Porcupine Caribou, Impact Assessment, and Political Agendas; Uncertainty and Inequity in the Arctic Refuge Conflict

by

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Introduction

The debate over whether or not the Arctic National Wildlife Refuge should be opened to gas and oil development has evolved into one of North America's most publicized and symbolic environmental issues of the decade. The various aspects of this mega-project proposal include all the necessary ingredients of a world-class common property issue, underpinned with strong forces of political economy. Involved in this case study is the interface of government, the corporate sector, private and community interests with each asserting rights and vying for benefits from resources which hold incompatible values Forces in the Arctic Refuge conflict include the trans-boundary Porcupine Caribou Herd with core calving grounds in the heart of the proposed development site; an Alaskan infrastructure which is economically dependent on upon the oil industry, gleaning 80 % of its state budget from oil loyalties, large environmental organizations which view the Arctic Refuge as "American's Last Great Wilderness"; the multi-billion dollar oil industry, whose investment at Prudhoe Bay is currently decreasing in production, and southern-based U S consumers who comprise six percent of the world's population and consume 20% of its petroleum resources

Living in small villages in the region are several indigenous groups split by the U.S.- Canadian border. In Canada, sharing in the use of the Porcupine caribou, are native groups represented in four native land claim agreements, by two territorial governments, by means of an array of rapidly evolving co-operative resource management arrangements Living in Alaska on the South Slope of the Brooks Range just south of the Refuge Border are the Gwich'in Indians and to the north are the Inupiat Eskimos of the North Slope. Neetaii Gwich'ins., the Alaskan Gwich'in who live in the communities of Venetie and Arctic Village just south of the refuge, are among the most outspoken on issues of Alaskan native sovereignty. Their 20,000 year adaptations with caribou remain a central theme to their sense of cultural identity and future survival. [1] In the North Slope Inupiat village of Kaktovik, just north of ANWR, Prudhoe Bay oil development has provided local jobs and offered indirect economic benefits The Inupiats' association with industry and their shared ownership in regional and village native corporations are viewed as part of their long-range plans for economic development

Adding fuel to the Arctic development controversy have been recent state, national and international events; the wreck of the Exxon Valdez, the 1991 Gulf War, the Bush Administration's attempts at passing a National Energy Policy, the United States' failing economy, the erosion Alaska rural residents' rights to harvest wild foods, and even Kevin Costner's movie "Dances with Wolves

This paper describes one aspect of the legislatively mandated environmental impact assessment process which took place from 1980 through 1987, an institutional arrangement which has been utilized by the U.S. federal government in its on-going Arctic Refuge decision making process This aspect is the assessment of

impacts of oil development to the Porcupine Caribou Herd. It is my intention that this description will provide insights into the effectiveness of this large-scale impact assessment process, illustrating how its techno-scientific approach to decision making was vulnerable to political interests, and how local indigenous communities have, in turn responded. This paper will examine the handling of matters of equity and uncertainty in the process, and will reflect on state-level and local-level reactions to the impact assessment process

Impact Assessments and CPR's

When formalized, environmental impact assessment (EIA) represented a refreshing and novel attempt by big government to resolve ecological ills during a time of environmental renaissance of the late sixties EIA, a by-product of the National Environmental Policy Act of 1969, was based on several assumptions: that better information leads to more rational decisions (e g better decisions), that government can serve as an objective agent in implementing the EIA instrument, and that an EIA can analyze data, accurately predict, and in some cases, mitigate and compensate, impacts [2] The intent was that the products of these processes would provide "full and fair discussion of significant environmental impacts and inform decision makers and the public of the reasonable alternatives " [3] Implicit in the regulations of NEPA is that EIA's were to serve in determining the extent of impacts rather than to serve as a decision-making institution Upon the implementation of EIA's in the early 1970's, it became evident that courts would assume the role of safeguarding fairness in the EIA process.[4] As a result of judicial participation, the guidelines for EIA's have been interpreted, redefined, and reinterpreted several times. Recognizing that the EIA process assumed an unnatural dichotomy between humans and their environment, social impact assessment processes have been developed, and strive to advance EIA's utility. Today the limitations and shortcomings of EIA's are well documented and acknowledged in the literature [5], as are their potential value in defining values and facilitating communication. The EIA trend, however, appears to be spreading in popularity with NEPA-like policies and EIA guidelines currently being legislated and implemented in both industrialized and third world countries, serving state governments' needs for addressing constituents' concerns for environmental degradation Although the US. may have been the brain child of the federal EIA process, significant modifications to its EIA approach have not been undertaken here. Consequently, the United States has fallen behind other countries which have created institutional modifications, recognizing the role uncertainty plays in the EIA processes [6] and the important contribution to be made by communities. [7]

In the common property context it is important to understand that an EIA documents a publicly sanctioned review process which has the potential of shaping rights and duties By defining subtractablity, the consequence of future actions are predicted By making final recommendations, the EIA not only lays out alternative actions, but specifies which action is most acceptable From definitions of subtractablity follow decisions regarding exclusion and government's rights to "takings " In this sense, the EIA establishes rights by making predictions about what will be the consequences of actions, by stating the alternatives for actions, and by providing a recommendation for state intervention. EIA's also serves as a means of determining which groups are legitimate and which are not by including and excluding them. EIA's may also shape the definition of costs to losers, as well as giving legitimacy to interested groups.

Uncertainty and equity

In any attempt to predict the future uncertainty plays a central role in the EIA process Thus, uncertainty is fundamental to the EIA Nevertheless, EIA's rarely acknowledged the influence of uncertainty on the process or its final product. From the techno-scientific standpoint, ecological complexity, natural variability, random variation, errors of estimation and lack of knowledge represent dimensions of uncertainty in ecological decision making . [8] Addressing uncertainty, techno-scientific professionals have generated an abundance of elaborately sophisticated methods which quantify forcasters' concerns for errors in prediction.[9] They appear under the titles of "sensitively analysis," the "Monte Carlo method." and the "speculative simulation model," to name only a few They are occasionally incorporated into the EIA process, yet few, if any of these elaborate modeling exercises appropriately meet NEPA's requirements that EIA's serve the public and decision makers. Furthermore, such models used for predictions will never be a complete solution to the problems of uncertainty since their underlying assumptions will be questioned Debated will be the assumptions underlying the models, the correctness of input data, as well as the significance of the results from applying these models Voodgt's research argues that assumptions are simply the solutions to the problems of uncertainty [10] Other research has concluded that scientists relying on models have a special difficulty in clarifying the assumptions upon which their models are based [11]

Uncertainty and caribou have long been associated both in the realms and scientific studies and traditional knowledge. As Dr David Klein states, " Assessing the consequence for caribou of northern development is particularly difficult in contrast to other ungulates. The complexity of caribou ecological relations, involving traditional patterns of migratory movements, result in transitory dependence on several difference ecosystems and special physiological and morphological adaptations that enable then to use a unique food resource. In addition, their complex social structure varies seasonally."[12] For the traditional northern hunter waiting and hoping for the annual return of the herd, this ecological dynamic meant that a cloud of uncertainty was simply part of the seasonal cycle

From a cross-cultural context, uncertainty is clearly a concept which is communicated in a variety of fashions, as are cultural approaches to conflict Gallagher brings important insights to the problems inherent in the Alaska's land planning processes by illustrating differences in westerners' assumptions of certainty and the Athabascan assumptions of uncertainty [13] Non confrontational styles of dealing with conflict are also a communication pattern among northern peoples Nelson's work describes Inuits' means of giving advice through long narratives, a style which is evident in a locally produced impact assessment from Kaktovik, described in the case study [14]

It appears that issues of equity in the EIA process should be explained on at least two parameters One could embrace the paradigm from which positivist approaches to modeling are born, and in which fairness equates to validity. Hollings has spoken to the imperfections of modeling by suggesting that agreements on a model building process serve as an ongoing aspect of assessment processes, something he calls "adaptive management." [15] Another paradigm of equity is an attempt to transcend paradigms In this approach, defining

fairness in the procedurally based EIA may therefore be even more difficult than getting a handle on uncertainty, given that guidelines serve as the basis for its own model and its own assumptions Thus, equity may be subdivide into two categories, one dealing with the substantive outcomes of an analysis, and the other being the more ethically oriented and having to do with procedures which provide equal access.[16] The dominant role of science as an agenda setter adds another dimension to the equity issue.

The value of well defined procedural aspects allows for challenges in the courts, yet the inherent problems of weighting total social costs and evaluating meaningful public participation makes detailed procedures a double-edged sword Speaking to economic considerations of conducting impact statements, Sadler, a Canadian policy analyst, suggests that effectiveness in the EIA process is a function of equity and efficiency. Yet this formal policy analysis model is too simplistic, leaving out the important role of power politics, the nefarious abuse of interest groups which control captured agencies through political appointments, and the influence of agency organizational structure. bounded rationality, contending world views, and procedures have on outcomes

Where does all this talk of equity, uncertainty, CPR's, and resource sustainability leave us? How are these issues being played out in the Arctic Refuge conflict?

The Case Study: The Arctic Refuge Coastal Plain Assessment

In passing the Alaska National Interest Lands Conservation Act, the U.S Congress mandated the Department of the Interior to complete an environmental impact assessment of proposed gas and oil development on the 1 5 million acre coastal plain of the Arctic National Wildlife Refuge. The assessment process that was initiated in 1980 culminated in 1987 with the publication and release of the Arctic National Wildlife Refuge, Alaska Coastal Plain Resource Assessment, Recommendation to Congress and Final Legislative Environmental Impact Statement. In this case study, I document aspects of one key and highly controversial component of the Arctic Wildlife Refuge coastal plain assessment process, the Department of Interior's analysis of oil development impacts on the Porcupine Caribou Herd I also provide a brief accounting of the responses to the impact statement on the part of the scientific community, the federal government, and several Alaskan native groups. The case study provides a brief background on caribou of the Arctic Refuge, a brief history of the events leading to the assessment, a description of the legislation relevant to the assessment process, and a review of caribou assessment methods. The case study highlights caribou-related changes in data interpretation, contradictory statements which appeared in the draft and final assessment documents, how one indigenous group has been excluded from the process

The ANWR Ecosystem

The Arctic National Wildlife Refuge is located in the northeastern corner of Alaska and is the second largest of U.S. National Wildlife Refuges. In Arctic Refuge one finds an array of sub-Arctic, mountain-Arctic, and north-slope habitats, devoid of significant human development. The pristine qualities of an entire ecosystem represent only one of a number of ANWR's unique features. On the southern slope of ANWR's Brooks Range is

the northernmost boreal forest in North America In the Arctic Refuge's mountains, which include the highest peaks of the Brooks Range, is found the northernmost distribution of dall sheep On ANWR's north slope is the highest concentration of musk oxen in the United States. ANWR's twelve polar bear denning sites, located on the high bluffs of the Beaufort Sea coastline, represent the highest concentration and most significant collection of on-shore sites in Alaska [17] *Ursus horribilis* , the grizzly, although generally found in mountainous habitat, occurs in its highest North Slope density in the Arctic Refuge. During the autumn, more than a 100,000 Snow Geese and up to 350,000 Black Brant make use of ANWR's lagoons and coastal tundra ponds as staging grounds during their long migration south These and other migratory waterfowl spend only a few weeks in the Arctic Refuge during their staging period, feeding and resting before continuing the long journey south [18] These unique characteristics, none of which is legal grounds for preservation, have served to intensify the current dispute over whether or not the Arctic Refuge should be open to gas and oil development

Caribou of the Arctic Refuge

Central to both the ANWR development dispute and to the greater ecosystem of which ANWR is part is the Porcupine Caribou Herd (P C H) The PCH is the sixth largest caribou herd in North America and the largest shared mammalian wildlife resource of the Canada and the United States. P C.H migration covers over six hundred miles annually and defines a distinct ecosystem of 96,100 square miles (249,000 km2) The U.S.-Canada International Porcupine Caribou Herd Agreement, calling for bilateral cooperative management of the wildlife resource, defines the herd as "those migration barren ground caribou found north of 64°30' north latitude and north of the Yukon River which usually share common and traditional calving ground and post-calving aggregation grounds between the Canning River in the State of Alaska and the Babbagee River in Yukon Territory and which historically migrate within the state of Alaska, Yukon territory, and the Northwester Territories "[19] It is beyond the scope of this paper to describe fully the years of extensive research which have been devoted to the Alaska's caribou ecology.[20] The following synopsis of caribou-related information is, however, necessary in understanding the ANWR environmental assessment process.

Although P.C.H movement varies in minor ways from year to year, the herd annually winters south of the Brooks Range. In spring the P C H migrates along three major routes to North Slope parturition and insect-relief habitat First to depart wintering grounds are the pregnant cows, which travel through deep snows, cross raging rivers during spring break-up, and traverse high mountain ridges to reach their annual calving grounds Upon arriving on the coastal plain of Canada and the United States in June, P C.H cows give birth to their young during a two- to three-week period. Shortly thereafter, the cows are joined by the bulls, and in scattered groups and aggregated bands, the P C.H spends the ensuing three to four weeks grazing and seeking insect relief. By late July to early August, caribou have put on new layers of fat, ended their mass aggregation behavior, and return south, completing a cycle which has continued for millennia.[21]

Because of improved censusing methodology, supported by better technology, it is only within the past few decades that meaningful population estimates of the P C.H and other caribou herds have been obtained

(Urquhart) The Porcupine Caribou Herd appears to have been stable until the seventies when it has increased steadily with populations of 110.000 in 1961, 105,000 in 1977, 135,000 in 1983, and 165,000 in 1985 In 1989 187,944 Porcupine Caribou were counted indicating an annual increase of 5% since 1979. Preliminary data from the 1992 P C.H census indicates that the herd may have exceeded 200,000.[22]

Factors influencing caribou population dynamics include predation, climate, parasites. accidents, human activity, diseases, fire and forage resources The primary predators of caribou are the brown bear or grizzly, wolves, and golden eagles Humans as predators, both for sport and subsistence purposes, have and continue to influence caribou numbers Each year 2000 to 7000 are harvested by subsistence hunters, with 60% of the harvest taken in Canada and 80% of the subsistence harvest taken by Gwich'in hunters [23] Climate conditions of the Arctic region vary from year to year and can result in high caribou energy expenditures during years of deep snows, late snow melt, and colder temperatures More important, deep snows can restrict herd migrations from reaching historically preferred calving areas The warble fly and nasal bot fly, although not fatal to caribou, torment individuals and add to their energy expenditures Brucellosis is considered to be the most important of several caribou diseases and has been documented to occur in high numbers in other Alaskan Caribou herds. The bacteria can affect both sexes and can result in abortions, lameness, and weakness. Fatal injuries do occur on occasion, however, the number of such accidents is not thought to be significant. Range condition is a very important factor and a direct relationship between poor foraging conditions and herd productivity has been found. Two primary factors impact on range condition, fire and over-grazing, with over-grazing serving as a self-regulating system against over-population Human activity in the form of aircraft, snow machines, or oil facilities does have some impact on herd movements, although quantifying such data is difficult [24]

PCH Utilization of the Coastal Plain

Caribou activities on the coastal plain can be divided into two phases; calving and post-calving activities. The PCH's arrival to the coastal plain coincides with the melting of snow on the hummocked sedge tussocks *(Eriophorom vaginatum)* , a tundra plant, which is well adapted for energy efficiency, and which offers pregnant cows a high-value food source after the arduous journey north. In addition to excellent feeding grounds, the coastal plain's cool breezes from the Beaufort Sea provide relief to caribou from insect harassment, and its open landscape affords caribou better visual protection from predators [25]

PCH calving locations vary from year to year, though studies from 1971 to the present indicate a strong fidelity to a "core" or "concentrated calving area" located in the upper Jago River in the eastern central portion of Area 1002 (See Map #2) [26] Researchers have observed that on the years that cows do not reach the coastal plain in time for calving (often because of deep snow), there is higher calf mortality.[27] It is common for cows not to reach their historically sustained calving habitat in time for calving, to travel to the region soon after parturition [28]

Due to weight loss from the long migration, calving, lactation, hair loss, and mass aggregation, the post-calving period is the physiologically low period of the annual life cycle of the caribou .[29] Late June is also peak insect season on the coastal plain (mosquitoes, bot flies, and warble flies) and when not seeking insect relief,

caribou feed continuously During hot windless days when insects are at their worst, caribou utilize two kinds of habitats and display various insect-relief behavior On the foothills of the coastal plain, caribou gather in dense aggregations and generally do not feed Caribou also travel to coastal areas during peak periods of bug harassment, where they are on the move constantly and gain insect relief from northern breezes blowing off the Beaufort Sea. Throughout the post-calving period, caribou react to weather conditions and wind patterns, crossing and criss-crossing the coastal plain in pulsing rhythms from the foothills to the coastline.

Central Arctic Herd Ecology

Also making use of the Coastal Plain area is the smaller Central Arctic Herd(CAH) The CAH, which currently numbers approximately 16,000 and has reportedly increased from 3000 (1971), differs from the PCH, its range is entirely north of the continental divide, having a shorter total migration distance and a less demanding life-cycle energy expenditure Calving occurs in two areas, the lower Kuparuk River area near Prudhoe Bay and west of the Prudhoe oil fields to the Canning Delta which is within the western portion of the Arctic Refuge. CAH aggregations during the parturition and post-calving period are not as dense as those of the PCH [30]

Post-calving CAH habitat within the Arctic Refuge generally includes movements from the Canning River Delta to Camden Bay, with an estimated 2000 to 3000 caribou utilizing the area for post-calving and insect relief Some years an additional 1000 animals have been widely dispersed from the Sadlerochit River and north of the Sadlerochit mountains (both within ANWR) A small number of Central Arctic Caribou, from 100 to 1000, winter in this area [31]

RELEVANT HISTORY

Any human history relevant to the Porcupine Caribou and the Arctic Refuge should begin with that period in which indigenous peoples lived without cash economies and were highly dependent on caribou as an important source for food, clothing, tools, and other artifacts [32] Today located across the P.C.H.'s range today are approximately 9000 Inuvialuit, Athabascan, and Metis groups as well as non-native residence, living in thirteen communities

Early Caribou Research

Although explorers and whalers began visiting the area in the 1700's, followed by mineral prospectors in the 1800's, no comprehensive scientific analysis of Alaskan caribou was initiated until the early 1900's Among the first to study the Caribou of the PCH range was Olaus Murie, who in the 1920's and 1930's served as a field scientist for the U.S Biological Survey and conducted wildlife research in the Brooks Range, including the area that is now the Arctic Refuge The contrast of early researchers' study methods and modern-day methods of scientific field research is important when considering the ways information has been gathered and how the various PCH political actors participated in the development of the current ANWR debate. Without the use of satellite telemetry and geographic information systems, Murie depended on travel to remote regions by boat,

satellite telemetry and geographic information systems, Mune depended on travel to remote regions by boat, foot, and dog sled. His research data, much of it morphological, were gleaned from years of personal observations, discussions with local residents, and collaborated work efforts Mune's research reports , although not defining the Porcupine Caribou with exact boundaries, did note the occurrence of several northern herds, including one centered in the Porcupine River-North Slope area [33]

Arctic Wildlife Range Established and the Early Years

A 1949 National Park Service commissioned study made the first comprehensive analysis of Alaska's wildlands for the purpose of evaluating their recreational value, wildlife habitat, and potential as conservation units. Upon completion of the study, its authors. George Collins and Lowell Sumner, were in touch with Dr. Olaus Mune, who by the fifties was a nationally known ungulate biologist and president of the Wilderness Society Collins and Sumner alerted Mune that mining activities would lay claim to the northeast corner of Alaska unless the region received protection. In the late fifties. as Alaskan statehood was being considered, Murie and others intensified their effort to bring public attention to the area by organizing a series of research expeditions and inviting several high-profile personalities including renowned wildlife biologist George Schaller and Supreme Court Justice William O Douglas Murie also worked to gain support from sportsmen's groups of Fairbanks, a matter he felt was key in gaining state-wide acceptance of the Arctic Wildlife Range concept.

In 1960 after a highly controversial and unsuccessful battle in Alaska and Washington for congressional approval to protect the northeast corner of Alaska, Justice Douglas and Dr. Mune convinced out-going President Eisenhower to exercise his executive powers and establish 8.9 million acres in the northeast corner of Alaska as the Arctic Wildlife Range Thus, the area was set aside because of its wildlife, wilderness, and recreational values and protected from mineral exploration, the perceived threat at that time.[34] This controversial, yet well-orchestrated event would be the first in several heavy-handed federal decisions to influence the fate of the area, its residents, and its caribou.

Statehood and Alaskan Native Claims

A year prior to the creation of the Arctic Wildlife Refuge, Alaska received statehood in 1959. With the decision to join the union, the people of Alaska entered into a contract with the federal government, agreeing that the State of Alaska would be entitled to 40% of Alaska's land Delaying the final allocation of lands to the state and to the federal governments was the unsettled land claim of the Native peoples of Alaska The discovery of oil at Prudhoe Bay in 1968 influenced both the State of Alaska and the federal government to settle that claim in fear that litigation by Natives at a later time might halt or delay the construction of the Trans-Alaska Pipeline [35] A negotiation process ensued and led to the enactment of the Alaska Native Claims Settlement Act of 1971(ANCSA), guaranteeing Natives rights to 10% of Alaska's land as well as other entitlements. The Alaskan Statehood Act and ANCSA are of particular importance to the current ANWR debate and the coastal plain assessment which this paper reviews Both laws represent the first two steps in a three-step process to allocate Alaska lands and determine Alaska's federal land management priorities

In 1943, the Gwich'in of the Upper Chandlar region had already made a land settlement of sorts by establishing a reservation administered through the Bureau of Indian Affairs. In the ANCSA process, Gwich'in community members from Venetie and Arctic Village opted against a cash settlement or participation in a village or regional corporations, instead choosing additional acreage for their native reservation. As a part of the process, the community members transferred land holdings to the "Native Village of Venetie Tribal Government." The Inupiat of Kaktovik took the more popular approach, establishing the Kaktovik Inupiat Corporation and receiving stock in the Arctic Slope Regional Corporation

Natural Gas Transportation System and the first EIA

The first proposal for oil-related development in the PCH range was actually considered and assessed in the mid-seventies when the United States and Canada entertained the possibility of constructing a natural-gas pipeline from the existing fields at Prudhoe Bay, through Canada, to the lower forty eight states of the United States Several of the proposed routes for the MacKenzie River Gas Pipeline crossed the coastal plain of the Arctic Wildlife Range Under the guidelines of the newly enacted NEPA, several alternative routes were evaluated through a formal environmental impact assessment process. In March, 1976, the Department of Interior released its Final Environmental Impact Statement (EIA). The statement represents some of the first intensive studies of the Porcupine Caribou Herd and the first formal environmental impact assessment of how coastal plain development would impact the ungulates' ecology Assessing the impact of a proposed route (which traces roughly the route proposed in 1980) the United States EIA reads:

> In summary it is expected that the operation and repair of the system can have serious impacts on the Porcupine caribou Herd by shifting them away from traditional calving area north of the pipeline route. This in turn could lead to long-term reduction of herd size. . . if controls on all aspects of the project are not enforced, the herd may decline as much as 90 percent in 5 to 10 years. . [36]

Construction of the project was never completed, not necessarily because of the predicted impacts, but perhaps as a result of a declining natural gas market and financial difficulties of the firms promoting the endeavor

Addressing the potential social, environmental, economic impacts of the pipeline in Canadian was the precedent-setting MacKenzie Pipeline Inquiry, under the leadership of Justice Thomas Berger That process which functioned without federally mandated procedures, generated voluminous mounds of scientific data and analysis, and launched a public hearing process that allowed local community members to express their feelings as well as be heard by southern-based populations of Canada. The educative function of the Berger Inquiry is important if one compares the final outcome of the MacKenzie pipeline EIA process with that of the 1987 Coastal Plain Assessment

The Alaska National Interest Lands Conservation Act (ANILCA)

In 1980, after ten years of highly controversial negotiations, the Alaska National Interest Lands Conservation Act, the third step in Alaska land allocations, became law [37] The passing of ANILCA made final the allocation of 60% of AK for federal lands, 30% of AK for state lands, and 10% for Natives lands In addition, ANILCA made significant increases to Alaska's National Parks and wilderness areas Following a pattern, the bill was enacted much in the same way as Eisenhower's creation of the Arctic Wildlife Range Because of a deadlocked congressional negotiation process, President Carter, in the final hours of his lame-duck administration, used his executive powers to draft the bill which was eventually passed by Congress [38]

ANILCA and the Arctic Refuge

ANILCA made a number of specific changes to the Arctic Wildlife Range It changed its name to the Arctic National Wildlife Refuge, coordinating its management with other conservation units under the jurisdiction of United States Fish and Wildlife Service (FWS) ANILCA increased the Arctic Refuge's acreage from 8 9 million to 19 million acres and designated 8 million acres of ANWR as part of the National Wilderness Preservation System [39] ANILCA also gave rural residents of Alaska rights to continued access to lands for subsistence Activities [40] ANILCA also redefined ANWR's purpose to read

> To conserve fish and wild populations and habitat in their natural diversity including but not limited to the P C , polar bears, grizzly bears, musk oxen, dall sheep, wolves, wolverines, snow geese, peregrine falcons, and other migratory birds and Arctic char and Arctic grayling.[41]

In addition, ANWR's management was to include fulfillment of international treaties with respect to fish and wildlife; allow for subsistence hunting by local residents, and ensure water quality.[42]

The ANWR coastal plain had long been known for its potential petroleum value and, as part of the ANILCA negotiation process it was agreed that the choice to open or preserve the coastal plain would be deferred until after further study Busy with Prudhoe Bay oil in peak production, industry was content to wait Environmental advocates, aware of the coastal plain's wildlife and wilderness values, consented to more studies and a better understanding of the area This compromise resulted in the inclusion in ANILCA of Section 1002.

Section 1002 called for a "comprehensive and continuing inventory and assessment of the fish and wildlife resources of the coastal plain of the Arctic National Wildlife Refuge, an analysis of the impacts of oil and gas exploration, development, and production and to authorize exploratory activity within the coastal plain in a manner that avoids significant adverse effects on the fish and wildlife and other esources." [43] The study area, now known as "Area 1002" (ten -o -two), includes 1 55 million acres of undulating tundra, melt ponds, pingos, and rivers sandwiched between the Brooks Ranges to the south and the Beaufort Sea Recognizing that little research had been completed on ANWR's coastal plain, Congress mandated the Department of the Interior to

begin the assessment with a "Baseline Study" of the area's resources "with emphasis on" the study of caribou, wolves, wolverine, grizzly bears migratory waterfowl, musk oxen, and polar bears [44] Baseline studies called for

a) an assessment of the size range, distribution, of the populations of the fish and wildlife,

b) a determination of the extent location and carrying capacity of the habitats of the fish and wildlife;

c) an assessment of impacts of human activities and natural processes on the fish and wildlife and their habitats

d) an analysis of the potential impacts of oil and gas exploration development, and production on such wildlife and habitats;

e) and an analysis of the potential effects of such activities on the culture and lifestyle (including subsistence) of affected Native and other people [45]

THE REPORT TO CONGRESS

Section "1002 (H)" of ANILCA called on the Department of Interior to compile its baseline data, evaluate the impact of oil development in ANWR, and make a recommendation to Congress within five years The "Report to Congress," later to be titled the Coastal Plain Assessment was to include:

1) an estimate of the oil and gas potential of the coastal plain and how they would be transported to processing facilities,

2) an evaluation of how ANWR gas and oil relates to national energy needs;

3) a description of the area's species and habitats;

4) an evaluation of the adverse effects of further seismic exploration would have on wildlife and other resources;

5) and recommendations as to whether further exploration should be permitted and if so, how the negative effects of development might be mitigated [46]

Section 1003, entitled "Prohibition on Development, " gave the U S Congress the final authority to decide the fate of ANWR, requiring no leasing or other development leading to the production of oil and gas be initiated without an Act of Congress [47]

THE ASSESSMENT

Assessment Initiated

Which marching orders in hand, the newly appointed Secretary of the Interior, James Watt, assigned responsibilities for the 1002 studies to three agencies; U.S Geological Survey (USGS), U.S. Fish and Wildlife

(FWS), and the Bureau of land Management (BLM), giving USGS responsibility as the lead agency The Secretary's choice of USGS, an agency which primarily coordinates government work in geologic studies, soil studies and mapping as the lead agency, was met with opposition by environmental community Environmental interest groups perceived the intent of the ANILCA lawmakers to give FWS lead responsibility, and believed USGS to be an inappropriate agency to coordinate an assessment of development impacts on a pristine ecosystem. It recognized the political significance of a development-oriented agency coordinating the project. As a result, environmental groups went to court, marking the first case in several that would involved the ANWR 1002 assessment. In *Sierra Club vs James Watt*, the judge ruled in favor of the Sierra Club and directed Secretary of the Interior Watt to give FWS responsibility as the lead agency of the assessment [48]

In the years that followed BLM and USGS assumed responsibility for assessing the area's petroleum resources through seismic exploration Once these seismic studies were completed, the two agencies developed a hypothetical development scenario that was passed on to FWS After FWS completed its baseline study it took the hypothetical development scenarios from BLM and USGS and began its assessment of development impacts to the biological environment [49]

Although the collecting of field data was challenging, what may have been more significant was the agencies' lines of authority and organizational design for decision making Although I have found no documentation outlining the design for the assessment's decision-making process, conversations with several FWS's personnel indicate that the process evolved over the seven-year period and was complex. FWS generally operates within a hierarchical decision-making train, involving senior bureaucrats in Washington, Denver, and a Regional Director of FWS in Alaska It is my understanding that although much of the 1002 research effort was completed by the Fairbanks ANWR office and by on-site ANWR research staff, the Fairbanks office reported to regional office in Anchorage, which in turn answered to the Director of FWS in Washington, DC., who was under the direction of the Secretary of the Interior

The 1002 program was organized through teams of specialists, each taking responsibility for each of the six major sections of the report Reports were coordinated with team leaders from FWS, USGS, and BLM, under the direction of a Regional Leader (from Alaska's FWS) The Regional Leader worked with a Washington, DC Department of Interior counterpart to make the final decisions and create the printed documents· The proximal relationship of the Report's final editors to front-line researchers, and the fact that final editing and text authority were assumed to senior bureaucrats in Washington, is noteworthy, as is the fact that only one social scientist, a socio-economist, served as a contributing member of the assessment team

Caribou Assessment

With the passing of ANILCA, FWS stepped up its caribou research program, making use of new animal telemetry methods and attempting to fill the voids of information perceived to be needed to complete the assessment By 1986, FWS's three full-time caribou biologists and support staff had compiled data for the mandated baseline studies. Working in collaboration with FWS were other agencies and university scientists

Studies were assembled with other information and produced in technical papers which would be updated throughout the 1002 study program (a process that continues today). [50]

Public awareness of the Porcupine Caribou Herd as symbolic to the resource value of the Arctic Refuge was being advanced by environmental organizations. Consequently, choosing a mechanism for predicting the impacts of a hypothetical development scenario on ANWR's coastal plain was recognized by FWS as a formidable and potentially controversial task. As one FWS researcher put it

> We knew we were working with a very controversial issue and one where there was no easy answer in the literature We were talking about things that hadn't happened. . well there had been development in the range of Central Arctic Caribou Herd, there are differences which means we couldn't extrapolate from one to the other And realizing how controversial this one was, we knew we would be shot down by industry or environmental groups if it was just FWS sitting in a room and coming up with its own decision

Facing the challenge, FWS developed its approach, a two-day workshop involving caribou experts with advanced technical research experience studying the Porcupine Caribou and caribou-North Slope oil development interactions The beauty of this decision-making approach was that it relinquished all who participated of responsibly for the final conclusion, including FWS By using this method, FWS could state that the recommendations were a product of the process and not the agency, thus making FWS less accountable

The Workshop

Fourteen caribou biologists gathered in Fairbanks, Alaska on November 19th and 20th, 1985 for the workshop. Represented were academics from the University of Alaska (1) and University of Victoria(1); biologists from Canadian Wildlife Service (2), private biological consulting firms (2); Alaska's Department of Fish and Game (5), FWS (2); and the oil industry (1).[51] The oil industry representative was the only individual not having professional expertise as a caribou researcher.

Prior to the workshop, each group member received background data generated from baseline studies and a description of the hypothetical development The hypothetical scenario description outlined the scale of the development, the size and locations of facilities, methods for disposing of drilling muds, and the quality of gravel necessary to construct each component of the facility Additional pre-workshop information addressed the task which was to be undertaken by the participants

> Using the caribou use area maps included here, workshop participants will be asked to interpret how various configurations of potential development may affect coastal plain caribou, given the activities and facilities described above Estimating the magnitude of these effects should also be a discussion topic Mitigation measures and the extent to which they can reduced any identified negative effects would be sufficient to consider eliminating some area from potential development [52]

At the workshop plenary and small group session participants discussed how caribou might be affected by the hypothetical scenario, the qualitative terms used in characterizing impacts, suggested mitigation of negative impacts, and where development should be restricted

Each small group included one FWS representative who served as a facilitator, making use of a modified dephi technique to determine the effects of the oil development scenario on the PCH Although groups organized by FWS were viewed by one participant as imbalanced, (some groups weighing more pro-development than others), *all* groups came to the *same* conclusion: displacement from historically utilized calving areas was a major issue; disturbance from displacement was a major concern, and other proposals for ancillary development projects (particularly off-shore leasing) needed to be part of a cumulative analysis [53]

Fifteen recommendations were made at the final plenary sessions, the most important being that "the area of sustained calving use should be deleted from leasing " [54] The workshop also quantitatively defined sustained-calving habitat as that area in which 5 of the last 14 years (during the period 1972 - 1985) were utilized The meaning and use of the terms "core" and "concentrated" were also topics of discussion. Studies prior to 1981 did not indicated the exact density of calving habitat After 1981, these preferred-calving areas were determine to have 19 or more caribou km2 (50/m2) and defined as "core " It was agreed by participating biologists that it is "readily apparent" that pre-1981 observations reflect similar densities. The final workshop report also noted that "there was one dissenter from this view " [55] According to one workshop biologist, the dissenter was the participating oil industry representative

The definition of terms describing impacts to be used in the 1002 report was also the subject of discussion The group recommended that definitions should address both impacts to caribou within the 1002 area and to impacts on the entire PCH range. Definitions for the terms Major, Moderate, Minor, and Negligible were formulated by the biologists and accepted by FWS with Major impact being defined as "widespread, long-term change in habitat availability or quality which would likely modify natural abundance or distribution persist(ing) as long as modifying influences exist " [56] The workshop was documented by Refuge Manager Glenn Elison and sent to the Advisory Work Group for incorporation into the 1002 report

Draft Summary

The language of Section 1002 of ANILCA made no mention that "Report to Congress" should meet the requirements of the National Environmental Policy Act (which calls for all impact statements to be completed with a public review and comment period, yet it was the intent of the Department of Interior for the Report to serve both as the ANILCA legislative report to Congress and as the formal NEPA-required EIA. With this objective in mind, the Department made plans for allowing public comment to occur after Congress had received the document

Consequently, several environmental organizations argued that NEPA's guidelines were being violated by not allowing for public comment before its release and as a result, environmental organizations returned to the courts and again sued the Department of Interior Eventually, Trustees for Alaska, the organization filing the suit, won the case and the court ruled that a release of a Draft Report and public comment period must proceed the Final Report [57]

In November, 1986, the Department of Interior released the Draft Report of the Coastal Plain Resource Assessment: Report and Recommendation to the Congress of the United States and Legislative Environmental Impact Statement Addressing caribou-related topics are three chapters of the draft: "The Existing Environment" which relates to the findings of the baseline studies, "Environmental Consequences" which addresses the impacts of five alternative management plans, and "The Secretary's Recommendation "[58]

The Draft Report's "Alternative A " describes a full-scale oil and gas development scenario, and is similar to the hypothetical-development proposal considered by the caribou biologists in their workshop Under Alternative A development would extend from the Canning River Delta to the far eastern and southeastern sections of Area 1002 "Alternative B" calls for a development scenario which excluded "traditional core calving " The Draft quantitatively defined core calving in the same way as defined by the caribou workshop group (having 19 or more caribou km2 or 50/m2) "Alternative C" examines only exploratory drilling whereby four deep-well tests would be drilled for the purpose of determining more precisely the nature of substrata geologic composition. "Alternatives D" and "E" both call for no drilling management, "D" is a "No Action Plan" and "E" considers wilderness designation of Area 1002 under the Wilderness Act of 1964 [59]

"Environmental Consequences" of the five alternatives are considered by using the Major to Negligible impact terms discussed at the caribou workshop. Mandated by 1002 to investigate possible mitigation, FWS based its analysis on the Council of Environmental Quality's definition of mitigation which is separated into five options avoiding, minimizing, rectifying, reducing or eliminating, and compensating. The first four are used in the coastal plain assessment. Using these guidelines, the assessment identifies five indicator species, (caribou, musk ox, polar bear, snow geese, and Arctic Char) and assesses the impacts to indicator species of the various alternative management choices

Habitat utilization is framed within four "Resource Categories" or habitat value classifications These determine an areas' "suitability to support a given species." The range of "Resource Categories" (Res Cat.) are defined as

> Res Cat 1 - High value or evaluation species. Unique and irreplaceable on a national or in the eco-region
> Res Cat 2- High value for evaluation species. Relatively scarce or becoming scarce...
> Res Cat 3- High to medium value Relatively abundant on a national basis
> Res Cat 4- Medium to low value for evaluation species

Important in understanding fully the assessment process is FWS's policy stating that "legally designated or set-aside areas, such as National Wildlife Refuges, be given special consideration as either resource category 1 or 2 "

In keeping with this policy, "major" effects on an indicator species within a Category 1 habitat is in conflict with FWS policy Major impacts in Category 2 habitat are not prohibited [60]

The Draft Assessment and the Secretary's Recommendation

Consistent with the reported proceedings of the caribou workshop, the draft report's chapter on Environmental Consequence defines "core calving" area as "at least 50 caribou/square mile during calving for at least 5 of 14 years . ." The draft went on to determine 242,000 acres of the 1002 area as Resource Category 1, with the remaining 1,304,000 acres of the coastal plain as Category 2. [61]

In reference to production, transportation and development in a full-leasing scenario (Alternative A), the draft report adds.

> Major . losses of habitat and additional reductions in habitat value would be widespread throughout the 1002 area. The habitat value losses from these indirect effects would result from behavioral avoidance of development areas, decreasing accessibility to undeveloped areas (insect -relief habitat along the coast) due to physical barriers and disturbances Displacement of the PCH from core calving are to a less desirable area would be expected to reduce caribou productivity Loss of important habitat has been shown to directly impact ungulate populations " [62]

In comparing the PCH to the CAH, the draft report states.

> Analogies comparing the effects of current oil development on the CAH and effects of potential 1002 area development on the PCH must be drawn with caution. Because of the greater density of PCH on their calving, the PCH would interact with oil development much more extensively and intensively that the CAH has interacted in the Prudhoe Bay area. [63]

This section adds:

> Long-term losses in fish and wildlife resources, subsistence uses and wilderness values would be inevitable consequences of long-term commitment to oil and gas development in the area. Mitigation measures such as environmentally sensitive siting of facilities, time and area closures, and harvest restrictions can minimize some adverse effects to the PCH as well as to other fish, wildlife, wilderness and subsistence resources. But Even with effective mitigation, herd displacement or reduction could be as great as 20 - 40 percent. [64]

In the final "Summary of Effects" for Alternatives A, B, C, D, and E, effects of development on caribou (and other wildlife) are assessed in matrix format Full-scale development (Alternative A)'s impact on caribou is categorized as "Major "[65]

The Secretary's Recommendation

The final chapter of the Draft Report, "The Secretary's Recommendation," represents a interpretation of the data included in the report and the Secretary's assessment of what is in the best interest of the American people That the statements of the draft summary endorse full-scale gas and oil development was no surprise to most Since 1980 the Department of the Interior's Secretaries, both appointed by Ronald Reagan, had

implemented a policy of liquidating natural resource public goods That the Draft Report includes statements which are radically inconsistent with the multi-million dollar 1002 field research effort was a surprise to many involved with the process The following excerpt from Chapter Seven, "The Secretary's Recommendation," stands in contrast to the remainder of the assessment

> Even though the billions of barrels of oil reserves have been brought on line and the infrastructure developed to bring that oil to US markets, the fish and wildlife resources of the Prudhoe Bay area remain healthy. The central Arctic caribou herd has increased substantially during the period that development has occurred within the heart of its range . . Although circumstances with the 1002 area may be different, the evidence derived from the Prudhoe Bay experience leads one to be quite optimistic about the ability to explore for and develop without significant deleterious effects on the unit's wildlife resources most adverse environmental effects would be minimized or eliminated through mitigation based on the vast amount of information and technology acquired during he development of the Prudhoe Bay Development would proceed with no net loss of habitat quality, unnecessary adverse effects would not be allowed to occur [66]

Public meetings allowing for comment on the Draft Report took place in Anchorage, AK, Kaktovik, AK, and Washington DC No meetings throughout the 1002 assessment took place in Gwich'in or Canadian Native Villages. The Draft Report generated public comment from 11,198 individuals and the majority of these indicated that they were in favor of development The public participation process documented in the Final Report made no special mention of the comments made by local community members. The Draft Report (as well as the Final Report) also omitted any mention of Alaska's Gwich'in people as an Indian government. This final point speaks to the on-going legal battle regarding Alaska State and the Federal Government's non-recognition of Gwich'in under the Indian Reorganization Act It has been the position of the U S and Alaskan government that the Gwich'in (and all other Alaskan Natives) extinguished their rights to sovereignty by signing ANILCA. Gwich'in feel otherwise and have asserted their claims through several court battles.

The Final Report

The Department of the Interior reviewed the assessment in light of public comments, rewrote sections, and released its Final Report on April, 1987 Like its predecessor the Draft Report, the Final Report endorses full-scale gas and oil development Presented in the same format as the draft report, it contains much of the same information However, there are a few subtle, but important changes

The term "core calving" was eliminated and replaced with the milder term "concentrated calving." In addition to the name change, the final report changed the designation of all coastal plain sustained calving habitat from Resource Category #1 to Resource Category #2 The Department of the Interior attributes the change to "further consultation with Canada."[67] The quantitative definition of PCH "core" or "concentrated" calving area was redefined as that area utilized for 7 to 15 years (instead of 5 to 14 years as indicated in the Draft Report and the caribou workshop). This manipulation of overlays resulted in a decrease in acreage of sustained calving habitat from 242,000 acres (Draft) to 84,000 (Final). [68] In addition to changes in terms and definitions, statements used in the Draft Report regarding possible "displacement or reduction" of PCH 20% to 40 % were deemed invalid and

eliminated. Other key sentences stating the importance of Resource Category 1 habitat to the PCH were eliminated

Why had the Department made these and other changes? The Department of the Interior states that "the percentage was related to distribution changes [not population], but through an editing error in punctuation, the relationship was obscured . This [the error] prompted FWS to conduct further analysis...[and determine that] a percentage in change of distribution would be highly speculative." [69] One FWS staff member attributed the text change in the term "core" to "concentrated" as a result of the word "core" sounding too important to the general public Another indicated that the changes had been made in response to public comments on the Draft Report. Canada responded by publishing a document which stated that the Final Report's references to consultation with Canada misrepresented what actually transpired in discussions; "[The change] incorrectly interprets the importance of the area to the PCH, and shows a disregard for the value of the area to other wildlife "[70]

Although changes had been made to the technical sections of the Final Report (Chapter 1 through 6), the Secretary's Recommendations were lengthened and consistent with the recommendations of the Draft Report, repeating the inconsistencies mentioned earlier

SUBSEQUENT EVENTS AND THE IMPACT OF THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

Since the release of the now famous and by some accounts infamous "1002 Report, " the U.S. Congress has taken no final action on opening or preserving ANWR's coastal plain, yet in the five-year period which has followed ,trends established in the Coastal Plain assessment process continue to pervade the decisions making environment The following is a description of several related events which have followed the 1002 assessment on Federal and reactions at the local levels

Ongoing Caribou Research, Ongoing Uncertainty

The intensified research into the effects of oil development on caribou has continued since the 1002 report, being conducted by university academics, federal agencies (Canadian and US), Alaska's State, Canadian Federal, and Yukon Territory agencies, as well as industry-hired consulting groups Subsequent research efforts have striven to understand more accurately the potential impact of oil development on caribou and has made much progress in understanding the herd Twenty yeaars ago biologists thought that winter habitat, migration routes, and calving habitiats where the most critical components of the herd's ecology Today summer habitat is considered the most sensitive [71] Yet, there remain many unanswered questions One central question currently being addressed is the potential effect of herd displacement from the Coastal Plain to foothills where there is a higher concentration of predators A modeling project is currently being undertaken by the FSW to understand better the dynamics of these potential impacts

Recently, research on the part of the Alaska Department of Fish and Game (ADF&G) in the Prudhoe Bay area has generated reports [72] and journal articles,[73] indicating adverse impacts on Central Arctic Caribou as a result of Central Arctic Caribou-oil field interactions. The validity of ADF&G's caribou research program was then challenged by the oil industry and industry-contracted caribou researchers. As a means of addressing the

challenges, ADF&G initiated a formal review process of its research, undertaken by an independent organization, (The Wildlife Management Institute of Washington DC) In short, the Institute's document "Review of North Slope Alaska Caribou Research," critically analyzes issues of confounding variables, over-generalizations made in research findings, problems with research design, and conclusions made by researchers. [74] The report calls for more holistic research efforts, and adds that "If the energy spent assailing the quality of work done in one piece of research or the other could be re-channeled into advance planning and scientific input to the design of research to solve appropriate questions, there would likely be less conflict and better, more constructive results. (p 27)" Questions regarding the degree to which extrapolations can be made from one herd to the other and the potential impact of oil development have been better defined Nonetheless the report confirms, "Cumulative effects on caribou can be expected if additional major oil development occurs on the North Slope, especially that proposed for the 1002 area of ANWR "

Congressional Efforts at researching the issues

Numerous proposed bills, both pro-development and pro-preservation, have been entertained by the Senate and the House since the 1987 release of the 1002 Report . There have also been numerous Congressional hearings related to those bills in which caribou biologists have offered a litany of conflicting testimonies. Among them have been US FWS agency personnel asserting the compatibility of development with caribou. The only bill to approach a house vote is the Bush Administration's National Energy Policy. In reference to the bill and caribou,the co-sponsor of the bill, Bennett Johnston (Republican from LA), commented, "Caribou have the resistance factor to man about equal to pigeons. . There is no inconsistency with the caribou herd and drilling in ANWR. If there is any place in America that ought to be drilled, its ANWR "

As a part the waxing and waning interest in ANWR legislation on the part of Congress, several Congressional Review Committees (groups actually undertaking independent research on behalf of - Congresspeople) as well as Congressional delegations, have traveled to Alaska's northeast corner. These groups are often hosted by FWS and accompanied by environmental organization and oil industry representatives. Included in travels have been tours of Prudhoe Bay, an airtour or ANWR, and bus rides through the Inupiat Village of Kaktovik[75] Since Congress began its ANWR deliberations, only one Congressman (Senator Max Baucus) has actually visited a Gwich'in community and interacted directly with the people of The Venetie Reservation to discuss their concerns No ANWR-related federally sponsored public meeting have ever been held in any of the South Slope villages. One informant asserts that FWS personnel have told congressional delegations interested in visiting the Gwich'in reservation that airlines make no regular stops in Venetie or Arctic Village Currently, these villages are serviced by several airlines and will make stops on request during their regular flights to Kaktovik.

LOCAL-LEVEL RESPONSES TO THE 1002 ASSESSMENT

On the North Slope

Villagers in ANWR's north and south slope communities of Alaska both felt the consequence of the impact assessment process and the international controversy in the midst of which they have found themselves. People from both sides of the Brooks Range have expressed their dismay at the institutional arrangements for decision making, and sense of intrusion by the numbers of people who have passed through their communities as curious observers and collectors of information Also significantly increased have been the number wilderness recreational travelers in ANWR who use Kaktovik and Arctic Village as gateways. In one summer (1991) CBS, ABC NBC, and CBC media news crews all visited Kaktovik

The North Slope villagers of Kaktovik, although generally portrayed by the media as officially in favor of development, are hardly monolithic in their individual positions. On matters of official records, however, small villages have a tradition of standing together Although in favor of development, the People of Kaktovik have formally expressed their dismay at government's approach to environmental assessment and have clearly stated on several occasions that they favor a plan which allows them significant control of the activities occurring on their lands and to their wildlife resources Through an Alaska State funded grant, the village of Kaktovik published its own "Impact Project " in July 1991 That document, a mixture of compliments and concerns, apologies and attacks, and demands and requests, speaks directly to what the community perceives as the impacts resulting from government's baseline collection and impact assessment processes; their sense being that wildlife is violated by research with radio collars and that agencies which undertake this activity are acting without respect to the villagers or their land, or to the wildlife. Their concerns also focus on maps which include proposed oil facilities and service roads, drawn without their consultation or approval. Asserting the villagers' concerns and need for central involvement in oil development, the document states:

> As we go forward with the planning and preparation for industrial activity in our county, we, Kaktovikuiut, ask, indeed, insist, that our interest, our values, our way of seeing things here be given proper consideration We want to have an overview position in all of this, especially in the care and respect given our fellow creatures We think that will be useful not only to us but to the larger goals of out larger society in seeing, understanding and protecting the things here of real value [76]

The document goes on to recommend the establishment of a local impact assessment office in which the People of Kaktovik play a central role and maintain responsibility for "keep[ing] an eye on things here, to watch and to report all the many things which are likely not to be as they should be " [77]

South Slope

On the South Slope, villages are finding new coalitions and re-established connections with of distant kinships For the Gwich'in People of Alaska, the threat of oil development on the P H C calving grounds and the lack of adequate representation in the decision making process has led to the founding of the Gwich'in Steering Committee, a non-profit organization which coordinates public education and represents its interest to the greater world As a part of the Gwich'in peoples' struggle to council together and gain national recognition, "gatherings" have been held in local villages. These forums for renewed friendships, lessons from elders, fun and games, dancing, strategic planning, and family reunions are deeply rooted in the Kutchin (traditional Gwich'in) tradition, but one had not occurred for over 100 years In 1988 the first took place in Arctic Village and last summer over 2000 native and non-native people gathered in Venetie for the third such event Through the Gwich'in Steering Committee and the Gwich'in summer gatherings, a closer alliance between Alaska's Neetaii and Canada's Ventut Gwich'in has been established Also established is a relationship of support with the Porcupine Caribou Management Board, a co-management system established in Canada in 1986 The Ventut Gwich'in's participation in caribou issues differs radically from the highly adversarial relations currently existing between the Gwich'in and the U S Fish and Wildlife Service, and the Canadian Porcupine Caribou Management Board has served as a link with the Canadian Ministry of Environment and Yukon Territorial Governments Both governments have supported the Gwich'in's efforts with financial and lobbying resources, and have formally stated their disapproval in the EIA process and the Department of Interior's interest in development. Links have also been extended to supporters in Hollywood at a "Dances with Wolves" Gwich'in benefit, various regional and national environmental organizations, affiliates of the United Nations, and indigenous peoples of other continents struggling with issues of sovereignty

In 1989 the Gwich'in Steering Committee was represented by the Native American Rights Fund, filing suit against the Department of Interior and Secretary of Interior Manuel Lujan, charging that the Secretary failed to carry out the mandate of Congress in the 1002 assessment. The courts recently ruled to suspend temporarily its judgment because of the case's timing

Another source of frustration and disappointment for the Gwich'in has been the Canada- U.S. International Porcupine Caribou Agreement and its International Porcupine Caribou Board. The international agreement was initiated in the seventies and final negotiations occurred concurrent with the 1002 assessment The Alaskan Porcupine Caribou Commission, a non-profit founded to advance native interests during the long and contentious negotiation process, was a major force in the evolution and signing of the agreement, although no Alaskan Gwich'in has yet to be included on the International P Caribou Board's membership which is composed of managers and user representatives from each country In the U S , appointments are made by the Department of Interior and Alaska's governor After the first set of terms ended, the United States chose not to select new members which delayed meetings for about a year At present, both U S. representatives are Inupiat. The Gwich'in and other native groups interested in the PCH have responded by re-establishing operations of its Alaska Porcupine Caribou Commission

Finally, the Gwich'in have been forced to view their harvest data as proprietary information Making their own observations about the Central Arctic Herd's health and realizing that if herd populations were to decrease significantly, they have realized that government imposed caribou harvest quotas would serve as the basis for allocations

IN SUMMARY

What can we learn from these events about uncertainty and science, about lost opportunities, about the reaction of local communities, and the resulting overall political environment?

By mandating the 1002 impact assessment, the U S Congress operated with the assumption that through seven years of research and through millions of dollars in expenditures, meaningful predictions could be made regarding the potential impacts of development to caribou As indicated, no comprehensive research on the herd had been completed prior to the seventies and accurate, quantifiable data were not collected until 1981 Doug Urquhart provides a vivid and useful image of the Porcupine Caribou Herd, comparing its seasonal migratory patterns and ecology to that of an amoeba which gradually shifts its mass north, then south; the movement streaming like cytoplasm which is hardly moving at all or is slowly moving all at once.[78] The usefulness of the image is in illustrating the challenge researchers face when addressing research questions about caribou. The obvious shortcomings of rapid ecosystem research are compounded in the far north by problems of weather and logistics, Arctic research requires years, and in some cases decades, to begin understanding its dynamic qualities.

The scientists of the workshop made *judgements* , based on data collected from several different studies. Their process differs greatly from scientific research and involved predictions about a hypothetical condition. The Coastal Plain Assessment, a document designed to inform citizens and law makers, offers no disclaimer to readers about its ability to make clear and defendable predictions. Yet, scientists are not impotent in their ability to make predictions. The strength of wildlife ecology is in making predictions about the direction of change, not the magnitude of change In this context, the biologists of the workshop were correct to speculate only on the displacement and decreases in population,and to qualify their statements as highly dangerous. Their precise language stands in contrast to the Secretary's assured optimism about the ability to develop "without deleterious effects " One lesson of uncertainty and politics in the 1002 case study may be *The postponing of political decisions with directives for additional research may leave the process more vulnerable to political forces*

Although Kaktovik and the Gwich'in differ in their official positions regarding ANWR, they appear to share several concerns, a common feeling that government lacks respect for their contribution to policy decisions and that they should have central involvement in decisions making Given the scale of 1002 EIA and the organizational design of the Department of Interior, it is difficult to imagine meaningful involvement on the part of local communities in a milieu as politically charged forces as Arctic Refuge. At minimum, what may be necessary in order to adequately secure their rights to caribou is a reassertion of native rights to resources. Furthermore, there is

another pattern suggested in these events which merits further review and discussion, that the Gwich'in peoples' rights are being systematically violated on several fronts

Flawed as it may be the 1002 process seems to have resulted in some benefits, as well as some costs Scientists are now collaborating an international P C H technical committee, operated as a function of the International agreement. They are also now in a better position to monitor changes of the P C.H regardless of the development decision, a luxury not afforded at Prudhoe Bay In place are established native political organizations with proven track records, far-reaching networks of dedicated alliances, sophisticated and skilled at dealing with problems in Washington. The preservationist-Gwich'in relationship has also developed.

The greatest disservice of the Coastal Plain Assessment may be to the American public at large Lost in the Coastal Plain EIA was an opportunity for United States citizens to learn from the experience of its Candaian neighbor's mega-project assessment and the benevolent leadership of Berger, to hear from the descendents who have resided the region for thousands of years, and come to terms with realties of the Arctic Refuge as an arctic homeland

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[37] The reader should note, however, that the decision for Alaska lands resource allocations still in hot debate, and is now being made through court challenges and interagency conflicts on interpretation of these three pieces of legislation. Current law suits from Alaskan Native groups and conflicts between Alaska and the Federal government could prove the law to be unconstitutional

[38] Robert Cahn, The Fight to Save Wild Alaska, Audubon, 1982.

[39] The National Wilderness Preservation System protects lands under Wilderness Act of 1964, calling for "preservation and protection in their natural condition " Wilderness Act Public Law 88-577, Section 2, 1964

[40] U S Congress, Alaska National Interest Lands Conservation Act, Public Law 96-487-Dec 2, 1980, Sec VIII

[41] U S Department of the Interior, Assessment, 15

[42] Ibid

[43] U S Congress, Alaska National Interest Lands Conservation Act, Public Law 96-487-Dec 2, 1980, Sec 1002 (a)

[44] Ibic 1002 (c)

[45] Ibid

[46] Ibid , 1002 (h)

[47] Ibid , Section 1003

[48] T H Watkins, "The Perils of Experience," Wilderness, Winter, 1990, 33-38

[49] U S Department of the Interior, Assessment, 1-6

[50] See U S. Fish and Wildlife Service, Final Report Baseline Study of the Fish, Wildlife, and their Habitats, Section 1002 (c) of ANILCA, 1986

[51] # in parenthesis indicates number of representatives attending

[52] Elison, Caribou Workshop, 18

[53] Elison, Caribou Workshop, 18-20

[54] Ibid 11

[55] Ibid 11

[56] Elison Caribou Workshop, 8

[57] U S Department of the Interior, Assessment *(Trustees for Alaska, et al vs Donald P Hodel et al*, February 25, 1986,) 194

[58] Department of the Interior, Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment - Draft Report, November, 1986

[59] Ibid

[60] Ibid , 97.

[61] Ibid , 133

[62] Ibid , 107

[63] Ibid 106

[64] Ibid 104

[65] Ibid , 149

[66] U S Department of the Interior, Draft Assessment, 170

[67] Ibid , 49

[68] Ibid 24 and 187

[69] Ibid , 195

[70] Canada, Comments by Canada on the ANWR Coastal Plain Resource Assessment, Ottawa, November, 1987, 4

[71] Don Russell, Canadian Wildlife Service, per communication

[72] Whitten, Kenneth and Fancy, Steven, "Effects if Potential Displacement of Caribou From the 1002 Area on Mortality Rates of Calves," Alaska Fish and Wildlife Research Center and Arctic National Wildlife Refuge, Terrestrial Research -1002 Area Arctic National Wildlife Refuge Annual Progress Report, Field Season 1989, 16-19

[73] Cameron, Reed, Dau, Smith, "Does Arctic Petroleum Development affect Calving Caribou?" Forthcoming in Arctic

[74] Wildlife Management Institute, 1991. Review of North Slope Alaska Caribou Research Report to the Alaska Department of Fish and Game, December.

[75] Kaktovik has a population of 225 and is located on a one mile square area

[76] City of Kaktovik, Chapter 9 "Wildlife," In This Place, A guide for Those Wishing to Work in the Country of the Kaktovikmiut, page 3

[77] *Ibid* - "Planning," page 2

[78] Urquhart, D.R 1986, The Status and Life History of the Porcupine Caribou Herd, Renewable Resources, Government of Yukon Territory