
Co-management in a Landscape of Resistance: The Political Ecology of Wildlife Management in Western Alaska

Joseph J. Spaeder *J.J. Spaeder Consulting*

Abstract: This paper examines the evolution, structure and operation of co-management regimes for caribou and brown bear from a political ecology perspective. Since 1989, Yup'ik Eskimo hunters and government managers in Western Alaska have established a set of regimes for the joint management of caribou and brown bear. The creation of these decentralized management institutions occurs in the face of divergent perceptions of wildlife population dynamics, incongruent land tenure systems and long-standing traditions of local resistance to external game regulation. Political ecology serves as a conceptual framework for developing an integrated understanding of how environmental factors, political forces and cultural traditions interact to produce social conflict and, in these cases, generate new institutional responses to conflict.

Keywords: co-management, political ecology, resource conflicts, Yup'ik Eskimos, caribou, brown bear

Résumé : Cet article examine l'évolution, la structure et le fonctionnement des régimes de cogestion du caribou et de l'ours brun sous l'angle de l'écologie politique. Depuis 1989, les chasseurs Eskimos Yup'ik et les administrateurs de l'État en Alaska occidental ont mis sur pied un ensemble de régimes de gestion conjointe du caribou et de l'ours brun. La création de ces institutions de gestion décentralisée a eu lieu en dépit de perceptions divergentes sur la dynamique des populations fauniques, de régimes fonciers incompatibles et d'une longue tradition de résistance locale face à la réglementation extérieure du gibier. L'écologie politique sert de cadre conceptuel pour le développement d'une compréhension intégrée de la façon dont les facteurs environnementaux, les forces politiques et les traditions culturelles interagissent pour générer du conflit social et, dans ce cas, pour susciter de nouvelles réponses institutionnelles au conflit.

Mots-clés : cogestion, écologie politique, conflits autour des ressources, Eskimos Yup'ik, caribou, ours brun

Introduction

In many parts of the world, local communities with long histories of occupancy developed local systems of land tenure, ecological knowledge and resource use that continue to the present (Berkes 1989; Bromley 1992; Freeman and Carbyn 1988; McCay and Acheson 1987). For many such communities, however, interactions with state structures for resource control are increasingly unavoidable.¹ With the rise of the global economy, centralized governments have asserted control over previously ignored hinterland areas. Through the assertion of state claims to land and resources, previously autonomous communities have become encapsulated within the political economy of modern nation states (Feit 1988). As a result, pure communal resource management is no longer possible in many places (Berkes 1989; McCay and Acheson 1987; Ostrom 1990).

In Arctic North America, as well as in many parts of the developing world, co-management has emerged as the dominant strategy for resolving resource conflicts and building partnerships in conservation and management between local communities and government agencies. Co-management (also called co-operative management) has been highly effective in some cases where neither local management nor exclusive government control provides for sustainable and equitable common property management. Co-management has thus become one of the principle means by which formerly isolated or autonomous communities are linked, or manage their linkages, to nation states.

Co-management refers to decentralized institutional arrangements involving the sharing of management responsibilities between community-level and state-level actors (Osherenko 1988; Pinkerton 1989). Pinkerton (1992: 331) defines it as "power sharing in the exercise of resource management between a government agency and a community or organization of stakeholders," while Osherenko's (1988) definition focusses on the formal dimen-

sions of this approach, stating that co-operative agreements between government agencies and user groups apply to a specific species and/or a geographic region and include:

1. A system of rights and obligations for those interested in the resource;
2. A collection of rules indicating actions that subjects are expected to take under various circumstances;
3. Procedures for making collective decisions affecting the interest of government actors, use organizations and individual users (ibid: 94).

Since regulators and resource users at both local and national levels must frequently interact, co-management agreements can be viewed as a process of institutionalizing the *de facto* interdependence which exists between local users and authorities and state-level authorities and the users they authorize (McCay and Acheson 1987). Over the past decade a growing body of literature has analyzed successful examples of the co-management or co-operative management of common property resources (Lloyd 1986; Marks 1991; Pinkerton 1989; Richard and Pike 1993; Usher 1991). These studies have shown that in some cases, local users are able to increase their influence over the management of resources upon which they depend, while government agencies realize the benefits of reduced social conflict and greater user compliance with regime rules (Pinkerton 1989).

This paper examines the evolution, structure and operation of co-operative management systems for caribou and brown bear in Alaska through the lens of political ecology. After a brief overview of political ecology and the social and ecological contexts of Western Alaska, I examine first the origins of resource conflicts which precede co-management, and secondly how the emergence of new institutional arrangements alters existing power relationships and property regimes in both formal and informal arenas. I argue that these joint management institutions can be best understood within the context of a history of competing claims to wildlands and wildlife, local repertoires of resistance and divergent perceptions of animals and their ecology.

Emergence of the Political Ecology Framework

In the mid-1980s, growing concern about the localized environmental and social impacts of the global economy and dissatisfaction with existing models for explaining Third World land degradation led scholars in a variety of disciplines, including anthropology, to seek new explanatory frameworks. Drawing on earlier work in political economy, theorists from anthropology, geography and

other disciplines developed the political ecology framework in an effort to provide a better explanation of how land degradation at the hands of both local and non-local social actors was mediated by political economic forces, especially asymmetric power relations (Blaikie and Brookfield 1987; Bryant and Bailey 1997; Painter and Durham 1995; Zimmerer and Bassett 2003).

The broad interdisciplinary political ecology framework has several distinguishing features, including: a focus on analysis of local patterns of resource use; attention to the political-economic and ecological dimensions of environmental resource use at different spatial scales ranging from the village level to the regional, national and international levels; consideration of the social construction of natural resources by social actors at scale; and lastly an emphasis on the importance of historical analysis and ethnographic depth in understanding the interactions between resource-dependent communities and regional and international political economies (see Spaeder and Feit, introduction to this issue).

Initially developed to analyze the social causes of environmental degradation (Blaikie and Brookfield 1987; Peet and Watts 1996; Stonich 1993) this analytical framework has recently been applied more broadly, across a range of disciplines, to the analysis of large-scale environmental change, community-based conservation and resource conflicts in both the first and third worlds (Moore 1993; Neumann 1998; Peluso 1992).

From Homelands to Public Lands: Encapsulation and Contested Proprietary Rights in Rural Alaska

The embeddedness of land-holding in ecological, social, cultural and political life means that one tenure regime can seldom be legislated away in favor of another. (Ship-ton and Goheen 1992: 316)

In Western Alaska and many other parts of rural Alaska, a paucity of management personnel, funding and public interest allowed native rural residents to continue their traditional subsistence activities up through the 1960s, largely unimpeded by external game laws and enforcement efforts. However, this situation dramatically changed with the passage of the Alaska Native Claims Settlement Act (ANCSA) in 1971. With its passage, Alaska Natives witnessed the formal extinguishment of aboriginal land claims to 90% of the State. In exchange, they received fee-simple title to approximately 10% of Alaska (44 million acres), the establishment of both village-level and regional

corporations and cash payments of just over 960 million dollars.

Formal protections for native subsistence rights were not established until the passage of the Alaska National Interest Lands Conservation Act (ANILCA) a decade later. Under this law, Native Alaskans gained two important subsistence protections. First, ANILCA guaranteed rural native people (along with all rural residents) access to federal lands for the purpose of undertaking "customary and traditional" subsistence activities, as defined by management agencies under the terms of ANILCA. Secondly, subsistence users were assured priority over other uses, such as commercial fishing and sport hunting, in times of scarcity. Access and use of wildlife, however, was to be subject to game laws established by state and federal agencies.

At this time the State of Alaska had management authority over wildlife on both state and federal public lands. This act of Congress permitted the State of Alaska to retain management of fish and wildlife on federal lands, as long as they extended the federal subsistence protections stipulated by ANILCA to their management of State lands. The State of Alaska complied until 1990, when the State Supreme Court determined that ANILCA's subsistence priority was in violation of the State constitution. At that point, federal resource agencies resumed management authority over federal conservation lands.

Accompanying this transformation of indigenous land tenure in the 1970s and 1980s was the establishment and expansion of management agency headquarters in regional centres across rural Alaska staffed by a professional cadre of managers, biologists and wardens. While their rights to harvest wildlife were guaranteed by law, the practical exercise of those rights, in the view of native residents, was attenuated by an extensive system of federal and state game laws developed by distant institutions and enforced by non-local wardens. Thus, by the early 1990s, formerly self-managed native communities were bereft of formal management authority or meaningful input into the management of wildlife resources upon which they depended.

This paper draws on 14 months of field work in a set of Kuskokwim River Yup'ik Eskimo communities between 1992 and 1996. This research included extensive semi-structured interviews with elders, active hunters and village leaders from the caribou and brown bear harvesting communities of Kwethluk, Akiachak Quinhagak, as well as interviews with federal and State wildlife managers and biologists.

Game Laws and Village-Based Repertoires of Resistance

Scott (1985) observed that subordinate and politically disenfranchised groups in many parts of the globe customarily respond to the hegemony of non-local resource control with "everyday forms of resistance" rather than more overt forms of protest. Scott's early analysis of these repertoires of resistance spawned additional work in this area (Colburn 1990; Neumann 1998; Peluso 1992), as well as critiques of this approach (Abu-Lughod 1990; Gupta and Ferguson 1999; Ortner 1995).

In Western Alaska indigenous hunters practice a broad array of such anonymous and unorganized strategies of resistance including widespread disregard for most game laws, stealth in harvesting, avoidance of agency personnel in the field and nearly total non-compliance with mandatory paperwork, such as game permits and harvest reporting, creating a "landscape of resistance" (Scott 1985). Such "everyday forms of resistance" are not usually intended to confront or transform the formal land tenure arrangements or game laws through outright defiance or formal opposition. On the contrary, villagers attempt, by means of stealth and non-compliance with many game laws, to avoid overt challenges to the authority of agency managers, to minimize risk of apprehension by game wardens and to continue the pursuit of customary subsistence practices. Occasionally, as we shall see in the two case studies of resource conflicts to follow, local communities choose to augment informal resistance with more direct and confrontational forms of engagement with external structures of resource control.

Western Alaska's Yukon Delta National Wildlife Refuge

These two case studies of resource conflicts over caribou and the brown bear unfolded in the Qavilnguut (Kilbuck) Mountains of Western Alaska. Located within the Yukon-Delta National Wildlife Refuge (YDNWR), this large upland region south of the Kuskokwim River consists of rolling treeless hills rising to 1 000 metres, with riparian zones forested with alder, spruce and willow. The Qavilnguut Mountains provide habitat for moose, caribou, brown and black bear, as well as many species of small fur-bearing animals. With the passage of the ANILCA in 1980, the refuge was expanded by seven-fold to 19.6 million acres, encapsulating the village sites and traditional homelands of some 35 Central Yup'ik Eskimo communities within what became the nation's second-largest national wildlife refuge.

The Qavilnguut (Kilbuck) Mountains have been the homeland of extended family bands of Yup'ik Eskimos for generations. Traditionally, Yup'ik people harvested wildlife within a mosaic of distinct territories defined by historical land use and occupancy (Andrews 1989; Wolfe, et al. 1984). Subsistence territories and key harvesting sites, such as fish camps and berry patches, were informally controlled by kinship groups which limited access to these lands and resources (Andrews 1989). The presence of traditional use territories, however, did not preclude sharing of certain resources among kinship groups, especially migratory wildlife.

Geographic remoteness and the absence of boom and bust cycles associated with easily exploitable resources have enabled Yup'ik people to successfully maintain use of their native language and cultural traditions to a greater degree than other native peoples in Alaska and the continental United States (Langdon 1988). Contemporary subsistence activities occur within the context of a mixed cash-subsistence economy, sustaining some 16 000 Yup'ik Eskimos living throughout the Yukon-Kuskokwim Delta region.

Today, as in the past, the harvest of wildlife resources plays a central role in the subsistence economies, social organization and culture of Native Alaskan communities (Coffing 1991; Hensel 1992; Langdon 1988; Wolfe, Fall et al. 1986). While four species of salmon form the foundation of the subsistence diet, other foods—including caribou, moose, bear, seals, small game and waterfowl—provide important additional sources of protein and remain an important part of the seasonal round of subsistence activities. With a high unemployment rate in these remote villages, reliance on wild foods remains among the highest in the State (Wolfe, Fall et al. 1986).

Contested and overlapping claims to these lands contribute significantly to conflict between native groups and government regulators. As a result of these changes in land tenure and the imposition of non-local resource management, the YDNWR has been the site of recurrent conflicts over resources and a perennial disregard of game laws by local native resource users.

From Conflict to Co-management: Decentralized Management of the Qavilnguut (Kilbuck) Caribou Herd

In the mid-1980s, conflict emerged between several Yup'ik Eskimo communities and the government wildlife agencies over the management of a small non-migratory caribou herd in the Qavilnguut Mountains of Southwestern Alaska (also known as the Kilbuck Mountains) (see map 2). Caribou are known to exhibit non-equilibrium population

dynamics, resulting in cycles of boom and bust (Couturier, Brunelle et al. 1990; Russell, Morschel and Klein 1997; Martell et al. 1993). Historical accounts indicate the presence of large numbers of caribou, numbering in the thousands, ranging over the Qavilnguut Mountains and Y-K Delta lowlands in the late 1800s (Murie 1935; Skoog 1968). By the early 1900s, this extensive caribou herd had nearly disappeared from Y-K Delta lowlands leaving only a small remnant population in the Qavilnguut Mountains (Hinkes 1988; Kacyon 1990).

Prior to 1983, agency personnel believed that very few caribou were available for harvest, save for a few stragglers from the large neighbouring herd, the Mulchatna herd (Hinkes 1988; Jonrowe 1979). In the mid-1980s, the Alaska Department of Fish and Game (ADF&G) began to take notice of small but growing groups of caribou in the Qavilnguut Mountains and initiated efforts to census the population. Early aerial survey efforts, attempted without the benefit of radio telemetry techniques, were incomplete and, by the agency's own standards, unscientific.² Following aerial surveys of portions of the Qavilnguut Mountains in 1984 and 1985, ADF&G staff estimated the population to be 200 in 1984 and only 75 in 1985. Without additional field work or consultation, the ADF&G made a finding that the groups of caribou in the mountains constituted a distinct caribou herd. Shortly thereafter, it was asserted that "sustained yield limits had been exceeded" (Patten 1985), and the caribou season in the region was closed without any indication of when or under what conditions harvest might be resumed. Once the ADF&G, and later the United States Fish and Wildlife Service (USFWS), came to believe that the Qavilnguut caribou constituted a distinct herd rather than a splinter group from the Mulchatna herd, legal mandates of state and federal agencies were invoked to justify newly initiated programs to census the herd and sharply increase enforcement activities in an effort to conserve this small herd.

Based on their direct observations, village leaders vigorously disputed the ADF&G's caribou counts in public meetings and opposed the complete closure of the herd. Active Yup'ik hunters from Kwethluk and Akiachak, who frequented the Qavilnguut Mountains, reported observing many hundreds more caribou than were being reported by government biologists. They also contended that the population was growing rather than declining, as asserted by the agency. The ADF&G, the Yup'ik hunters argued, was substantially under-reporting the size of the herd, because the area surveyed by agency biologists was too small and because small dispersed groups of caribou are difficult to observe from the air. Disagreeing with the agency's information and enforcement actions based on

that information, a number of active hunters continued to hunt caribou that fall and winter, but with greater stealth.

In announcements to the public and press, the ADF&G caribou data came to resemble firm herd census figures rather than estimates based on often incomplete aerial surveys. During their 1986 aerial survey of the region, the ADF&G found very few caribou and, after a widely publicized illegal harvest, the ADF&G regional biologist publicly declared that less than 12 caribou remained in the herd. Several natives caught illegally hunting were portrayed as selfish poachers whose actions were threatening the survival of the herd. The ADF&G continued annual surveys and increased law enforcement patrols in the Qavilnguut Mountains in an effort to avert what they saw as a "tragedy of the commons" in the making (Hardin 1968). Also, in an effort to reduce illegal harvests, the ADF&G area biologist publicly pledged to open the herd to limited hunting when the herd reached 1 000 animals (Kacyon 1990; Patten 1985).

Indigenous Knowledge of Caribou

The perspective of indigenous hunters regarding the ecology and population status of the herd differs greatly from those of the agency biologists. One area of sharp disagreement relates to the types of caribou present in the region. Active Yup'ik hunters identify three different types of caribou based on coat colour and size of the animals. The first type, found in relatively small numbers, is pure-bred wild caribou (or *tuntu*, in Yup'ik). The second and most numerous type is a mixture of wild caribou and reindeer. This type, called *tuntu suaraat* or small caribou has smaller frames, shorter legs and bears different fur coloration than wild caribou due to interbreeding with feral domestic reindeer, which were turned loose by native herders in the early 1940s. The third type, referred to as woodland caribou, is distinguished largely by its proclivity to inhabit woodland areas bordering the water courses at lower elevations in the Qavilnguut Mountains. According to native residents, these woodland caribou comprise a portion of the caribou which go uncounted in the annual herd censuses. Agency biologists discount this typology, asserting that native residents have mistaken natural variation among barren ground caribou for differing caribou "types."

Native models of causality in nature differ in many, though not all, respects from those posited by agency biologists. In agency wildlife management, the concept that animal populations can be actively controlled through human intervention and maintained at a sustained yield remains foundational (Bailey 1984; Bergstrand and Joint Federal-State Land Use Planning Commission for Alaska

1978; Bolen and Robinson 1995). Maximum sustainable yield (MSY) assumes that a particular population of wildlife can be maintained at or near an equilibrium point by manipulating several variables, including predation, human harvest and habitat protection and enhancement (Holling 1973; Holling 1994). However, recent developments in theoretical ecology challenge the generalized application of these assumptions (Gunderson, Holling et al. 1995; Holling 1994; Walters 1986).

In contrast, Yup'ik respondents place much less emphasis on predation, human or natural, as a variable controlling wildlife population dynamics, instead relegating it to a minor cause of the local decline of particular species. While many hunters perceive that caribou harvest results in a direct reduction of the herd, they stress traditional beliefs in the autonomy of wild animals (Fienup-Riordan 1990; Hensel 1994). Animals are understood to increase and decrease according to their own rules and patterns; humans can neither accurately predict nor control animal populations. As one Kwethluk resident put it: "Animals mind their own ways; you can't make them come [increase]." These perceptions are reflected in the local belief that animals have long-term population cycles, during which they multiply in numbers and expand their range beginning from the interior and moving toward the Bering Sea Coast. Animals will colonize areas where they have not been seen in many years, increase in numbers and after a time, perhaps many decades, will be seen to decline, even disappearing entirely only to re-emerge from out of the interior at a later time and re-establish themselves. The Kilbuck caribou herd is seen to adhere to this cyclical pattern, as are moose and beaver. In this view, non-equilibrium or non-linear population dynamics are considered normative. Consequently, rather than attempt to control populations, the chief goal for Yup'ik hunters is to gain an understanding of the population trends and behaviour of wildlife in their territories and to adapt harvesting practices to those dynamics.

The differing modes of gathering environmental knowledge between biologists and hunters also contribute to resource conflicts. For instance, biologists' heavy reliance on aerial monitoring affords reduced opportunities for on-the-ground observation of wildlife, the principle mode of observation by local hunters. The agency's extensive use of aerial surveys also fuels the prevalent Yup'ik belief that agency aircraft effectively harass wildlife and are deployed, in part, to monitor subsistence activities and to apprehend out-of-season hunters. Many native residents also believe that agency biologists, in the process of surveying, at times use aircraft to purposefully drive caribou and other wildlife away from the villages in an

attempt to reduce harvest opportunities. Thus, in addition to contesting the resource agency's right to manage wildlife on their traditional homelands, Yup'ik hunters also dispute the biological data that defines the caribou conflict.

Getting from Conflict to Co-management

In 1990, four villages adjacent to the herd jointly petitioned the Alaska Board of Game to establish a limited caribou harvest. Such direct engagement with regulatory institutions marked a major shift away from a sole reliance on informal and anonymous forms of resistance. This shift was triggered by three factors. First, due to below-average subsistence salmon harvests in 1989 and 1990, the villages were experiencing a pressing need for meat. Second, expanded law enforcement efforts by state and federal game wardens were becoming increasingly contentious in the villages. Intensive efforts by game wardens resulted in house searches of suspected poachers, fines and confiscated hunting equipment for convicted out-of-season hunters. Nearly violent confrontations between groups of angry villagers and game wardens occurred. Aware that harvests would continue legally or not, village leaders were increasingly eager to obtain a legal hunt in order to reduce the chance of enforcement actions. Third, despite unauthorized harvests, the ADF&G's own survey data in 1988 revealed that the herd had exceeded 1 000 animals, the level at which the area biologist, though lacking the authority to do so, had publicly promised a hunting opening.

The Alaska Board of Game denied the villages' request for a limited hunt based on their assessment that the herd was too small to sustain a harvest. The board did not indicate a threshold population size nor any other factors necessary to open a season in the future. To native leaders, this decision signalled the agency's unwillingness to fulfil public pledges made by agency staff, and it affirmed native peoples' powerlessness to affect change from within the wildlife management system.

Lacking any recourse within the existing regulatory structure, one of the four villages, Kwethluk, filed suit in 1990 in federal court to require the Alaska Board of Game to provide a limited subsistence hunt. In a decision which surprised both sides, the court awarded the village a one-time permit-based harvest of 50 caribou, while sharply criticizing the Board of Game's routine pattern and practice of decision making. Citing the agency's lack of a management plan for the herd, Judge Holland of the Federal Court admonished the State Board for failing to establish "an articulated and evenly applicable definition of sustainable yield" upon which to base their denial of a limited

subsistence hunt. His decision reproached the Board for acting in an "*ad hoc* fashion, as though it had unfettered discretion to decide what meaning it would attribute to the sustained yield issue in any particular case." This ruling, coupled with the resolve of native actors to continue litigation if necessary, forced managers to consider villages' proposed alternatives to centralized bureaucratic control of wildlife.

Over the next two years, a co-operative caribou management plan was fashioned by a stakeholder body called the Qavilnguut Caribou Working Group, which was composed of representatives from the USFWS, the ADF&G and participating village councils. Initially, only a handful of villages located closest to the Qavilnguut Mountains participated in discussions. Soon the number of participating villages was increased to 18, in order to include nearby villages that were believed to have historically hunted or herded reindeer in these mountains.

The Caribou Working Group began by negotiating an annual harvest level for the herd. The group unanimously agreed to a harvest level of 5% of the herd, limited to bulls only. Permits would be required to legally hunt in order to assure that the harvest would be limited. Although this conservative harvest figure would initially provide access to only 60 animals, it was readily accepted by the native representatives as the most efficacious route to reach their chief goal of establishing a legal caribou harvest. It also satisfied state and federal managers who needed to justify the hunt on biological grounds to their respective agencies.

Divergent perceptions of herd numbers and location by managers and users were partially addressed through the direct participation of native hunters in aerial surveys of the herd. Experienced native hunters from Kwethluk and Akiachak began to accompany agency biologists during the yearly aerial herd census. Native spotters directed pilots to previously unsurveyed areas where additional caribou were found which, in combination with radio-collared caribou, resulted in a significant increase in the "official" size of the herd as reported by the State and federal managers.

Finally, an innovative method for allocating permits within the villages was established to replace the centralized allocations of permits by the USFWS. This system has several advantages. In addition to having village councils distribute the permits (by lottery) to active hunters, the system includes special provisions allowing the transfer of permits among hunters and proxy permits, enabling an active hunter to hunt on behalf of others, such as elders, who are unable to do so. The latter two provisions increased the likelihood that the limited number

of permits available would go to active hunters who were equipped to engage in caribou hunting. Community-based permit distribution constitutes an important means of strengthening joint management systems by incorporating local social capital into the management framework. It also serves to legitimize village social institutions.

The style of communication and process of negotiation that produced the Qavilnguut Caribou Management Plan was distinctive in several ways. First, this case was unusual in that governmental agencies were negotiating directly with community-based native institutions, rather than specially-created committees composed of at-large native "representatives" selected by the agency. Second, although English remained the official language of discourse, native representatives, intent on developing internal consensus and avoiding public displays of dissent, frequently caucused among themselves in Yup'ik during working group meetings. Finally, in a move that reflected Yup'ik modes of decision making, the working group operated principally on the basis of consensus decision making with the aim of achieving unanimity. Votes, when taken, were unanimous or nearly so.

After functioning for five years, the regime was suspended, not due to renewed social conflict but due to exogenous ecological change. Beginning in 1995, a splinter group of over 40 000 caribou from the neighbouring Mulchatna caribou herd migrated south mingling with the Qavilnguut herd (numbering some 6 000) and temporarily negating the need for a permit system.

As is often the case, native actors were forced to surmount formidable barriers in order to initiate the development of decentralized joint-management regimes. With their shift from resistance to proactive engagement, coupled with their successful leverage through the courts, native leaders dramatically changed power relations between the regulatory institutions and the regulated users. Once native representatives had secured a seat at the management table by means of leverage in the courts, negotiation and co-operation quickly replaced litigation and charges of injustice. As a result of their role in crafting a new joint-management plan local native leaders developed an uncommon level of ownership over the new regime.

"Don't Bother the Bears": Contention and Co-operation in the Management of Brown Bears in Western Alaska

In 1993, this same set of indigenous villages and state and federal management agencies became embroiled in a new conflict over the initiation of a large and ambitious USFWS research project to census the brown bear pop-

ulation in the Qavilnguut Mountains. This \$500 000, five-year research project called for anaesthetizing, collaring and permanently marking 75 or more brown bears in a 6 700 square mile study area. These Kuskokwim River villages, with the village Kwethluk playing a key leadership role, united in staunch opposition to the research project which was perceived as an unnecessary harassment of a spiritually powerful species. The conflict demonstrated the new-found abilities of village-based indigenous leaders to advance their concerns within regional and national political administrative arenas.

In the Qavilnguut Mountains brown bear are hunted principally by subsistence hunters from eight villages along the middle Kuskokwim River and Bering Sea (Hensel 1994). Within the Yup'ik worldview, animals are seen as non-human persons, sentient in nature and capable of intentional action (Fienup-Riordan 1990). The brown bear, possessing both great physical power and special numinous powers, is seen in the region as deserving of special treatment and respect.³ For example, brown bears are understood to have excellent hearing, including the ability to comprehend the intentions and attitude of a hunter. Respondents in Kwethluk and Akiachak described their understanding that bears could hear through the ground and that they would know things were said about them even when hunters are in the village. In deference to the power of brown bears, hunters in many of the harvesting villages refrain from speaking about their bear hunting plans or even making direct reference to brown bear. Hunters in the region continue to follow the traditional prescriptions for butchering bears, especially ritual treatment of the skull, which they are instructed to leave in the field (Hensel 1994). Kwethluk elders stated their belief that hunters who are presumptuous, boastful or explicit about their intentions of bear hunting risk poor luck or harm from brown bears. Disrespectful treatment of a bear may engender a retaliatory attitude in that animal, making it more dangerous when it is hunted or encountered in the wild. In both private discourse and public meetings regarding brown bear, hunters employ one of several avoidance terms when referring to brown bears, including: *tauukaq* (literally target), *carayak* (horrible something) or *ungsiq* (four-legged animal) (Hensel, personal communication 1993; Yup'ik orthography: Jacobson 1984). Yup'ik rarely articulate traditional perceptions of animals in public arenas, as these views are often sharply at odds with the views of government wildlife biologists.

Prior to 1991, the harvest of brown bear in the Qavilnguut Mountains occurred almost entirely outside the governmental regulatory structure. Subsistence hunters

are required by law to obtain a State or federal harvest permit prior to hunting brown bear, as well as report the number and location of all bears harvested for subsistence use. This regulation created a conflict for Yup'ik hunters, as obtaining a permit was perceived as signalling one's intention to catch a bear. This conflict, compounded by a wide-spread disregard of game laws, resulted in very few hunters obtaining the required brown bear permits or reporting their harvest. This chasm between customary subsistence practice and hunting regulations created potential for criminalizing customary food-getting practices.

In an effort to bridge this gap and accommodate customary practices, the regional native organization representing 56 tribes in the area requested the establishment of special subsistence hunting regulations for brown bear. They proposed that the season be lengthened and the harvest level be increased from one bear every four years to one bear per year, along with several other provisions aimed at making the regulation more culturally appropriate. Though federal managers reluctantly supported the requested regulatory change, they expressed concern about a lack of brown bear harvest and population data for the region. To assure themselves that "these liberalized regulations would not endanger the health of the population," the regional director of the USFWS directed staff to design a new bear population-monitoring project in the Qavilnguut Mountains. Thus a proposal intended by native leaders to be a minor regulatory accommodation to existing practices ultimately furnished the rationale for a extensive research project they would come to vigorously oppose as disruptive, disrespectful and harmful to the bears.

In early 1992, the USFWS notified several villages that hunt in the Qavilnguut Mountains about their research plans. Since the project was to be conducted on public lands, over which the USFWS claimed exclusive management rights, the agency felt no obligation to obtain the consent or support of adjacent villages that utilized the area. In doing so, agency biologists and managers continued to ignore indigenous leaders' efforts to maintain and advance their proprietary rights over their traditional homelands and wildlife resources. Furthermore, the social landscape had recently changed significantly in ways that agency officials did not fully appreciate. As described above, power relations in the region had been altered as a result of the villages' successful legal challenge and negotiation of a new co-management regime for the Qavilnguut caribou herd. For some villages, political engagement, rather than resistance and disregard, had become their principle response to governmental resource

agencies. Yet, despite those developments, involvement of local communities in the project was reduced to informing them of agency plans to undertake this large research project.

As more villages became aware of the magnitude of the brown bear project during the winter and spring of 1993, local opposition to the project increased rapidly, for several reasons. First, the project was seen as unnecessary harassment of a species which local hunters asserted was neither in decline nor in imminent danger of over-harvest at that time. Hunters noted that hunting pressure on Western Alaska brown bear appeared to be stable or even declining due to decreased interest in brown bear meat by young people in some communities which had not acquired a taste for the meat. Secondly, hunters believed the Qavilnguut Mountain brown bear population was growing based on increased numbers of sightings and increased incidences of bear damage to fish camps of the previous four-year period. Thirdly, the presence of radio collars and concerns about residual effects of the tranquilizing drug contributed to the sense of many respondents that the captured bears would be permanently altered from their previously wild state and would be more dangerous to humans. Lastly, a number of village leaders believed that one of the concealed aims of the study was to increase non-local sport hunting opportunities by documenting the presence of a harvestable surplus of bears in the region.

As opposition to the project swelled in the communities, village leaders made two demands of the USFWS. First, they demanded a one-year moratorium on the research project in order to provide local native leaders an opportunity to develop an alternative method of obtaining census and trend data for brown bear in a less invasive way. Secondly, following the suspension of the existing project, they sought to establish a co-management regime, including both native and agency members, which would provide a forum for setting out mutually agreeable approaches to future research and management initiatives affecting Western Alaska brown bears.

Although the USFWS was willing to begin co-management talks, the Director of the Alaska regional office announced the agency's decision to continue the census project irrespective of local opposition. Native leaders rejected the agency's offer to initiate discussions about the development of a brown bear co-management regime. In their view any discussions of alternative management approaches were strictly contingent upon terminating or significantly altering the agency's research project.

In June of 1993, the first phase of a projected three-year brown bear capture and collaring effort was launched, resulting in 29 bears collared. Under their belief

that the conflict was fuelled by misunderstanding on the part of local residents regarding the goals and methods of biological research, agency officials responded to continued staunch village opposition by setting up a series of village “information and education” meetings. These meetings consisted of agency staff explaining the technical aspects of the capture operation and reassuring residents of the benign nature of their activities, which included locating and then chasing bears with helicopters, drugging and tattooing the bears and finally affixing radio collars to them. These information and education meetings contributed little to mollifying the distrust and anger expressed by native hunters and village leaders.

Seeking Exogenous Power

In the face of the USFWS's resolve to carry out the bear-collaring project, village leaders, with the aid of their regional native non-profit organization, once again turned to exogenous sources of power. Native representatives engaged in litigation and appeals to legislators and higher-level agency personnel in an effort to stop the project. Their legal counsel filed a new lawsuit in federal court in the spring of 1993 with a set of allegations. These included the failure of the USFWS to consult with the regional advisory council to assure that subsistence use of wildlife received priority over other uses as stipulated in ANILCA and the failure to complete an environmental impact statement. Though a federal court judge denied the village leaders' request for a temporary restraining order halting the initiation of the bear research, the lawsuit continued.

In addition, native leaders engaged in an intense lobbying effort aimed at bringing the issue to the attention of the Alaska Congressional Delegation and top Interior Department officials. They succeeded in obtaining the support of a key U.S. Senator who intervened at the Department of the Interior on behalf of the villages, supporting their request for a year's moratorium. These appeals, based on a call for increased local control over governmental decisions affecting Native Americans, happened to coincide with new initiatives in the Clinton administration for improving relations with native groups and “...building a more effective day-to-day working relationship reflecting respect for the rights of self-government due the sovereign tribal governments” (Clinton 1994). At a time when local and regional managers and biologists vowed to forge ahead with the project, this new executive branch policy initiative specifically directed each executive department and federal agency to:

Assess the impact of Federal Government plans, projects, programs, and activities on tribal trust resources

and assure that tribal government rights and concerns are considered during the development of such plans, projects, programs, and activities. (Clinton 1994: 1)

Citing a fundamental lack of trust in the management actions of the USFWS, village leaders also pledged to withdraw from all existing co-management agreements in the region if the brown bear issue was not favourably resolved. Thus the fate of a valuable source of social capital—successful joint regimes governing caribou, waterfowl and salmon—was threatened, pending the resolution of the escalating struggle over the research and treatment of brown bears. Such credible threats by native leaders to withdraw from co-management regimes led the ADF&G to the brink of withdrawing their bear biologists who were supplying critical technical expertise to the project. This exerted additional pressure on USFWS managers, who acknowledged that their agency lacked the requisite knowledge and experience with drugging and handling bears to safely complete the research project on its own.

The conflict, which began with four Kuskokwim River Yup'ik villages opposing a federal agency, ultimately reached the Director of the USFWS and the highest levels of the Interior Department. In 1994, Secretary of the Interior Bruce Babbitt, citing the need to create conservation partnerships with local communities, overturned the decision of the Alaska regional director and suspended the project for a period of one year, pending discussion.

Following this decision, the villages quickly terminated litigation, opening the way for new negotiations. In the fall of 1994, representatives of village governments began meeting with state and federal agency staffs to develop a brown bear co-management plan as well as a less invasive survey method that would involve local users. Within months, the two parties, which had only recently been at loggerheads, produced a memorandum of agreement outlining their commitment to jointly develop a management plan and carry out a community-based harvest assessment project for brown bear. They also developed a set of goals and objectives for the management plan that formed a foundation for action. Within a year funding for the brown bear research project was redirected to other research projects by the USFWS regional office, making resumption of the project unlikely in the foreseeable future.

The Political Ecology of Resource Struggles

In analyzing decentralized management regimes in the North as well as the Third World, a number of authors

(Andrews, Borque et al. 1991; East 1991; Richard and Pike 1993; Schwarber 1992; Sneed 1997; Western and Wright 1994) have tended to focus primarily on the formal agreements and written policies. While this approach may be useful in comparative studies, its employment carries a number of unintended consequences. First, it tends to privilege the voices of resource agencies over those of local communities, since most policy documents and meeting records are drafted by the state. Second, this approach results in what Brosius and Tsing (1998: 159) term "generalization": the problem arising when key terms such as "community, territory, rights, resources, management, indigenous and traditional are used generically without regard to local contexts and wide-ranging political stakes." Essentializing decentralized management in this fashion facilitates the impulse by some NGOs and state-level actors to transplant regimes deemed "successful" in one context to a new location despite widely varying local social and ecological variables between sites. Finally, this over-emphasis on formal regime structures and agreements tends to occlude an understanding of the way co-management regimes are shaped by community-level politics and cultural practices acting "from below," and the political and economic forces of state structures for resource acting "from above."

In the following section I draw on the political ecology framework to analyze: the role of contested proprietary rights fuelling conflict and shaping new co-management regimes and the alterations in power between new co-management institutions with state-level actors and indigenous efforts to renegotiate their relationship with the state. Finally, I discuss the constraints on these and the implications of joint management for both state resource control and village repertoires of resistance.

The Primacy of Proprietary Rights

In both of these cases indigenous opposition to the formal land tenure regime constitutes the principle source of resource conflicts. As discussed earlier in the historical analysis of changes in land tenure, native hunters have long contested the deployment of state programs of wildlife management on their customary subsistence lands. Community-based repertoires of resistance, replete with narratives concerning the "unjust game warden," emerged in the 1950s and 1960s in response to the slow but inexorable expansion of non-local resource control in Western Alaska. Direct confrontations between managers and users over land rights were rare because the parallel land tenure regimes maintained by native villages and state institutions rarely interacted. Native hunters were content to resist in anonymous and informal ways, even

if it did not advance their claims to land rights, while government managers were content to publicly assert unilateral management rights, even if they lacked the resources and political will to enforce them.

These dual systems of land tenure, one formal and one informal, began to change by the early 1980s as the village of Kwethluk sought and gained access to formal management regimes covering their traditional homelands in the Kilbuck Mountains. In the caribou case, the lack of access to the decision-making process governing caribou compelled leaders from Kwethluk to file suit after direct appeals to the regulatory agency were rejected. This successful legal challenge galvanized the support of other villages which also deeply resented unilateral governmental control over wildlife upon which they depended for subsistence.

In the brown bear case, contested land rights also played a pivotal role in fuelling the struggle for joint management rights. The resolve of agency officials to initiate the project over the strong objections of villagers was perceived as a negation of local demands for a voice in management decisions. Leaders from Kwethluk, who again played a catalytic role, argued that subsistence hunters ought to have a meaningful voice in management decisions affecting their lives. For local residents, the brown bear research project served as a vivid reminder of the power of government managers to impose their will over lands within their formal jurisdiction, irrespective of the concerns of local communities.

Throughout these cases of resource conflict, contested rights to land remain "off stage" and half-hidden. Government managers are unwilling to directly discuss local land claims and native leaders have grown disinclined to assert such claims in public meetings. Instead they focus on demands for joint management rights.

A New Response to State Structures for Resource Control

What is observed in these cases is not simply the establishment of new institutions but rather a remarkable transformation in the nature of the relationship between indigenous communities and state structures for resource control. For much of the past 40 years, Yup'ik villagers have resisted the gradual transformation of their communal lands to state-controlled public lands by means of anonymous and unorganized strategies of resistance. These strategies proved highly effective at enabling local hunters to informally maintain customary use rights while keeping state structures for resource control at bay. Local repertoires of resistance, however, were ineffective in establishing new joint management rights, as in the cari-

bou case, or in halting government management actions opposed by village leaders, as in the brown bear case. Attaining co-management rights required new strategies based on legal challenges, legislative appeals and negotiation rather than avoidance and resistance. For these reasons, co-management can be seen as the principle means by which indigenous actors have sought to renegotiate their relationship with the state.

In many parts of the developing world, social scientists have observed with alarm a trend whereby decentralized institutions and approaches to resource management (including community-based management and co-management) have increasingly been appropriated by state structures for resource control (Brosius 1999; Brosius, Tsing et al. 1998). In the hands of state-level institutions, these decentralized initiatives are bent to fit within the agency's managerial paradigm, while maintaining a "rhetoric of participation."

In contrast, the cases presented here represent salient examples of "co-management from below." Here, local indigenous groups not only embraced co-management as the most effective instrument by which to acquire joint management rights, they demonstrated their willingness to overcome substantial barriers to attaining such shared management erected by state structures for resource control. Formal agreements often imply that state-level managers took the lead in developing these management regimes, when in fact, responsibility for initiating regime formation belongs to local communities.

Shifting Power Relations between Communities and Management Institutions

The emergence of these co-management regimes governing bear and caribou has altered power relations between agencies and local communities in two important ways. First, community-based indigenous leaders have demonstrated that, under certain conditions, they are able to gain access to exogenous sources of power—such as the courts and legislative elites—in order to advance their goals. In the process of accessing these external sources of power in both cases, native leaders increased the transaction costs associated with conventional centralized management, compelling government managers to accept more decentralized and participatory approaches to wildlife management.

Secondly, co-operative agreements governing the management of brown bear and caribou have, in effect, extended new management rights to participating villages to propose and review changes in seasons and bag limits as well as to approve research plans and methods for these species. Previously, these Kuskokwim River

communities were treated by management agencies as undifferentiated rural subsistence users, bereft of any special claims or status with respect to specific species or traditional territories. However, following the establishment of these new institutional arrangements, local users have secured a seat at the management table for discussion and consultation regarding the management of these species. Alaskan co-management regimes such as these constitute a limited accommodation of village-based claims to preferential use-rights and joint management rights. Community-based claims to management rights, in limited and prescribed ways, received public recognition and acceptance through the implementation of these regimes. Significantly, this recognition has been achieved without incurring the high costs associated with changing laws or coercing agencies to formally relinquish power (Kiser and Ostrom 1982).

Finally, the brown bear case demonstrates the newfound abilities of village-based actors to advance their concerns within regional and national political-administrative arenas. Rather than relying on regional native organizations to represent their concerns, village leaders presented their case directly to higher-level agency administrators. At the same time, the brown bear case demonstrates that the resolution of local conflicts may involve complex and highly unpredictable interactions among local, regional and national political actors.

This study presents a more complete understanding of joint systems of common property management by nesting institutional analysis of co-management regimes within an ethnography of resource conflict between state-level managers and resource dependent communities. I have argued that the emergence and expansion of co-management regimes in Western Alaska cannot be understood apart from an analysis of local histories of conflict and competing claims to wildlands and wildlife by local and state-level institutions. Political ecology provides a useful conceptual framework for understanding how history, environmental factors, power and culture interact to produce social conflicts, and in cases such as these, new institutional arrangements for managing wildlife. A more widespread application of such a framework would expand our understanding of the evolution and performance of co-management regimes, as well as how such institutions alter state programs of resource control and community-based practices of resistance.

Joseph J. Spaeder, J.J. Spaeder Consulting, P.O. Box 2087, Homer, Alaska, 99603, U.S.A. E-mail: jjspaeder@earthlink.net

Acknowledgments

I owe a debt of gratitude to the elders and Tribal Council members in the villages of Kwethluk, Akiachak and Quinhagak for their expert knowledge and generous hospitality. I gratefully acknowledge the extensive support and guidance of my academic advisors David Boyd, Don Callaway and Ben Orlove; and the help and unfailing support of Sharon Gorman, Marguerite Spaeder and Mike Coffing. Finally, my thanks to the two anonymous reviewers for their constructive comments and my deep appreciation to Harvey Feit for his excellent council and companionship as co-editor of this special issue.

Notes

- 1 I use the term "state" (lower case "s") when referring generally to governmental structures for governance at the federal or State level (i.e., State of Alaska). Otherwise, I capitalize "State" when referring specifically to the State of Alaska.
- 2 In small non-migratory herds, caribou frequently travel in groups of less than 50, making them very difficult to observe from the air. A federal biologist involved in Qavilnguut caribou surveys, in noting the difficulties in finding small groups of caribou in a study area of 6 400 square kilometers wrote: "Since 1987, collared animals have provided a means of locating groups which might have been missed during survey efforts alone....For example, one group of >100 [caribou] took four passes with an airplane to locate, and was finally observed only because we continued to search for a radio-collared animal" (Hinkes 1988: 7).
- 3 Other Alaskan native cultures possess very similar perceptions about the capabilities and behaviour of brown bears, including the Inupiat of Kotzebue Sound (Loon and Georgette 1989) and the Koyukon Athabaskan (Nelson 1983).

References

- Abu-Lughod, L.
1990 The Romance of Resistance: Tracing Transformations of Power through Bedouin Women. *American Ethnologist* 17(1): 41-55.
- Gupta, A., and J. Ferguson
1999 Culture, Power, Place: Ethnography of an End of an Era. *In* Culture, Power, Place. A. Gupta and J. Ferguson, eds. Pp. 1-46. Durham, NC: Duke University Press.
- Andrews, E.
1989 The Akalmuit: Territorial Dimensions of a Yup'ik Eskimo Society. Juneau, AK: Division of Subsistence, Alaska Department of Fish and Game.
- Andrews, R.R., J.W. Borque et al.
1991 The Beverly and Kaminuriak Caribou Management Board: An Example of Cooperative Management. *Transactions of the Fifty-sixth North American Wildlife and Natural Resources Conference*, Edmonton Convention Centre. Edmonton, AB: Wildlife Management Institute.
- Bailey, J.A.
1984 Principles of Wildlife Management. New York: Wiley.
- Bergstrand, J., and Joint Federal-State Land Use Planning Commission for Alaska
1978 Fish and Wildlife Use and Management in Alaska. Anchorage, AK: Federal-State Land Use Planning Commission for Alaska.
- Berkes, F., ed.
1989 Common Property Resources: Ecology and Community-Based Sustainable Development. London: Belhaven.
- Blaikie, P.M., and H.C. Brookfield
1987 Land Degradation and Society. London and New York: Methuen.
- Bolen, E.G., and W.L. Robinson
1995 Wildlife Ecology and Management. Englewood Cliffs, New Jersey: Prentice Hall.
- Bromley, D.
1992 Making the Commons Work: Theory, Practice and Policy. San Francisco: Institute for Contemporary Studies.
- Brosius, J.P.
1999 Green Dots, Pink Hearts: Displacing Politics from the Malaysian Rain Forest. *American Anthropologist* 101(1): 36-57.
- Brosius, J.P., A.L. Tsing and C. Zerner
1998 Representing Communities: Histories and Politics of Community-Based Natural Resource Management. *Society and Natural Resources* 11(2): 157-168.
- Bryant, R.L., and S. Bailey
1997 Third World Political Ecology. London and New York: Routledge.
- Clinton, W.J.
1994 Memorandum for the Heads of Executive Departments and Agencies re.: Government-to-Government Relations with Native American Tribal Governments. The White House: Office of the Press Secretary.
- Coffing, M.
1991 Kwethluk Subsistence: Contemporary Land Use Patterns, Wild Resource Harvest and Use, and the Subsistence Economy of a Lower Kuskokwim River Area Community. Juneau, AK: Division of Subsistence, Alaska Department of Fish and Game.
- Colburn, F.D.
1990 Everyday Forms of Peasant Resistance. Armonk, NY: M.E. Sharpe.
- Couturier, S., J. Brunelle, D. Vandal and G. St-Martin
1990 Changes in the population dynamics of the George River Caribou Herd, 1976-87. *Arctic* 43(1): 9-20.
- East, K.M.
1991 Joint Management of Canada's Northern National Parks. *In* Resident Peoples and National Parks: Social Dilemmas and Strategies in International Conservation. P. West and S. Brechin, eds. Pp. 333-345. Tucson, AZ: University of Arizona Press.
- Feit, H.
1988 Self-management and State Management: Forms of Knowing and Managing Northern Wildlife. *In* Traditional Knowledge and Renewable Resource Management. M.M.R. Freeman and L.N. Carbyn, eds.

- Pp. 72-91. Edmonton: Boreal Institute for Northern Studies.
- Fienup-Riordan, A.
1990 *Original Ecologists? The Relationship between Yup'ik Eskimos and Animals. In Eskimo Essays: Yup'ik Lives and How We See Them.* A. Fienup-Riordan, ed. Pp. 138-157. New Brunswick, NJ: Rutgers University Press.
- Freeman, M.M.R., and L.N. Carbyn, eds.
1988 *Traditional Knowledge and Renewable Resource Management in Northern Regions.* Edmonton, AB: Boreal Institute for Northern Studies, University of Alberta.
- Gunderson, L.H., C.S. Holling and S.S. Light
1995 *Barriers and Bridges to the Renewal of Ecosystems and Institutions.* New York: Columbia University Press.
- Hardin, G.
1968 *Tragedy of the Commons.* *Science* 162: 1243-1248.
- Hensel, C.
1992 *Where It's Still Possible: Subsistence, Ethnicity and Identity in Southwest Alaska.* Unpublished doctoral dissertation. Berkeley, CA: University of California-Berkeley.
1994 *Brown Bear Harvests in the Western Alaska Brown Bear Management Area, 1992/1993: Statistical Information and Cultural Significance.* Results of the Association of Village Council Presidents (AVCP) Harvest Survey of October-December 1993.
- Hinkes, M.
1988 *Populations, Movements, and Seasonal Distribution of the Kilbuck Caribou Herd, Southwest Alaska.* Bethel, AK: U.S. Fish and Wildlife Service Progress Report.
- Holling, C.
1973 *Resilience and Stability of Ecological Systems.* *Annual Review of Ecological Systems* 4: 1-23.
- Holling, C.S.
1994 *New Science and New Investments for a Sustainable Biosphere. In Investing in Natural Capital: The Ecological Economics Approach to Sustainability.* A.M. Jansson, M. Hammer, C. Folke and R. Costanza, eds. Pp. 57-73. Washington DC: Island Press.
- Jacobson, S.A., and Alaska Native Language Center
1984 *Yup'ik Eskimo Dictionary.* Fairbanks: Alaska Native Language Center, University of Alaska.
- Jonrowe, D.
1979 *Unit 18 Caribou Survey—Inventory Progress Report.* Caribou Survey Inventory Progress Report, vol. 10. Juneau, AK: Division of Wildlife Conservation, Department of Fish and Game.
- Kacyon, R.
1990 *Memorandum Re: Problem: Kilbuck Caribou Management.* Bethel, AK: State of Alaska, Division of Wildlife Conservation, Department of Fish and Game.
- Kiser, L., and E. Ostrom
1982 *The Three Worlds of Action: A Meta-theoretical Synthesis of Institutional Approaches. In Strategies of Political Inquiry.* E. Ostrom, ed. Pp. 179-222. Beverly Hills, CA: Sage.
- Langdon, S.
1988 *The Native Peoples of Alaska.* Anchorage, AK: Greatland Graphics.
- Lloyd, K.
1986 *Cooperative Management of Polar Bears of Northeast Baffin Island. In Native People and Renewable Resource Management.* Edmonton. J. Green, ed. Pp. 108-117. AB: Alberta Society of Professional Biologists.
- Loon, H., and S. Georgette
1989 *Contemporary Brown Bear Use in Northwest Alaska.* Kotzebue, AK: Division of Subsistence, Alaska Department of Fish and Game.
- Marks, S.A.
1991 *Some Reflections on Participation and Co-management from Zambia's Central Luangwa Valley. In Resident Peoples and National Parks.* P. West and S. Brechin, eds. Pp. 346-358. Tucson: University of Arizona Press.
- McCay, B.J., and J.M. Acheson, eds.
1987 *The Question of the Commons: The Culture and Ecology of Communal Resources.* Tucson: University of Arizona Press.
- Moore, D.S.
1993 *Contesting Terrain in Zimbabwe's Eastern Highlands—Political Ecology, Ethnography, and Peasant Resource Struggles.* *Economic Geography* 69(4): 380-401.
- Morschel, F.H., and D.R. Klein
1997 *Effects of Weather and Parasitic Insects on Behavior and Group Dynamics of Caribou of the Delta Herd, Alaska.* *Canadian Journal of Zoology* 75(10): 1659-1670.
- Murie, O.
1935 *Alaska-Yukon Caribou.* *North American Fauna* 54. Washington, DC: U.S. Dept. of Agriculture.
- Nelson, R.K.
1983 *Make Prayers to the Raven: A Koyukon View of the Northern Forest.* Chicago, IL: University of Chicago Press.
- Neumann, R.P.
1998 *Imposing Wilderness: Struggles over Livelihood and Nature Preservation in Africa.* Berkeley: University of California Press.
- Ortner, Sherry
1995 *Resistance and the Problem of Ethnographic Refusal.* *Comparative Studies in Society and History* 37(1): 173-193.
- Osherenko, G.
1988 *Sharing Power with Native Users: Co-Management Regimes for Native Wildlife.* Canadian Arctic Resources Committee.
- Ostrom, E.
1990 *Governing the Commons: The Evolution of Institutions for Collective Action.* Cambridge: Cambridge University Press.
- Painter, M., and W.H. Durham
1995 *The Social Causes of Environmental Destruction in Latin America.* Ann Arbor: University of Michigan Press.

- Patten, S.
1985 Unit 18 Caribou Survey-Inventory Progress Report. Caribou Survey—Inventory Progress Report, vol. 16. Juneau, AK: Alaska Department of Fish and Game.
- Peluso, N.L.
1992 Rich Forests, Poor People: Resource Control and Resistance in Java. Berkeley: University of California Press.
- Peet, R., and M. Watts, eds.
1996 Liberation Ecologies: Environment, Development, Social Movements. London: Routledge.
- Pinkerton, E.
1992 Translating Legal Rights into Management Practice: Overcoming Barriers to the Exercise of Co-management. *Human Organization* 51(4): 330-341.
- Pinkerton, E., ed.
1989 Co-Operative Management of Local Fisheries: New Directions for Improved Management and Community Development. Vancouver: University of British Columbia Press.
- Richard, P.R., and D.G. Pike
1993 Small Whale Co-management in the Eastern Canadian Arctic: A Case History and Analysis. *Arctic* 46(2): 138-143.
- Russell, D., A. Martell and W. Nixon
1993 Range Ecology of the Porcupine Caribou Herd in Canada. *Rangifer*. Special Issue No. 8.
- Schwarber, J.A.
1992 Conditions Leading to Grassroots Initiatives for the Co-management of Subsistence Uses of Wildlife in Alaska. Unpublished MS Thesis, University of British Columbia, Vancouver.
- Scott, J.C.
1985 Weapons of the Weak: Everyday Forms of Peasant Resistance. New Haven, CT: Yale University Press.
- Shipton, P., and M. Goheen
1992 Understanding African Land-Holding: Power, Wealth and Meaning. *Africa* 62(3): 307-325.
- Skoog, R.
1968 Ecology of the Caribou (*Rangifer tarandus granti*) in Alaska. Berkeley: University of California Press.
- Sneed, P.
1997 National Parkland and Northern Homelands: Toward Co-management of National Parks in Alaska and the Yukon. In *Conservation Through Cultural Survival: Indigenous Peoples and Protected Areas*. S. Stevens, ed. Pp. 135-154. Washington: Island Press.
- Stonich, S.C.
1993 I Am Destroying the Land! The Political Ecology of Poverty and Environmental Destruction in Honduras. Boulder, CO: Westview Press.
- Usher, P.J.
1991 The Beverly-Kaminuriak Caribou Management Board: An Experience in Co-Management. Paper presented at the 1991 Conference of the International Association for the Study of Common Property, Winnipeg, MB.
- Walters, C.J.
1986 Adaptive Management of Renewable Resources. New York and London: Macmillan.
- Western, D., and R.M. Wright
1994 Natural Connections: Perspectives on Community-Based Conservation. Washington, DC: Island Press.
- Wolfe, R.J., J.A. Fall, V. Fay, S. Georgette, J. Magdanz, S. Pedersen, M. Pete and J. Schichnes
1986 The Role of Fish and Wildlife in the Economies of Barrow, Bethel, Dillingham, Kotzebue, and Nome. Technical Paper, 154. Juneau, AK: Division of Subsistence, Alaska Department of Fish and Game.
- Wolfe, R., J. Gross, S. Langdon, J. Wright, G. Sherrod and L. Ellanna
1984 Subsistence Economies in Coastal Communities of Southwest Alaska. Technical Paper, 89. Juneau, AK: Division of Subsistence, Alaska Department of Fish and Game.
- Zimmerer, Karl, and Thomas Bassett
2003 Political Ecology: An Integrative Approach to Geography and Environment-Development Studies. New York and London: Guilford Press.