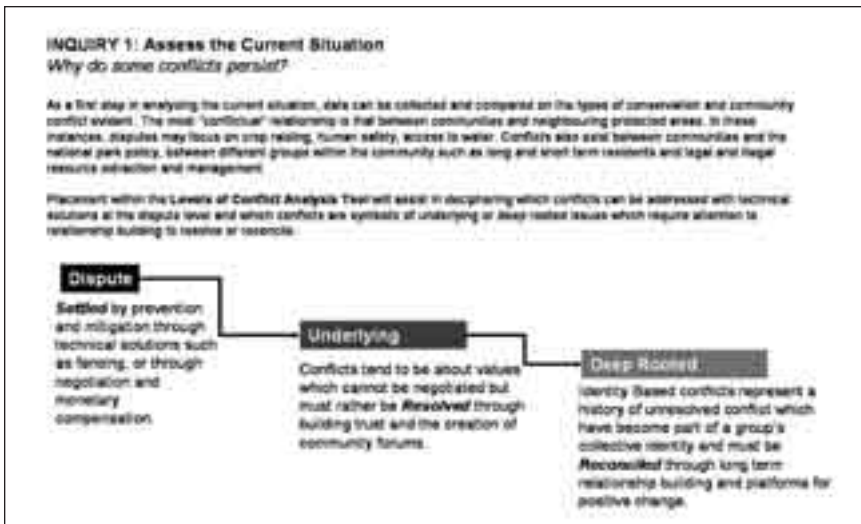


Figure 3. Three levels of conflict model.

case of the International Gorilla Conservation Program in Uganda, disputes often involve crop raiding, both symbolically by gorillas and impact-based by bush pigs and baboons. IGCP has settled these conflicts by forming Problem Animal and Human Animal Gorilla Program (HuGo) committees to reduce the incidence of crop raiding and monitor gorillas when they leave the park. Addressing the immediate problem by setting up programs to compensate for gorilla crop raiding may address the dispute level, but will not address the underlying sense of resentment.

The next level is underlying conflicts. Underlying conflicts represent the unresolved history of previous disputes that were not settled in a mutually satisfactory way, resulting in a sense of injustice or powerlessness. If these underlying conflicts are not resolved, future interactions will be used as opportunities to rectify the past. In the case of IGCP, this includes the loss of land and rights with the creation of the national park, and a lack of community distribution of tourism revenue to affected communities. IGCP has resolved these issues by creating a forum for communities to discuss their concerns and liaise with the national park.

Beneath underlying conflicts are deep-rooted, or identity-based conflicts. Deep-rooted conflicts represent situations where longstanding conflicts become part of the identity of the actors involved. However, deep-rooted conflict can occur in any situation that threatens the identity or beliefs of the actors involved. In the case of IGCP, this includes lack of respect for local community needs in the face of tourist development, and for traditional land use practices. These kinds of issues cannot be reconciled with tangible



Figure 4. Transitions model.

technical solutions, but rather must be addressed through relationship building and through the creation of positive events where community needs can be discussed. This has not yet occurred in the IGCP project.

### *Transitions model*

Our second analysis tool for understanding the current community conflict situation for a given project is called the transitions model (Figure 4), originally developed by William Bridges (Bridges 1991). As a four-step, non-linear process, individuals who undergo a series of external behavioral changes must also undergo an internal psychological transition for the change to be successfully integrated. While this is not necessarily a complicated process, it may be important for project workers to allow sufficient transition time and perhaps even assist communities through certain phases.

**Endings.** The first phase begins when a behavior, practice or way of life ends. An excellent example of transitions and the role of NGOs in facilitating them in individuals and communities is the African College for Community Based Natural Resource Management (CBNRM)'s Administrative Management Design (ADMADE) project in Zambia. Under this program, a hunter may be asked by his community to stop poaching and attend training at the college. By joining classes at the college, the poacher becomes a hunter and pledges to cease all illegal activities. In this regard, a phase of this young man's life has ended.

**Searching.** Hunters at the African College for CBNRM are guided through this phase of uncertainty. At the completion of their six-week train-

ing, hunters sign an oath to put down their guns for a minimum of six months in order to try an alternative livelihood, such as conservation farming, gardening, beekeeping, or community hunting. Every young man in the hunter transformation program is aware that re-entry into his village will be difficult. If proper time and respect are not given to either of these two phases, an uncertainty loop may return individuals and communities to the beginning of the process.

**New beginnings.** “People are ready to change attitudes, but the conditions under which they live dictate their behavior.” This sentiment was echoed by poachers and other community members who wished to participate in the ADMADE program but lacked knowledge and training. The African College for CBNRM intends to provide new beginnings to its students. All participants who complete the course and sign the pledge receive small funds to start a new project, as well as dry season food supplies.

**Integration.** Perhaps the hardest phase of transitions is integration. The ex-poachers re-enter their community as hunters, beekeepers, or farmers. Many suffer difficulties during the six-month pledge period, but very few pick up their guns and return to hunting. We noted that most communities in Africa were in the endings phase, not having accepted that certain behaviors were no longer possible—that the national park, for example, would be a permanent fixture. Interestingly, most conservation practitioners were offering communities a new beginning, and could not understand why their project activities were not embraced by communities.

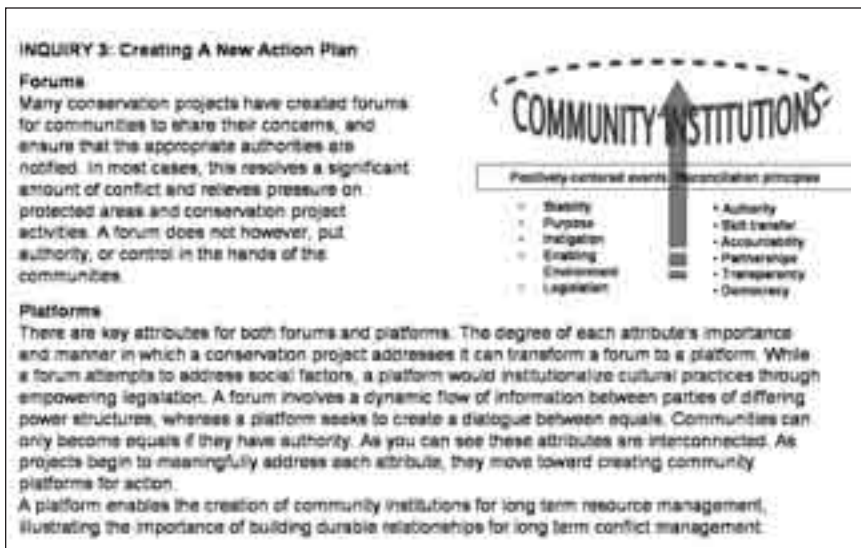


Figure 5. Create a new action plan: forum and platform.

### *Community institutions*

**Forums.** Many conservation projects have created forums where community members can share concerns (Figure 5). In most cases, this resolves a significant amount of conflict and relieves pressure on protected areas and conservation project activities. A forum does not however, put authority or control in the hands of the communities.

**Platforms.** Conflict transformation suggests that sustainability is found in durable relationships, not specific solutions. Therefore, the function of a platform for change is to transform the relationship between conservation projects and communities (Lederach 2003). As such, there are key attributes for both forums and platforms. The degree of each attribute's importance, and the manner in which a conservation project addresses it, can transform a forum to a platform. For example, while a forum may attempt to address social factors, a platform would institutionalize cultural practices through empowering legislation. A forum involves a dynamic flow of information between parties of differing power structures, whereas a platform seeks to create a dialogue between equals. Community members can only become equals if they have authority. These attributes are interconnected. As projects begin to meaningfully address each attribute, they move toward creating community platforms for action. In order to facilitate effective community action, conservation needs to incorporate reconciliation principles. By engaging in the three-phase conservation conflict transformation framework, projects may begin to reformulate their relationships with local communities.

### *North American application: the Nez Perce Tribe's Wolf Recovery Program, Idaho*

The purpose of the North American case study was to apply the conservation conflict transformation framework and reconciliation principles from the African project evaluations to an alternative conflict to test the model and see what lessons might be distilled for conservation practitioners and communities on two continents. In 1974, wolves were listed under the Endangered Species Act, but it took 20 years to build the political support for wolf recovery. In the mid 1990s, the U.S. Fish and Wildlife Service (USFWS) approached the state as well as the tribes of Idaho, seeking their involvement in the federally-mandated recovery effort. However, opposition from powerful ranching, timber, and outfitting constituencies prompted the Idaho state legislature to pass a bill prohibiting the Idaho Fish and Game Department from being involved in wolf recovery. The Nez Perce Tribe, which like many tribes in the U.S., is recognized as a sovereign nation and not bound by the state legislature, saw this as an opportunity to assert treaty rights regarding wildlife management in their traditional homeland, and to strengthen its ties with the federal government. Tribal biologists wrote a wolf management



plan which led to the signing of a Memorandum of Understanding with the USFWS to manage the wolf recovery program in Idaho. This innovative partnership was a first test case for a statewide endangered species recovery effort managed by a tribe in the U.S., and serves as a model for other tribes across the country interested in wildlife management.

While wolf recovery in Idaho has been a biological success story, the larger conflict over wolves is ongoing. To fully understand why this is so, it is helpful to use the “three levels of conflict” model (see Figure 3). This model shows how what appear to be simple disputes that could be settled through negotiation or monetary compensation are often underpinned and fed by more complex issues. Livestock depredation by wolves, for example, has been addressed monetarily through the Defenders of Wildlife’s Livestock Compensation Fund, but ranchers in Idaho believe that “compensation does not equal restitution” (M. Hinson, pers. comm.). In other words, this issue cannot be settled through monetary compensation alone. With intractable conflict, one must look deeper to see the underlying conflicts that represent a history of unresolved disputes; they tend to be more about values, and are therefore non-negotiable.

Finally, deep-rooted conflicts occur when a conflict has gone on for so long it becomes part of the identity of those involved. Identity-based conflicts for the tribe include loss of their aboriginal homeland, language, religion, and broken treaties. For ranchers, identity-based conflicts include threats to ranching as a way of life. Ranchers also express a sentiment—that, interestingly, was heard from community members in Africa, as well—that endangered species are considered more important than people by governments and conservation organizations. What the model reveals is that prolonged conflicts are usually not about monetary compensation or benefits, but usually involve unaddressed and underlying normative and identity issues.

The transitions model theorizes that change is external, situational, and imposed from the outside, while transition is the internal psychological process that one goes through to adapt to change. If the transition process is incomplete, the change is not successfully integrated. Obviously, this has relevance for conservation practitioners working with communities to reach conservation goals by asking them to abandon established behaviors that are often closely tied to individual or community identity. When the Nez Perce tribe, as well as Idaho ranchers, are mapped according to this framework, several important leverage points for conservationists are revealed. For example, to Idaho’s ranching community, wolf recovery represents a threat to a way of life. The possibilities for innovation and for shaping new identities are still unclear, and uncertainty affects whether communities are able to see change as a threat or as an opportunity, and leaves people focusing more on what they stand to lose, rather than on possible opportunities ahead. This is a key



leverage point where conservationists can assist communities in transition. Rather than seeing gray wolf recovery in Idaho as a threat, the tribe was able to frame gray wolf recovery as an important opportunity for reconnecting to culture, religion, and language, integrate the old ways with the new, and complete a successful transition. The tribe is on the cusp of the transitions cycle. The tribe has succeeded at envisioning their political future, and wolf recovery has been so successful that delisting is on the horizon. But will they have a role as the state of Idaho takes the lead in wolf management upon delisting? How this next transition will be managed is yet to be played out, revealing another possible entry point for conservation organizations to provide support and assistance if needed.

The Nez Perce case study is mapped below, according to the four factors for success distilled from the African project reviews:

**Enabling environment.** The willingness of the USFWS to engage in this innovative partnership was crucial. It was a risky proposition for both the tribe and the service. The partnership was facilitated by an umbrella of existing legislation (Endangered Species Act), giving this program legitimacy as a government policy rather than just a conservation project. The tribe's sovereign status was also important here.

**Role of NGOs.** In contrast to the institutional roles that conservation organizations often play in Africa (providing health care services, building roads, paying for enforcement of existing legislation), in this case study the conservation organizations played a supporting role to the tribe and government, who were the primary partners.

**Livelihoods (broadened from food security for this case study).** The wolf recovery program has had a modest beneficial effect, monetarily speaking, on tribal livelihoods through employment of a few tribal wolf biologists and wildlife technicians. The tribe receives \$400,000 per year from the USFWS to run the program.

**Identity.** Interviews with tribal members revealed strongly-articulated views that tied the tribe's recovery of the gray wolf to their identity as Nez Perce people. Tribe members related that they felt a shared history with the wolf that included prejudice, persecution, and removal. This parallel history continues today as the recovery of gray wolves has also sparked a spiritual and cultural recovery for the Nez Perce.

The tribe has been successful in creating a forum and platform within tribal society, and has been able to use this ecological restoration as a platform for a political, cultural, and spiritual restoration as a people. The formidable challenge that lies ahead is to construct a shared sustainable vision and a forum for all of the communities of central Idaho concerned about wolf recovery integrating the values, livelihoods, and identities of these stakeholder groups. If the decisions made through this forum have authority and

legitimacy, it will have the potential to become a platform for action and for conflict transformation.

### **Summary**

In conclusion, this study has found that by addressing environmental conflicts, communities may be better able to address other difficult issues. Conflict can be an opportunity for skill training, for more effective activities toward biodiversity conservation, and for recreating the relationship between conservation projects and communities. Conservation crises are the product of social, economic, and political factors, and as such need to be addressed with comparable processes and relationship building, rather than wholly technical or biologically-based solutions. Benefits from participation in conservation programs are not always monetary. Identity underlies many protracted natural resource debates, and can alternately fan the flames of conflict or be channeled constructively to reach conservation goals and empower communities. Finally, conservation and community empowerment are compatible.

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# What we've learned about nature from the national park idea

Aubrey L. Haines Lecture  
October 7, 2003

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An interesting conceit (at least for those who believe that the past is irrelevant to how the world is unfolding) is that history is a brand of intellectual recreation, not a practical, applied field. I'd like to lay that assessment to rest. Not quite four years ago, I picked up my local newspaper (the *Missoulian*; it was November 27, 1999) to find this headline: "Blackfeet Take Boundary Dispute to Washington." In 1895, Montana's Blackfeet Indians had ceded to the United States a large chunk of their reservation, which a few years later became the eastern half of Glacier National Park. Based on their long-standing presence in the Northern Rocky Mountains, however, the tribe had reserved certain usufruct rights to the land they'd long thought of as home.

Over the subsequent century of time the Indians, the newspaper went on, were increasingly dismayed to discover that the park service (and the wilderness movement) had concluded that the Blackfeet never actually utilized the mountain "wilderness" that became the park, but were merely its "first tourists." The tribal council had thus concluded that if the tribe was to be denied special use privileges based on its long-standing history in the part of their territory that became the park, then it wanted a share of entrance fees, concessions, and control over campgrounds in Glacier as fuller compensation. The paper quoted Bill Old Chief, Blackfeet Tribal Chairman's, somewhat ominous conclusion: "We are a sleeping giant."

That was a particularly intriguing story to me because at the moment I was reading a new book titled *Dispossessing the Wilderness* by an environmental historian named Mark Spence, who had investigated a series of nineteenth-century controversies (which no one but the Indians remembered

these days) about the removal of native peoples from the places that became Yosemite, Yellowstone, Glacier, and several other American national parks. It turned out that a century or more ago we had ejected a host of resident natives—not just Blackfeet but Shoshones, Crows, Navajos, Miccosukees, Havasupais, even the Pai’Ohana of Hawaii—from their homelands in order to create many of America’s most famous parks. This was a story that drove home to me, yet again, that history—especially what we now call environmental history, the study of the relationship between people and nature across the centuries—has a habit of circling back to bite at the present. If nothing else, wariness about getting our backsides nipped ought to be sufficient reason to look back over our shoulders occasionally.

Since Yellowstone National Park’s inception as the modern world’s first great national park in 1872, and its use as a kind of model for nations across the globe, a central theme for national parks around the world has been to preserve nature for the benefit of future generations. Over the ensuing 130 years, various nations have set aside national parks for a variety of reasons, but a majority of our “classic” parks have been scenic and/or wildlife preserves. In the case of these kinds of parks, the policymakers’ goals—usually spelled out fairly specifically (as in the case of the American NPS enabling act in 1916), or at least implied—have been similar in both cases. When we have established parks primarily as monumental scenery preserved, park managers hoped to sustain vegetation and views and geological processes for future generations to enjoy. If we have intended parks as wildlife spectacles primarily, we’ve had similar goals resting on different natural sciences. In the instance of a grand park like Yellowstone, vegetation, views, geological processes, and wildlife spectacle have all combined in a vision that, quite often, ended up pitting one form of preservation against another. Nonetheless, park goals—as the NPS enabling act specified—were all about allowing the public to experience nature while preserving it for future generations.

Preserving nature, of course, has turned out to be a very tricky proposition. Integral to the premise is an implied knowledge about how nature works. To “preserve nature” in any part of the world—America, Africa, Australia, Canada—policy makers and park personnel had to possess not just a sound grasp of general ecological processes, they have had to cope with the nuances of places and (we found out soon enough) even the nuances of time frames. Looking back on this, it seems that the founders of the national parks idea bequeathed to those in charge of parks a profound task that scarcely anyone comprehended. Embedded in the notion of great nations’ parks was not merely the charge that park personnel understand the natural world they were preserving, but that they interpret it for their publics. Largely because our sciences were in no way up to the task, this seemingly straightforward assignment turned out to be far more difficult than anyone would realize a

century ago.

The intent of this talk is to examine a select handful of the lessons the national parks in the U.S. American West have taught us over the past 130 years about what nature is, what wildness is, how they've functioned in the past, and how they're functioning in the parks today. As my brief historical survey shows, I hope, many of the things we thought we knew about these issues a century ago clearly turned out to be flawed, or far more complex and nuanced than anyone believed.

As the splendid Northern Rockies autumn of 2003 unspooled, I reflected on this topic, and it seems to me that one of the themes to discern in the historical story is one we'd expect to be there: That the history of park management through time nicely tracks the evolving story of modern humanity's increasing sophistication about the science of ecology. But it seems to me that there's another theme, as well, and I modestly propose that the parks have in fact played the role of great national laboratories, where over the decades we have tried to apply what we thought we knew about nature and, for better or worse, have gotten to observe the results. Sometimes we saw results we expected. More often, nature surprised us. But in so many respects—from the role of natural fire to the function of ecosystems, from the unending dynamism of nature to the cascading effects of predators, as well as where I started above, with the longstanding presence and role of humans in so many of the perceived “wildernesses” Europeans found around the planet—the national parks have been our great teachers and global laboratories in the quest to understand nature.

In the United States we, of course, had parks before we had a government service to bring a kind of rationality, and at least some rudimentary science, to managing them. We not only had parks—16 of them by 1916, but compliments of the Antiquities Act of 1906, the U.S. also had 18 so-called national monuments, widely-scattered parcels diced out of the public domain ostensibly to protect archeological ruins and sites in the Southwest, but mostly used up to 1916 to designate special geological wonders such as the Grand Canyon in Arizona and Devils Tower, a remnant volcanic plug in Wyoming. The 1916 enabling act for the National Park Service placed all these parks and monuments under control of the new NPS, whose mandate (according to the language of the act) was “to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.” More than one historian (and undoubtedly plenty of frustrated park superintendents) have noted that several of these multiple objectives seem at cross purposes.

National parks and the science of ecology were born almost as fraternal twins. Although conceived in the 1860s and having its first impact on policy

as a result of streamflow/watershed arguments in the late nineteenth century, ecology did not mature as a science in the U.S. until the Ecological Society of America emerged in 1914. The early American ecologists such as Frederick Clements (prairies), Victor Shelford (animal communities), C.C. Adams (mammal ecology), E.A. Birge (limnology), and Henry Cowles (plant ecology) were well on their way by 1914 to establishing some governing principles for the science. They all accepted the idea of a basic harmony in undisturbed nature (which they called “the balance of nature”), saw humans mostly as disruptors of it, and accepted that “undisturbed” nature represented ecological health and a baseline against which human changes could be judged. Additionally, they developed the principles of energy flow through nature, the idea of biotic communities, a grasp of adaptation, and the idea of the climax community, the natural state they believed nature seeks.

Eventually, the ecological sciences would add a crucial scientific leg to form a kind of tripod (the other legs represented by utilitarian/democratic conservation and romantic/aesthetic preservation) to support environmental thinking in America. But by our own time ecology has thoroughly critiqued, modified, even rejected many of its early insights. And as one indication of its emergent qualities as a science, one of the founders of the Ecological Society of America, Victor Shelford, wrote his last book in 1963, just 40 years ago.

### *Fire*

It’s especially interesting now to look back on our ideas about fire in light of ecology’s early twentieth-century ideas about climax and the balance of nature. A century ago, ecology in its American form suffered from all the false starts one could expect in a new science. One of the most problematic of its ideas, which its scientists clearly absorbed from a tradition that extended back through Western culture to the Greeks, was the ancient notion of the balance of nature. The so-called Prairie School of ecologists, working in the grasslands of the Great Plains, re-fashioned this premise in the 1920s into the idea of “climax” in nature, an ultimate and static ecological balance of species—unique to each different setting—which life sought inexorably. The climax argument had little sympathy for ecological disturbance or dynamism in general. In the tradition of George Perkins Marsh’s great, nineteenth-century book, *Man and Nature*, this was a theory that tended to regard humans as entirely separate from nature, and almost literally as the only power on the planet capable of disturbing “climax” conditions.

We all know that the catastrophic fires in Yellowstone National Park in the summer of 1988 woke many Americans up to the apparently counterintuitive idea that fire is an inherent part of the forest ecosystem, without which some species cannot survive or reproduce. Fire, in the new bumper sticker insight, was natural. Dramatically, too, the 1988 fires also showed the dangers of suppressing natural fire for decades. But fire suppression emerged in part

in light of ecology's early twentieth century ideas about the balance of nature. Anyone who spent time in a region like the Rocky Mountains or the Sierra Nevadas (or who looks at old photographs of those places) in the nineteenth century realized that fires burned or had burned everywhere, from foothills to high forests. The most startling of visual evidence of this for many modern people is looking at paired images of repeat photographs, shot in the same locations 100 years apart. The natural setting, for which many of us yearn, it turns out was roughly 30% more barren than the nature we live with in our own time.

Now here is the punch line: In the American mind 100 years ago, the cause of that barren condition quite properly was fire. But when it came to the cause of fire, the early syllogism broke down. Today's ecology, with a full grasp of disturbance in nature, understands that a primary ignition source of wildfire (depending on setting, of course) is lightning, especially lightning strikes in years that follow wet cycles allowing the buildup of fuels. But a century ago, everyone was convinced that as the only possible disturber of nature, humans had to be responsible for almost all fire in the natural world. Today that has led us quite properly to a new appreciation of the role of native peoples in firing and shaping landscapes. But a century ago, particularly after the astonishing Great Fire of 1910 in the Northern Rockies, ecologists lent their weight to forest and park managers in the quest to suppress all fire. Why? Obviously in part because they destroyed property and lives. But beneath that ran the idea that fire was a disturbance, that only humans disturbed nature's balance, hence wildfire was "unnatural." As no less than John Wesley Powell argued, the best strategy for stopping wildfire in mountain forests was "to remove the Indians, the cause of the conflagrations."

### *Ecosystems*

Yet another area where modern thought about nature's processes was either missing or downright wrong in those formative years for parks, from the 1870s to the 1930s, had to do with the fundamental question of criteria for sites to preserve. Historians of the American park system usually argue that the philosophical direction the NPS took in its early years was the result of first director Stephen Mather's personal vision. According to his biographer, Mather developed a set of evaluative criteria for new additions to the park/monument system that his successor and protégé, Horace Albright, followed as well. The "Mather criteria?" He looked for sites that were, in effect, clones of Yellowstone and Yosemite: large, preferably contiguous blocks of terrain, with natural features so extraordinary as to be of national interest. What features? Namely, scenery, and of a particularly unusual and impressive quality—what park service historians have called the "monumentalism" requirement.<sup>1</sup>

Monumentalism has its own fascinating cultural trajectory, springing as



it does from eighteenth century Romantic attempts—really quasi-religious attempts—to define the sublime in nature. The almost overpowering scenic qualities of many of the parks around the world owe much to European notions about the sublime, the idea that in the face of monumental nature one stands literally in the presence of God. If you peel back the layers sufficiently, here, as well, you find the seed that has flowered in our own time into parks as great national sacred places.

If God resided only in these specific blocks of the world, though, the deity didn't know much about ecology. Because, of course, the handy nineteenth- and twentieth-century method of drawing the boundary lines for parks omitted something we've come to realize was crucial. The linear grids we drew around sublime scenery disguised for us, but not for the life forms inside, the fact that Yellowstone or Glacier or Rocky Mountain parks never stood separately from the surrounding landscape. There always had been connectivity with the lands stretching away in every direction. As far back as 1933, when the very first *Fauna of the National Parks of the United States* appeared, park ecologists like George Wright understood that the parks did not function as ecological units.<sup>2</sup> So when the mid-twentieth century ecologist Eugene Odum began preaching the science of ecosystems, it became very clear what foolish mistakes we'd made in bounding so many of the parks as we had. Today, the science of conservation biology is neck-deep in mapping out the ecosystem connections of major landforms all over the planet. But again, it was the parks that became our teachers in the new idea—first by the example they set of how we never should have done things in the first place, but eventually in more positive ways, as in mapping out the Greater Yellowstone Ecosystem, that sprawling, connected landscape that takes in both Yellowstone and Grand Teton parks, set into an irregular terrain at lower elevation that's easily as large as the two parks combined.

Nor does the real ecological connectivity end there, as the Yellowstone-to-Yukon Initiative (and many others modeled on it) show so well. Of course, alongside that now-recognized ecological reality is the political one that the old mistakes leave us with. The NPS directly can manage only the parks themselves, not the ecosystems surrounding them. When bison or grizzlies or wolves in Yellowstone instinctively hearken to the ancient dictates of their landscape, and pass those linear 1872 boundaries like the artificial and cultural lines they assuredly are, we humans are compelled to act as if the old mistakes are still absolutely defining.

### *Predators—prey eruptions—vegetation changes*

Then, famously, there was the predator question. Between 1901, when the professional wolfer Ben Corbin published his *The Wolf Hunter's Guide* explaining America's war on wolves in terms of Christianity, democracy, and the depravity of wolves, and 1924, when the Predator and Rodent

Control (PARC) division of the Biological Survey was distributing 3½ million strychnine baits annually, we cleared the American West (including the parks) of all but a few pockets of wolves. PARC's figures indicate that there probably never were as many wolves southward in the West as farther north, since by 1962 its wolf tally in New Mexico and Arizona was only about 600 animals, while in Montana, Idaho, and Wyoming PARC hunters had killed some 24,000 wolves. In the second half of the century, only in the far north of the continent were there still healthy populations of wolves.

In an orgy of death-dealing, we had shot wolves, roped them, gassed, stomped, and strangled them. We'd trapped them with the new steel leghold trap invented by Sewell Newhouse (to replace the wild with "the wheatfield, the library, and the piano," Newhouse said). We hung them from trees as if they were human outlaws. We tried biological warfare; in Montana, a 1905 state law required veterinarians to infect captured wolves with sarcoptic mange and release them to spread the disease. But mostly we just poisoned them, and by the thousands. Everyone in the West for three decades or so seemed to regard it as a patriotic duty to carry a vial of strychnine around to lace every carcass with poison. It was civilization's revenge on the animal that more than any other has reminded the civilized how brief is our separation from the animal.

We did all this because it was part of the European tradition, as well as some kind of psychological need. And, because our science—in the thrall of the culture than enveloped it—had yet to grapple with predators' role in nature. Indeed, ecology at least until the 1920s seemed to regard predators as some kind of natural mistake, varmints whose removal would improve the world enormously. Then the consequences of what we'd wrought began to come home to us.

In the 1920s, when ecologists first began to probe the possible beneficial effects predators might have in nature, a classic view emerged: that there was indeed a set of relationships between predators and their prey, and that they worked mechanically, that predators were the key to holding prey populations under some carrying capacity fixed by nature, and that this was a symbiosis working as a rhythmic oscillation around a steady line. As deer or elk populations increased, the number of wolves also increased until a point was reached where predation dampened prey population growth. Declining numbers of prey in turn suppressed predator population growth, until the scenario commenced once again. Ecology gave this concept a name—the Lotka-Volterra equation—while the parks where wolves were now erased, particularly Yellowstone, Rocky Mountain, and Grand Canyon parks, now demonstrated for the whole world how it worked in nature. Elk and deer populations without predators underwent a dramatic efflorescence and destroyed their browse, in some cases dramatically altering the vegetation

of the parks. Spectacular ungulate population crashes, at least sometimes, followed, the most famous one on the Kaibab Plateau of the Grand Canyon. Meanwhile, outside the parks, managers substituted human sport hunting for predators with better success.

In the mid-twentieth century, predator/prey ecology went through some revisionism from this classic view, when Charles Elton conducted careful new investigations of Hudson's Bay Company trapping records. Similarly, Durward Allen's work on moose and wolf interactions in Isle Royale National Park in Minnesota showed what seemed to be wild swings in the populations of both species, and also showed the precarious nature of predation; wolves commonly "tested" more than a dozen moose before they were successful in bringing one down. By now, predation revision was in full swing, and in 1973, a New Zealand ecologist, Graeme Caughley, published a soon-famous paper asserting that predators played little or no role in controlling populations of many prey animals, that for some ungulates an autogenic (internal) mechanism slowed or stopped population growth when it approached carrying capacity. Furthermore, Caughley argued, for a variety of reasons the whole Kaibab/Yellowstone/Rocky Mountain park ungulate irruptions probably didn't mean what ecologists thought. Kaibab, he asserted, may even have been a hoax.

Here in the twenty-first century, predator revisionism seems to be in retreat. Studies from the western Canadian provinces, from Denali Park in Alaska, from Isle Royale Park in Minnesota, and now increasingly from Yellowstone and the northern Rockies, where we currently have 800 wolves in the wake of a marvelously-successful restoration under the Endangered Species Act, all appear to demonstrate a keystone role for predators like wolves. In Denali, wolf predation is said to have exerted strong evolutionary pressure on the behavior and habitat selection of mountain goats, and on moose and Nechina caribou demographics. In Canada's Wood Buffalo Park, wolves have a dampening effect on the population dynamics of bison. In Minnesota, a particularly compelling study done by well-known biologist and wolf advocate David Mech found wolves a key factor (among several interacting ones) in significant whitetail deer herd reduction in the Superior National Forest in the 1970s.

Jasper and Banff parks, the Canadian analogues to Glacier and Yellowstone, join their U.S. counterparts in wolf history trajectory. Western Canadians inherited all the same flawed science and folklore that Americans did a century ago. Their park managers stayed in close communication with NPS managers during the heyday of wolf eradication, and they tried the same tactics. Using guns and traps, Banff very nearly succeeded in eradicating wolves—at least from the 1930s until the 1980s—and adding snares and wolfhounds to those weapons, Jasper came close to success during the '30s. But the Canadian Rockies had too much connectivity with wild country

north and south for local wolf extirpation to work for very long. After only a decade, particularly after elk shipped up from Yellowstone got going, the wolves filtered back into Jasper. They were denning in the Bow Valley in Banff again by 1980. Fortunately for the wolves, this happened during the span of years that ecology was moving towards an understanding of predation's role in nature, and was finally getting the word out to the public.

Canada has no Endangered Species Act to recover wolves, but in the 1980s, as wolves insinuated themselves back into Canada's parks, Banff and Jasper experienced the same remarkable ecological re-shuffling that Yellowstone is experiencing now.

And what an experiment it has been to remove a keystone predator for more than half a century, then get to watch as its return quite literally re-organizes ecological relationships and processes up and down the ecosystem!

### *Humans*

In 1933, the pre-eminent American ecologist Victor Shelford, who at the time chaired the Ecological Society of America's Committee for the Study of Plant and Animal Communities, wrote in a short essay in *Ecology* that "primitive man...is probably properly called a part of nature." So far, so good; properly, so are we all. But then—and here Shelford would articulate a view that two succeeding generations of ecologists and environmental thinkers took to heart—he went on that America's ecology was "probably not much affected by these primitive men. That is the argument for leaving them out of the picture."<sup>4</sup>

It's also the argument that, most recently of all the issues I've touched on here, would eventually get those ecologists and conservation biologists down the timeline in a heap of trouble when environmental historians and ecological anthropologists came along with new techniques for estimating Precontact human populations, and considerable documentary evidence of Indian manipulation of the world around them. As we know, this has fueled a most interesting debate that's functional in modern ecological restoration: Were the Americas' wilderness settings shaped purely by "natural" forces? Or (the newer view out of the historical record), had 12,000 years of stacked-up human inhabitation/manipulation made the continents "managed" places much as Europe or Africa were? If the latter has been the case, what does that mean for our grasp of nature in the parks, aside from the kinds of possibilities I hinted at with the Blackfeet in my opening remarks?

The truth is, right now we don't quite know, at least in pragmatic terms, what an ancient human presence in our parks might mean. In other terms, it helps (at least) to restore our sense of our own naturalness. We, too, are children of nature. But pragmatically, our science is not yet up to the task of assessing an ancient human presence beyond obvious ones in places like Chaco Canyon or Mesa Verde parks, created around the ruins of the

ancients.

But grappling with this idea has had real importance in other parts of the world. As historian of African parks Jane Carruthers has written, as the park idea spread out of America and around the world, its peculiar conceits about the wilderness quality of the “New World” led to problems elsewhere. In Africa, from the beginning, an element in creating parks was conservation’s insistence that the local natives with their subsistence hunting and gathering economies constituted a threat to the kind of nature tourists wanted to see. Thus, places like South Africa’s Kruger National Park, from which the state ejected 3,000 Africans at its creation in 1926. Managers allowed some natives to continue living in Kruger Park, but for the sake of “wilderness” forbade them to walk on the roads or otherwise be visible. In 1969, Kruger Park officials finally expelled the Makuleke, the last group. Like the Blackfeet and many resident native peoples, they now have a lawsuit to allow either their return or significant compensation for their removal. Kruger, then, is just one example of a seeming conflict between the American park model, with its insistence that nature is only natural if humans are absent, and the real world out there, where in truth virtually all of “nature” is ancient human habitat.

### *Conclusion*

The park idea is a Western idea, originating with Europeans in the form of the Greek sacred groves, in modern times emerging from a European tradition of treating unusual landscapes as terrain outside the normal expectation of privatization that powered the nineteenth-century settlement of America. It was a tradition that actually produced a public (state) park, in the astonishing canyon of the Merced River in the Sierra Nevadas—our Yosemite—almost a decade before Congress designated Yellowstone as the world’s first national park.

The modern scientific method is another legacy of the Western tradition. However one feels about science as a worldview, and there are plenty of people mightily suspicious of its appropriation by powerful interests, science is here to stay, for two very good reasons: it explains more about our world and our universe than any other system of knowledge we humans have ever developed, and its very fallibility is one of its strengths. Science is often wrong, yet truth emerges eventually. Unlike faith-based systems of knowledge, science admits its mistakes—it cannot go forward any other way.

That is why, when I look at this history, I cannot share Alston Chase’s outrage, in a book like *Playing God in Yellowstone*, where the author seems to think that park managers knew all along what they should have done, but were willfully and even criminally negligent enough to try to make bad science work. Willful they may have been, and (as Richard Sellars shows in his own book about science in the parks) their attention indeed may have been elsewhere, specifically on tourists. But with all the great ecological issues,

managers I think have simply applied what the experts assured them was the best science of the day. Looking back, that, of course, has to sober our confidence in what we think we know now.

One final conclusion: Around the world, parks have demonstrated convincingly that if you build it, they will come. From the dawn of time, our species seems to have known instinctively that we ascended out of the Earth, that despite our cultural or religious conceits, in fact we are biological. We spring from nature, and unless we figure out a way not to die, we will never transcend it. So modern humanity needs the sights and smells and tactile experiences of the natural world whose very processes produced us. We need it so badly that the parks, it seems to me, are the ultimate evidence for E.O. Wilson's biophilia hypothesis, that evolution hard-wired us to love and revel in the diversity of life with which we co-evolved.

### Notes

<sup>1</sup> Shankland, R. 1979. *Steve Mather of the national parks*. 3rd edition. New York: Alfred A. Knopf, 210–15. Richard Sellars's *Preserving nature in the national parks: a history* (New Haven: Yale University Press, 1997) has shown how difficult it was for the ecologists to bring the park service around to their way of thinking.

<sup>2</sup> *Fauna Two* (1935) was an early investigation of the possibility of re-introducing extirpated species into the parks. See Keir Sterling, 1999. Zoological Research, wildlife management, and the federal government. Pages 19–65 in *Forest and Wildlife Science in America: a History*, H. Steen, ed., Durham: Forest History Society.

<sup>3</sup> I have no wish to whitewash the Canadian story. While Western Canadians have lived with wolves in their midst during most of the period that we Americans came to think of wolves as merely symbols of the long-gone Frontier—so that many Canadians have been, frankly, amazed at the uproar over wolf recovery in the U.S.—in Canada the story isn't straightforward, and it may be predictive for what's in store for us. In 1951, rabies appeared among red foxes in Alberta. The result for wolves was a hysterical rabies eradication program that from 1953 to 1955 reduced Alberta's wolf population from 5,000 to fewer than 1,000 animals, despite the fact that not a single wolf killed tested positive for rabies. Canada has no Endangered Species Act that protects wolves, and in the 1980s sport hunters and wildlife agencies in British Columbia pushed for and got a campaign to poison and helicopter-gun thousands of wolves in B.C. to protect ungulate herds. Although the courts declared that hunt illegal in 1988, the hunt encouraged a private sportsman's group in Alberta to offer bounties and free traps to anyone who would go after wolves in Alberta. And finally, this: The wolf/prey relationship in Western Canada hints that the norm in nature is an endless cycle of population swings, of both prey and wolves—something we should be ready to witness farther south.

<sup>4</sup> Shelford, V. 1933. The Preservation of natural biotic communities, *Ecology* 14: 240–5.



# Community Conservation Services for Serengeti National Park's surrounding communities

Emmanuel J. Gereta

## ***Abstract***

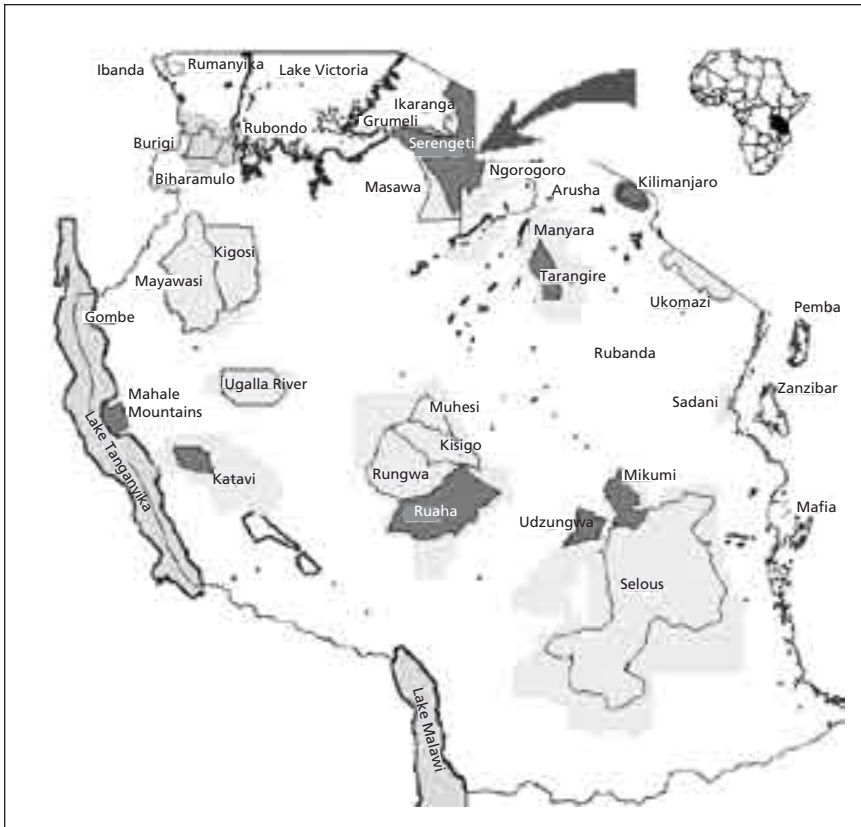
*Community Conservation Service (CCS) is an outreach program of Tanzania National Parks (TANAPA) intended to support communities surrounding national parks. The focus of the program is to create awareness in these communities so that they become part of conservation efforts. The program started with Serengeti National Park and thereafter grew to cover other national parks. The idea of the program was to solve social conflicts between people, wild-life, and protected areas. Communities are supported through a benefit sharing system using money collected from tourism in the parks. Communities also propose projects that the parks support on the understanding that the communities will also contribute. Communities pay 30% of the project cost in the form of cash, labor, or available local materials. TANAPA pays the remaining 70%. The program has registered some successes in conflict resolution. However, income-related poverty seems to link strongly to poaching by the poorest members of the communities. These community members have shown to be lacking the ability to meet their basic needs. The challenge ahead for TANAPA shows that the poorest members of the community need to be empowered individually to meet their basic needs for conservation to remain sustainable.*

## ***Introduction***

The Community Conservation Service (CCS) was created to increase conservation awareness in local communities up to the district level of government (local government), with the aim of having them becoming part of the conservation efforts. It was a field-based program, supported by TANAPA head office. The program started in 1988 in Serengeti National Park (Maps 1 and 2) as a pilot project under "Neighbors as Partners," an African Wildlife Foundation (AWF) project in collaboration with TANAPA begun in three villages at the eastern borders of Serengeti National Park. All these villages were in the Ngorongoro District, a predominantly Maasai area. The program then grew to cover a few more parks in early 1991. These parks were Tarangire, Lake Manyara, and Arusha national parks.

The idea of CCS in Serengeti came about after it was realized that there was a continued erosion of the integrity of Serengeti National Park despite the increased efforts of law enforcement. The apparent decline of some of its wildlife species was caused by illegal over-exploitation that peaked in the 1980s. Affected species included elephants, buffaloes, rhinos, and roan antelopes. There was also a progressive loss of the natural system that was





Map 1. Location of Serengeti National Park in relation to other national parks and other wildlife-protected areas in Tanzania.

advancing from the boundary towards the interior of the park. The shrinking of the park was caused by human encroachment, most probably as a result of population growth. These threats forced the management to question whether its approaches to conservation were achieving the intended results of protecting the biological diversity in the protected area.

Natural resource use conflicts between people and parks, and people and wildlife were contentious under the colonial and post-colonial legislation. These laws imposed penalties for unlicensed hunting, entry into protected areas, firewood and medicinal plants collection, and any other unauthorized harvesting of park resources. Neighboring villages also suffered heavy losses of property and life caused by wildlife, without compensation. Thus, human communities were alienated from their natural resources. This created conflicts, and wanton harvesting ensued. An idea then came that suggested provision of social and welfare services to reverse the hostility. This suggestion

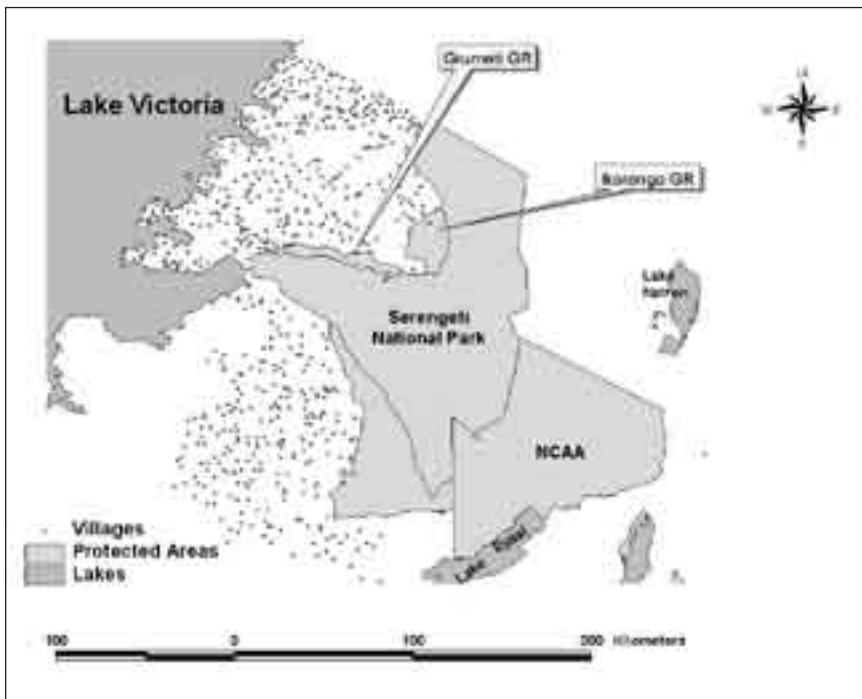
brought up the concept of establishing CCS, now known as the Outreach Program.

In 1992, the CCS program was incorporated and became one of the TANAPA departments under the Directorate of Parks Management and Conservation. Today, the organization has a full-fledged department, with permanently employed staff at the head office and in all 12 national parks. The department is now called the Outreach Program, with its manager under the Directorate of Resource Conservation and Ecological Monitoring, a change brought up by a recent corporate restructuring exercise.

The main objectives of CCS were to explain the purpose of the parks to local communities, to solicit local participation in park management, and to protect the integrity of national parks by promoting good relationships with the surrounding communities. In other words, community conservation sought to change the ways in which resource users and the state agencies interacted so that conservation goals could be achieved.

### *CCS mission*

CCS is a TANAPA field program supported by the head office with an aim of identifying and implementing opportunities for sharing park benefits



Map 2. Serengeti National Park with surrounding villages.

(accrued from tourism) with adjacent communities. The CCS activities are fully integrated with other park management activities, and it follows normal TANAPA procedures along the lines of responsibilities and reporting. The Department seeks to protect the integrity of national parks by reducing conflicts between wildlife and surrounding communities, improving relations with those communities, and helping to solve problems of mutual concern (TANAPA 2001).

### *The Serengeti–Mara ecosystem*

The Serengeti–Mara ecosystem covers an area of 25,000 km<sup>2</sup> defined by the annual movement of wildebeest, zebras, and Thomson's gazelles, and is comprised of several protected areas. Mara, in the southern part of Kenya, joins Serengeti in the northern part of Tanzania. Serengeti National Park, whose area is 14,793 km<sup>2</sup> and where CCS was pioneered, is the core of the ecosystem, and is one of the natural wonders of the world. Serengeti is famous for its annual migration of wildebeest, zebras, Thomson's gazelles, and elands, all together numbering more than 2,000,000 (Sinclair and Arcese 1995). There is also a high diversity and abundance of large predators and non-migratory ungulates. The CCS concept has been adopted in the conservation efforts supplemented by other management practices.

### *How CCS works in supporting communities*

The CCS work strategy starts with the initiation of an extension service to communities to solve outstanding problems and establish good working relationships based on the concept of “Ujirani Mwema,” literally known as “good neighborliness.” Once this relationship is established, the park starts to make contributions to small community development projects that benefit most of the people living there. The park's contributions to these projects are supposed to provide concrete benefits and real evidence to communities of TANAPA's willingness to share benefits of conservation.

TANAPA's Support for Community Initiated Projects (SCIP) fund was initiated in 1992 as part of headquarters and the park strategic planning process. The SCIP fund program works with communities bordering or close to national parks and stresses support for community-initiated projects. Approval mechanisms are set at the park level, and there is increasing collaboration with tourism-related projects adjacent to the parks.

The SCIP fund currently amounts to about 7.5% of each park's operating budget. However, the majority of parks do not receive enough gate fees to cover operating costs. The parks that generate more revenue subsidize such parks. The parks with such high revenue generation are Kilimanjaro, Serengeti, Arusha, Manyara, and Tarangire.

In order to access the SCIP fund, communities fill out a simple, one-page form written in Swahili. This proposal is reviewed by a park SCIP commit-

tee using a set of established guidelines together with the strategic plan for that park. Generally, the park contributes 70% of the project cost and the community provides the remaining 30%. The 30% contributed by the community can be in form of cash, labor, or locally available materials. The community forms a Natural Resources Committee under that community's village government that collaborates with the Outreach Program warden from the park. This committee supervises project implementation. Where technical expertise is needed, depending on the type of project, district authorities are consulted. This service is provided free of charge. Apart from supporting community projects, conservation education is also provided to schools and local communities by the park. The following are some of the projects supported by the SCIP fund from 1994 to 2002, and their costs in U.S. dollars as shown in Table 1.

**Table 1. CCS projects and their costs, 1994–2002.**

Year	Project type	Amount (U.S.)
1994–2002	Education projects	282,230
1994–2002	Health projects	82,541
1994–2002	Water projects	50,236
1994–2002	Conservation education	4,105
Grand total		\$419,112

**Conservation education.** TANAPA's conservation education is an idea that was developed with an aim of making the population aware of, and concerned about the total environment and its associated problems, and providing them with the knowledge, skills, motivation, and commitment to work individually and collectively toward solutions of current problems and the prevention of the new ones (GreenCOM 2000). The implementation stage of conservation education is carried out in the form of arranging park visits by local community groups, providing training to communities on project management and accounting, establishing conservation clubs in schools, training teachers, and showing conservation films to communities using the park's mobile film van. The costs involved in these operations are fully covered by the park's operations budget, which is independent from the SCIP fund.

**Contribution of local communities to conservation.** Based on the conservation efforts created in communities through awareness of natural resources conservation and management, communities have started to respond positively. Poaching is now being combated by the formation of village game scouts (VGS) formed by village governments. The village game scouts perform anti-poaching patrols complementing the state-owned and park anti-poaching forces. Under the new Tanzania Wildlife Policy (1998), the VGS are empowered to carry out arrests within their communal land. They also provide tips leading to arrests of people dealing in illegal trophies (e.g., ivory, rhino horns) and more commonly, the illegal game meat trade.

VGS have the advantage of knowing the seasons and areas that are prone to illegal activities and probable perpetrators. The VGS and the general public are also providing the vital service of reporting stray animals. For example, on two different occasions, rhino sightings were reported at Machochwe and Halawa villages. Serengeti National Park, through its Outreach Program, supports law enforcement in community lands, recognizing that this is where most poachers live and sell their illegal products. Likewise, VGS compliment the park's ranger force by tracking down culprits outside the boundaries of the protected areas. In recognition of this good work, the park provided seven bicycles in 2000, on a trial basis, to facilitate easy travel to the nearest ranger post or police station when seeking assistance. The park also provided 30 uniforms to six VGS units. Transport is provided on request when needed for conducting anti-poaching operations. Institutions run by the government under the Wildlife Division offer training for the VGS.

**Law enforcement in the communities.** Apart from using the governmental machinery (court of law and police) in the prosecution of illegal activities, law enforcement officers on community lands use traditional leaders who have succeeded in controlling cattle rustling, which was a major concern for local authorities. Communities use sanctions that have evolved in their societies and have proved to be more effective than government procedures. Local people have several linkages among themselves. Better able to influence one another, they administer sanctions at less cost than the customary government bureaucracy. They know the appropriate and most effective sanctions based on the offenses committed. Sanctions range from verbal warnings to fines and corporal punishment. These sanctions have reduced time for park personnel in traveling to courts of law to give evidence, hence allowing more time for fieldwork.

### *Successes registered by CCS*

Although there are no quantitative figures to show the success registered since the inception of the CCS program to Serengeti National Park, the following have been observed:

- There is now an amicable relationship between the local communities surrounding the park and park employees. The hostility that existed prior to the 1990s is now history.
- Environmental conservation through increased awareness and sensitivity seems to be well understood, as shown by the wide use of more efficient charcoal stoves by over 50% of households in 20 pilot villages that had one or two women trained. Tree planting has also shown success in these communities.
- A growing number of illegal harvesting cases are dealt with by village councils. As an example, the Mikese Village in Serengeti District

dealt with over 400 offenses that were related to wildlife conservation between 1999 and 2002.

- There is an apparent decline of illegal activities such as cattle grazing. Poaching missions are being disrupted before being effected, and trophies are sometimes confiscated as a result of intelligence tips offered by villagers.

### *Problems associated with CCS*

Although people living around Serengeti National Park now have a better understanding of wildlife conservation, and some of their social welfare problems have been partly attended to, they still do not have reliable sources of income, apart from the few who have had the opportunity to be employed by various institutions in the park, to meet their basic needs. The provision of conservation education, revenue sharing, and building of schools and health centers have all led communities to value wildlife as a purposeful resource. Certainly, people's attitude toward wildlife and the park are positive, but poaching levels have not declined significantly as was earlier envisaged. Poaching has an economic basis, and without changing the economic incentive system for the villagers, all efforts will bear little fruit. This argument is supported by Campbell et al. (2001), who carried out a study on sustainable use of wild land resources in the Serengeti area. The analysis made on individual cases during 1998 to 2000 showed that all arrests of individuals from the village were of males and that all were hunting within the park. The cases also indicated that all could be classified as belonging to the poorest section of the community. None reported owning livestock, and all were arrested with hunting weapons either purchased at the village or made by themselves. Some did not own land, and 50% gave financial reasons for hunting. This study suggests that benefits from the partnership may not be reaching the poorest members of the community at levels that are sufficient to stop people from hunting in order to meet their needs for cash or meat.

### *Conclusion*

Poaching or illegal hunting in the Serengeti is mostly linked to income-related poverty. The majority of community members are poor and are unable to meet their basic needs. The need to pay taxes, village development contributions, or levies including education for their children and the purchase of clothes were identified as the most important factors, and were responsible for 79% of the need for cash. Wildlife was primarily hunted for economic reasons, to generate cash through the sale of wild meat rather than in response to a direct need for meat (Campbell et al. 2001). This is a challenge TANAPA has to face now. TANAPA needs to start thinking on the kind of program or projects that will help reach the poorest members of the communities and

generate income that will sustain individual requirements if natural resources conservation goals are to be achieved.

### *Acknowledgements*

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# Ecological mechanisms linking nature reserves to surrounding lands

Andrew J. Hansen and Ruth DeFries

## **Abstract**

*Many nature reserves are losing species despite their being well protected within their boundaries. We suggest that human land use outside reserves may strongly affect ecological processes and biodiversity within reserves. This is because nature reserves are often parts of larger ecosystems. Energy, materials, and organisms flow between nature reserves and these larger ecosystems. Human land uses that alter these flows result in changes in the reserve. This paper focuses on land use effects on nature reserves in two regional settings: Maasai East Africa and the Greater Yellowstone Ecosystem. We first examine extent of land use change in these regions. Next, we review the ecological mechanisms by which land use outside reserves may influence biodiversity within reserves. These mechanisms include habitat size, ecological flows, crucial habitats, and edge effects. Finally, we consider implications for management. We found that 45% of the total lands and 53% of the unprotected lands in the Maasai region have been converted to human land uses. Within Greater Yellowstone, 11% of the total lands and 43% of the unprotected lands have been converted to human land uses. Based on the species area relationship, we predict that this reduction in habitat area will lead to a loss of 14% of bird and mammal species in the Maasai region and 5% in Greater Yellowstone. The full conversion of unprotected lands is predicted to result in the loss of 36% of birds and mammals in Maasailand and 9% in Greater Yellowstone. Land use has also altered large mammal migrations in East Africa, causing a dramatic reduction in populations of wildebeest and other species. In Greater Yellowstone, low elevation population source habitats for birds have been converted to population sink areas due to rural home development. Consequently, subpopulations in Yellowstone National Park are at increased risk of extinction. Knowledge of the ecological mechanisms by which land use influences nature reserves provides a basis for policies for sustaining nature reserves and local human communities across these two important regions.*

## **Introduction**

The concept of national parks evolved in the mid 1800s, as the new world was being colonized by Europeans and wilderness was rapidly being converted to agricultural landscapes. The thought was that by removing the influence of humans, natural ecosystems would continue to maintain native species and ecological processes. In the 130 years or so since then, we have come to consider nature reserves as the cornerstone of our global conservation strategy.

As human land use has continued to intensify in unprotected lands, we increasingly rely on nature reserves to protect nature.

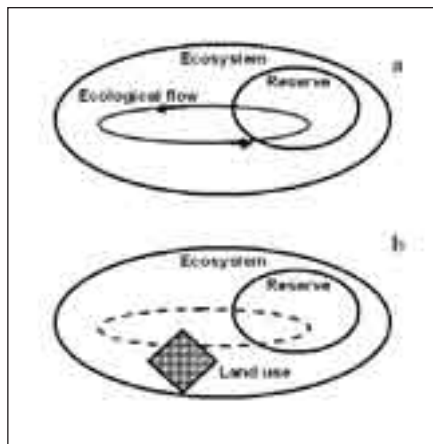
Oddly enough, many nature reserves, even large ones, have lost species (Parks and Harcourt 2002). This suggests that the reserves are not functioning as originally expected. We are realizing that nature reserves are often parts of larger ecosystems (Figure 1) (Hansen and DeFries in review). Ecological processes such as wildlife often span areas larger than nature reserves, and some animals migrate outside reserves. The semi-natural habitats around nature reserves are being occupied by people and used for agriculture, settlement, and other land uses. How might land use

intensification outside nature reserves influence ecological processes and biodiversity within reserves? Modern ecological theory provides a basis for understanding these influences and for developing regional management strategies to maintain both reserve function and local human communities.

We have been studying land use change and nature reserves in the Greater Yellowstone Ecosystem and in the region of East Africa occupied by the Maasai cultural group. This paper first reviews rates of land use change in these two regional landscapes; next, the ecological mechanisms by which land use change influences nature reserves are presented. Finally, we explore implications for regional management.

### *Land use change*

The unprotected wildlands around nature reserves have been increasingly converted to human uses over the past decades (Hansen et al. in press). In some developing areas, road construction and demand for resources is leading to the harvesting of primary forest. In longer-settled areas, increases in wealth, technology, and population density are leading to more rural settlement. In the U.S. since 1950, for example, rural residential development has been the fastest growing land use type and now covers 25% of the lower 48 states (Brown et al. in review). Maasai East Africa and the GYE remain some of the largest tracts of wildlands in their regions. However, land use change is also happening in these places.



HANSEN AND DEFRIES (IN REVIEW)

Figure 1a. Nature reserves as part of a larger ecosystem with energy, materials, and/or organisms flowing through the ecosystem. Figure 1b. Human influences in the unprotected portion of the ecosystem disrupt ecological flows and alter properties of the nature reserve.

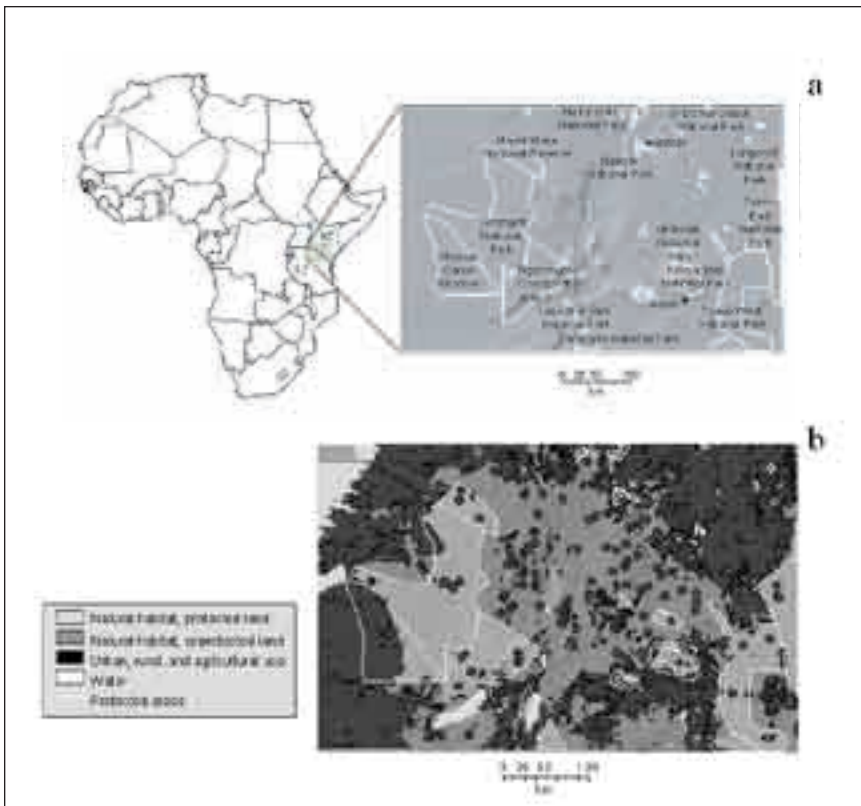


Figure 2a. The Maasai region of East Africa considered in this paper. Figure 2b. Distribution of land use types across the region including those occupied by human settlement or agriculture, natural habitats within protected land allocations, and natural habitats within protected parks and game reserves.

### *Maasai East Africa*

Maasai East Africa in Kenya and Tanzania includes several national parks and game reserves (Figure 2). The area contains the largest migration of mammal herds on earth. Wildebeest, elephant, zebra, and other large mammals migrate over the region. Savanna vegetation is the basis for the predominantly pastoral lifestyle of the Maasai. However, small-scale farming and some commercial farming are increasing throughout the region (Serneels and Lambin 2001). Though the Maasai do not traditionally hunt for bushmeat, hunting and poaching are important for other ethnic groups in the region.

The rapidly growing population and changes in land tenure are causing massive land use intensification in the region, resulting in great reductions in many large mammal populations (Caro et al. 1998; Coughenour et al. 2000). Human population density has been rapidly increasing in recent decades, at

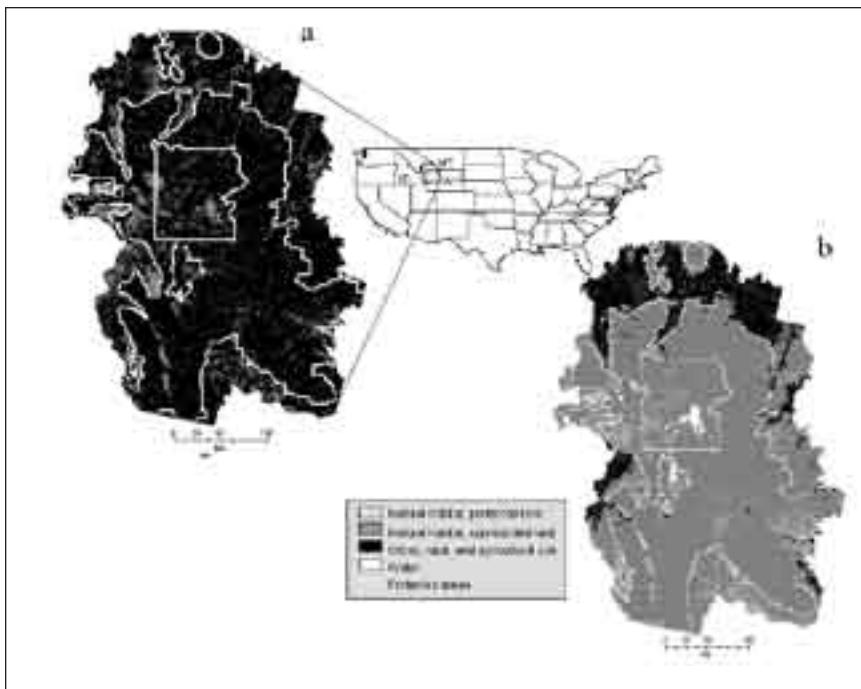


Figure 3a. The Greater Yellowstone Ecosystem. Figure 3b. Distribution of land use types across the region, including those occupied by human settlement or agriculture, natural habitats within protected land allocations, and natural habitats within protected parks and game reserves.

rates of up to 3% per year. An analysis of land use change by Rustigian et al. (in review) revealed that land use has intensified around many of the region's nature reserves. Agriculture and human settlement has increased rapidly to the west of Serengeti National Park, between Lake Manyara and Tarangire national parks, and around Kilimanjaro National Park (Figure 2). At present, some 45% of the total land area and 53% of the unprotected land areas are subject to intense land use.

### *Greater Yellowstone Ecosystem*

The Greater Yellowstone Ecosystem (GYE) is made up of Yellowstone and Grand Teton national parks and surrounding public and private lands (Figure 3). The national parks are relatively high in elevation, while private lands are in lower elevations and include valley bottoms. Low elevation valley bottoms have fertile soils, longer growing seasons, and higher primary productivity. Consequently, many native species are concentrated in small hot spots at lower elevations. Land use varies with ownership. Outside the public lands, agriculture, range, rural residential development, and urban develop-

ment are common land use types on private lands. The GYE has 370,000 residents, most living in small cities. The national parks serve both as nature reserves and as sites for public recreation. Yellowstone National Park is one of the best-known nature reserves in the world and is unique in supporting wilderness species such as grizzly bears and free-roaming populations of large ungulates.

The GYE is undergoing a transition in demography and land use (Hansen et al. 2002). The population has grown 60% since 1970, fueled largely by wealthy immigrants that are attracted by the natural amenities. The dominant change in land use is from natural and agricultural land uses to urban and rural residential development. The number of rural homes has increased 350% over this time. Thus, the rate of land consumption has exceeded population growth. The areas of intense land use are mostly the productive, low elevation river valleys. Eleven percent of the total land area and 43% of the unprotected land area have been subject to intense land use (Rustigian et al. in review). Of the many miles of river flowing through private lands in the area, only 11% of the streambanks are not near homes, farms, or cities. Among aspen and willow habitats, critical for wildlife, only 51% of those in the Greater Yellowstone Area are free from intense human land use.

### *Ecological mechanisms*

There has not been a systematic evaluation of the ecological consequences of such land use change around nature reserves on reserve function and biodiversity. Spatial ecology gives a basis for understanding these linkages. Island biogeography, habitat fragmentation, disturbance ecology, and metapopulation processes are all relevant to the spatial properties of nature reserves. Hansen and DeFries (in review) have put forth four general ecological mechanisms by which land use change outside reserves may influence biodiversity within reserves (Table 1). Here, we provide examples of some of these mechanisms for the Maasai and Greater Yellowstone regions.

**Effective size.** Land use intensification reduces the functional size of natural habitats, including the reserve itself and its surrounding intact habitat. Reduction in functional size can increase species extinction rates. A well-known tenet of island biogeography theory is that the number of species found on an oceanic island or in a habitat fragment is a function of its area. A large body of empirical evidence indicates that the number of species ( $S$ ), increases with area ( $A$ ), according to the equation  $S=cA^z$ , where  $c$  and  $z$  are constants (e.g., Rosenzweig 1995). The species area relationship has been used to predict the consequences of reducing the size of a habitat through conversion to intensive land uses (see Cowlishaw 1999).

Rustigian et al. (in review) used the species area relationship as a coarse, first-order estimate of likely species extinction rates associated with land use changes in our two study regions. Based on loss of habitats from pre-

# Ecological mechanisms linking nature reserves to surrounding lands

Mechanism		Type	Description	Examples
Change in effective size of reserve	Minimum dynamic area		Temporal stability of seral stages is a function of the area of the reserve relative to the size of natural disturbance.	Hurricanes in Puerto Rico
	Species area effect		As natural habitats in surrounding lands are destroyed, the functional size of the reserve is decreased and risk of extinction in the reserve is increased.	Fragmented forests in Kenya
	Trophic structure		Characteristic spatial scales of organisms differ with trophic level such that organisms in higher levels are lost as ecosystems shrink.	Loss of predators on Barro Coronado Island
Changes in ecological flows into and out of reserve	Initiation and runoff zones		Key ecological processes move across landscapes. "Initiation" and "run-out" zones for disturbance may lie outside reserves.	Fire in Yellowstone National Park
	Location in air or watershed		Land use in upper watersheds or airsheds may alter flows into reserves lower in the water- or airshed.	Rainfall in Monte Verde Cloud Forest
Loss of crucial habitat outside reserve	Ephemeral habitats		Lands outside reserves may contain unique habitats that are required by organisms within reserves	Wildebeests in Serengeti National Park
	Dispersal/migration habitats		Organisms require corridors to disperse among reserves or to migrate from reserves to ephemeral habitats	Elephants in East Africa
	Population source sink habitats		Unique habitats outside reserves are population source areas required to maintain sink populations in reserves.	Birds around Yellowstone National Park
Increased exposure to humans at park edge	Edge effects		Negative human influences from the reserve periphery extend some distance into nature reserves.	Eurasian badgers in Donana Park

Facing page: Table 1. General mechanisms by which land use surrounding nature reserves may alter ecological processes and biodiversity within reserves. From Hansen and DeFries (in review).

European settlement times, they predicted a loss for Maasai East Africa of 14% of bird and mammal species. In the GYE, the predicted loss was 5% of bird and mammal species. These predictions for the GYE compare favorably to the number of species currently at risk in the ecosystem. If all unprotected habitats are converted to human land uses, 36% and 9% of birds and mammals are predicted to be lost from the Maasai and GYE regions, respectively. This analysis indicates that loss of habitat area across these regions is likely to lead to substantial extinctions of species within the protected areas.

**Crucial habitats.** Reserves often do not contain the full range of habitats and conditions required by organisms. In this case, organisms may move outside the reserve boundaries seasonally or during parts of their life histories to get access to crucial resources. If these crucial habitats outside reserves are subjected to intense land use, populations of organisms within reserves may be reduced.

Ecosystems with high heterogeneity in climate and food resources are especially likely to have organisms that move long distances over the land-

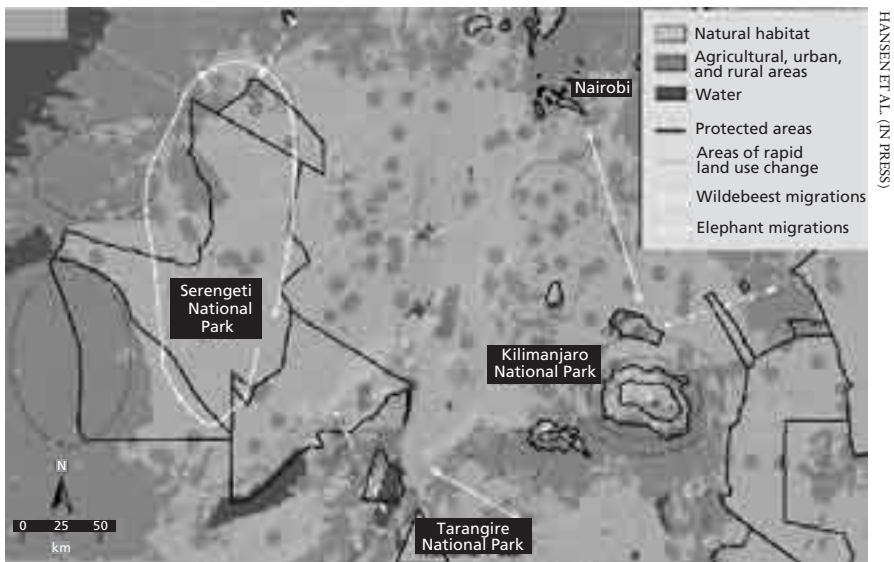


Figure 4. Across the Maasai Region of Kenya and Tanzania, organisms such as wildebeest and elephant migrate outside of nature reserves such as Serengeti National Park seasonally. Replacement of nomadic pastoralism by crop agriculture and expansion of settlements has altered habitats outside of the nature reserves and resulted in substantial population declines of some migratory mammal species.



scape to acquire suitable resources. Populations of wildebeest in the Maasai Mara portion of East Africa's Greater Serengeti Ecosystem, for example, have declined by 75%, possibly due to the conversion of key seasonal habitat outside the reserve to commercial wheat farming (Serneels and Lambin 2001) (Figure 4). Elephants, zebras, and other large mammals have also decreased as human settlements and croplands have expanded in this region (Coughenour et al. 2000).

The crucial habitats outside reserves may be especially rich in resources and act as population "source" areas. These habitats may allow subpopulations to produce surplus offspring that disperse to less-rich habitats in nature reserves and allow persistence of the subpopulations in the reserves. For example, in the Greater Yellowstone Ecosystem, Hansen and Rotella (2002) found that bird populations were concentrated in small "hot spots" in productive, lowland settings outside protected areas (Figure 5). Intense land use

HANSEN ET AL. (IN PRESS)

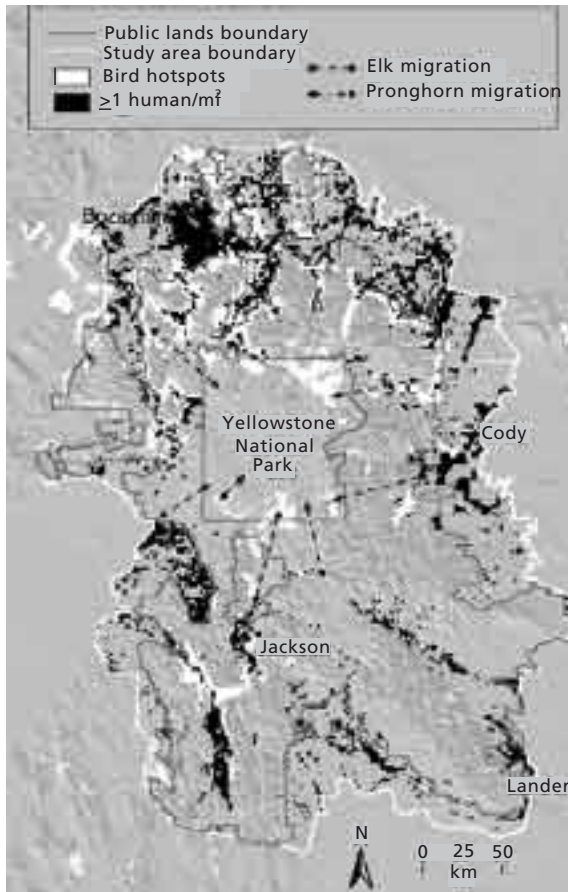


Figure 5. Distribution of bird hotspots and rural homes across the Greater Yellowstone Ecosystem. Bird hotspots are locations where predicted bird species richness and total abundance were more than 60% of maximum. Notice that bird hotspots are rare in Yellowstone National Park and are primarily at lower elevations near rural homes. Simulation model results suggest that low elevation hotspots were population source areas that maintained populations in Yellowstone Park. Rural residential development may have converted these source areas to population sinks, jeopardizing the viability of some bird species in the park.

**Table 2. Criteria for managing regional landscapes to reduce the impacts of land use change outside of nature reserves on ecological processes and biodiversity within reserves.**

Mechanism	Type	Design criteria
Change in effective size of reserve	Species Area Effect Minimum Dynamic Area Trophic Structure	Maximize area of functional habitats
Changes in ecological flows into and out of reserve	Disturbance initiation and runout zones Placement in watershed or airshed	Identify and maintain ecological process zones
Loss of crucial habitat outside of reserve	Ephemeral habitats Dispersal or migration habitats Population source sink habitats	Maintain key migration and source habitats
Increased exposure to human activity at reserve edge	Poaching Displacement Exotics/disease	Manage human proximity and edge effects

(exurban development) has converted these low elevation population source areas to sink areas and reduced the viability of subpopulations in the more marginal habitats in protected areas.

**Increased exposure to humans at park edge.** Human presence on the periphery of reserves may cause changes in ecosystem processes and biodiversity that extend varying distances into the reserve. On the western edge of the Greater Serengeti Ecosystem, poaching was found to lead to the death of approximately 40,000 wildebeest per year (Campbell and Hofer 1995). In the GYE, edge effects involve ecological processes such as disturbance rates and microclimate changes, human settlement and recreation, and introduction of exotic organisms and diseases. Many of these edge effects are proportional to the density of the adjacent human population (Brashares et al. 2001). Hence, these effects may be increased under human population growth around reserves.

In sum, myriad studies indicate that land use change has been an important driver of change in biodiversity within the protected areas of the Maasai and Greater Yellowstone regions. Natural habitats have been converted to more intense human land uses, with dramatic effects on native species and communities. Even the remaining natural habitats are not immune from the effects of land use change. Human activities in the matrix around natural habitats can alter ecological processes and organisms within the reserves. These findings suggest that the future ability of protected areas to maintain

current species richness depends on integrating reserve management with regional land use activities.

### *Regional management*

How can we maintain nature reserves in the face of increasing human pressures? Clearly, management designs will need to consider not only nature reserves, but the entire regional landscape that the parts are embedded within. Knowledge of these ecological mechanisms can help provide design criteria for regional landscapes. Presented in Table 2 are criteria that follow from the ecological mechanisms that can be used to guide management and policies across the two study regions. Our challenge is to manage these regions to maintain nature reserve function and biodiversity as human land use intensifies in the unprotected portions of these regions.

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# Conservation and contested landscapes: the potential for community-based conservation in East Africa and North America

Jim Igoe

## *Abstract*

*This paper draws from anthropological fieldwork in Tanzania and the United States. It addresses the experiences of two indigenous communities living on the boundaries of two national parks: Maasai herders and the Tarangire National Park; and Oglala Sioux and the Badlands National Park. Both parks were established in the latter half of the twentieth century following the traditional Yellowstone model. Both have ongoing conflicts with indigenous communities over the meaning and use of landscapes and natural resources. This paper argues that the effective management of the contested landscapes of Badlands and Tarangire will need to draw from recently developed models of collaborative conservation. It explores the potential obstacles to this approach in both parks, and suggests possibilities for overcoming them. Drawing from successful collaborative management models in other parts of the world, it suggests some possible ways forward for the Maasai, Oglala Sioux, and National Park Services of their respective countries.*

## *Introduction: the case for community-based conservation*

*This conference will promote understanding of the ecological and social challenges facing parks in the Greater Yellowstone and East Africa, and initiate the development of useful strategies for sustaining the national park idea at the dawn of the twenty-first century. —Beyond the Arch conference program*

As the above quote implies, the concept and institution of “the national park” are under attack. Evidence of this attack is all around us. Shortly before the *Beyond the Arch* conference, Congress passed a new law allowing for oil exploration in wilderness areas—an objective of the Bush administration since their 2000 campaign. Similarly, it is no secret that the administration favors a drastic outsourcing of National Park Service (NPS) personnel, and even has designs for the privatization of national parks. In Africa, the story is equally bad, if not worse. Since independence in the early 1960s, there has been an ongoing tension between development and conservation. African leaders argued that their impoverished countries could not afford parks or conservation. Western conservationists countered that parks could become a major source of hard currency (Neumann 1998). This argument has created a fundamental confusion over parks in Africa: is their primary purpose to

preserve wildlife habitats or to promote economic growth? This tension has worsened since the free market reforms of the 1980s (Igoe and Brockington 1999; Igoe 2003).

In addition to the problems within parks themselves, conservationists have grown concerned that parks are increasingly threatened by processes and practices beyond their borders. Urban sprawl in the United States impinges on the borders of many parks. In Africa, large-scale commercial enterprises and growing human populations impinge on parks throughout the continent. These processes and practices have severely hampered wildlife migration routes in the vicinity of national parks both in Africa and the U.S. (also see Borner 1985). The danger in this situation is that parks may become island ecosystems, incapable of supporting their resident wildlife. The overcrowding of wildlife within national parks, and the resultant inability of park ecosystems to recover from grazing during certain times of the year, threatens the possibility of ecological collapse within national parks. This situation is compounded by the poaching of natural and cultural resources within parks, both by impoverished individuals and by well-armed networks of organized poachers.

The growing crisis of national parks set off by these conditions has prompted two types of responses from conservationists. The first is to call for the increased protection of park boundaries by paramilitary game guards, and the use of high-tech equipment such as radio collars. Dan Brockington (2002) has labeled this response "fortress conservation." The second response is to call for the involvement of communities in the conservation of wildlife habitats and the protection of park boundaries. Although I have some concerns about the ways in which community-based conservation is being implemented in some contexts (see Igoe 2003), I agree with those who argue that the future of conservation lies (among other things) with human communities living on the boundaries of parks and other protected areas.

The most important difference between community-based conservation and fortress conservation is that the former acknowledges that human societies are as complex as the natural ecosystems of which they are a part. Protected areas need to be flexible enough to adjust to the changes that are constantly occurring in the ecosystems they are meant to protect. The same can be said of the political side of conservation. As Brechin et al. (2002) argue, democracy is a necessary component to conservation. Democratic systems are dynamic enough to adjust to changes and to recover from mistakes. More totalitarian approaches to conservation, by contrast, are inherently inflexible. They tend to exacerbate longstanding conflicts between park authorities and neighboring communities. These conflicts are expensive to both park authorities and local people, as park authorities are forced to expend large sums of money on boundary enforcement while local people remain impoverished by

their continued exclusion from parks without economic alternatives.

The historical legacy of fortress conservation represents a major obstacle to community-based conservation in most parts of the world (Igoe 2003). This problem is clearly visible at both parks where I have conducted field research: Tarangire National Park, in northern Tanzania; and Badlands National Park, in South Dakota. Wildlife migration routes out of Tarangire have been blocked by large-scale commercial farms and human settlement (Igoe and Brockington 1999; Igoe 2002). Attempts by the AWF (African Wildlife Foundation) to implement community-based conservation have been staunchly resisted by local people (Igoe 2003). Since June 2002, a group of Oglala activists with close ties to the American Indian Movement has occupied the South Unit of Badlands National Park. They are demanding that the NPS (National Park Service) withdraw forthwith (*ibid.*). The basis for this claim is that the land contained in the South Unit belongs to the Oglala Sioux Tribe, since many tribal members refuse to recognize the memorandum of agreement that turned over the area to the NPS in 1976 (Burnham 2000; White 2002). The position of these Oglala activists is legally ambiguous, and the administration of Badlands has yet to determine an effective response to their demands. Instead, they have remained at a destructive standoff.

These examples demonstrate that community-based conservation needs to break from the historical legacy of fortress conservation—superficial attempts to enroll communities in conservation will not succeed. In the remainder of this paper, I address the major variables that influence options for community-based conservation in different parts of the world. Understanding the role of these variables in specific situations will be an important first step to creating flexible approaches to ecosystem protection and community empowerment. The variables to be addressed in the body of this paper are as follows:

- **Colonial histories and conservation encounters.** National parks were first imposed on indigenous communities throughout the world during the late European expansion and empire building (roughly 1872–1961). While parks came with specific types of ideological baggage and institutional restrictions, their impacts on indigenous communities varied from place to place and from time to time. Understanding the nature of these encounters in specific situations is essential to the success of community-based conservation.
- **Sovereignty and political clout.** In spite of their increasing use of community-based conservation rhetoric, western conservationists appear most inclined to enter into alliances with indigenous communities who control important conservation resources. This variable is directly related to the legal rights of indigenous and other



local communities over land and other natural resources.

- **Civil society and NGOs (non-governmental organizations).** In order for local people to participate effectively in community-based conservation, it is necessary to have conditions and institutions that foster democratic action and ideas. Conservation NGOs have played a central role in the politics of community-based conservation at specific locations. Indigenous NGOs have been important catalysts for the participation of local people in community-based conservation programs in their communities.
- **Local attitudes toward conservation.** It is dangerous to assume that local people understand the word “conservation” in the same way as western conservationists. If local people have had positive encounters with conservation, then their attitudes are likely to be positive. If they have had negative encounters with conservation, then their attitudes are likely to be negative. Like other people, indigenous people form opinions based on experience. It is facile to believe that local attitudes toward conservation should change just because conservationists promise to do things differently in the future. It would be irrational for local people to believe these claims without substantial proof.
- **Capacity and indigenous environmental knowledge.** As a result of historical dispossession, and their marginal position in the world economy, indigenous people are less likely to possess the skills and knowledge necessary to manage natural resources according to western conservation paradigms. The other side of the coin is that western conservationists have a poor track record of incorporating indigenous skills and environmental knowledge into their conservation paradigms.

### *Colonial histories and conservation encounters*

*Once we were happy in our own country and we were seldom hungry, for then the two-leggeds and the four-leggeds lived together like relatives, and plenty for them and plenty for us. But the Wasichus came, and they made little Islands for us and other little islands for the four leggeds, and always these are becoming smaller, for around them surges the gnawing flood of the Wasichu; and it is dirty with lies and greed. —Black Elk, Lakota Holy Man, from Black Elk Speaks.*

*We were told to sign. It was never explained to us. None of the elders knew how to read or write. You white people are very tough. —Signatory of the 1958 agreement stipulating*

that the Maasai would leave the Serengeti National Park (Bonner 1993, 175).

The creation of national parks, both in the U.S. and East Africa, entailed the forced exclusion of indigenous communities. While the popular discourse of national parks is that they protect wildernesses, free of human beings and any evidence of their activity, the reality of the situation is that park authorities needed to create these wildernesses before they could protect them. The details of these histories are beyond the scope of this paper, but are well worth reading about for anyone concerned for conservation and equity issues, as American parks like Yellowstone, Glacier, and Yosemite “have served as models for preservationist efforts, and native dispossession, the world over” (Spence 1999, 5; also see Keller and Turek 1998; Neumann 1998; Jacoby 2001; Iggoe 2003).

For purposes of this paper, the most important aspect of conservation encounters is that they are unique in every context. It is imperative, therefore, that conservation interventions begin by reconstructing historical events surrounding the creation of a park and their implications for the future of the park in question. In both the [continental] United States and East Africa, indigenous communities were removed from parks by force, trickery, and bureaucratic fiat. Furthermore, park authorities have continued to expand park boundaries at the expense of local people, even in recent times (Bonner 1993; Keller and Turek 1998; Neumann 1998; Spence 1999; Burnham 2000; Jacoby 2001; White 2002; Iggoe 2003). In such situations, it will be necessary to redress the historical grievances of local people, both in the interest of equity and for building relationships of trust that are the foundation of effective community-based conservation. These conditions are very different from those in Alaska and Australia, where local people were active participants in the creation of parks in the hopes that they would protect their lands from large scale commercial interests (Catton 1997; De Lacy 1994; Lawrence 2000). They also contrast with Brazil, where indigenous communities were allowed to live inside parks as another type of “endangered species” (Davis 1977; Nugent 1994). In these cases, there were more opportunities for alliances between conservationists and local people.

The legacy of historical encounters also varies from park to park within specific countries. At Yellowstone, for instance, indigenous communities were removed from the area prior to the creation of the park, which means that Yellowstone has no direct boundary conflicts with indigenous communities (Nabokov and Loendorf 2002). Mesa Verde National Park was created through dubious land swaps with the Ute Mountain Ute, and Ute leaders created a tribal park in an effort (among other things) to pre-empt further encroachment onto their land by the administration of Mesa Verde. The boundaries between Mesa Verde and the tribal park are still contentious

(Burnham 2000). At Badlands, where park and reservation overlap, the status of the park is still open to question (White 2002; Igoe 2003).

Similar differences can be seen in Tanzania. Maasai herders left the Serengeti after signing a “compromise” with the British that would allow them to continue living in the Ngorongoro Conservation Area (Bonner 1994; Neumann 1998). Tarangire National Park, by contrast, was created in 1971 after the British had already left Tanzania. In the mid-1980s, however, a group of European and African conservationists tried to expand park boundaries to the east, a move that has galvanized community opinion against the park to the present day (Igoe and Brockington 1999; Igoe 2003). Finally, local people were violently evicted from the Mkomazi Game Reserve in 1988. Although the Tanzanian Supreme Court later proclaimed these evictions illegal, they were never overturned, and local people were never meaningfully compensated (Brockington 2002).

Clearly, cookie-cutter approaches to conservation are bound to run into trouble trying to operate in such a diversity of socio-historical conditions. Fortunately, previous approaches of ignoring (or worse, covering up) conservation histories are falling away in favor of approaches that favor historical reconstruction. What remains to be seen about this promising development, however, is how historical information will actually be used in practice.

### *Sovereignty and political clout*

*Very few conservationists could truthfully say that they would vigorously support subsistence hunting if the natives had zero political clout.* —Robert Weeden, President of the Alaska Conservation Society, concerning the uneasy alliance between conservationists and native communities in Alaska in the 1970s (Catton 1997, 209)

In the past 15 years, discourses about the importance of indigenous communities for effective protected area management have achieved a surprising prominence in international conservation circles (see WWF 1997). Individuals within institutions like the IUCN (International Union for the Conservation of Nature and Natural Resources), the WWF (World Wide Fund for Nature), and the NPS have worked tirelessly for indigenous rights. Some have even advocated for new types of more flexible protected areas that would include local people rather than excluding them. In spite of the efforts of these individuals and indigenous activists from around the world, however, the discourses and ideas they promote have in many cases remained little more than discourses and ideas. Tangible support by western conservation organizations for indigenous land rights has been inconsistent. Actual alliances between conservationists and indigenous peoples—especially

where they entail the management of protected areas by indigenous communities—remain scarce on the ground.

The reasons why these new discourses have not translated well into practice are too complex to address effectively in this short paper (but see Catton 1997; Burnham 2000; Brockington 2002; Igoe 2003). Suffice to say that people-oriented approaches to protected area management are frequently at odds with entrenched approaches premised on the exclusion of local people. These established models are defended vehemently by powerful hardliners within conservation NGOs as well as within government agencies. They also serve the interests of powerful corporations that have made sizeable investments, and reap sizeable profits, in parks both in the U.S. and East Africa. In Africa and other developing regions, the traditional protected area model is also valuable to underpaid park officials who use their positions to supplement their income through various forms of misappropriation (cf. Bayart 1993; URT 1993; Chabal and Daloz 1999). In all cases, keeping national parks inviolate has become a point of pride for politicians and higher-ups within park bureaucracies. As such, it has also become part of the institutional culture of parks and an imperative for the rank and file of park personnel. The problem with this perspective is the assumption that parks are the property of the nation and therefore belong to everyone. From the perspective of people displaced by parks, this argument appears ridiculous. They pay the costs of parks, while receiving little or nothing in return. This discrepancy is even starker in countries like Kenya, where a small minority of national elites profit from parks that are visited almost exclusively by wealthy outsiders.

As in any other political situation, indigenous communities seem to do best in cases where they have some sort of leverage or political clout. In Brazil, the position of indigenous communities within parks became the basis of alliances with international conservation organizations (Turner 1993). A similar situation has prevailed in Panama, where the Kuna Indians have created a tribal park to protect their indigenous homeland (Chapin 2000). In Australia and Alaska, where indigenous communities have been able to lay legal claim to land within parks, government agencies have made them partners in protected area management. In Nepal, a Third World country that was never colonized, western conservationists have been unable to take a heavy-handed, exclusionary approach (Stevens and Sherpa 1993). All of these situations contrast sharply with both the U.S. and East Africa.

Two related variables appear to influence alliances between conservationists and indigenous communities on a global scale: sovereignty and legal rights to land, especially in the form of an officially designated corporate territory. In situations where such rights are present, indigenous communities consistently enjoy a prominent role in protected area management and/or receive large sums of money from international conservation organizations

(Igoe 2003, Chapter 5). In cases where indigenous communities do not enjoy these kinds of rights, they have fared much worse in the field of collaborative conservation.

The starkest example of this problem is Tanzania, where colonial land laws were designed specifically to transfer land from African communities to European settlers and colonial development/conservation projects, including parks. Central to this legislation was the idea of “permissive rights of occupancy,” which meant that Africans could continue living on their traditional homelands as long as the governor didn’t want to take the land away. If land was wanted for any reason, it could be taken from communities with a minimum of legal and bureaucratic procedure. The situation remains nearly unchanged in contemporary Tanzania, except that the government evicting local people from their land is African instead of European (URT 1993; Shivji 1998). From the perspective of local people, however, this is an unimportant detail. Evicted is evicted, especially when no compensation is involved.

This unfortunate situation presents international conservation organizations with formidable obstacles to their efforts to protect biodiversity and wildlife habitats in Tanzania. Organizations like the AWF and WWF have introduced programs to enroll local people in the protection of wildlife habitats under the rubric of community-based conservation. However, most local people actually have little say over the management of land and other natural resources in their communities. Consequently, they have little to offer western conservation organizations. The traditional resource management systems of rural Tanzanians have frequently been transformed in ways that are inimical to protected area management (also see Igoe 2002). Furthermore, rural people displaced by parks and large-scale commercial enterprise have also become a threat to wildlife habitats (Igoe and Brockington 1999; Brockington 2002; Igoe 2003). Finally, and most importantly, the biggest threat to wildlife habitats in Tanzania is usually not local people at all. More commonly, it is large-scale extractive enterprises that present the largest threat to biodiversity in East Africa—from commercial farms and mines that disrupt wildlife migration routes in the upcountry, to prawn farms that destroy mangrove swamps on the coast.

Because these enterprises threaten biodiversity as well as local livelihoods, they appear as a logical common ground for an alliance between western conservation organizations and local people. For the most part, however, western conservation organizations have been reluctant to take on the powerful vested interests behind these large-scale enterprises. This makes sense, as these organizations enjoy a privileged position in countries like Kenya and Tanzania. They are unlikely, therefore, to rock the proverbial boat (see Igoe 2003). What this means in practice is that local people are treated as a problem rather than as potential allies. Community-based conservation

programs wind up revolving around revenue sharing and technical development projects, missing important opportunities to incorporate indigenous environmental knowledge and enroll local people in biodiversity protection.

The situation in the U.S. is somewhat different, because some indigenous communities here do enjoy legal rights over land and natural resources, along with sovereign status. However, this situation has not consistently translated into political clout for indigenous communities when it comes to issues of protected area management (Keller and Turek 1998; Spence 1999; Burnham 2000; Jacoby 2001). In some cases, indigenous groups were removed from places that became protected areas (Yellowstone). Some parks were created by the “ceding” of reservation land (Glacier and Mesa Verde), and in other instances, small indigenous communities have remained resident in national parks, but with few legal rights (Death Valley, Grand Canyon, and Yosemite). A particularly challenging case is that of the Oglala Sioux and the Badlands National Park, where park land and reservation land overlap, and the legal authority of tribe and park administration has become blurred.

The details of the Badlands case are beyond the scope of this paper (but see McCabe 1995; Burnham 2000; White 2002; Igoe 2003). What is important about this case is that it presents a situation where the NPS and a tribal government could become partners in the management of a protected area. Unfortunately, this has not occurred. In fact, members of the Oglala Sioux Tribe are currently at a standoff with the administration of Badlands National Park. Oglala traditionalists have occupied the South Unit of Badlands, and are demanding that the NPS withdraw from the land forthwith. Part of the reason for this situation is that the NPS lacks an established paradigm for collaborative management with indigenous communities. Therefore, such an approach is not an established part of its institutional culture. More importantly, the history of Badlands has been fraught with conflict. The NPS only gained management authority over the land in question after a 15-year campaign of cajoling and coercion by Department of the Interior bureaucrats, which tribal leaders staunchly resisted. The agreement was finally signed in 1976 by a tribal administration that many tribal members consider to have been fundamentally corrupt. It is not surprising, therefore, that these individuals view the agreement as illegitimate.

The Badlands case demonstrates that the axe of sovereignty can cut both ways. While tribal governments have been successful at advocating on behalf of their constituents, they sometimes also enter into agreements that are detrimental to indigenous communities—agreements that are legally binding in perpetuity. This problem reflects the history of indirect rule both in the U.S. and in East Africa. Because of their desire to streamline their negotiations with indigenous communities, as well as to transform said communities according to western bureaucratic standards, European administrators worked to cre-

ate tribal governments—a process that was widely resisted in both Africa and North America. As Ronald Niezen (2003) points out, bureaucratic power, without a natural resource base to provide the foundation of economic development, is a recipe for despotism and corruption. Furthermore, allowing a small group of people to represent the interests of an entire community or country discounts the diversity of interests and perspectives that are essential to effective collaboration between [outside] conservationists and local people. Opening up the conservation arena to include such a diversity of voices is messy (and therefore frightening to some), but the alternative is to act as though some interests or perspectives are irrelevant or simply do not exist. The current situation at Badlands is a cautionary tale of why this type of approach is a bad idea in the long run.

### *Civil society and non-governmental organizations*

*Civil society occupies a unique space, where ideas are born, where mindsets are changed, and where the work of conservation and development doesn't just get talked about, but gets done.* —Kofi Annan, U.N. Secretary General, speaking to a civil society forum in Johannesburg, South Africa, September 2, 2002

Since the fall of the Soviet Union in the early 1990s, the question of democracy has become a central concern in international governance and development circles. Likewise, and perhaps a bit more surprisingly, it has become a concern of international conservation. In spite of initial enthusiasm for multi-party transitions in former one-party states like Kenya and Tanzania, however, it quickly became apparent that electoral politics were not sufficient to bring about democracy. People needed to be instilled with democratic world-views, and there was a spreading call for grassroots participation in conservation and development at the community level—something that has been sadly lacking in both the U.S. and East Africa.

In the discourse of democracy and community-based conservation, the putative space in which grassroots participation takes place is known as civil society. The most concise definition of civil society of which I am aware comes from anthropologist Robert Hefner (1998, 5–6):

Though most writers differ on its details, most agree in describing civil society as an arena of friendships, clubs, churches, business associations, unions, and other voluntary associations that mediated the vast expanse of social life between the household and the state. This associational sphere is seen as a place where citizens learn habits of free



assembly, dialogue, and social initiative. If managed properly, it is suggested, civil society can also help bring about that delicate balance of private interests and public concern vital for a vibrant democracy.

In the context of community-based conservation, civil society has come to be represented in most cases by officially registered NGOs, which operate on a number of levels. For purposes of this paper, three types of NGOs are of particular importance: international conservation NGOs, like AWF, the WWF, and IUCN; national conservation organizations, like the Sierra Club and National Parks Conservation Association; and indigenous NGOs, which operate at the community level and are usually run by community members themselves.

International conservation organizations have more influence in Africa than in the United States. The African colonial experience left countries like Kenya and Tanzania with weak states, lacking the resources and expertise to undertake conservation on their own. Consequently, international conservation organizations have had a tremendous amount of influence on conservation policy and practice in East Africa, including the establishment and funding of national parks. The influence of these organizations is evidenced by the ubiquitous panda (WWF) and elephant (AWF) logos that adorn government vehicles and the entrances to national parks (see Bonner 1993; Neumann 1998). For reasons described above, these organizations have not entered into significant alliances with indigenous communities in East Africa, as they have successfully done in other parts of Africa, Asia, and Latin America (see Igoe 2003).

In the United States, with its powerful government and imperviousness to trends in international governance, international conservation organizations have been much less influential. National organizations, on the other hand, have been significant in their influence. To be sure, the history of the largest of these organizations is inextricably linked to the history of national parks in this country. John Muir, founder of the Sierra Club, was also a champion of Yosemite National Park. George Bird Grinnell, founder of the Audubon Society, was also instrumental in the creation of Glacier National Park. It is not surprising, therefore, that these organizations strongly subscribe to the traditional exclusionary approach to protected area management, and that they have consistently opposed indigenous land rights whenever they conflict with what they perceive as conservation interests (Spence 1999; Burnham 2000). Because of their elite-centric approach to conservation, it has been difficult for these organizations to link with grassroots social movements dealing with environmental issues. This situation is evidenced by the difficulties experienced by the Sierra Club in developing an environmental justice

component to its activities, and stands in stark contrast to Australia, where the Australian Conservation Association has supported indigenous land rights since the early 1970s. It is probably no coincidence that co-management of national parks is legally impossible in the continental United States, while it has become an increasingly common approach to protected area management in Australia and is currently also on the rise in Canada.

Indigenous NGOs can also have tremendous influence on park-community relationships. In Tanzania, this relationship turned out to be rather dysfunctional. In my research area, one Maasai NGO played the role of patsy for the AWF, working to enroll local people in community conservation with extraordinarily limited success. Meanwhile, a rival NGO played the role of spoiler for community-based conservation. Representatives of this organization regularly attended and disrupted meetings between the AWF and local people. Most local people did not trust the Maasai NGO that supported the AWF. They didn't necessarily trust the other NGO either, but they saw it as the lesser of two evils. The bottom line was that the AWF had very little success in convincing local people that it was bringing a "new kind of conservation" that would benefit them significantly. In the end, they gave up and went away (Igoe 2000; Igoe 2003). Such antagonism need not automatically prevail. PEMANSKY, a quasi-NGO of the Kuna in Panama, entered into successful alliances with a number of international conservation organizations. In the process, the organization successfully raised millions of dollars for the protection of biodiversity as well as Kuna land rights (Chapin 2000).

It is important to note that indigenous NGOs have yet to make a comparable impact on community-based conservation here in the United States. While the NPS does work with indigenous NGOs, conservation and development work for tribes in the U.S. is dominated by tribal governments. Furthermore, indigenous NGOs in this country are primarily oriented toward tribal governments and Bureau of Indian Affairs funding. This makes it difficult for them to define or follow alternative agendas (Kathy Pickering personal communication). This is unfortunate, because it makes it difficult for diverse interests to influence protected area management. As noted above, this can lead to intractable problems. It is all fine and well for the superintendent of Badlands National Park to wave around a memorandum of agreement to trump protesters at community meetings. Unfortunately, this memorandum isn't worth the paper it's written on when it comes to removing Oglala occupiers who are disrupting park management. Finally, neither tribal governments nor indigenous NGOs in the U.S. have received substantial funding from international conservation organizations, although they probably could access this type of funding—especially groups like the Ute Mountain Ute, the Navaho, and the Salish Kootenai, who have established their own parks and wilderness areas.

*Local attitudes toward conservation*

*We have to be very careful about what we say. Those conservationists are just waiting for us to make a mistake. —Ernest House Senior, Ute Mountain Ute Council Member, speaking to a council meeting in July 2002*

*Tanzania National Parks Authority does not understand good neighborliness (Tanzania's community-based conservation program). Their cattle (wildlife) come to graze in our villages, and we do not bother them. If it rains in the park we can't go there, even if our cattle are dying. If we do go into the park, we are beaten and our cattle are taken away. This is not good neighborliness. I know all about Tanzania National Park Authority's good neighborliness. I've seen it with my own eyes, and we don't need it here. We would all be better off if they took their good neighborliness and went somewhere else. —Loodo Ole Loure, Maasai Elder, speaking at a meeting on community-based conservation in November 1996*

*We Eskimos would like to join the Sierra Club. We have no money, but lots of thoughts and collective action. —William Willoya, Inuit Activist, in 1969, advocating for the creation of a wilderness area that would also protect Inuit land rights (Catton 1997, 195)*

Park administrators and representatives of western conservation organizations frequently view indigenous people as being intractable and ignorant. Negative local attitudes toward conservation are described as unfounded and treated as a hindrance to conservation—as something that needs to be changed or at least worked around. During my work in Tanzania, representatives of the AWF frequently expressed bewilderment concerning local people's suspicious attitudes toward community-based conservation. When people pointed out that conservationists had come and taken their land, the standard response was, "that was a long time ago; we don't do things that way any more." I have heard similar discourses in my work here in the U.S., such as when a Sierra Club representative described Native Americans' asserting their rights to land and natural resources as dressing the conservation problem in "Indian blankets." NPS personnel express dismay at the confrontational attitudes of some Native American groups, saying, "they don't really know what they want" or "they just want to hunt in the park."

It is important to remember, however, that most peoples' attitudes reflect something about their experiences. When western conservationists confront

indigenous communities whose attitudes toward conservation are very different than their own, their immediate reaction is frequently to assert that there is something irrational or wrong about these attitudes. A more rational response would be to begin with the assumption that local people's different attitudes reflect different experiences. For them, the word "conservation" may have very different meanings and associations than it does for people in the West—especially those who have dedicated their lives to conservation and are emotionally invested in the concept.

The ideas of most Americans concerning conservation are shaped by popular ideas and images, to which they are exposed through the media and formal education. They experience conservation at a distance. When they send a check to the WWF or the Sierra Club, they rarely see how their money gets used. Indigenous communities, by contrast, tend to be on the "business end" of conservation. They experience conservation directly. Their ideas concerning conservation are shaped in large part by these direct experiences. The nature of these experiences influences how specific groups perceive and respond to conservation.

When I asked my informants in Tanzania if the Maasai did conservation, they usually responded, "Of course not, why would we do anything so ridiculous?" If I asked them, however, whether they ever managed the environment in ways that were beneficial to wildlife, they often responded, "Of course, don't you see that more animals graze in the areas that we burned last year than in other areas?" In short, most of my informants didn't describe conservation as an activity, but as an alien force over which they had no control. I witnessed similar attitudes at a meeting of the Ute Mountain Ute Tribal Council, in which a council member spoke about tribal involvement in a water project opposed by the Sierra Club. He said, "We have to be very careful about what we say. Those conservationists are just waiting for us to make a mistake." This is an especially interesting statement, considering that the Ute Mountain Ute have their own tribal park, which would make them conservationists in almost anyone's book. Here again, we see conservation described as an outside force, rather than something that local people might undertake themselves. Similar attitudes prevailed among Oglala traditionalists who are occupying the southern part of Badlands National Park. Conservation is seen as a political force, one that is controlled by powerful outsiders, and a negative one to boot.

This situation stands in contrast to the Inuit who wanted to "join the Sierra Club." Other groups, like the Anangu in Australia and the Kayapo in Brazil, have also sought alliances with international conservation organizations. The Kuna of Panama started a conservation initiative that achieved international renown. While members of these groups might not see conservation as a wholly positive thing, they do see that it has possibilities. It

can become the basis for alliances to protect traditional homelands and the valuable natural resources they contain. It can also become the basis for initiatives that will bring unprecedented levels of funding to marginal indigenous groups. Differences in local attitudes toward conservation appear closely tied to the differences in the experiences of colonial processes outlined above.

The question of local attitudes is especially important because so many conservation interventions revolve around changing them. Unfortunately, many of these interventions begin with faulty assumptions. For instance, community-based conservation in Africa begins with the premise that local people need to learn to value nature. Of course, most already do—they just value it in ways that are not compatible with western conservation agendas. If local attitudes toward conservation are bad, this probably has more to do with negative experiences with an alien force called “conservation” than with inherently problematic ways of looking at the world. Conservation interventions geared toward changing local attitudes should begin by asking where they come from in the first place. Is there a historical basis for an alliance between western conservationists and indigenous communities? If not, what might provide the basis of such an alliance? What is the nature of community grievances toward conservation, and how can those grievances be redressed? What would be the most effective ways for building trust between conservationists and indigenous communities? Most importantly, what do indigenous conservation practices look like, and how could they be incorporated by mainstream conservation?

### *Capacity and indigenous environmental knowledge*

*Replacement of European staff by untrained, unqualified (African) men will spell disaster for game.* —Russell Train, Chief Founder of the African Wildlife Foundation, Speaking about the impending independence of Kenya and Tanzania in 1961 (Bonner 1993, 57)

*We felt that under new African governments, all prospects for conservation in nature would be ended.* —Max Nicholson, Founding Member of the World Wildlife Fund, explaining the interference of western conservation organizations in the internal affairs of Kenya and Tanzania during the 1960s (Bonner 1993, 64)

The final variable addressed in this paper is the question of capacity. The administration of parks and other types of conservation programs requires special skills. Unfortunately, the skill set it requires, such as computer and grantwriting skills, are often in short supply in indigenous communities. As

a result, it is extraordinarily difficult for indigenous communities to become partners in protected area management. People who acquire these types of skills frequently leave their impoverished communities for jobs in urban areas or conservation and development bureaucracies. Those who stay are in short supply and high demand. Consequently, they are frequently overburdened and almost always underpaid. This means that they are forced to look for other sources of income, which takes them away from conservation activities. Their other alternative is to live in abject poverty, a lifestyle most are understandably unwilling to accept. Finally, and perhaps most tragically, the efforts and achievements of these indigenous intelligentsia frequently go unrecognized both by their own communities and by western conservationists.

If indigenous leaders lack the skills to do conservation, or there simply aren't enough of them to do it, this can be as disastrous as any of the other problems outlined in this paper. Training and capacity building are therefore essential to collaborative conservation with indigenous communities. This presents two dangers. First, training usually involves indoctrination. Not only are indigenous leaders given new skills, they are also immersed in the cultural values that go along with them. Second, conservationists frequently use lack of community capacity as a reason not to involve local people in protected area management. In spite of these dangers, the issue of community capacity is pragmatically important. Even the Ute Mountain Ute, who would prefer to keep westerners out of their business, cautiously engage experts to teach them the skills necessary to run their tribal park.

The question of capacity is a two way street. While western conservationists are usually well trained to do conservation, they frequently lack the capacity for intercultural communication necessary to do community-based conservation. They are also frequently unaware of indigenous environmental knowledge and resource management systems. As a result, they have a difficult time incorporating indigenous knowledge and practice into the conservation models that inform their daily activities. The devaluation of indigenous environmental knowledge is one of the central problems of contemporary western conservation models. Finding ways to value and incorporate indigenous knowledge through democratic inclusion of indigenous communities will be essential to the continued survival of national parks and the national park idea in many parts of the world.

### ***Conclusion: building alliances and "getting to yes"***

*I am personally not very interested in animals. I do not want to spend my holidays watching crocodiles. Nevertheless, I am entirely in favor of their survival. I believe that after diamonds and sisal, wild animals will provide Tanganyika (Tanzania before 1964) with its greatest source of its income. Thousands*

*of Americans and Europeans have a strange urge to see these animals.* —Julius Nyerere, First President of Tanzania

*Do you know what the park service has always been able to gain that nobody even recognizes or talks about? Indian land and park land have been traditionally immune from large-scale development. That relationship is the land base. It just extends beyond park boundaries. Endangered species, both plant and animal, somehow find a way to maintain their existence on Indian land just outside of parks.* —Don Whyte, Mesa Verde Ranger and Ute Mountain Ute Tribal Member, speaking to investigative journalist Phillip Burnham (2000, 267–268)

In many ways, unpacking the complexities of conservation problems flies in the face of traditional approaches to conservation and development. Simplicity is an essential ingredient in the realms of policymaking and NGO fundraising. Cookie-cutter approaches to conservation and development policy require a world in which diverse, complex problems can be made to fit into a limited set of policy boxes. Meanwhile, leaders of conservation NGOs are faced with the daunting challenge of distinguishing themselves from a growing field of similar organizations in an intensely competitive fundraising environment. In the space of about 30 seconds, they need to convince people to write a check to their conservation organization as opposed to another. In this brief message, they must present both a problem and a solution. Furthermore, they must convince their target audience that the problem can be solved by giving money to them (cf. Nugent 1994 and Maren 1997). There is little space for complexity under these extraordinarily difficult conditions.

Cookie-cutter policies and NGO fundraising imperatives also do not fit well with the growing recognition on the part of ecologists and social scientists that conservation problems are extraordinarily complex, not to mention context-specific. Unfortunately, this lack of fit has become a widely-recognized sticking point for the incorporation of ecological and human complexity into conservation and development interventions, even those that are explicitly designed to be community-based. This fundamental problem presents conservationists with two possible courses of action: to continue to obfuscate the complexity of conservation and protected area management in an effort to keep it simple; or to find more flexible and complex (but admittedly less tried and true) ways of doing conservation.

The first approach is more attractive in the short term, because it appears to protect the precarious gains that conservationists have made in the twentieth century, which are currently under direct attack by an especially virulent form of free market capitalism. In the long run, however, this approach cre-



ates more problems than it resolves. Simply sweeping complexity under the rug will not make it go away. Most commonly, human communities on the margins (and sometimes inside) of parks threaten the continued viability of parks—including areas outside of parks that are essential to biodiversity. By ignoring the presence of these communities for so long, western conservationists have gotten themselves into a proverbial Chinese finger trap. They respond to the perceived threat of indigenous communities by strengthening park boundaries, while bemoaning the fact that the parks, whose boundaries they are busily reinforcing, are not effective models of biodiversity conservation.

Developing new approaches to protected area management that account for both human and ecological complexity will be a contentious political process, one that will almost certainly push some people well out of their comfort zone. It is also important to acknowledge that there are a growing number of people within the conservation movement who are simply opposed to community-based conservation. In fact, advocates of community-based conservation are currently organizing themselves to address the “backlash” against their organizations within the conservation movement. In light of this problem, the conservation movement needs to set priorities for itself and find the political will to promote them. However, expecting such a diverse group of people to speak with one voice—let alone become a political vanguard—is simply unrealistic.

Nevertheless, it is incumbent upon people within the conservation movement to address the fundamental contradictions that continue to plague our work. There is a real danger that addressing these contradictions will strengthen growing rifts within the conservation movement. However, we will all fare better by listening to one another rather than tuning each other out. By listening, rather than stereotyping, it will become increasingly clear what we are disagreeing about—and quite probably we will discover that there is more common ground within our movement than we previously assumed.

Another area where we could use some clarity is in defining who the so-called enemies of our movement actually are. In the past 10 years, there has been a tendency for conservationists to circle the wagons without really looking to see who might be shooting at us. Anyone who may threaten conservation agendas, narrowly defined, is seen as a potential enemy, from indigenous communities to tourists, social scientists, large-scale commercial enterprise, and even ecologists whose ideas run counter to the short-term imperatives of NGO fundraising. Conservationists working in Tanzania see the country's parks as equally threatened by European investors and the rural poor. Individuals within the NPS see parks in the American West as equally threatened by national snowmobile lobbies and indigenous hunters. Clearly,

however, these perceived enemies of conservation have different agendas and different impacts on the environment. Most importantly, in my opinion, their historical claims to the resources in question are not equally valid, and we need to find sophisticated criteria for evaluating people's claims to resources. Simply asserting that the problem is too complex will not make it go away.

At present, the biggest threat to conservation is global capitalism and large-scale commercial enterprise—a situation that is made doubly difficult by the fact that a number of conservation NGOs are dependent on large donations from corporate sponsors, while the viability of parks in countries like Kenya and Tanzania depends on investment from companies like Hilton and Serena. In the U.S., the Bush administration has created a drastic shortage of funding for the NPS—so that three new parks were added to the National Parks Conservation Association's endangered park list in 2003 (NPCA 2003). In Africa, commercial farms threaten the boundaries of national parks, while luxury lodges tax local water tables. In both the U.S. and East Africa, the infrastructural demands of large-scale tourism threaten the continued viability of wildlife habitats—not to mention contributing to our unsustainable dependence on private motor vehicles and fossil fuels.

Addressing the impacts of these processes on a global scale would tax the current capacities of the conservation movement, especially because we ourselves are divided on how to deal with these issues (and whether we even should deal with them at all). It is more realistic to address these problems on a case-by-case basis, and in this respect indigenous communities and other local people will quite often be our natural allies, since their cultures and livelihoods are frequently threatened by the same processes that threaten national parks. It is important that we avoid romanticizing these communities, since they are as complex and diverse as the conservation movement itself. It would be folly to deny that there are members of indigenous communities who favor activities like oil exploration in northern Alaska, uranium mining in northern Australia, and gold mining in the Amazon Basin. This being said, there are significant interest groups within these communities who staunchly oppose these activities because of their implications for their traditional livelihoods and more generally the health of the Earth.

As Mesa Verde ranger Don Whyte points out, national parks and Indian reservations often represent contiguous areas of low (or no) economic development. His home, the Ute Mountain Ute Reservation, is a quintessential example of this relationship, since members of his tribe have opted to set aside large areas of their reservation for the preservation of cultural and natural resources. Not all Native American communities have set aside parts of their reservations as protected areas, although a surprising number have. Generally speaking, however, there is less development on reservations than in surrounding communities. As such, they may be inadvertently protecting

“biodiversity hotspots,” as Whyte implies in his statement above. Work by Homewood and Rodgers (1991) indicates that Maasai resource management practices have had similar effects in East Africa, by maintaining palatable grass species and keeping farms and commercial enterprises out of wildlife migration corridors (a situation that is admittedly changing). Finally, a study by the WWF (1997) indicates a strong correlation between biodiversity and the territories of indigenous communities on a global scale.

I do not view indigenous peoples as “noble savages” or “natural conservationists.” However, I do believe that the relationship between indigenous communities and biodiversity is compelling and well worth exploring through rigorous interdisciplinary research. Furthermore, it would be worthwhile for conservationists to empower indigenous communities by supporting indigenous self-determination, reconstructing the historical relationships of specific communities and specific parks, redressing the historical grievances of indigenous communities through good faith gestures, trying to understand local attitudes toward conservation (whether negative or positive), helping to build the capacity of indigenous communities to do conservation, exploring ways to incorporate indigenous resource management and environmental knowledge into mainstream conservation models, and working to assure that conservation benefits accrue directly to the people who have paid for the creation of parks with their traditional natural resource base—something that conservationists have promised to do since they began negotiating with indigenous communities for access to land at the turn of the twentieth century.

Most importantly, it will be necessary to begin addressing the ongoing conflicts that have surrounded most national parks since their inception, since these conflicts represent major obstacles to both conservation and the equitable distribution of its benefits. Addressing these conflicts will begin with the simple step of admitting that they are conflicts. In many cases, effective community-based conservation will need to begin by treating conservation problems as conflicts of entrenched positions. As current approaches to conflict resolution acknowledge, it is frequently difficult for individuals enmeshed in these types of conflicts to see beyond their positions in order to effectively evaluate their wants and needs. This in turn makes it difficult (seemingly impossible, sometimes) to negotiate with others (who are similarly enmeshed in their positions) around these wants and needs, making it exceedingly difficult to develop pragmatic strategies for meeting those wants and needs (Fisher and Ury 1991).

This fundamental problem is compounded by the fact that many powerful conservationists feel that there is nothing to negotiate about. However, their growing concern about the future of parks should indicate that, in fact, there is something to negotiate about. A professional mediator I met once put it quite simply, “If you can wave a magic wand and make the world exactly

how you would like it to be, then there is no need to negotiate. Otherwise, you are going to have to negotiate or resign yourself to the status quo, whatever that happens to be.” Many conservationists would like to see a global system of protected areas with inviolate boundaries, protecting biodiversity in the form of pristine wildernesses. Since this vision is practically impossible to translate into reality, it is probably time to explore alternative visions. Inviolable parks are part of the traditional conservationist position, but the protection of biodiversity is one of the primary conservationist needs. If effective alternatives can be found for the protection of biodiversity, then it would make sense for traditional conservationists to abandon their position on inviolable parks in favor of more effective alternatives. These alternatives will necessarily entail negotiation with, and accommodation of, other interest groups. This is something that conservationists are going to have to get good at in order to be effective in the future. Finding effective ways of grappling with complexity and uncertainty, ultimately resulting in more effective approaches to biodiversity protection, represents the central challenge to conservation in the twenty-first century—a challenge we can no longer afford to ignore.

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