JOURNAL OF ANIMAL LAW AND ETHICS

A PUBLICATION BY THE STUDENTS OF
THE UNIVERSITY OF PENNSYLVANIA LAW SCHOOL

Volume 3 May 2009

THE POLAR BEAR TREATY AND THE CHANGING GEOGRAPHY OF THE HIGH ARCTIC

James Fallows Tierney

THE POLAR BEAR TREATY AND THE CHANGING GEOGRAPHY OF THE HIGH ARCTIC

JAMES FALLOWS TIERNEY [*]

INTRODUCTION

Characterized by cold, extreme weather, and low biological productivity, the high Arctic is a unique ecological, geographical, and cultural region. For centuries, native populations relied on the few living resources in the region for subsistence, including the polar bear (*Ursus maritimus*). Overhunting of the polar bear population during the middle part of the twentieth century led five of eight circumpolar states to create a treaty regime for protecting and conserving the polar bear as a unique resource of the high Arctic. That treaty, the International Agreement on the Conservation of Polar Bears,[1] was signed by Canada, Denmark (Greenland), Norway, the Soviet Union, and the United States in 1973. The parties committed to regulating the annual polar bear "take"[2] in order to stabilize and properly manage the polar bear population in accordance with good science.

---

[*] J.D. candidate, University of Chicago Law School (2011); M.A., International Relations, University of Chicago (2007); A.B., Brown University (2006). Thanks to Georgie Boge Geraghty and Richard Thies for their ideas and comments, and to Jesse Baker for convincing me of the need for this article.

[1] Agreement on the Conservation of Polar Bears, Nov. 15, 1973, 27 U.S.T. 3918, 13 I.L.M. 13 (1974) [hereinafter Polar Bear Treaty].

[2] The term is defined in the Polar Bear Treaty, art. 1(1) as "hunting, killing, and capturing." However, recent international agreements and U.S. statutes have adopted a broader interpretation of "take" and "taking," meaning "to harass, hunt, capture, or kill" the protected wildlife, or "to attempt to harass, hunt, capture, or kill" the protected wildlife. See, e.g., Conservation and Protection of North Pacific Fur Seals, 16 U.S.C.A. § 1151(m) (2007); Marine Mammal Protection Act of 1972, 16 U.S.C. § 1362(11)A (applying this definition to "marine mammal[s]"); *id.* at 16 U.S.C. § 1362 (1994 amendments extending "harassment" to mean "pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption off behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering."); *United States v. Hayashi*, 22 F.3d 859, 864 (9th Cir. 1994) (interpreting "harass" as meaning a "direct and significant intrusion" upon normal marine mammal behavior); *id.* (explaining that "normal" and "natural" behavior does not include behavior that threatens humans, for if the court adopted that interpretation, "[n]othing could legally be done to save a modern-day Jonah from the devouring whale, or to deter a rampaging polar bear from mauling a child").

To that end, the treaty categorically limited the 'take' of polar bears; how best to implement the treaty was left to each state. Since ratification, all of the parties have cooperated in the newly formed treaty regime, the Polar Bear Specialist Group (PBSG), which meets every several years to coordinate management and research. The jurisdictions differ in their implementation schemes, alternatively using quota-based systems (Canada and Denmark), flat moratoria (Russia and Norway), or native management mechanisms (United States) in order to protect the polar bear populations. Although the regime has been generally successful in limiting the annual polar bear harvest, some populations remain threatened. Researchers have identified nineteen discrete subpopulations in the Arctic, each of which are defined by the limits of their geographic range, as well as their relative genetic isolation from the others. On the basis of subpopulation viability analysis, polar bear specialists predict that five of these eighteen subpopulations face "high" or "very high" risks of population decline within the next ten years.[3]

Moreover, the Polar Bear Treaty has not sufficiently addressed the emerging and perhaps more serious threat to population dynamics and conservation efforts: global warming and the shrinking of polar sea ice.[4] Scientific studies have shown that the declining health of polar bears is strongly correlated with (and likely caused by) temperature changes and early season break-up of sea ice.[5] Polar bears use this ice as a 'platform' for

---

[3] Jon Aars, Nicholas Lunn, & Andrew Derocher eds., *Polar Bears: Proceedings of the 14th Working Meeting of the IUCN/SSC Polar Bear Specialist Group* 34–36 (Occasional Paper of the IUCN Species Survival Comm'n No. 32, 2005), *available at* http://pbsg.npolar.no/docs/PBSG14proc.pdf.

[4] Peter Lemke et al., *Observations: Changes in Snow, Ice and Frozen Ground*, *in* CLIMATE CHANGE 2007: THE PHYSICAL SCIENCE BASIS 337, 341–43, 350–56 (Susan Solomon *et al.* eds., 2007), *available at* http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Ch04.pdf; *cf.* Alexandre Gagnon & William Gough, *Trends in the Dates of Ice Freeze-up and Breakup over Hudson Bay, Canada*, 58 ARCTIC 370, 370–82 (2005) (describing the development of a longer ice free season on Hudson Bay), *cf.* POLAR BEAR RANGE STATES MEETING SUMMARY, *available at* http://pbsg.npolar.no/docs/PB-Sheph07-outcome.pdf (last visited January 13, 2009).

[5] Ian Stirling & Claire Parkinson, *Possible Effects of Climate Warming on Selected Populations of Polar Bears* (Ursus Maritimus) *in the Canadian Arctic*, 59 ARCTIC 261, 261 (2006); *see also* Ian Stirling et al., *Polar Bear Distribution and Abundance on the Southwestern Hudson Bay Coast During Open Water Season, in Relation to Population Trends and Annual Ice Patterns*, 57 ARCTIC 15, 15–26 (2004) (comparing population trends of Polar bears in areas of varying ice breakup periods); Ian Stirling et al., *Long-term Trends in the Population Ecology of Polar Bears in Western Hudson Bay in Relation to Climate Change*, 52, 52–54 ARCTIC 294 (1999) (proposing a link between the increase in temperature that has led to earlier ice break up and the declining condition of the Polar bear population in Hudson Bay).

hunting seals and other prey.[6] Therefore, if climate change trends continue to contribute to the destruction of this habitat, there may result a significant long-term threat to specific subpopulations and the global population alike.

This article analyzes the effectiveness of the Polar Bear Treaty and regime in addressing various threats to polar bears, including the annual harvest and climate change trends. This article strives for this goal by combining doctrinal and empirical analysis throughout the subparts that follow. To better understand the structure and intended effects of the treaty, Part I examines the reasons why states cooperated in this area, as well as the process by which they achieved consensus. That section also presents a detailed doctrinal description of the law established by the Polar Bear Treaty. Part II looks at how the regime has changed since the ratification of the Polar Bear Treaty, including how the Polar Bear Specialist Group has adapted to changing circumstances. Part III is a review of scientific papers and other reports about trends in population dynamics, attempting to determine the trends in population dynamics and in the changing geography of the high Arctic. This paper analyzes regime change and threat change throughout, asking whether the parties to the Treaty are effectively and adequately regulating the polar bear populations. Are the States Parties to the treaty tracking other present or emerging threats to critically analyze their conservation approaches? Part IV briefly presents developments in bilateral and end-user agreements that have contributed to polar bear conservation efforts. The article concludes with a discussion of what should be done if the purpose of the regime is to protect polar bears and their habitat—that is, if true conservation is the goal, rather than simply restricting the polar bear hunt.

I. THE DEVELOPMENT OF THE POLAR BEAR TREATY (AND REGIME)

A. Regimes

Unlike the other polar region, the Arctic does not have a comprehensive treaty regime governing territorial claims, resource exploitation, and/or environmental protection.[7] Instead, the international law of the Arctic has

---

[6] Ian Stirling, POLAR BEARS 116-20 (1988).

[7] Antarctic Treaty, Dec. 1, 1959, 12 U.S.T. 794, 402 U.N.T.S. 71; Convention on the Conservation of Antarctic Marine Living Resources, May 20, 1980, 33 UST 3476, 1329 UNTS 48 (1982); Protocol on Envtl. Protection to the Antarctic Treaty, Oct. 4, 1991, 30 I.L.M. 1461 (1991); *see also* Melissa Verhaag, *It Is Not Too Late: The Need for a Comprehensive International Treaty to Protect the Arctic Environment*, 15 GEO. INT'L

remained a loose amalgam of hard and soft law, most of which, like the U.N. Convention on the Law of the Sea,[8] is not tailored to the Arctic region. Efforts at international governance over the Arctic have combined this law with aspirational documents like the Arctic Environmental Protection Strategy.[9] As compared to the regime governing Antarctic affairs, which was established in 1959, there was no analogous dedicated mechanism for coordinating cooperation in Arctic issues until the eight circumpolar states (the Polar Bear Treaty parties, plus Finland, Iceland and Sweden) created the Arctic Council in 1996.[10] Prior to this round of incipient institution formation during the 1990s, cooperation in Arctic issues was weak and insubstantial, and the strongest area for cooperation was in the Polar Bear Treaty regime.

In the field of international relations, regimes are viewed as processes for fostering cooperation toward collectively solving a problem or coordinating action. In other words, they are "sets of implicit or explicit principles, norms, rules and decision-making procedures around which actors' expectations converge in a given... area of [international relations]."[11] Before the Polar Bear Treaty, there were few such

---

ENVTL. L. REV. 555, 557–59 (2003) (arguing for the need for a single unified treaty dealing with Arctic conservation); Barry Dubner, *On the Basis for Creation of a New Method of Defining International Jurisdiction in the Arctic Ocean*, 13 MO. ENVTL. L. & POL'Y REV. 1, 7–8 (2005) (arguing for the creation of a new jurisdictional region for the Arctic); *cf.* Philippe Sands, PRINCIPLES OF INTERNATIONAL ENVIRONMENTAL LAW 710-31 (2d ed. 2003).

[8] United Nations Convention on the Law of the Sea, Dec. 10, 1982, 21 I.L.M. 1261 (1982) [hereinafter UNCLOS].

[9] Arctic Environmental Protection Strategy, June 14, 1991, 30 I.L.M. 1624; *see also* David VanderZwaag, Rob Huebert, & Stacey Ferrara, *The Arctic Environmental Protection Strategy, Arctic Council and Multilateral Environmental Initiatives: Tinkering while the Arctic Marine Environment Totters*, 30 DENV. J. INT'L L. & POL'Y 131, 131 (2002) (highlighting the inadequateness of current agreements dealing with environmental issues of the Arctic).

[10] Antarctic Treaty, *supra* note 7; Declaration on the Establishment of the Arctic Council, Sept. 19, 1996, 35 I.L.M. 1382; *see also* Donald Rothwell, *The Arctic Environmental Protection Strategy and International Environmental Co-operation in the Far North*, 6 Y.B. INT'L ENVTL. L. 65, 66 (1995) (discussing the increased cooperation among states in the Arctic region in recent years).

[11] Stephen Krasner, *Structural Causes and Regime Consequences: Regimes as Intervening Variables*, 36 INT'L ORG. 2 (1982), *reprinted in* INTERNATIONAL REGIMES 1-2 (Stephen Krasner ed., 1983); Oran Young, CREATING REGIMES: ARCTIC ACCORDS AND INTERNATIONAL GOVERNANCE 4 (1998) ("With few exceptions, the formation of international regimes or governance systems features a process aimed at reaching agreement on packages of mutually acceptable provisions suitable for expression in documents that . . . constitute evidence of the defining or constitutive characteristics of institutional arrangements as understood by their creators.").

opportunities for cooperation in the Arctic issue area;[12] one study explained that the relative paucity of fora for international cooperation can be attributed to "the lack of a common 'Arctic outlook'" because all of the states which have a significant presence and interest have "a greater concern with southern rather than northern issues."[13] Similarly, the absence of a treaty regime similar to that governing Antarctica is likely due to differing concerns about the ecology, geography, and sovereignty of the two regions.

The environment of the Arctic—characterized by a cold, arid climate for much of the year—is unlike most places on Earth, with the exception of the Antarctic. However, unlike the Antarctic, the Arctic has relatively rich biological productivity and biodiversity. Furthermore, the physical geography of the Arctic is the inverse of the Antarctic, in that the former is an ice-covered sea surrounded by land and the latter is an ice-covered continent surrounded by sea.[14] These factors make the Arctic region—and in particular, its ecology—a potentially rich topic for international environmental law. As one of the few 'hard law' treaties governing the Arctic,[15] the Polar Bear Treaty is especially ripe for analysis.

B. History of the polar bear hunt

Like the polar bears that evolved from grizzly bears to opportunistically fill the Arctic ecological niche, humans have established cultures in the high Arctic. These cultures began with the Paleoeskimos and the Dorset people

---

[12] Many commentators tried to address this absence with proposals for an Arctic regime or explanations for why a regime could develop. *See* Barnaby Feder, *A Legal Regime for the Arctic*, 1976–8 ECOLOGY L. QUARTERLY 785, 786; J. Enno Harders, *In Quest of an Arctic Legal Regime*, 11 MARINE POLICY 285, 286 (1987); Elizabeth Young, *The Arctic: Prospects of an International Regime*, *in* STRATEGY AND THE ARCTIC 105 (R.B. Byers & Michael Slack eds., 1986); Vladimir Golitsyn, *The Arctic—On the Way to Regional Cooperation*, 1 MARINE POL'Y REPORTS 91, 95 (1989); David VanderZwaag, *International Law and Arctic Marine Conservation and Protection: A Slushy, Shifting Seascape*, 9 GEO. INT'L ENVTL. L. REV. 303, 303 (1997); *see also* Gail Osherenko & Oran Young, *The Formation of International Regimes: Hypotheses and Cases*, in POLAR POLITICS: CREATING INTERNATIONAL ENVIRONMENTAL REGIMES 1 (Oran Young & Gail Osherenko eds., 1993) (comparing various regimes in the Arctic region).

[13] Donald Rothwell, THE POLAR REGIONS AND THE DEVELOPMENT OF INTERNATIONAL LAW 417 (1996); Young, *supra* note 11, at 31–32 ("With the exception of Iceland, the land and natural resources located in the Circumpolar North are sparsely populated hinterlands of advanced industrial societies whose metropoles lie well to the south. Thus, Alaska is affected by policies articulated in Washington; Greenland by policies set in Copenhagen; the North Calotte by policies set in Helsinki, Oslo, and Stockholm; and the Russian North by policies devised in Moscow.")

[14] Young, *supra* note 11, at 22–23.

[15] Verhaag, *supra* note 7, at 556.

around four thousand years ago, and have culminated in today's native populations, including the Inuit, Saami, and Inuvialuit.[16] These groups have harvested polar bears for their subsistence for centuries. Unlike other native groups that hunted their prey to extinction,[17] it appears that the native Arctic peoples generally did not take more than they needed, and thus did not threaten the polar bear population's sustainability. In the pre-contact and pre-industrial Arctic, communities did not take polar bears as prizes. Instead, they used the harvested bears efficiently: bear meat was used for food, fat for heating and light, and hides for clothing or blankets.[18] Under this theory, ancient Arctic peoples did not over-hunt bears because their needs were generally limited to subsistence, and their harvesting practices allowed them to meet their needs.

An alternative explanation for the native Arctic peoples' stewardship of the polar bear population arises from their spiritual tradition.[19] The ancient Dorset created polar bear carvings that "represent[ed] the spirits of the polar bears rather than the bears themselves."[20] The polar bear, known to the Inuit as the *nanuuq*, was valued for its significance as a powerful and important apex predator. More recently, the native peoples' spiritual beliefs included the idea that an individual spirit animal, the *tunraq*, protected each member of the community. The powerful nature of the polar bear meant that "the shaman usually had the polar bear as his *tunraq*."[21] Some communities, like the Inuit, imposed moratoria upon themselves against killing bears after a harvest, "to allow sufficient time for its soul to return to its family."[22] This belief and practice suggests that communities abiding by these spiritual moratoria recognized, to some extent, the importance of

---

[16] Stirling, *supra* note 6, at 21–27; *Id.* at 29–30.

[17] Martyn Murray, *Perspectives: Overkill and Sustainable Use*, 299 SCIENCE 1851, 1852 (Mar. 21, 2003).

[18] *See* Vladimir Randa, L'OURS POLAIRE ET LES INUIT 196–205 (1986); Stirling, *supra* note 6, at 30 ("The Inuit killed polar bears for clothing, sleeping skins, and food for themselves and their dogs. . . .to this day, the wearing of polar bear pants by a boy or man is a sign of status.").

[19] *See* Calvin Martin, *Keepers of the Game: Indian-Animal Relationships and the Fur Trade* (1978) (analyzing relationships of Native American groups and the animals they hunted); *cf.* Richard Nelson, *Make Prayers to the Raven: A Koyukon View of the Northern Forest* 223 (1983) (arguing the animist spirituality of the native Koyukons is linked to their "intentional, empirically based attempts to manage resources, founded on principles identical to those of modern western ecology"); Asen Balikci, *Shamanistic Behavior among the Netsilik Eskimos*, 19 SOUTHWESTERN J. OF ANTHROPOLOGY 380, 388 (1963) (chronicling predicaments believed to be repercussions of poor behavior).

[20] Stirling, *supra* note 6, at 29.

[21] *Id.* at 30.

[22] *Id.* at 31.

allowing the polar bear population to regenerate. The hunters understood that taking too many bears in a short timeframe would unbalance the spiritual harmony of the bear population—that is, that the bears would submit to the hunters and allow them to be successful. While possibly an *ex post* reconstruction interpreting historical narratives through the lens of the present, the similarities between the spiritual rationale for the moratorium and a conservation rationale are striking.

After the age of exploration and the colonization of the Fourth World, native communities competed with Western explorers, fur trappers, and hunters who sought the bears as prizes rather than for sustenance. Statistics on the polar bear hunt during this period are unavailable because the polar bear hunt was unregulated and unreported until the early twentieth century.

The earliest attempt to regulate the hunt in the high Arctic occurred in 1938, when Soviet environmental groups pressured Glavsevmorput—the agency that controlled commerce and transportation along the Soviet Union's northern Arctic Ocean coast—"to prohibit hunting of polar bears from ships, and except in emergencies, at polar hydrometerological stations."[23] This pressure had come about because hunters from elsewhere throughout the Soviet Union had come into the region and were decimating the bear population.[24] The initial first step of banning unsportsmanlike hunting tactics, such as hunting from vehicles or from fixed weather stations, opened the path for environmentalists to promote a shift in Soviet thinking about protecting Arctic fauna. Three groups—the Commission of Environmental Protection, the Soviet Academy of Sciences Commission on the North, and the All-Russia Environmental Protection Society—"prepared background documents in support of a program for increased protection of animal populations in the Soviet Arctic," leading Moscow in 1956 to implement a total moratorium on hunting polar bears.[25]

Elsewhere in the Arctic, other mechanisms, such as Greenlandic fur suppliers' unilateral decisions to protect females and cubs,[26] served not only to promote a sustainable polar bear harvest but also to introduce market-

---

[23] Anne Fikkan, Gail Osherenko & Alexander Arikainen, *Polar Bears: The Importance of Simplicity*, *in* POLAR POLITICS: CREATING INTERNATIONAL ENVIRONMENTAL REGIMES 96, 106 (Oran R. Young & Gail Osherenko eds., 1993)

[24] *Id*. at 106.

[25] *Id.* at 106, 111 (citing V. A. Chichvarin, *Fundamentals and Character of the International Law Concerning Protection of Arctic Nature*, in Problemy Severa (Problems of the North), vol. 2. (Moscow: Nauka, 1967) (in Russian); Savva M. Uspensky and L. K. Shaposhnikov, *Protection of Animal World of the Arctic*," in Priroda (Nature), 21957, no. 6 (in Russian); and Savva M. Uspensky, *Polar Bear* (Moscow: Agropromizdat Publishers, 1989) (in Russian)).

[26] *Id.* at 105.

based responsibility for conservation. In Greenland, the market-based approach to conservation was followed by piecemeal regulation efforts by the Danish government: "protect[ing] cubs and females with cubs throughout the year" in 1950; limiting the types of weapons that hunters could use against polar bears in 1956; instituting residency requirements for those who wanted to hunt bears in 1965; and finally "[i]n 1973, prohibit[ing] hunting of polar bears from airplanes or snowmobiles throughout Greenland."[27]

The conservation measures in Greenland and the Soviet Union were the exceptions rather than the norm among circumpolar states at the time. For example, "[i]n Alaska, aerial safaris caused a threefold increase in trophy harvesting of polar bears between 1945 and 1965."[28] This increased harvest was not offset by conservation initiatives: prize hunters were unconstrained from harvesting polar bear populations that lived on the ice off the coast of Alaska, making that state a popular destination for hunters. A separate market in skins also exacerbated the problem.[29]

These trends toward overhunting led wildlife managers, scientists, and the public to express concern about polar bear welfare and long-term species survival. Of the eight circumpolar nations, the five with polar bear populations met in Fairbanks, Alaska in 1965 to discuss the status of the polar bear and recommend conservation strategies to their home governments.[30] Three years after the first successful meeting, the countries organized into a permanent Polar Bear Specialist Group (PBSG), to be a subsidiary of the International Union for the Conservation of Nature and Natural Resources (IUCN). It was to be a "neutral base" in which each state's delegation—featuring wildlife managers, academic researchers, technocrats, and other scientists—would share research and reach consensus on conservation strategies.[31]

By 1970, the legal hunt was extensive in Canada, Greenland, Norway, and the United States, and the physical impact on bear populations was increasing.[32] On the Svalbard archipelago[33] that year, the crew at a weather

---

[27] *Id.*

[28] *Id.* at 102.

[29] Ian Stirling, *Research and Management of Polar Bears* Ursus Maritimus, 23 POLAR RECORD 167, 168 (1986).

[30] *Id*. at 168.

[31] *Id*. at 169. On "neutral base," see Fikkan et al., *supra* note 23, at 107.

[32] Stirling, *supra* note 29, at 168 [citing Odd Lønø, *The Polar Bear in the Svalbard Area*, 149 NORSK POLARINSTITUTT SKRIFTER 1 (1970)].

[33] Although Norway exercises formal sovereignty over Svalbard, the archipelago is the subject of a treaty regime that is outside the scope of this paper. *See* Treaty Concerning the

observatory killed 105 (20% of the take), sealers and trophy hunters killed 138 (27% of the take), and unidentified hunters killed 272 bears (the remaining 53% of the take).[34] In other states, public opposition on moral and conservation grounds pressured governments to develop strategies to protect the bear population. Hunting from airplanes was one of the most objectionable practices, morally and pragmatically, and was unilaterally banned by the Alaska Board of Game in March 1972.[35] Six months later, Congress passed a federal ban on hunting polar bears for sport; under the Marine Mammal Protection Act, native groups such as the Inupiat of Alaska's North Slope were exempted and allowed to continue their subsistence harvest.[36] In August 1973, the Norwegian Ministry for the Environment banned the polar bear hunt, except where humans had to kill bears in self-defense, in Svalbard and on international waters.[37]

As an international resource experiencing population decline from overhunting, polar bears through the early 1970s were archetypal victims of the tragedy of the commons.[38] If other states were to allow the taking of a transboundary resource, and the marginal increase in conservation from unilateral regulation was not substantial, what incentives would circumpolar states have to regulate the taking of that transboundary resource? This argument was countered by research in 1972 showing that polar bears were not part of a worldwide population, but rather part of nineteen discrete

---

Archipelago of Spirtsbergen, Feb. 9, 1920, 2 L.N.T.S. 8 (*entered into force* Aug. 14, 1925); *see also* Elen Singh & Artemy Saguirian, *The Svalbard Archipelago: The Role of Surrogate Negotiators*, *in* POLAR POLITICS: CREATING INTERNATIONAL ENVIRONMENTAL REGIMES 56 (Oran R. Young & Gail Osherenko eds., 1993); Rothwell, *supra* note 13, at 178–79.

[34] Statistics Norway, *Svalbard Statistics 2001: Table 90 Catch of Polar Bear: Numbers, 1920–1973* (2001), *available at* http://www.ssb.no/english/subjects/00/00/20/nos_svalbard_en/arkiv/nos_c673_en/tab/t-90.html.

[35] Fikkan et al., *supra* note 23, at 102.

[36] 16 U.S.C. §1361-1407 (as amended 2000) [hereinafter MMPA]; *see also* Jamie M. Woolsey, *A Survey of Agreements and Federal Legislation Protecting Polar Bears in the United States*, 1 JOURNAL OF ANIMAL LAW 73, 76-84 (2005) (describing the drafting history, provisions, and exceptions of the MMPA, as applied to polar bears); Sarah Morgan, *Polar Bears and the Laws Governing Them in the Five Arctic States* (2007), *available at* http://www.animallaw.info/articles/dduspolarbears.htm.

[37] Fikkan et al., *supra* note 23, at 103.

[38] Garrett Harden, *The Tragedy of the Commons*, 162 SCIENCE 1243, 1244 (1968) (given a common grazing area "open to all[,] . . . [t]he rational herdsman concludes that the only sensible course for him to pursue is to add another animal to his herd. And another; and another. . . . But this is the conclusion reached by each and every rational herdsman sharing a commons. Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit–in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all.")

subpopulations.[39] Some of these subpopulations lived on sea ice in international water, where they were not subject to domestic regulations. These research findings on subpopulations "underscored the need for an international regime and became a driving force toward its achievement."[40]

Discussions toward regulating the polar bear hunt began first at a nongovernmental level among scientists, then proceeded to a consultative level with other states and the IUCN, and finally resulted in negotiations at the diplomatic level.[41] During each stage, the PBSG continued to coordinate research and conservation goals. At the 1970 meeting, the delegates agreed to broach the subject of a polar bear convention with their respective governments and foreign ministries.[42] The IUCN was instrumental in producing draft agreements to reconcile the interests of the circumpolar states, drafting at least five formal versions of a Polar Bear Protocol. The final product differed markedly from these initial drafts.[43]

To go into force, the Polar Bear Treaty required three of the five potential signatories to ratify it. Ninety days after the Soviet Union ratified in February 1975, the treaty entered into force with Canada and Norway as the other parties. The United States ratified in November 1976, and Denmark followed on behalf of Greenland in December 1977. The treaty provided that it would "remain in force initially for a period of five years from its date of entry into force," and the parties would meet again at that time to determine whether "it shall continue in force thereafter."[44] At the meeting in 1981, no party objected, and as a result, the treaty remains in force indefinitely.

When analyzing treaty regimes, it is important to consider the factors that are instrumental or necessary in forming the regime. In their study of the Polar Bear Treaty, Fikkan *et al*. reject power-based hypotheses, noting that neither of the superpowers had exercised either coercive or benign hegemony during the negotiations.[45] Rather, each state had a "mutual veto

---

[39] Stirling, *supra* note 29, at 170 [citing D.P. Demaster & Ian Stirling, *Ursus maritimus*, 145 MAMMALIAN SPECIES 1 (1981); A. PEDERSEN, DER EISBÄR: VERBEREITUNG UND LEBENSWEISE (1945).

[40] Fikkan et al., *supra* note 23, at 108; *cf*. Thor Larsen, *Progress in Polar Bear Research and Conservation in the Arctic Nations*, 4 ENVIRONMENTAL AFFAIRS 58 (1975).

[41] *See, e.g.*, Fikkan et al., *supra* note 23, at 110.

[42] *Id.* at 114.

[43] A full analysis of the dynamics of the negotiation process is outside the scope of this paper, and has been thoroughly treated in *id.* at 119–24.

[44] Polar Bear Treaty, art. X(5).

[45] Fikkan et al., *supra* note 23, at 124 ("Neither took advantage of its structural power to impose institutional arrangements favorable to itself on the others (coercive hegemony) or to supply institutional arrangements to others as public goods (benign hegemony).")

power," since the prospect of free-ridership through unilateral non-compliance or non-ratification would undermine the object and purpose of the Polar Bear Treaty.[46] However, in addition to these instrumental or procedural factors, the most important factor was the circumpolar states' broad agreement about the underlying need for a treaty regime. A shared belief in the intrinsic value of protecting the polar bear from threats of overhunting and extinction provided the principled reason that was the basis for negotiating and formulating the regime.[47]

C. The structure and purpose of the Polar Bear Treaty

The fundamental purpose of the Polar Bear Treaty is to protect polar bears from being "taken" – the technical term commonly used to refer to the unnatural death of a polar bear.[48] The treaty contains several exceptions to the ban on taking, though it does not cover most other types of threats to polar bears' survival. Moreover, although the Treaty refers to conserving the polar bear's habitat,[49] that provision is vague and does not provide a guide for what such conservation would look like in practice. States were evidently less concerned or less able to reach consensus on habitat conservation than on hunting, perhaps due to sovereignty concerns. Despite any shortcomings in that area, however, the participating states were ultimately concerned about the polar bear hunt and were therefore determined to address that threat.

---

[46] *Id.* at 125; *see also infra* note 81 and accompanying text for discussion of the free-rider problem.

[47] A similar consensus about the intrinsic value of protecting and conserving whales—which developed simultaneously with but separate from beliefs about polar bear conservation—and more broadly the need to protect threatened species was the decisive factor in forming the anti-whaling regime. *See* Charlotte Epstein, *The Making of Global Environmental Norms: Endangered Species Protection*, 6 GLOBAL ENVTL. POL. (May 2006) 32, 48 ("The whaling ban, and the convergence of nonstate action that enabled it, entrenched endangered species protection as the first global environmental norm, both in the [International Whaling Convention] and beyond."); Charlotte Epstein, THE POWER OF WORDS IN INTERNATIONAL RELATIONS: BIRTH OF AN ANTI-WHALING DISCOURSE (2008); *see also infra* note 61. Once scientists and environmentalists shared concerns about polar bear conservation and laid this ideational groundwork, *see supra* notes 30–31, 35, 42–43, the path to regime creation was eased along by favorable incentive structures. *Cf.* Fikkan et al., *supra* note 23, at 126 ("[R]egimes form when self-interested parties visualize a problem and its solution in contractarian terms and endeavor to coordinate to reap joint gains.").

[48] In implementing the Polar Bear Treaty through the MMPA, the United States has taken a more expansive definition of "take": "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill." 16 U.S.C. § 1362(2).

[49] Polar Bear Treaty, art. II.

How does the treaty seek to fulfill its purpose of protecting and conserving the polar bear population? Article I of the Treaty bans the taking of polar bears with several exceptions, where taking is defined as "hunting, killing, and capturing."[50] Article IV specifically extends this ban to taking from "aircraft and large motorized vessels," except with an opt-out clause in which states may choose not to comply with that provision "where the application of such prohibition would be inconsistent with domestic laws."[51]

By not enacting a flat moratorium or planned international quotas, the parties understood that local management could respond dynamically to changes in the population. (Of course, in the United States, local management would have been necessary for the purposes of domestic implementation, due to federalism concerns as well as the nature of federal-tribal relations.[52]) The parties also recognized that limits would infringe upon the inherent rights of the Arctic native communities to perform subsistence hunting.[53] As such, while the taking ban is broad, it is subject to several exceptions contained in Article III.

> These exceptions allow:
>
> any contracting Party [to] allow the taking of polar bears when such taking is carried out:
>
> (a) for bona fide scientific purposes; or
>
> (b) by that Party for conservation purposes; or
>
> (c) to prevent serious disturbance of the management of other living resources, subject to forfeiture to that Party of the skins and other items of value resulting from such taking; or
>
> (d) by local people using traditional methods in the exercise of their traditional rights and in accordance with the laws of that Party; or

---

[50] *Id.* at art. I(1). It is unlikely that the word "and" was meant to imply a conjunctive rather than disjunctive test, because a strong ban on taking would cover any of the three acts on their own, and not only when all three acts were present.

[51] *Id.* at art. IV.

[52] The question of proper stewardship of the polar bear population has created tensions at both the federal-state and federal-tribal levels. See *infra* notes 122–28 for discussion of attempts to list the polar bear as a "threatened" species under the Endangered Species Act, 16 U.S.C. §1531 *et seq*, and the resistance from Alaskan and tribal leaders that has resulted.

[53] *See* Sophie Thériault, Ghislain Otis, Gérard Duhaime & Christopher Furgal, *The Legal Protection of Subsistence: A Prerequisite of Food Security for the Inuit of Alaska*, 22 ALASKA L. REV. 35 (2005); *see also* Jennifer Sepez, *Treaty Rights and the Right to Culture: Native American Subsistence Issues in US Law*, 14 CULTURAL DYNAMICS 143 (2002); *cf.* Richard Condon, Peter Collings & George Wenzel, *The Best Part of Life: Subsistence Hunting, Ethnicity, and Economic Adaptation Among Young Adult Inuit Males*, 48 ARCTIC 31, 32 (1995).

> (e) wherever polar bears have or might have been subject to taking by traditional means by its nationals.[54]

In other words, these exceptions cover scientific and conservation efforts, allow for protecting other animal populations, and native hunting. The last provision was intended to be a geographic limitation, determining the locations to which these exceptions would apply. Each exception is examined in detail below.

At the Oslo negotiations, the parties recognized that science was vital not only as an end for learning more about polar bears, but also as a means for conserving the bears. Certain research strategies, such as mark-and-recapture (in which scientists tag incapacitated bears with a tag or GPS transponder, release them, and recapture them some time later to study changes over time) are relatively invasive, and would need to be protected so that scientists conducting "bona fide" research would not be subject to local regulations protecting bears from harassment. (Note that "capturing" is one definition of "taking" under Article I (1).)

This rationale would have been especially important for trans-boundary populations, such as that shared by Canada and the United States, which might otherwise have been regulated by two competing sets of rules, one protecting research, and the other not. Not explicitly protecting scientific capture would provide a disincentive for researchers to carry out their work pursuant to other treaty provisions (e.g., Article VII, which provides for "national research programmes"[55]), by potentially attaching liability for taking (capturing) polar bears. Connected to that exception is the III(1)(b) exception providing for taking consistent with conservation purposes. While mark-and-recapture and other techniques might be used toward *in situ* (on-site) conservation, the III(1)(b) rationale is most reasonably interpreted as protecting *ex situ* conservation, such as taking polar bears to zoos or wildlife sanctuaries, or transporting them away from settlements where they might become problem bears. Finally, this exception might justify killing problem bears *for conservation reasons*: when wild animals become habituated to, and dependent upon, human presence, they may develop toxicity from eating unsuitable food or may lose their ability survive independently in the wild. It may be either unpopular or impracticable to prevent bears from becoming problematic by implementing controls on the supply side (e.g., not leaving whale carcasses on shore near Arctic settlements, inviting bears to feast[56]). Focusing on the demand side

---

[54] Polar Bear Treaty, art. III(1)(a)–(e).

[55] *Id*., art. VII; *see also infra* notes 78–79 and accompanying text.

[56] *See, e.g., Polar Bears, supra* note 3, at 16.

instead—the problem bears themselves—may be a scientifically legitimate way to preserve the integrity of the population.

As an apex predator, polar bears are at the top of the Arctic food web and have no natural enemies or predators besides humans. In some cases, the species that the bears prey on may themselves be protected or threatened. Article III(1)(c) recognizes this and creates an exception to the ban for the purposes of protecting other species or "living resources." Because the provision refers to "management," the reasonable interpretation of the provision is that this exception must be made at a statewide policy level. That is, an individual seal hunter could not invoke that provision to kill a polar bear that was also hunting a seal that the hunter wanted. Moreover, this provision leaves a door ajar for additional agreements protecting other Arctic living resources, which might be inconsistent with the object and purpose of the Polar Bear Treaty if it did not include this provision. (The "forfeiture" sub-clause is addressed below.)[57]

The fourth exception ensures that native communities may continue subsistence hunting as they have for centuries. The provision has been criticized not only for this reason, but also for being somewhat paternalistic toward native groups: rather than being autonomous, these groups are controlled by "the laws of th[e State] Party."[58] Because each state determines how to regulate the polar bear take, even by "local people," Canada and Denmark have interpreted Article III(1)(d) as giving these groups expansive rights, including the right to guide non-native hunters.[59] In practice, autonomy over polar bear stewardship has been requested by and/or granted to native groups. In Canada, for example, provincial and territorial governments retain jurisdiction over polar bear management, and work with individual hunting communities to develop quota systems and

---

[57] *See infra* notes 69–75 and accompanying text.

[58] Polar Bear Treaty, art. III(1)(d); *see also* Jeremy Firestone, Jonathan Lilley, & Isabel Torres de Noronha, *Cultural Diversity, Human Rights, and the Emergence of Indigenous Peoples in International and Comparative Environmental Law*, 20 AM. U. INT'L L. REV. 219, 241 (2005) ("In light of the growing awareness surrounding the role of indigenous peoples in the international arena, indigenous peoples are making their demand to be viewed as separate autonomous actors heard in international fora." By contrast, "[o]lder treaties" such as the Polar Bear Treaty "treated indigenous peoples as the responsibility of the nation-state in which they were located.").

[59] Fikkan et al., *supra* note 23, at 123 ("Although the final compromise did not include these restrictions, neither did it explicitly permit Native-guided sport hunting. In the formal declaration accompanying its instrument of ratification, however, Canada indicated that its interpretation of the agreement term 'traditional rights of local people' would permit the locally guided Canadian sport hunt to continue.") (citing Paragraph 2 of Declaration, Canadian Minister of Foreign Affairs, ratification documents, deposited at Oslo, 16 Dec. 1974, USDOS files, 20 Dec. 1974.).

regulations for bear management.[60] In the Polar Bear Treaty, these native communities are identified by their use of "traditional methods." Similar tests are used in other conservation agreements, including the Whaling Convention[61] and the Convention on Biodiversity.[62]

The final exception, Article III(1)(e), codifies the status quo to the extent that it licenses state parties to allow hunting in the geographic region where its "nationals," inclusive of indigenous and non-indigenous people, "have or *might have*" taken polar bears in the past.[63] The spatial and temporal scope of the clause means the state may regulate the hunt wherever it *might have* occurred historically. As such, states may regulate on the basis of speculation that a polar bear hunt might reasonably have occurred even in the absence of evidence indicating that fact. Moreover, "the solution draws the boundary between areas where polar bears may be hunted and where they may not be hunted by historical precedent rather than legalistic delimitation criteria."[64] If traditional hunting could never have occurred in the high Arctic basin—that is, the polar sea ice near the North Pole—then hunting there would not be permitted under Article III(1)(e). This satisfied the American delegation's interest in creating a polar bear sanctuary, and also allowed for the ambiguity inherent to the question of where hunting had occurred in the past.[65] (Tribal claims and other estimates ranged from "three miles from shore" to "up to seventy-five miles from shore."[66]) A lack of consensus as to the limits of international waters in the Arctic required "avoiding any definition of borders and protecting polar bears throughout their range."[67] This is the exception to the general rule that states "manage areas within its [exclusive economic zone, or "EEZ"] itself, largely without reference to adjacent EEZs or high seas, or the Arctic ecosystem as a whole."[68]

---

[60] Milton Freeman & G.W. Wenzel, *The Nature and Significance of Polar Bear Conservation Hunting in the Canadian Arctic*, 59 ARCTIC 21, 23-25 (2006).

[61] International Convention for the Regulation of Whaling, Dec. 2, 1946, 161 U.N.T.S. 72 (1946) (as amended Nov. 19, 1956, 338 U.N.T.S. 336); *see also* Alexander Gillespie, *Aboriginal Subsistence Whaling: A Critique of the Inter-Relationship between International Law and the International Whaling Commission*, 12 COLO. J. INT'L ENVTL. L. & POL'Y 1, 97 (2001).

[62] Convention on Biological Diversity, June 5, 1992, 31 I.L.M. 822 (1992).

[63] Polar Bear Treaty, art. III(1)(e).

[64] Fikkan et al., *supra* note 23, at 132.

[65] *Id.* at 132-33.

[66] *Id.* at 132 n.96 (citing *Inupiat Community of the Arctic Slope v. United States*, 548 F. Supp. 182 (D. Ak. 1982), *aff'd* 726 F. 2d 570 (9th Cir. 1984)).

[67] *Id.* at 122.

[68] Stuart Kaye, *Legal Approaches to Polar Fisheries Regimes: A Comparative Analysis of the Convention for the Conservation of Antarctic Marine Living Resources and the Bering*

Article III(2) qualifies the exceptions in III(1)(b)-(c) by providing that "[t]he skins and other items of value resulting from taking under sub-paragraphs (b) and (c) of paragraph 1 of this Article shall not be available for commercial purposes."[69] Similarly, Article III(1)(c) may be invoked only "subject to forfeiture to that Party of the skins and other items of value resulting from such taking."[70] These forfeiture clauses are meant to prevent states from strategically citing conservation or species protection as a legitimate rationale for taking bears while actually using them for commercial purposes. (Forfeiture clauses are common in international law protecting certain species.[71]) Although the Treaty antedates the practice of "scientific" whaling or blue fin tuna fishing by Japan,[72] it clearly intends to inhibit this kind of strategic tactic. Forfeiture was especially important given the market incentives to circumvent the ban on hunting: in Japan and the United States, polar bear hides and other parts were very valuable through the 1970s.[73] Similarly, people in some Asian countries believe that the gallbladder of the polar bear is an aphrodisiac, creating a robust market for these parts.[74]

By attacking the supply end of the illicit market for hides, gallbladders, and other parts, forfeiture aims to protect bears from potentially unscrupulous government officials. An additional way the Treaty attempts to minimize the market for bear parts, and to prevent the hunt more broadly, is by requiring states to "prohibit the exportation from, the importation and delivery into, and traffic within, its territory of polar bears or any part or product thereof taken in violation of this Agreement."[75]

Article II protects "the ecosystems of which polar bears are a part," requiring states to manage polar bear populations "in accordance with sound conservation practices based on the best available scientific data."[76] As such, the states must conduct research into ecosystems, a requirement they fulfill through consultations at the PBSG. However, two members of that

---

Sea Doughnut Hole Convention, 26 CAL. W. INT'L L.J. 75, 110 (1995) (citing the Polar Bear Treaty as the exception to this last rule).

[69] Polar Bear Treaty, art. III(2).

[70] *Id.*, art. III(1)(c).

[71] Gillespie, *supra* note 61, at 106.

[72] Sands, *supra* note 7, at 580–81, 592–93; Bluefin Tuna Case (Australia and New Zealand v. Japan), Aug. 4, 2002, International Tribunal for the Law of the Sea, 39 I.L.M. 1359 (2000).

[73] Fikkan et al., *supra* note 23, at 147.

[74] *See, e.g.*, William Carroll, *Regulating the Trade in Bear Parts for Use in Asian Traditional Medicine,* 80 MINN. L. REV. 1283, 1300 (1996).

[75] Polar Bear Treaty, art. V.

[76] *Id.* at art. II.

group have criticized the signatory states for not doing enough to implement Article II in practice. They observe that "[n]o migration routes or feeding areas have been protected. . . . it is unclear how polar bear denning habitat in the Alaska National Wildlife Refuge will be conserved if development of hydrocarbons takes place there."[77] The scientific purpose of Article II is expanded in Article VII, which provides for coordination on

> national research programmes on polar bears, particularly research relating to the conservation and management of the species. They shall as appropriate coordinate such research with research carried out by other Parties, consult with other Parties on the management of migrating polar bear populations, and exchange information on research and management programmes, research results and data on bears taken.[78]

This is perhaps the most visible component of the polar bear regime. Although Article VII does not explicitly provide for an international organization focusing on polar bear conservation, it does legally enshrine a role for the PBSG. One study has explained that "[t]he international component [of regimes] involves the establishment of whatever apparatus is needed to administer or manage a regime on an ongoing basis." However, it concludes, the "international component of operationalization is minimal" in the Polar Bear Regime.[79]

Article VIII requires states to "promote compliance with the provisions of this Agreement by nationals of States not party to this Agreement."[80] In order to solve a free-rider problem,[81] the IUCN's first draft of a Polar Bear

---

[77] Pål Prestrud & Ian Stirling, *The International Polar Bear Agreement and the Current Status of Polar Bear Conservation*, 20 AQUATIC MAMMALS 113, 121 (1994).

[78] Polar Bear Treaty, art. VII.

[79] Young, *supra* note 11, at 16. On the other hand, notwithstanding the meetings of the PBSG, the States Parties have recently agreed to meet every two years to discuss cooperation and coordination of conservation efforts, beginning in 2009. POLAR BEAR RANGE STATES MEETING SUMMARY, *supra* note 4, at 4.

[80] Polar Bear Treaty, art. VIII.

[81] Free riding occurs when one party in a group reaps the benefits of a public good, which is provided either by a powerful hegemon or through multinational cooperation, without paying any of the costs of provision or cooperation itself. *See* Carlo Carraro and Dominico Siniscalco, *International Coordination of Environmental Policies and Stability of Global Environmental Agreements*, in PUBLIC ECONOMICS AND THE ENVIRONMENT IN AN IMPERFECT WORLD 264-265 (Lans Bovenberg & Sijbren Cnossen, eds., 1995) (explaining free ridership, in the context of international environmental law, as when "a country lets other countries sign a cooperative agreement, and thereby enjoys a cleaner environment at no cost"); *see also* Carlisle Ford Runge, *Institutions and the Free Rider: The Assurance Problem in Collective Action*, 46 THE JOURNAL OF POLITICS 154 (1984). In the case of polar bear conservation, free ridership would occur if the hypothetical polar Republic of Nordlandia enjoyed the benefit of conservation efforts by other states who are committed to those conservation efforts—e.g., the five circumpolar states parties to the Polar Bear Treaty—while

Protocol intended to follow a limited circumpolar treaty with a more comprehensive international treaty committing all states to conservation.[82] This approach was jettisoned during the negotiation phase in favor of a smaller regime that protected polar bears in "all areas frequented by polar bears, and the anticipated moratorium on hunting would apply within national territory as well as international waters."[83] Not only did the circumpolar states seek to limit decision-making on Arctic issues to themselves, but they also "believed that other nations would not dare to violate an agreement entered into by the two superpowers."[84]

II. THE EVOLUTION AND STATUS OF THE REGIME

Did the Polar Bear Treaty successfully achieve its purpose after ratification? As a result of continued cooperation, research projects continued in earnest throughout the 1970s and 1980s. These included studies on polar bear physiology in Canada and Alaska, population dynamics, and management of problem polar bears.[85] However, the direct effects of signing the Agreement are not easily identified because of problems with causality: did the Agreement cause states to promote polar bear conservation, or did latent interest in conservation prompt states to sign the Agreement?[86] Trophy hunting seemed to decrease around the time of the signing, while subsistence hunting continued to vary seasonally. The combined mean annual worldwide take decreased post-1973; this was also the case in all jurisdictions except for Canada.[87] However, these estimates may not be reliable, because conservation efforts vary among the states parties and "there are vast areas of the circumpolar Arctic for which no reliable population estimates are available because of lack of research."[88]

Current management efforts differ among jurisdictions. Each state presented its current research and management programs at the PBSG's

---

Nordlandia either continued to allow the polar bear hunt, or alternatively did not engage in any conservation efforts itself.

[82] Fikkan et al., *supra* note 23, at 116.

[83] *Id*. at 120.

[84] *Id.* at 122; *id.* at 138. This calls into question the authors' claim elsewhere that the United States and the Soviet Union did not "[take] advantage of [their] structural power to impose" the particular "institutional arrangement[]" that eventually was adopted. *See id.* at 124; *see also supra* note 45 and accompanying text.

[85] Stirling, *supra* note 29, at 172–73.

[86] Prestrud & Stirling, *supra* note 77, at 114.

[87] *Id.* at 115-117.

[88] *Id* at 116.

2005 meeting in Seattle, the most recent meeting as of publication time. The Greenland Home Rule authority (which *de facto* controls Greenland's governance even though Denmark exercises *de jure* sovereignty) implemented specific protection measures for polar bear cubs and mothers, in addition to all polar bears during the late summer. It is also attempting to collect better harvest data from polar bear hunters.[89] Norway has continued its full moratorium in Svalbard since 1973, legally allowing the taking of polar bears only in situations of self-defense.[90] Although Russia has also continued its broad-spectrum prohibition, in effect since 1965, as of press time it was considering reinstating the polar bear hunt.[91]

In the United States, the MMPA was reauthorized in 2006. Due to federalism concerns, the "[h]arvest is not regulated [by the federal government] unless the subpopulation is considered depleted. Over the past four years (2001-2004), 324 bears were taken; the mean annual take was 81," almost exclusively by indigenous groups in Alaska.[92] (As discussed below, the U.S. Fish and Wildlife Service has reviewed scientific data collected since 2004 and has reconsidered the status of the polar bear population, which could lead the federal government to decide to regulate the harvest.[93]) Finally, in Canada, "[t]he Nunavut Land Claims Agreement gives power to Inuit to participate in wildlife management," on the premise that local (indigenous) ecological knowledge is vital for local stewardship initiatives. Although science-based population estimates suggested decline in certain polar bear subpopulations, this was inconsistent with the traditional ecological knowledge suggesting growth in certain subpopulations.[94]

At present, the scientific evidence shows that some subpopulations are growing while others are decreasing.[95] Under the treaty, each state may choose whichever conservation approach it desires. In populations where

---

[89] *Polar Bears*, *supra* note 3, at 17.

[90] *Id*. Svalbard is the only Norwegian land territory on which polar bears are found.

[91] *Id.* at 18; *but see* Steven Lee Myers, *Russia's Strategy: Save Polar Bears with Legal Hunt*, N.Y. TIMES, Apr. 16, 2007, at 1.

[92] *Polar Bears*, *supra* note 3, at 18.

[93] *See infra* notes 122–28 and accompanying text (describing the Fish and Wildlife Services' listing of the polar bear as a threatened species throughout its range).

[94] *Id*. at 19; *see also* Natasha Thorpe, Contributions of Inuit Ecological Knowledge to Understanding the Impacts of Climate Change on the Bathurst Caribou Herd in the Kitikmeot Region, Nunavut (July 2000) (unpublished M.R.M. thesis, School of Resource and Environmental Management, Simon Fraser University) (on file with author), *available at* http://www.rem.sfu.ca/pdf/thorpe.pdf.

[95] *Polar Bears*, *supra* note 3, at 33-47.

polar bears are protected, there is insufficient data for reliable estimates.[96] However, it is intuitive that subpopulations that are covered by strict moratoria on hunting, like those of Norway and Russia, are likely stable or increasing.[97] By contrast, in Canada, "the flexible quota system currently used in Nunavut is not precautionary."[98] Certain subpopulations have "very high" risks of future decline over the period 2005-2015, including the Canadian populations in Kane Basin, Baffin Bay, and Western Hudson Bay. Additionally, for several subpopulations, including Norwegian Bay and Lancaster Sound, both of which are in Canada, there is a "high" risk of future decline. In the United States, the subpopulation in the Southern Beaufort Sea is preliminarily estimated to be declining at present, but with no estimated risk of future decline over the next ten years.[99]

Why are these populations declining? Although hunting for subsistence or trophy[100] reasons accounts for some subpopulation decline, factors including pollutants, climate change, and eco-tourism are operative, as well.[101] In many Canadian jurisdictions, including in Nunavut, subpopulations are regulated not only by scientific data, but also by traditional ecological knowledge suggesting that bear populations are growing. Although there are good reasons to take traditional ecological knowledge seriously[102]—the native communities rely on their knowledge

---

[96] *Id.* at 34.

[97] To be specific, it is fair to assume neutral to positive population trajectories for fully protected polar bear subpopulations only if those subpopulations face relatively few exogenous, non-human threats—including, for example, viral outbreaks, ecosystem decimation, or prey stock decline. If ecosystem decline is affecting these (understudied) protected subpopulations as much as it is affecting other subpopulations, it may not be fair to assume neutral to positive population trajectories. See *infra* notes 106–14 and accompanying text.

[98] *Polar Bears*, *supra* note 3, at 25.

[99] *Id.* at 34–35. The Baffin Bay population is shared with Greenland.

[100] The private market for polar bear hides and meat is still extensive. The last reliable estimate for the private market price (as compared to large fur trapping corporations) is $625/meter of fur as of 1994. *See* Hanne Sandell & Birger Sandell, *Polar Bear Hunting and Hunters in Ittoqqortoormiit/Scoresbysund, NE Greenland*, 33:2 ARCTIC ANTHROPOLOGY 77, 90 (1996); *see also* Clifford Krauss, *Debate on Global Warming Has Polar Bear Hunting in Its Sights*, N.Y. TIMES, May 27, 2006, at 1 ("Global warming and over-hunting could diminish the polar bear population by at least 30 percent in coming decades, the International Union for Conservation of Nature and Natural Resources, a network of 10,000 scientists, predicted in May.. . . Hunting, when insufficiently controlled, [wildlife conservationist Peter Ewins] added, 'has the potential to really compound the problem.'"); Michael Hopkin, *Polar bears sink deeper into danger: Global menace of climate change and pollution add to local hunting concerns*, NEWS @ NATURE.COM, May 2, 2006, *available at* http://www.bioedonline.org/news/news.cfm?art=2495.

[101] Prestrud & Stirling, *supra* note 77, at 118–120.

[102] Erika Zimmerman, *Valuing Traditional Ecological Knowledge: Incorporating the*

and observations in order to stay alive—the conclusions arising from that knowledge have been contradicted by scientific estimates and studies.[103] Although most quota increases in Nunavut have been based on scientific data, quotas for Davis Strait, Baffin Bay, Foxe Basin, and Western Hudson Bay have increased because of traditional ecological knowledge.[104] Environmental trends such as global warming suggest that traditional ecological knowledge about these subpopulations is incorrect, and these populations are most likely *not* increasing.[105]

III. THE CHANGING ENVIRONMENT AND GEOGRAPHY OF THE HIGH ARCTIC

The Polar Bear Treaty does not include bears that die from human-related causes when humans do not actively take part in killing, capturing, or hunting the bears. If a polar bear dies because of contamination by toxins, starvation, or drowning as a result of melted ice, it would not reasonably fall under the definition of 'taking' under Article I. Yet a variety

---

Experiences of Indigenous People into Global Climate Change Policies, 13 N.Y.U. ENVTL. L.J. 803 (2005). Note also that if the theory presented in Part II(b) above—that native Arctic communities' spiritual tradition indicates a sensitivity to population dynamics—then applying the principle of charity in interpretation would suggest that traditional ecological knowledge is consistent with that sensitivity, rather than an attempt to justify more taking of polar bears. On the other hand, it is possible that sample bias can explain why hunters are seeing more bears near shore while scientific studies suggest a decreasing population, especially where these studies focus on off-shore populations: suddenly stripped of their preferred platform for hunting and denning because of melting sea ice, bears may be forced on shore earlier and more often. *See* Stirling & Parkinson, *supra* note 5, at 262 ("[N]o study has attempted to evaluate whether explanations other than an increase in population size could account for the increase in polar bear *sightings*. Possible additional factors include changes in the distribution or abundance of prey species and sea ice, both of which the bears depend on for their existence.") (emphasis added).

[103] *See* Stirling & Parkinson, *supra* note 5, at 262–63; *cf.* Government of the Northwest Territories, Policy 52.06: Traditional Knowledge (2005), *available at* http://www.enr.gov.nt.ca/plc/policy.htm. *But see* John Thompson, *Bear litigation a ploy, say Inuit groups*, NUNATSIAQ NEWS, January 18, 2008, *available at* http://www.nunatsiaq.com/news/nunavut/80118_858.html ("Last year the Nunavut government flip-flopped when it finally acknowledged that polar bears on the western Hudson Bay were declining in number.")

[104] Stirling & Parkinson, *supra* note 5, at 262 ("In those regions, the increased number of bears was interpreted as evidence that the populations were growing, and this conclusion greatly influenced the decision to increase the annual quotas."); *Polar Bear Numbers Rising, Inuit Elders Tell Wildlife Board*, CBC News Online, April 25, 2007, *available at* http://www.cbc.ca/canada/newfoundland-labrador/story/2007/04/25/arviat-bears.html.

[105] Stirling & Parkinson, *supra* note 5, at 262; *but see* Freeman & Wenzel, *supra* note 60, at 21 (arguing that "community-based polar bear trophy hunts provide an example of a *successful conservation-hunting program that contributes to wildlife management and sustainable* economic and community *development* in the Canadian Arctic.") (emphasis added).

of environmental factors have been identified in the scientific literature on polar bears, which do not fall under the Article I framework but nevertheless pose a major threat to polar bear population dynamics and sustainability.

Polar bears spend most of their time on the ice, except during the summer when they return to land in order to fast and wait for the ice to reform. They are inefficient at catching prey on land or in open water, and use the ice as a platform for hunting.[106] It is now well established that Arctic sea ice is breaking up earlier and to a greater extent than in previous years.[107] One study evaluated patterns of sea-ice breakup and freeze-up, testing the hypothesis that sightings of more polar bears in these areas are due in part to changes in sea ice, possibly resulting from climate warming, and do not necessarily indicate population increases.[108] In that study, the authors used satellite-based data on sea-ice break-up and formation in conjunction with studies measuring the health condition of bears to correlate the two. In the Western Hudson Bay, despite "some interannual variability, there is a clear overall trend toward progressively earlier sea-ice breakup . . . on average, breakup has been occurring about 7-8 days earlier per decade."[109] This also correlates with earlier high temperatures in the region, suggesting a causal link between global warming and climate change.

Ultimately, because polar bears hunt most efficiently on ice and cannot hunt efficiently in ice-free seas, they are "forced to come ashore progressively earlier to begin fasting and also to fast for a longer period."[110] Fasting also causes health problems, which the study found was correlated with (and most likely caused by) ice-free seas. For example, in Western

---

[106] Ian Stirling & A.E. Derocher, *Possible Impacts of Climatic Warming Polar Bears*, 46 ARCTIC 240, 240 (1993).

[107] *See, e.g.,* M.C. Serreze et al., *Observational Evidence of Recent Change in the Northern High-Latitude Environment*, 46 CLIMATE CHANGE 159 (2000); Claire Parkinson et al., *Arctic Sea Ice Extents, Areas, and Trends, 1978–1996*, 104 JOURNAL OF GEOPHYSICAL RESEARCH 20837 (1999); D.A. Rothrock, *Thinning of the Arctic Sea Ice Cover*, 26 GEOPHYSICAL RESEARCH LETTERS 3469 (1999); *see also* Andrew Revkin, *Arctic Melt Unnerves the Experts*, N.Y. TIMES, October 2, 2007; Andrew Revkin et al., *Arctic Sea Ice Melting Faster, A Study Finds*, N.Y. TIMES, May 1, 2007, at A17; Andrew Revkin, *Analysis Finds Large Antarctic Area Has Melted*, N.Y. TIMES, May 16, 2007, at A15; Andrew Revkin, *No Escape: Thaw Gains Momentum*, N.Y. TIMES, Oct. 25, 2005, at F1; Andrew Revkin, *Ice Shortfall in Arctic for 2nd Year Raises Fears of a Wider Melting*, N.Y. TIMES, Mar. 15, 2006, at A12; Andrew Revkin, *In a Melting Trend, Less Arctic Ice to Go Around*, N.Y. TIMES, Sept. 29, 2005, at A1.

[108] Stirling & Parkinson, *supra* note 5, at 263.

[109] *Id.* at 265 ("A linear least-squares fit through the data points . . . yields a slope of -0.75 ± 0.25 days/year, which is statistically significant at a confidence level exceeding 99% ($p = 0.003$).").

[110] *Id.*; *see also* Ian Stirling et al., *Long-Term Trends*, *supra* note 5 (discussing generally the relationship between sea-ice break-up and variations in polar bear fasting periods).

Hudson Bay between 1980 and 2004, polar bears lost an average of sixty-five kilograms (roughly 143 pounds), and some bears had crossed a threshold floor below which they were infertile.[111] (The researchers found similar trends in Foxe Basin and Baffin Bay, as well as an observed but not statistically significant trend in Davis Strait.) In addition to other stress effects of weight loss described below, weight loss materially affects reproductive health (and, by extension, population growth dynamics). Over time, environmental trends that lead to poor reproductive success, if allowed to continue unabated, will compound and lead to additional loss of bear subpopulations.[112]

The researchers concluded that local Inuit are observing more bears on shore because "many bears, especially subadults, are exhausting their stored body fat before freeze-up when they can return to the ice and hunt seals . . . not [because] their population is increasing."[113] This helps explain the discrepancy between traditional ecological knowledge suggesting that subpopulation size trajectories are neutral or increasing, and scientific research suggesting the opposite. If these trends continue, it will pose a serious threat to the long-term population stability and sustainability of the polar bear population, even overshadowing the question of population decline due to hunting.[114]

This threat is not limited to the fact that polar bears are on shore (and more dangerous to people) or that they are more physiologically stressed as a result of earlier ice break-up. Another study noted that, although between 1987 and 2003 no polar bears observed during aerial surveys had died in the water, four drowned bears were spotted in one month in 2004 alone.[115] The scientists conducting the study hypothesized this was due to the far distance between land and the ice pack. During the late season prior to ice reformation, polar bears were becoming too stressed to attempt swimming

---

[111] Stirling & Parkinson, *supra* note 5, at 266.

[112] Morgan, *supra* note 36.

[113] Stirling & Parkinson, *supra* note 5, at 266.

[114] *Id.* at 272; *but see* John Tierney, Op-Ed., *The Good News Bears*, N.Y. TIMES, Aug. 6, 2005, at A13 (arguing for optimism about polar bear population dynamics in a warming Arctic).

[115] Charles Monnett and Jeffrey Gleason, *Observations of Mortality Associated with Extended Open Water Swimming by Polar Bears in the Alaskan Beaufort Sea*, 29 POLAR BIOLOGY 681, 683 (2006), *available at* http://www.springerlink.com/content/p235r60mu4878820/; *see also* Tom Simonite, *Drowning Polar Bears Worry Researchers: Evidence Hints that Bear Populations are on Thin Ice*, NEWS @ NATURE.COM, Dec. 20, 2005, *available at* http://www.bioedonline.org/news/news.cfm?art=2495. ("'We can't say at the moment that there is a trend for polar bears to drown,' [conservationist Tonje Folkestad] says. 'But we do expect to see more of this kind of event in the future. Common sense tells you that if they have to swim 60 miles instead of 20, drowning is more likely.'").

to the ice across a distance of water much farther than they usually would, especially in "extreme and metabolically-demanding conditions, such as high sea states associated with stormy weather."[116]

Another study determined that several factors would affect polar bear mortality and population dynamics in a warming arctic climate: decreases in the overall extent of sea ice; decreases in multiyear ice; timing of ice formation and break-up; negative effects on denning; movements of bears on the sea ice; availability of prey; and changes in trophic dynamics.[117] Due to these trends, the IUCN, which maintains lists of threatened species, applied the precautionary principle and moved the polar bear from the 'conservation-dependent' species to a 'vulnerable' species.[118] Polar bears were red-listed in 2006 "based on a suspected population reduction of 30% within three generations (forty-five years) due to decline in area of occupancy. . .extent of occurrence. . .and habitat quality."[119]

Polar bears are listed in Appendix II of Convention on International Trade in Endangered Species,[120] which means that harvested bears and their parts may be traded only in limited circumstances. It is possible that if these population trends continue along with hunting and trading, and the bears are determined to be a "species threatened with extinction," polar bears would qualify for the more restrictive listing in Appendix I of CITES.[121]

On the domestic side, conservation groups petitioned the Fish and Wildlife Service (FWS) in 2005 to classify the polar bear as a threatened species for the purposes of the Endangered Species Act (ESA).[122] The United States Department of the Interior responded in December 2006 with

---

[116] Monnett & Gleason, *supra* note 115, at 685. There is evidence that swimming "may impose higher metabolic costs" for polar bears "than standing or walking on ice even under favorable weather conditions." These costs are exacerbated by long-distance swimming. *See, e.g.,* N.A. Øritsland, *Deep Body Temperatures of Swimming and Walking Polar Bears*, 50 J. MAMMAL 380 (1969); *see also* Andrew Revkin, *Grim Outlook for Polar Bears*, N.Y. TIMES, October 2, 2007, ("'Regardless of what condition [the bears] are in,' [polar bear specialist Stephen C. Amstrup] said, 'if they're stuck in the wrong place, then maybe they just can't make it [back to shore].'")

[117] Andrew Derocher, Nicholas Lunn, & Ian Stirling, *Polar Bears in a Warming Climate*, 44 INTEGR. COMP. BIOL. 163, 164–69 (2004).

[118] POLAR BEARS, *supra* note 3, at 31; *see also* Hopkin, *supra* note 100.

[119] S. Schliebe et al., *Ursus maritimus*, *in* THE IUCN RED LIST OF THREATENED SPECIES (2006), *available at* http://www.iucnredlist.org/search/details.php/22823/all.

[120] Convention on International Trade in Endangered Species of Wild Fauna and Flora, art. II(2) and Appendix II, Mar. 3, 1973, 993 U.N.T.S. 243 [hereinafter CITES].

[121] *Id*. art. II(1).

[122] Eugene Buck, *Polar Bears: Proposed Listing Under the Endangered Species Act*, Congressional Research Service No. RL33941 (Mar. 30, 2007), at 8, *available at* http://www.fas.org/sgp/crs/misc/RL33941.pdf; *see also* Endangered Species Act, 16 U.S.C. §1531, *et seq*.

a proposal that would classify the bear as threatened.[123] After an initial comment period on that proposed classification rule, which ended in February 2007, the Department "reopen[ed] the comment period" in September 2007 after "the [U.S. Fish and Wildlife] Service received nine reports prepared by the USGS that provide new data and modeling outputs relevant to" whether bears should be considered endangered.[124] However, the FWS missed the January 2008 deadline by which it was supposed to decide whether to list the polar bear as "threatened." It was not until May 14, 2008 that the FWS announced its decision to do so.[125]

What does the determination of "threatened" under the ESA mean for polar bears? Primarily, it strengthens restrictions against hunting, since FWS regulations "generally afford to species listed as threatened the prohibitions that section 9 of the [Endangered Species] Act establishes with respect to species listed as endangered."[126] However, it does not materially alter the subsistence hunting rights of Inuit hunters and communities in

---

[123] Press Release, U.S. Department of the Interior, Interior Secretary Kempthorne Announces Proposal to List Polar Bears as Threatened Under Endangered Species Act (Dec. 27, 2006), *available at* http://www.doi.gov/news/06_News_Releases/061227.html.

[124] *Endangered and Threatened Wildlife and Plants; 12-Month Petition Finding and Proposed Rule to List the Polar Bear (Ursus Maritimus) as Threatened Throughout Its Range*, 72 F.R. 53749, 53750, September 20, 2007; *see also* 72 F.R. 1064, January 9, 2007 (setting out the initial comment period for the proposed rule). The nine reports cited in the Federal Register notice are available at http://www.usgs.gov/newsroom/special/polar_bears/. Several of the studies (and representative findings from each, since there are too many to be covered here) submitted in September 2007 include George Durner, et al., *Predicting the Future Distribution of Polar Bear Habitat in the Polar Basin from Resource Selection Functions Applied to 21st Century General Circulation Model Projections of Sea Ice*, Administrative Report, at 19–20 (finding, for example, that "changes in polar bear habitat extent take on strong seasonal dependency, with dramatic losses in summer and modest to negligible losses in winter."); Steven Amstrup, et al., *Forecasting the Range-wide status of Polar Bears at Selected Times in the 21st Century*, Administrative Report, at 2 ("Our modeling suggests that realization of the sea ice future which is currently predicted, *would mean loss of* [about] *2/3 of the word's current polar bear population by mid-century*.") (emphasis added); Eric Regehr, et al., *Polar Bears in the Southern Beaufort Sea I: Survival and Breeding in Relation to Sea Ice Conditions, 2001–2006*, Administrative Report, at 18 (finding that "declines in survival and breeding were associated with increases in the duration of the ice-free period over the continental shelf").

[125] *See* Remarks by Secretary Kempthorne, Press Conference on Polar Bear Listing, available at http://www.fws.gov/home/feature/2008/polarbear0123 08/pdf/press-conference-remarks.pdf (last visited December 20, 2008); *see also Determination of Threatened Status for the Polar Bear (Ursus maritimus) Throughout its Range*, 73 F.R. 28212, May 15, 2008 (final rule); *cf. Special Rule for the Polar Bear*, 73 F.R. 28306, May 15, 2008 (interim final special rule); 73 F.R. 76249, December 16, 2008 (final special rule). A full discussion of these rules and their effects is outside the scope of this paper.

[126] 72 F.R. at 1097 (citing 50 C.F.R. 17.31); *id.* (citing 16 U.S.C. §1538(a)(1) (prohibiting importing, exporting, and taking—whether on U.S. territory, on U.S. territorial waters, or on the high seas—endangered species)).

Alaska, since the ESA provides a subsistence hunting exception to the prohibitions laid out in 16 U.S.C. §1538.[127] A positive listing decision also limits the activities that Federal agencies could "authorize, fund, or carry out" if there was a possibility that those activities—either by the government itself or by private citizens with the government's imprimatur—would negatively affect the remaining polar bear population or its habitat.[128]

IV. INTERNATIONAL LAW AND PBSG RESPONSES TO EMERGING THREATS

As the major forum in the polar bear regime, the PBSG responded in 2005 to emerging threats to long-term polar bear population dynamics with a non-binding resolution calling for states to take a precautionary approach to counter the effects of global warming on polar bears. The PBSG "[r]ecommend[ed] that polar bear harvests can be increased on the basis of local and traditional knowledge only if supported by scientifically collected knowledge," because while science has sometimes contradicted traditional ecological knowledge, indigenous groups are entitled to their equitable share of the harvest for subsistence.[129] The PBSG's goal was to ensure that native

---

[127] *Id.* (citing 16 U.S.C. §1539).

[128] *Id.* (citing 16 U.S.C. §1536(a)(2)); *id.* at 1098 (explaining that, in addition to regular take, a listing decision would prohibit the "[d]ischarge or dumping of toxic chemicals . . . (i.e., . . . *oil* . . .) into the marine environment that actually kills or injures individual polar bears by significantly impairing their essential behavioral patterns, including breeding, feeding or sheltering.") (emphasis added). Alaska's governor, Sarah Palin, has been critical of the proposed listing of the polar bear on precisely these grounds. If the federal government could not easily authorize potentially destructive activities in polar bears' critical habitat, presumably it could not authorize oil drilling on Alaska's north slope—with potentially devastating effects on Alaska's oil-based economy. Additionally, incidental oil spillage that affected polar bears would create significant liabilities for drilling companies in northern Alaska. *See* Sarah Palin, Op-Ed, *Bearing Up*, N.Y. Times, January 5, 2008, available at http://www.nytimes.com/2008/01/05/opinion/05palin.html. As Palin noted in her op-ed, her administration's scientists reviewed the literature and released its own report challenging the mainstream narrative of polar bear population dynamics. Environmentalists and polar bear researchers have challenged the state's revisionist view and the sources that have funded it. Tom Kizzia, *Political science: Lacking studies, state still disputes polar bear 'doom'*, ANCHORAGE DAILY NEWS, January 27, 2008, *available at* http://www.adn.com/news/alaska/v-printer/story/295420.html ("With limited peer-reviewed science available that concludes the bears are doing fine, however, the state devotes most of its [report's] space to challenging everyone else's work."); Tom Kizzia, *Funding and review of Palin-touted study criticized*, Anchorage Daily News, January 27, 2008, *available at* http://www.adn.com/news/alaska/v-printer/story/295418.html (polar bear scientist "Andrew Derocher . . . said in an interview that 'credible' polar bear scientists never had a chance to review or approve the article in the peer review process. He called it poor scholarship that misinterpreted previous studies to make a political point about climate change.").

[129] *See* Resolution 1 on A Precautionary Approach When Setting Catch Levels in a

communities' ecological knowledge, used as the basis for increasing annual quotas of polar bears, was not also used strategically to increase their own share of the quota. The PBSG also intended to counteract the problem of bear mortality as a result of climate change, the effects of which commingle with human-sourced mortality and threaten the long-term viability of polar bear populations.

Individual states and local groups have also expanded the polar bear regime since signing the Polar Bear Treaty in 1973. In 1988, native groups in the United States (Inupiat) and Canada (Inuvialuit) entered into the Polar Bear Management Agreement for the Southern Beaufort Sea,[130] a bilateral "user-to-user agreement" in which the management agencies act as technical advisors.[131] (The two tribes cooperated in establishing the agreement, rather than relying on their national governments to do so, because in the United States, federalist concerns and the Marine Mammal Protection Act require that "[u]nless a stock becomes depleted, the federal government cannot prevent populations from being over harvested."[132] This leaves intermediate conservation efforts within the realm of tribal governments.) The agreement created a fairly comprehensive sub-regime at the transnational (sub-state) level in the establishment of a Southern Beaufort Sea Polar Bear Management Zone stretching from Icy Cape, Alaska to Pearce Point, Northwest Territories. The U.S. and Canadian native groups agreed to voluntarily limit themselves to quotas and hunting seasons, place limits on the types of bears that could be harvested, and coordinate on traditional ecological knowledge to supplement scientific research on bears in the Southern Beaufort Sea. Since 1988, the agreement has kept the harvest "within sustainable limits," and publicity about the Agreement has aided promotion of polar bear conservation by hunters of this population.[133] It is

---

Warming Arctic, The IUCN Polar Bear Specialist Group, *reprinted in* POLAR BEARS, *supra* note 3, at 57.

[130] Inuvialuit-Inupiat Polar Bear Management Agreement in the Southern Beaufort Sea (1988), between Inuvialuit Game Council, Inuvik, NWT, Canada, and North Slope Borough, Barrow, AK, USA, January 1988 (available from the Inuvialuit Joint Secretariat, at http://www.jointsecretariat.ca/IGC/contactus.htm); *see also* Inuvialuit Game Council, *Annual Activity Report 1988/89*, at 6, *available at* http://www.jointsecretariat.ca/IGC/pdf/IGC%20Annual%20Report%201988-89.pdf.

[131] POLAR BEARS, *supra* note 3, at 20 ("[B]oth sides think the Southern Beaufort Sea subpopulation may be increasing but that no changes in quotas will occur until after the current subpopulation inventory is completed. . . Ian Stirling noted that the most important take-home message was that the users recognized a problem, agreed that it would not be solved by waiting for government-to-government agreements, and were proactive.").

[132] Woolsey, *supra* note 36, at 87.

[133] C.D. Brower et al., *The Polar Bear Management Agreement for the Southern Beaufort Sea: An Evaluation of the First Ten Years of a Unique Conservation Agreement*, 55

also notable that the Inuvialuit and Inupiat remain fully committed to continuing this Agreement into the future: the Agreement was reaffirmed and renewed in 2000.[134]

In 2000, the United States and Russia entered into the Agreement on the Conservation and Management of the Alaska-Chukotka Polar Bear Subpopulaton.[135] The Agreement was intended to create joint stewardship of the subpopulations in and around the Bering Sea[136] (northwest of Alaska and northeast of Siberia) by limiting the annual hunting take to native subsistence hunts. In large part, the Agreement tracks the language of the Polar Bear Treaty, explicitly linking the legal take of native groups to the provisions of the Polar Bear Treaty.[137] The Agreement also goes beyond the original Treaty by banning native groups from taking animals vital to sustainability (cubs and mothers)[138] and the use of "poisons, traps or snares."[139] It also explicitly creates a management role for the native groups by creating a U.S.-Russia Polar Bear Commission.[140] Among the most

---

ARCTIC 362, 371 (2002); *see also* B.P. Nageak, C.D. Brower, & S.L. Schliebe, *Polar Bear Management in the Southern Beaufort Sea: An agreement Between the Inuvialuit Game Council and the North Slope Borough Fish and Game Committee*, 56 TRANSACTIONS OF THE NORTH AMERICAN WILDLIFE AND NATURAL RESOURCES CONFERENCE 337 (1991) ("The concerns of the Inupiat and Inuvialuit for the long-term welfare of polar bear populations provides the motivation to cooperate in the management and conservation of polar bears in the Eastern Beaufort Sea region. This concern led to the development and implementation of the 'Management Agreement for Polar Bears in the Beaufort Sea region.'").

[134] Inuvialuit-Inupiat Polar Bear Management Agreement in the Southern Beaufort Sea (2000), between Inuvialuit Game Council, Inuvik, NWT, Canada, and North Slope Borough, Barrow, AK, USA, Mar. 4, 2000, *available at* http://alaska.fws.gov/fisheries/mmm/polarbear/pdf/I-I%20Agreemnt%20signed%20March%202000.pdf.

[135] Agreement on the Conservation and Management of the Alaska-Chukotka Polar Bear Population, Oct. 16, 2000, U.S.-Russ., S. TREATY DOC. NO. 107–10 (2002) [hereinafter Alaska-Chukotka Polar Bear Agreement], *available at* http://alaska.fws.gov/media/pbsigning/agreement.html; *see also* Sean Murphy, *Contemporary Practice of the United States Relating to International Law: U.S.-Russia Polar Bear Agreement*, 97 AM. J. INT'L L. 192 (2003); Hearing Before the Subcommittee on Fisheries Conservation, Wildlife, and Oceans of the H. Comm. on Resources, 107th Cong. (Oct. 11, 2001) (testimony of Margaret Hayes, Director of the Office of Oceans Affairs, Department of State), *available at* http://www.state.gov/g/oes/rls/rm/7168.htm.

[136] Alaska-Chukotka Polar Bear Agreement, *supra* note 134, art. III.

[137] *Id*. art. V, VI(1)–(2); *compare id.* art. VI(1)(c) ("the use of aircraft, large motorized vessels and large motorized vehicles for the purpose of taking polar bears is prohibited") *with* Polar Bear Treaty, *supra* note 44, art. IV ("the use of aircraft and large motorized vessels for the purpose of taking polar bears shall be prohibited").

[138] Alaska-Chukotka Polar Bear Agreement, *supra* note 134, art. VI(1)(b) (providing that "the taking of females with cubs, cubs less than one year of age, and bears in dens, including bears preparing to enter dens or who have just left dens, is prohibited").

[139] *Id.* art. VI(1)(d).

[140] *Id*. art. VIII.

important of the Commission's roles is to use scientific data and traditional ecological knowledge to set a sustainable harvest level, and "determin[e] the annual taking limits *not to exceed the sustainable harvest level*."[141] If the Commission continues to serve its intended purpose of coordinating management and stewardship in the Alaska-Chukotka subpopulation, it may serve as a powerful model for future bilateral conservation initiatives.

CONCLUSION

A. The state of polar bear conservation

This article presents an empirical analysis of the international agreements and domestic laws that affect polar bear hunting and conservation. These laws—in particular, the 1973 Agreement on the Conservation of Polar Bears—were primarily structured in order to stay the trends of overhunting that were decimating populations at the time. For the most part, that treaty, in combination with the implementation of regulations and laws passed by the five States Parties to the treaty, has been effective in limiting the non-subsistence polar bear hunt, and eliminating the hunt entirely in Russia and Norway.

However, as I have argued, while hunting was once the major threat to polar bear population stability, that is no longer the case. Anthropogenic climate change is having a marked effect on population dynamics, as borne out in a variety of scientific studies presented in part III above. Readers with a subtle understanding of threats to polar bear populations will note that while I have focused on hunting, I have bracketed some other important threats due to space constraints. These threats include those posed by air pollution, petroleum hydrocarbons, persistent organic pollutants, other toxins in the food web, and human activity in the Arctic (especially petroleum exploration and eco-tourism). These are important trends that have served as the basis, in part, of the FWS' reasons for listing the polar bear as threatened.[142] Nonetheless, it appears that the strongest evidence underlying conclusions that polar bear populations face decline in coming years comes from the strong trend toward earlier break-up of sea ice each year, as well as the trend toward increasing temperatures in the Arctic atmosphere.

---

[141] *Id*. art. VIII(7)(a)–(c).
[142] 72 F.R. at 1091–94.

B. What is to be done?

At present, the Polar Bear Treaty is structured to coordinate research and conservation programs in the context of hunting. While the Treaty regime has had some success in limiting the amount of trophy hunting, it remains to be seen whether the local management approach used in Canada, Denmark (Greenland), and the US—where native communities either self-regulate or are involved in setting quotas—will provide conservation at sustainable levels. If indications from Inuit history, culture, and spiritual traditions are correct, these communities are aware at some level of the dangers of overhunting and species depletion. However, Inuit communities have self-interested economic reasons for supporting a continued robust polar bear hunt, or at least exceptions to prohibitions that would allow them to continue to guide hunting tourists on sport hunts. If these communities rely on the sport hunt for important financial in-flows, the federal government could develop alternative funding arrangements that would provide similar levels of economic stimulus or development aid to these communities in exchange for agreements not to host sport hunts. If the subsistence hunting exception to otherwise blanket prohibitions remained in effect, there is no obvious reason why Arctic communities would turn down this financial aid if it matched the dollar amounts involved in the sport hunt.

These alternative funding arrangements could involve training, and then employing, Inuit hunters to use scientific data-collection methods on their hunting expeditions in order to get a more complete sense of environmental and population dynamics in the high Arctic. From the perspective of ecologists and biologists, this would have a positive effect of increasing the available data pool. If researchers and decision-makers are serious about respecting traditional ecological knowledge, then such a funding policy would have to be structured so as to give hunters the tools to collect scientific data as a *supplement* to reports of traditional ecological knowledge given to researchers.

In addition to developing relationships between tribes and the federal government, more cooperation at the international level could prove useful. Recent international agreements, such as the bilateral agreement between the U.S. and Russia protecting subsistence hunting in the context of sustainable conservation, and the end-user agreement between the Inuvialuit and the Inupiat aimed toward similar ends, may serve as a model for future cooperation in the polar bear regime.

Although the Polar Bear Specialist Group addressed the problem of melting sea ice and what that means for polar bear conservation at its 2005 meeting, its resolution calling for states to take a precautionary approach

toward global warming probably will not succeed in persuading other states to act. One effective strategy would be for the PBSG or conservation groups to persistently remind the Polar Bear Treaty states of their Article II obligations to protect the polar bears' habitat and the Arctic ecosystem. Until a broad international consensus forms in support of international cooperation to halt climate change—with the United States on board—the future looks increasingly grim for polar bears and their habitat.