Testimony of Kassie Siegel
Climate, Air, and Energy Program Director
Center for Biological Diversity

To the U.S. House of Representatives Select Committee on Energy Independence and Global Warming

January 17, 2008 Hearing:
On Thin Ice: The Future of the Polar Bear

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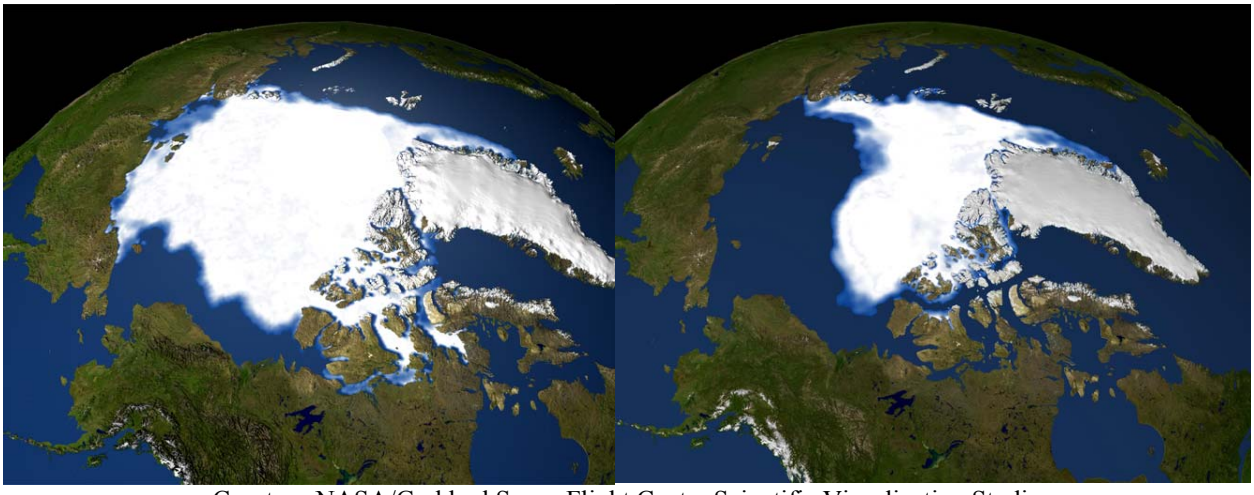
September 21, 1979 **September 14, 2007**



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EXECUTIVE SUMMARY

The Endangered Species Act requires all listing decisions to be made solely on the basis of the "best available science." Unfortunately for the polar bear, the "best available science," and in fact *all* available science relating to global warming, sea ice, and polar bears, indicates the species faces global extinction in the wild by century's end and complete extirpation from the United States by mid-century. The polar bear unequivocally meets the criteria for listing as at least "threatened" (and more properly "endangered") under the Endangered Species Act. Nevertheless, the Department of Interior has illegally delayed protection of the polar bear at every turn and is now poised to auction off some of the species' most important habitat in the United States to the highest oil company bidder. This is unacceptable.

Global warming has already severely and adversely affected the polar bear. Since the petition was filed to list the species under the Endangered Species Act in February 2005, new reports detailing polar bear drownings, cannibalism, starvation, and population declines have been published. Impacts predicted for the coming decades have already occurred, with 5 of the 19 populations now considered to be declining. The status of the polar bear has grown more dire, and, with it, the need for protection all the more compelling.

In September 2007, the same month that Arctic sea ice reached a new record minimum extent, government scientists predicted the polar bear would be extinct in Alaska by 2050 if current greenhouse gas emission trends continue. Predictions of polar bear extinction by 2050 may be optimistic. In September 2007, sea ice extent shrank to a record one million square miles below the average summer sea ice extent of the past several decades, reaching levels not predicted to occur until mid-century. Some scientists have recently stated that if the rate of melting observed in 2007 continues, Arctic summer sea ice could be lost in as little as five years.

The accelerated melting of the Arctic requires an accelerated response from the federal government. Instead, the Department of Interior has continued business-as-usual policies of foot-dragging, political interference, and illegal delay in Endangered Species Act decision-making. Protection of the polar bear under the Endangered Species Act is almost a year overdue. Moreover, it has been over 20 months since the Department of Interior has protected *any* species under the statute, and Secretary Kempthorne has failed to protect a *single* species in his 20 months as Secretary. This is the longest listing gap in the history of the Endangered Species Act, and Secretary Kempthorne has, in effect, instituted a policy of non-implementation of this most important of wildlife laws.

In contrast to the Department of Interior's wholesale practice of delaying protection for species under the Endangered Species Act, the Department has shown no such hesitation in authorizing oil and gas development in endangered species habitat. Nowhere is this contrast more apparent than in conflicting positions of the Department with regard to polar bear critical habitat designation and oil leasing in the Beaufort and Chukchi seas. Under the Endangered Species Act, absent rare circumstances where sufficient information is lacking, critical habitat is required to be designated concurrently with listing. In the proposed listing rule for the polar bear, the Department invoked this exception, stating that a "careful assessment of the designation of critical marine areas will require additional time and evaluation" and "there is a degree of uncertainty at this time as to which specific areas in Alaska might be essential to the

conservation of the species and thus meet a key aspect of the definition of critical habitat." In other words, the Department will delay critical habitat designation because not enough is known about what areas are essential for the species.

Notwithstanding the fact that the Department purportedly lacks information on what areas in the Chukchi and Beaufort Sea are essential to the polar bear, on June 29, 2007, Secretary Kempthorne approved a five-year oil and gas leasing program that would authorize five separate lease sales in polar bear habitat in the Chukchi and Beaufort seas. Under this program, virtually all offshore habitat for the polar bear in the United States is subject to leasing and development. Lease sale 193 in the Chukchi Sea is the first such sale under this program. It defies logic that the Department could lack sufficient information on the polar bear to protect its critical habitat, yet claims to have sufficient information to authorize the wholesale leasing away of this habitat to the oil industry. While there are many sound reasons the lease sales in the Chukchi Sea must be delayed or cancelled, the failure to identify and protect polar bear critical habitat in and of itself provides more than sufficient grounds to do so.

The situation in the Arctic has reached a critical threshold. The scientific evidence supports a broad moratorium on all fossil fuel extraction activities in the Arctic. Yet the only thing keeping pace with the rapid melting of the sea ice is the breakneck speed with which the Department of Interior, both on land and at sea, is authorizing oil and gas development in the region. The brakes must be put on such activity, while greenhouse gas reduction efforts must be accelerated. By delaying Endangered Species Act listing and offering oil leases in the Chukchi Sea, the Department is doing the very opposite.

The Department of Interior must immediately finalize the listing proposal for the polar bear, promptly initiate and complete the process of designating critical habitat, and convene a recovery team to develop a comprehensive recovery plan for the species. Moreover, the Department must refrain from any further oil and gas leasing, exploration and development in polar bear habitat until the designation of critical habitat and the completion of a recovery plan, and it should only resume such activities if it can affirmatively demonstrate these activities would be compatible with the survival and recovery of the species. The proposed Chukchi Sea lease sale meets none of these criteria and must not proceed.

While the situation facing the polar bear is grim, it is not hopeless. The good news is that the things we have to do to reduce greenhouse gas emissions and protect the polar bear – things like increasing energy efficiency and fuel economy, switching from fossil fuels to renewables and changing our land use and transportation patterns – can all improve our quality of life, benefit our economy, and improve our national security. The barriers to saving the polar bear and solving the climate crisis are political, not technological, and the time for Congressional action is now.

I. The Status of Polar Bears is Tenuous in a Rapidly Warming Arctic

A. Observations of Global Warming Impacts to the Polar Bear to Date

Polar bears are among the most ice-dependent of all Arctic species and require sea-ice habitat for survival (Regehr et al. 2007; Derocher et al. 2004). Polar bears need sea ice as a platform from which to hunt ringed seals and other prey, to make seasonal migrations between the sea ice and their terrestrial denning areas, and for other essential behaviors such as mating (*Id.*) Unfortunately, the sea ice upon which polar bears depend is rapidly melting away.

Global warming is impacting the Arctic earlier and more intensely than any other area of the planet. In parts of Alaska and western Canada, winter temperatures have increased by as much as 3.5° C in the past 30 years (Rozenzweig et al. 2007). Over the next 100 years, under a moderate emissions scenario, annual average temperatures in the Arctic are projected to rise an additional 3-5° C over land and up to 7° C over the oceans (Meehl et al. 2007).

As early as 1972, scientists noted that the polar bear could be adversely impacted by warming via changes in the sea ice and snow cover (Lentfer 1972:169). Canadian researchers were the first to document changes in polar bear parameters such as declining body condition, lowered reproductive rates, and reduced cub survival in the Western Hudson Bay population throughout the late 1980's and early 1990's (Stirling and Derocher 1993). Over the next decade and beyond, these researchers and their colleagues have continued to document the relationships between climate, sea ice, and polar bear physiological and demographic parameters. Stirling et al. (1999) established the link between global warming and reduced polar bear physical and reproductive parameters, including body condition and natality.

A 2004 peer-reviewed analysis by three of the world's foremost experts on the species, *Polar bears in a warming climate* (Derocher et al. 2004:163), concluded that "it is unlikely that polar bears will survive as a species if the sea ice disappears completely as has been predicted by some." Even short of complete disappearance of sea ice, Derocher et al. (2004) predicted a cascade of impacts to polar bears from global warming that will affect virtually every aspect of the species' existence, in most cases leading to reduced body condition and consequently reduced reproduction or survival:

- The timing of ice formation and break-up will determine how long and how efficiently polar bears can hunt seals. A reduction in the hunting season caused by delayed ice formation and earlier break-up will mean reduced fat stores, reduced body condition, and therefore reduced survival and reproduction.

- Reductions in sea ice will in some areas result in increased distances between the ice edge and land. This will make it more difficult for female bears that den on land to reach their preferred denning areas. Bears will face the energetic trade-off of either leaving the sea ice earlier when it is closer to land or traveling further to reach denning areas. In either case, the result is reduced fat stores and likely reduced survival and reproduction.

- Reductions in sea-ice thickness and concentration will likely increase the energetic costs of traveling as moving through fragmented sea ice and open water is more energy intensive than walking across consolidated sea ice.

- Reduced sea-ice extent will likely result in reductions in the availability of ice-dependent prey such as ringed seals, as prey numbers decrease or are concentrated on ice too far from land for polar bears to reach.

- Global warming will likely increase the rates of human/bear interactions, as greater portions of the Arctic become more accessible to people and as polar bears are forced to spend more time on land waiting for ice formation. Increased human/bear interactions will almost certainly lead to increased polar bear mortality.

- The combined effects of these impacts of global warming on individual bears' reproduction and survival are likely to ultimately translate into impacts on polar bear populations. Impacts will be most severe on female reproductive rates and juvenile survival. In time, reduction in these key demographic factors will translate into population declines and extirpations (*Id.*).

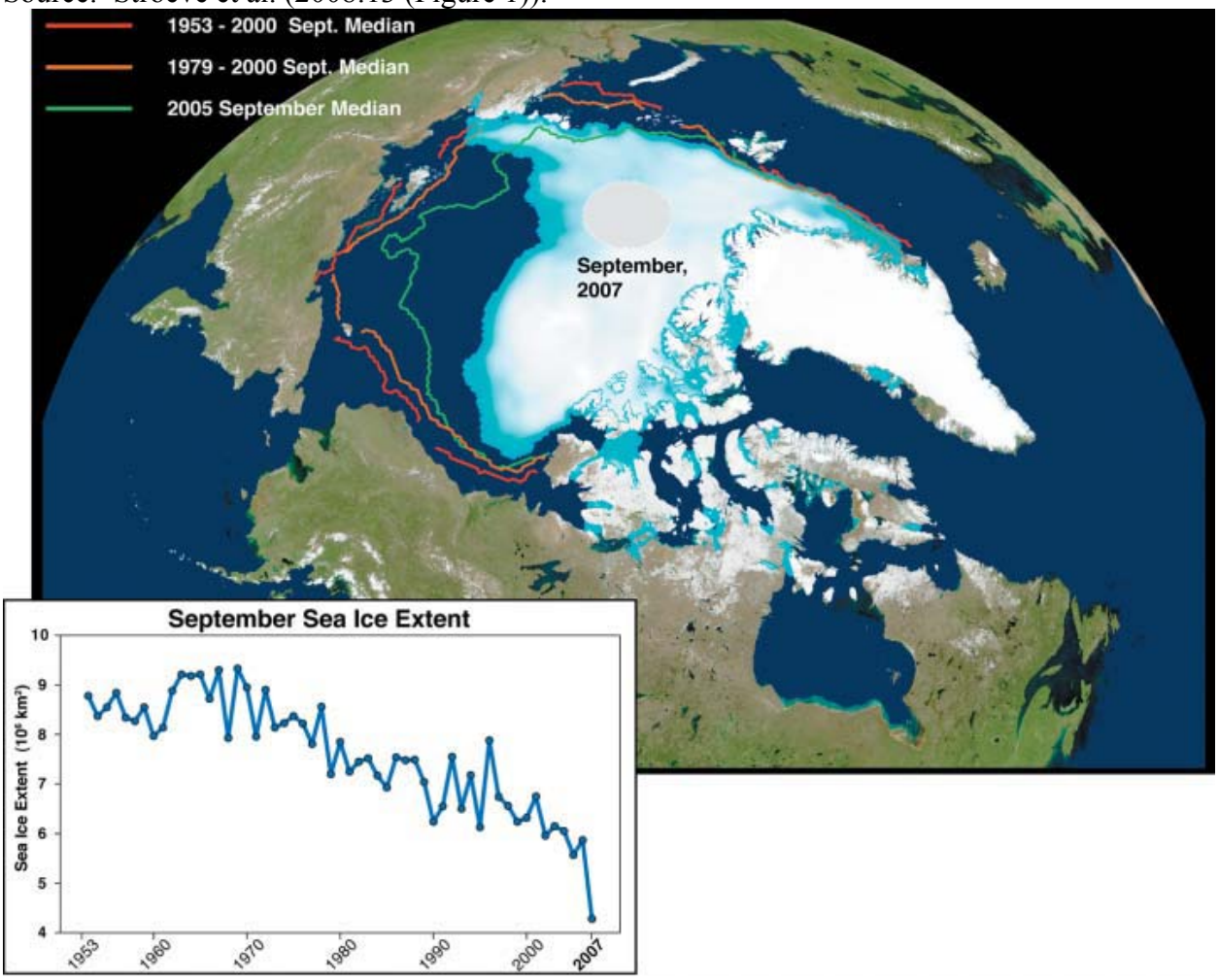
Summarizing the various likely impacts of global warming on the polar bear, Derocher et al. (2004:172) come to the following sobering conclusion:

> In contrast to many terrestrial and most marine species that may be able to shift northward as the climate warms, polar bears are constrained in that the very existence of their habitat is changing and there is limited scope for a northward shift in distribution. Due to the long generation time of polar bears and the current pace of climate warming, we believe it unlikely that polar bears will be able to respond in an evolutionary sense. Given the complexity of ecosystem dynamics, predictions are uncertain but we conclude that the future persistence of polar bears is tenuous. (emphasis added).

Since 2004, several dramatic trends have emerged. First, the Arctic sea ice melt has accelerated far beyond what was predicted even just several years ago, and second, impacts to polar bear populations have increasingly been documented, including both those that were predicted by Derocher et al. (2004) and additional impacts that were not expected.

This rapid warming of the Arctic is reflected in the devastating melt of the Arctic sea ice, which is highly sensitive to temperature changes. Summer sea-ice extent reached an unpredicted and utterly stunning new record minimum in 2007 (Stroeve et al. 2008; NSIDC 2007a,b; Figure 1)

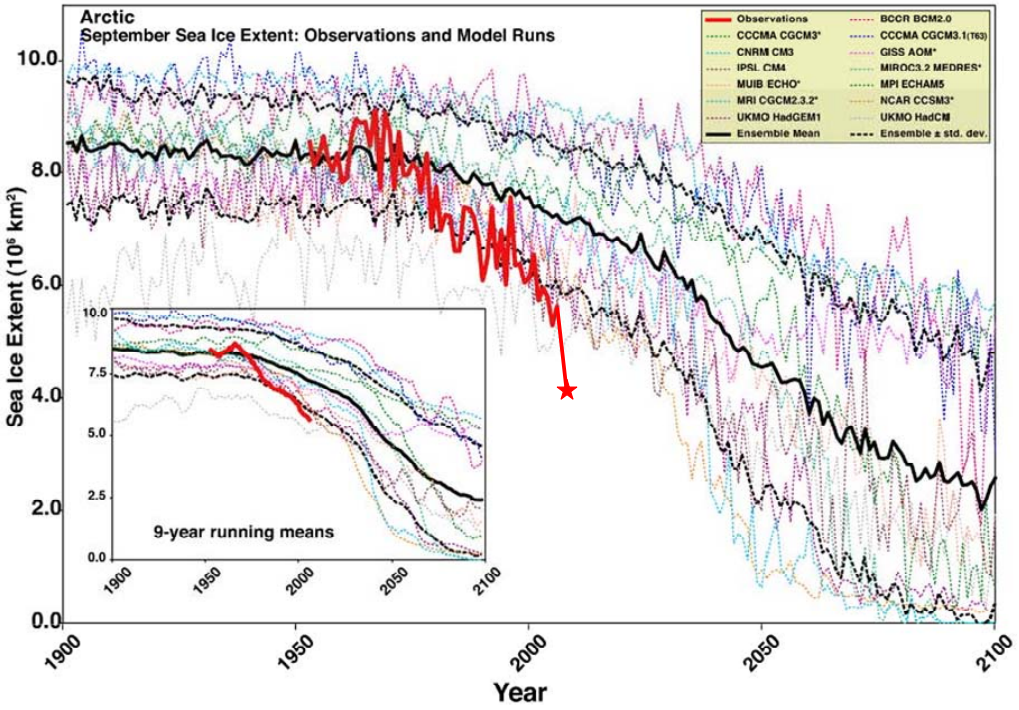
Figure 1: Sea ice concentration for September 2007, along with Arctic Ocean median extent from1953 to 2000 (red curve), from 1979 to 2000 (orange curve), and for September 2005 (green curve). September ice extent time series from 1953 to 2007 is shown at the bottom.
Source: Stroeve et al. (2008:13 (Figure 1)).



At 1.63 million square miles, the minimum sea-ice extent on September 16, 2007 was about one million square miles[1] below the average minimum sea ice extent between 1979 and 2000 (NSIDC 2007a), and 50% lower than conditions in the 1950s to the 1970s (Stroeve et al. 2008). The 2007 minimum was lower than the sea-ice extent most climate models predict would not be reached until 2050 or later (Figure 2). Leading sea ice researchers now believe that the Arctic could be completely ice free in the summer as early as 2030 (Stroeve et al. 2008).

[1] One million square miles is equal to about the area of Alaska and Texas combined.

Figure 2: Arctic Summer Sea Ice Extent: Observations Compared to Model Runs
Source: After DeWeaver (2007); Stroeve et al. (2007).



Since 2004 scientists have also documented increasing impacts to polar bears. The Western Hudson Bay polar bear population has now declined by 22% — from 1,194 bears in 1987 to 935 bears in 2004 (Aars et al. 2006). The researchers attribute this decline to "increased natural mortality associated with earlier sea ice breakup and to the continued harvest of approximately 40 polar bears per year (Lunn et al. 2002), which at some point ceased to be sustainable" and found no support for alternative explanations (Regehr et al. 2007:2680). Regehr et al. (2007) predict that the more northerly polar bear populations will experience declines similar to those observed in Western Hudson Bay.

The Southern Beaufort Sea population is now also classified by the Polar Bear Specialist Group ("PBSG") as declining (Aars et al. 2006:34). The population was estimated at 1,800 bears in 1986 and at 1,526 bears between 2001-2006 (Aars et al. 2006).[2] The Southern Beaufort Sea population has also experienced statistically significant declines in cub survival, cub skull size, and adult male weight and skull size, the same types of declines observed in Western Hudson Bay prior to the population decline (Regehr et al. 2006).

Regehr et al. (2006:14) report several instances of polar bear starvation in the Southern Beaufort Sea population in the spring of 2006:

[2] While the overlap of the more recent study's confidence interval with the previous point estimate prohibits an unequivocal statistical conclusion that he sub-population has declined, multiple lines of evidence indicate a population in decline (Aars et al. 2006).

In spring of 2006, three adult female polar bears and one yearling were found dead. Two of these females and the yearling had depleted their lipid stores and apparently starved to death. Although the third adult female was too heavily scavenged to determine a cause of death, her death appeared unusual because prime age females have had very high survival rates in the past (Amstrup and Durner, 1995).

Figure 3: Polar Bear in the Final Stages of Starvation
(Photo by Heiko Wittenborn).

Figure 3 shows a polar bear in the final stages of starvation. This photo was taken on September 4, 2007 on the Caniapiscau River in Canada, 160 km inland from Ungava Bay. While we cannot say for sure that this bear starved to death as a direct result of global warming, as we do not know the bear's history or origin, we do know that global warming will increase the number of bears that suffer this fate.

Polar bear experts have also observed evidence of male polar bears killing and consuming two adult female polar bears and one yearling male in early spring 2004 (Amstrup et al. 2006). These experts state

> During 24 years of research on polar bears in the southern Beaufort Sea region of northern Alaska and 34 years in northwestern Canada, we have not seen other incidents of polar bears stalking, killing, and eating other polar bears. We hypothesize that nutritional stresses related to the longer ice-free seasons that have occurred in the Beaufort Sea in recent years may have led to the cannibalism incidents we observed in 2004 (Amstrup et al. 2006).

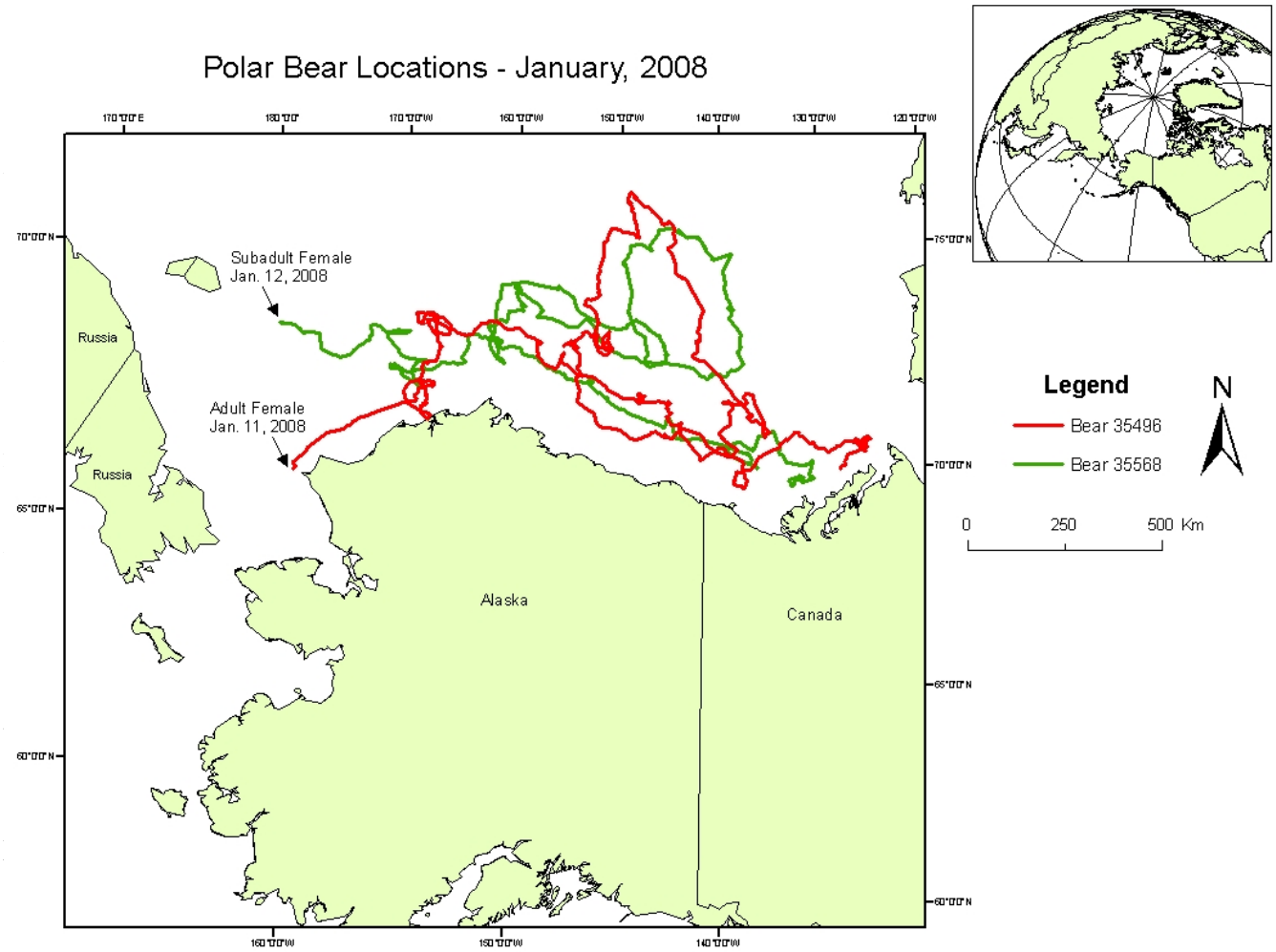
Stone and Derocher (2007) reported an additional incident of polar bear cannibalism in summer 2006 in Svalbard, Norway. An adult male bear in poor physical condition killed and ate a seven month old cub while both the polar bear mother and zodiacs full of tourists watched (Stone and Derocher 2007). The authors ascribe the incident to nutritional stress (Stone and Derocher 2007).

Impacts that were not previously predicted have been observed as well. In 2004, researchers with the U.S. Minerals Management Service observed the carcasses of four bears that had drowned in the Beaufort Sea during a period of high winds and rough seas between 10 and 13 September 2004 (Monnett and Gleason 2006). Because these scientists were able to observe only a relatively small area during their aerial surveys, they estimate via spatial extrapolation that 27 bears may have died during this time period (Monnett and Gleason 2006). Lone females and females with cubs may also be particularly prone to mortality during long-distance travel in open water, leading to "rather serious population-level implications" (Monnett and Gleason 2006). They conclude

> Our observations of higher numbers of swimming polar bears in open water than previously supposed should be considered by analysts and managers relative to marine transportation, ice-breaking, oil and gas development and other potential activities in open water (Monnett and Gleason 2006).

While the scientific publication process often leads to a delay between the observation of impacts and the transmission of that information to the public, media, and decisionmakers, it is apparent that further changes, both those previously predicted and those not anticipated, continue to occur. For example, this year researchers tracking radio collared bears in Canada have observed movements on a scale that is unprecedented, including the movement of bears from the Canadian portion of the Southern Beaufort Sea population into the Chukchi Sea (A. Derocher, pers.com.; Figure 4). While it is too early for scientists to draw firm conclusions from these preliminary observations (A. Derocher, pers. com.), this is further evidence of an ecosystem and species undergoing rapid change. One of the world's leading polar bear scientists stated on 14 January 2008 "My sense is that the 'traditional' movement patterns aren't possible now given the massive melt this past summer" (A. Derocher, pers. com.).

Figure 4: Selected Locations of Bears 35496 and 35568 through 12 January 2008
Source: Andrew Derocher, unpubl. data.



In 2007, the U.S. Fish and Wildlife Service ("FWS") requested that the Department of Interior's U.S. Geological Survey (USGS) address a series of research questions relating to the status of the polar bear. The FWS asked the USGS to do the following in support of the listing process: (1) develop population projections for the Southern Beaufort Sea polar bear population and analyze existing data on two polar bear populations in Canada; (2) evaluate northern hemisphere sea-ice projections, as they relate to polar bear sea-ice habitats and potential future distribution of polar bears; and (3) model future range-wide polar bear populations by developing a synthesis of the range of likely numerical and spatial responses to sea-ice projections. The USGS produced nine administrative reports addressing these questions and in doing so significantly advanced the understanding of sea-ice loss and its implications for polar bears.

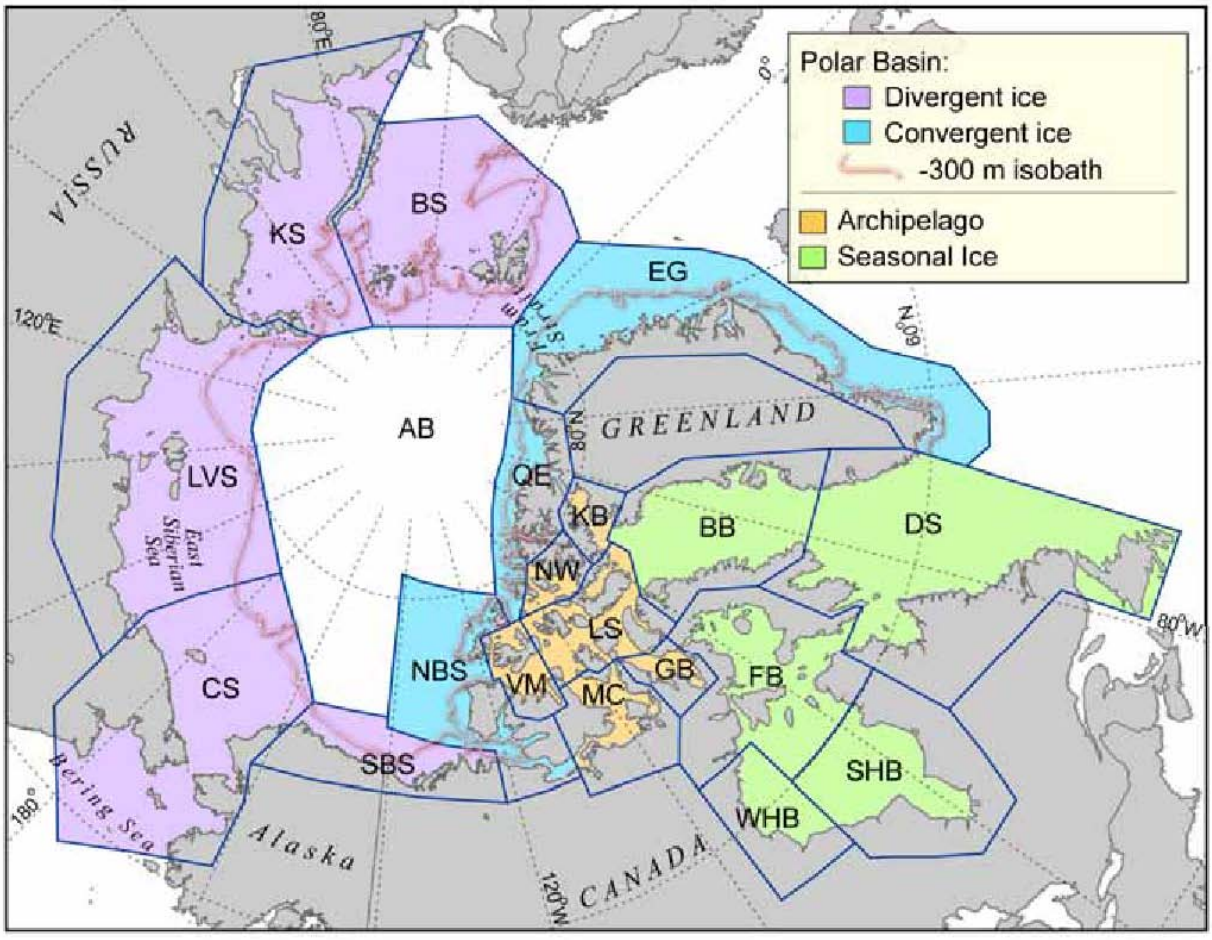
To address the question of the future status of the polar bear in a warming Arctic, the USGS conducted polar bear population modeling based on 10 general circulation models ("GCMs," or "climate models") that most accurately simulate future ice conditions (Amstrup et

[3] See http://ice-glaces.ec.gc.ca/App/WsvPageDsp.cfm?id=11892&Lang=eng.

al. 2007). The USGS used the Intergovernmental Panel on Climate Change ("IPCC") A1B "business as usual" scenario of future emissions to run the climate models (Amstrup et al. 2007). In the A1B scenario, atmospheric carbon dioxide concentrations reach 717 parts per million by 2100.

> The USGS divided the world's polar bear populations into four ecological regions:
>
> The (1) Seasonal Ice Ecoregion which includes Hudson Bay, and occurs mainly at the southern extreme of the polar bear range, (2) the Archipelago Ecoregion of the Canadian Arctic, (3) the Polar Basin Divergent Ecoregion where ice is formed and then advected away from near-shore areas, and (4) the Polar Basin Convergent Ecoregion where sea ice formed elsewhere tends to collect against the shore (Amstrup et al. 2007:1).

Figure 5: Map of Polar Bear Ecoregions used by USGS
Source: Amstrup et al. (2007:82).



The USGS projected the future range-wide status of polar bears using both a deterministic model of past, current, and future polar bear carrying capacity which assumed a linear relationship between bear density and annual average sea ice extent," and a Bayesian network model that

combined "empirical data, interpretations of data, and professional judgment into a probabilistic framework" (Amstrup et al. 2007:1). The deterministic model did not include seasonal changes in ice availability or other stressors, and thus provided an optimistic view of the impact of sea ice loss on polar bear populations (Amstrup et al. 2007). The Bayesian network model did incorporate information about annual and seasonal sea ice loss as well as other population stressors and thus provides a more realistic projection of future impacts (Amstrup et al. 2007). The "overall outcome" of the Bayesian network model was "a statement of the relative probabilities that the population in each ecoregion would be larger than now, same as now, smaller, rare, or extinct" (Amstrup et al. 2007:15). The results of the USGS study are profoundly disturbing.

The USGS projects that polar bears will be extinct in the Seasonal Ice and Divergent Ice ecoregions by the middle of this century (Amstrup et al. 2007). These two ecoregions account for two thirds of the world's polar bears, including all of the bears in Alaska. The "good news" is that polar bears may survive in the high Canadian Archipelago and portions of the Convergent Ice ecoregion through the end of this century. However, their extinction risk is still extremely high: over 40% in the Archipelago and over 70% in Northwest Greenland (Amstrup et al. 2007:66-67 (Table 8)). Moreover, the most likely outcome for each of these ecoregions by the end of this century is also extinction (*Id.*).

Table 1 displays a subset of the output from the USGS Bayesian Network model. Projections are given only for the ensemble mean ("middle of the road") sea ice projections of the 10 climate models used. The most likely (or "dominant") outcome and the probability of extinction at year 45 and year 100 for reach of the four ecoregions are displayed.

Table 1: **Most Likely Modeled Outcome and Probability of Extinction for Each of the Four Polar Bear Ecoregions Based on the Ensemble Mean Projections of the 10 Climate Models** (Source: Amstrup et al. (2007:66-67 (Table 8)).

Ecoregion	Time Period	Most Likely Outcome[a]	Probability of Extinction
Seasonal Ice	Year 45	**EXTINCT**	77.19%
	Year 100	**EXTINCT**	88.15%
Divergent Ice	Year 45	**EXTINCT**	80.33%
	Year 100	**EXTINCT**	83.89%
Convergent Ice	Year 45	**EXTINCT**	35.06%
	Year 100	**EXTINCT**	77.30%
Archipelago	Year 45	SMALLER	10.56%
	Year 100	**EXTINCT**	41.07%

[a] Outcome possibilities for the model are "larger than now," "same as now," "smaller," "rare," or "extinct."

In addition, the USGS emphasizes that because all of the available climate models have to date underestimated the actual observed sea-ice loss, the assessment of risk to the polar bear may be conservative (*e.g.* Amstrup et al. 2007:34,36). Perhaps most worrisome is the

observation that part of an area in the Canadian Archipelago expected to provide an icy refuge for the polar bear in 2100 lost its ice in the summer of 2007 (Amstrup et al. 2007:35,96).

The USGS projections of polar bear extinction risk are based on the IPCC A1B "business as usual" scenario, near the center of the distribution of all IPCC scenarios, in which atmospheric carbon dioxide concentrations reach 717 parts per million by 2100 (Nakićenović 2000). If future emissions meet or exceed the A1B scenario, the eventual extinction of polar bears is virtually guaranteed, as extinction risk will exceed 40% even in the high Canadian Archipelago in 2100, and warming will continue after 2100. The USGS reports, however, do not address the question of how much polar bear extinction risk can be reduced if greenhouse gas emissions are curtailed significantly below those assumed in the A1B scenario. Decreasing greenhouse gas emissions substantially can limit the Arctic sea-ice melt and therefore lower extinction risk for the polar bear.

While not explicitly making an Endangered Species Act listing recommendation, the information contained in the USGS reports, together with the substantial body of relevant peer reviewed literature and additional data and observations, definitively answers the question of whether the polar bear is in fact in danger of extinction and therefore warrants the protections of the Act with an emphatic "yes."

II. The Administration's Unlawful Delay of the Endangered Species Act Listing Process for the Polar Bear fits a Pattern of Political Interference in the Listing Program

For the past seven years, the Bush administration has implemented the Endangered Species Act in a manner that undermines, minimizes and eviscerates fundamental protections for the nation's most imperiled wildlife. Political appointees in the administration have consistently interfered in the scientific process with the express purpose of limiting protections for endangered species. They have delayed decisions, bullied government scientists, violated the law, and ignored public concern for the conservation of wildlife. As noted in the first part of this section, all of these elements have been present in the effort to list the polar bear. The second part of this section places the polar bear situation in a broader Endangered Species Act implementation context through a review of the administration's obstruction and interference in three critical aspects of implementation of the Endangered Species Act: protection of new species as endangered, designation of critical habitat, and development and implementation of recovery plans. The administration's malfeasance in these areas has already led to the extinction of species. Further interference in the listing process for the polar bear should not be tolerated.

A. The Administration Has Unlawfully Delayed and Interfered in the Endangered Species Act Listing Process for the Polar Bear

1. Delay and Censorship

The Center for Biological Diversity submitted a Petition to the Secretary of the Interior and FWS to list the polar bear under the Endangered Species Act due to global warming on February 16, 2005. The Petition initiated the listing process which is conducted pursuant to strict timelines. An initial finding on the petition is due within 90 days of the petition, a proposed rule within 12 months of the petition if the FWS finds that the species meets the criteria for listing,

and a final listing determination must be published in the Federal Register within one year of publication of the proposed rule. 16 U.S.C. § 1533. Species do not receive any regulatory protection under the Act until they are officially listed as threatened or endangered.

In December 2005, ten months after the Petition was filed, the administration had yet to make the first required "90-Day" finding. The Center for Biological Diversity, joined by the Natural Resources Defense Council ("NRDC") and Greenpeace, sued the Department of Interior for failing to issue an initial finding on the Petition. In response, a positive initial finding was issued in February, 2006, initiating both a public comment period and full status review for the species. The deadline for the second required finding on the Petition, due within 12 months of receipt of the petition, was only one week away at the time the first finding was made. The lawsuit was ultimately settled with a consent decree setting a deadline of December 27, 2006 for the FWS to make the second determination.

On December 27, 2006, Secretary of Interior Dirk Kempthorne announced that the polar bear met the criteria for listing as "threatened," and that the FWS would be publishing a proposed listing rule. The proposed rule was published in the Federal Register on January 9, 2007.

Political meddling in the listing process was first revealed at this time. Apparent attempts by the administration to stifle discussion of the role of anthropogenic greenhouse gas emissions and global warming in the decline of the polar bear seem to have resulted in discrepancies between the Status Review (Schliebe et al. 2006), the scientific document that formed the basis for the proposed rule, and the proposed rule itself. Inconsistencies in the communications from high level appointees at the FWS and Department of Interior, as detailed below, also reveal improprieties.

A listing proposal by law must examine the five Endangered Species Act listing factors:

1. The present or threatened destruction, modification, or curtailment of its habitat or range;
2. Overutilization for commercial, recreational, scientific, or educational purposes;
3. Disease or predation;
4. The inadequacy of existing regulatory mechanisms;
5. Other natural or manmade factors affecting its continued survival.

15 U.S.C. § 1533(a).

The first requires identification of the cause of endangerment; the fourth requires an examination of existing regulations related to that cause. The polar bear listing proposal, however, appears unique among the thousands of listing decisions issued over the last 33 years in completely failing to identify the cause of the polar bear's imperilment. It presents a comprehensive analysis of past and current sea ice melt, but conspicuously fails to identify what is causing the Arctic to warm so dramatically. There is no discussion of global warming or greenhouse gases.

Similarly, while the proposal discusses all relevant national and international regulations and efforts regarding hunting, oil and gas drilling, toxic contamination and disturbance, it does

not discuss any national or international greenhouse gas regulations or initiatives. It correctly concludes that "...there are no known regulatory mechanisms currently in place at the national or international level effectively addressing threats to polar bear habitat," but does not elaborate.

In his opening statement at the December 27th press conference, Secretary Kempthorne stated that global warming and its causes are "beyond the scope" of the government's efforts to protect the polar bear via the Endangered Species Act:

> "While the proposal to list the species as threatened cites the threat of receding sea ice, it does not include a scientific analysis of the causes of climate change. That analysis is beyond the scope of the Endangered Species Act review process which focuses on information about the polar bear and its habitat conditions including reducing ice (FWS 2006:3)."

Secretary Kempthorne clearly told the media that FWS scientists ***did not*** analyze the causes of global warming or the adequacy of the administration's greenhouse gas emissions policy. Director Hall went so far as to thrice state that the scientists ***could not*** do so because they lacked the expertise:

> "Sir, to be honest with you, we don't have the expertise in the Fish & Wildlife Service to make those kinds analysis [sic]. We're biologists by trade and so, we deal with the fact they're out on the landscape. And in this case, we're dealing with the fact of reducing ice and that's what we're able to analyze (FWS 2006:16-17)."

The Status Review had of course been completed before the press conference, but was not supplied to the public or the media until several weeks afterward. The Review itself states:

> "The purpose of the status review/assessment is to obtain, synthesize, and evaluate the best available scientific and commercial data on the status of the polar bear and threats thereto. Information in the status assessment is to form the basis for the next finding the Act requires the Service to make, the 12-month finding [i.e. the proposal] that the petitioned action is either: (1) warranted; (2) not warranted; or (3) warranted but precluded."

Much of the listing proposal was cut and pasted out of the Status Review and the two documents are structured very similarly. They differ, however, in that the Status Review contains the exact analyses that Secretary Kempthorne and Director Hall claimed were not and could not be performed by the FWS. It appears that these officials may have systematically censored all references to global warming, greenhouse gases, and the administration's failed emission policies out of the listing proposal, and then told the media that the analyses had never been conducted. Table 2 displays the number of times that keywords relating to global warming were used in the Status Review, compared to the number of times they were used in the Proposed Rule. The Status Review includes four references to CO_2, nine to greenhouse gases, 20 to global warming, and 24 to emissions. All of these were excluded from the listing proposal. So were 74 of the 83 references to climate change.

Table 2: Number of Keyword References in the Status Review and Proposed Rule
Source: Center for Biological Diversity Analysis of the Status Review and Proposed Rule.

Keyword(s)	Status Review	Proposed Rule
Climate Change	83	9
Greenhouse or Green House	9	0
CO_2	4	0
Emissions (in relationship to greenhouse gases)	24	0
Global Warming	20	0
Kyoto	4	0
United Nations Framework Convention on Climate Change or UNFCCC	15	0
White House	1	0
IPCC	17	3
U.S. Climate Change Science Program	1	0

The proposed rule itself states: "Further, the analysis conducted for the polar bear status assessment and proposed rule has been a significant and jointly-coordinated effort of fiscal, intellectual, and other resources among the Service and the USGS, NASA, species experts, and experts in other fields such as contaminants." 72 Fed. Reg. 1096. FWS scientists clearly have the expertise to conduct inter-disciplinary analyses and to coordinate with their colleagues at NASA and other agencies who have additional expertise in climate science and other fields relevant to the polar bear status review. For the Director of the FWS to suggest that agency scientists "[lack] the expertise" to conduct the high quality, thorough, and impressive analysis they had just completed is exceptionally strange behavior at best.

To fulfill the Endangered Species Act mandate to determine if existing regulatory mechanisms are adequate, the Status Review has a section entitled "Mechanisms to Regulate Climate Change." It examines the 1992 United Nations Framework Convention on Climate Change, finding that "To date, the goals set by the Framework have not been met." It examined the 1997 Kyoto Protocol, finding that it would only "slightly reduce the rate of growth of emissions and would only make a small contribution to stabilizing the level of emissions in the atmosphere." It also concluded that "mechanisms for enforcement of emission reductions have not yet been tested and there are no financial penalties or automatic consequences for failing to meet Kyoto targets." Domestically, it concludes that the strategy developed by the White House Office of Science Technology and Policy will actually allow continued increases in greenhouse gas emissions because while "emissions intensity could decrease the total emissions would still increase."

The listing proposal changed the name of this section to "Mechanisms To Regulate Sea Ice Recession," shortened it to a single paragraph and deleted all references to greenhouse gas policies. The section now reads in total:

> "Regulatory mechanisms directed specifically at managing threats to polar bears exist in all of the range states where the species occurs, as well as between (bilateral and multilateral) range states. There are no known regulatory mechanisms effectively addressing reductions in sea ice habitat at this time."

Sea ice recession by definition can not be regulated. Its cause — greenhouse gases — can be regulated, but the Bush administration has steadfastly opposed all such efforts to do so, and apparently excised the scientists' analysis prior to publication of the proposed rule. Saying that polar bears are threatened by sea ice recession without discussing global warming is like saying a species that is threatened by hunting is threatened by "rapidly flying bits of lead" and that there are no known regulatory mechanisms regulating "flying bits of lead," without discussing hunting.

The Status Review contains a section entitled "Projected Changes in Arctic Climate" which after examining the detrimental impacts likely to occur from continued global warming, states that the "warming trend would change considerably if actions were taken soon enough to keep the atmospheric gases from increasing (Schliebe et al. 2006:67)." The listing proposal changed the name of this section to "Projected Changes in Sea Ice Cover" and removed the reference to limiting greenhouse gas emissions or altering the current trajectory of warming.

While the Status Review explains Arctic warming in relationship to carbon emissions (see, e.g. Schliebe et al. 2006: 66: "The globally averaged surface temperature is projected to increase by somewhere between 1.4 and 5.8° C over the period 1990 to 2100 depending on model parameters and the assumptions made on future CO2 emissions"), the listing proposal does not discuss the cause of Arctic warming.

Around the same time as the proposed rule was announced, the administration also attempted to block scientists traveling abroad from discussing polar bears, sea ice, or climate change (FWS 2007). A March 2, 2007 email from Richard Hannon, Acting Alaska Regional Director to Alaska Region Staff, stated:

> Please be advised that all foreign travel requests (SF 1175 requests) and any future travel requests involving or potentially involving climate change, sea ice, and/or polar bears will also require a memorandum from the Regional Director to the Director indicating who'll be the official spokesman on the trip and the one responding to questions on these issues, particularly polar bears, including a statement of assurance that these individuals understand the Administration's position on these issues (FWS 2007).

In sum, while the proposed rule accurately determined that the polar bear qualifies for listing under the Endangered Species Act, inappropriate intrusion of politics into the listing process is readily apparent.

2. Failure to Propose Critical Habitat for the Polar Bear

Critical habitat, or the areas "essential to the conservation of the species" that "may require special management considerations or protection," provides substantial additional protection to listed species and must be designated at the time a species is listed. 16 U.S.C. § 1533(b)(6)(C). A final critical habitat designation may only be delayed if the agency finds that designation would be "not prudent" or "not determinable."

The proposed rule to list the polar bear stated that critical habitat designation was "not determinable," stating as follows:

> …in general the identification of specific physical and biological features and specific geographic areas for consideration as critical habitat is complicated and the future values of these habitats may change in a rapidly changing environment. The polar sea ice provides an essential conservation function for the key life history functions for hunting, feeding, travel, and nuturing [sic] cubs. That essential habitat is projected to be significantly reduced within the next 45 years, and some projections forecast complete absence of sea ice during summer months in shorter time frames. A careful assessment of the designation of critical marine areas will require additional time and evaluation. In addition, near-shore and terrestrial habitats may qualify as critical habitat; however a careful assessment will require additional time and evaluation. Therefore, there is a degree of uncertainty at this time as to which specific areas in Alaska might be essential to the conservation of the species and thus meet a key aspect of the definition of critical habitat. Consequently, the designation of critical habitat for the polar bear is not determinable at this time…If the listing of the polar bear becomes final, we will then consider whether to propose the designation of critical habitat."

72 Fed. Reg. 1096-1097.

It is highly improper to deny the polar bear the additional protections of critical habitat based on the rapid warming of the Arctic, the very factor that endangers the species in the first place.

The publication of the proposed rule triggered a January 9, 2008 statutory deadline for publication of the final listing determination. On January 7, 2008, Dale Hall, Director of the FWS, announced that the listing decision would be delayed. While Mr. Hall did not give a firm date for publication of the final listing determination, he stated that he hoped the decision would be announced within the next thirty days. Mr. Bruce Woods, a FWS spokesman in the Alaska region, was quoted in the San Francisco Chronicle as saying that the listing determination had left the Anchorage field office on December 14, 2007 (Kay 2008).

The Endangered Species Act listing process is designed to take no more than 2 years between receipt of a petition to list and a final listing determination. It has now been nearly three years since the Petition to list the polar bear was submitted on February 16, 2007. All listing decisions must be based solely on the basis of the best scientific information available. There is

simply no justification for delay now that agency scientists have finished their work. The administration's unlawful delay in issuing the final listing decision, while at the same time it is rushing to lease over 46,000 square miles of polar bear habitat in the Chukchi Sea for oil and gas development, is illegal. The delay also fits a pattern of severe and pervasive political interference in the Endangered Species Act listing process.

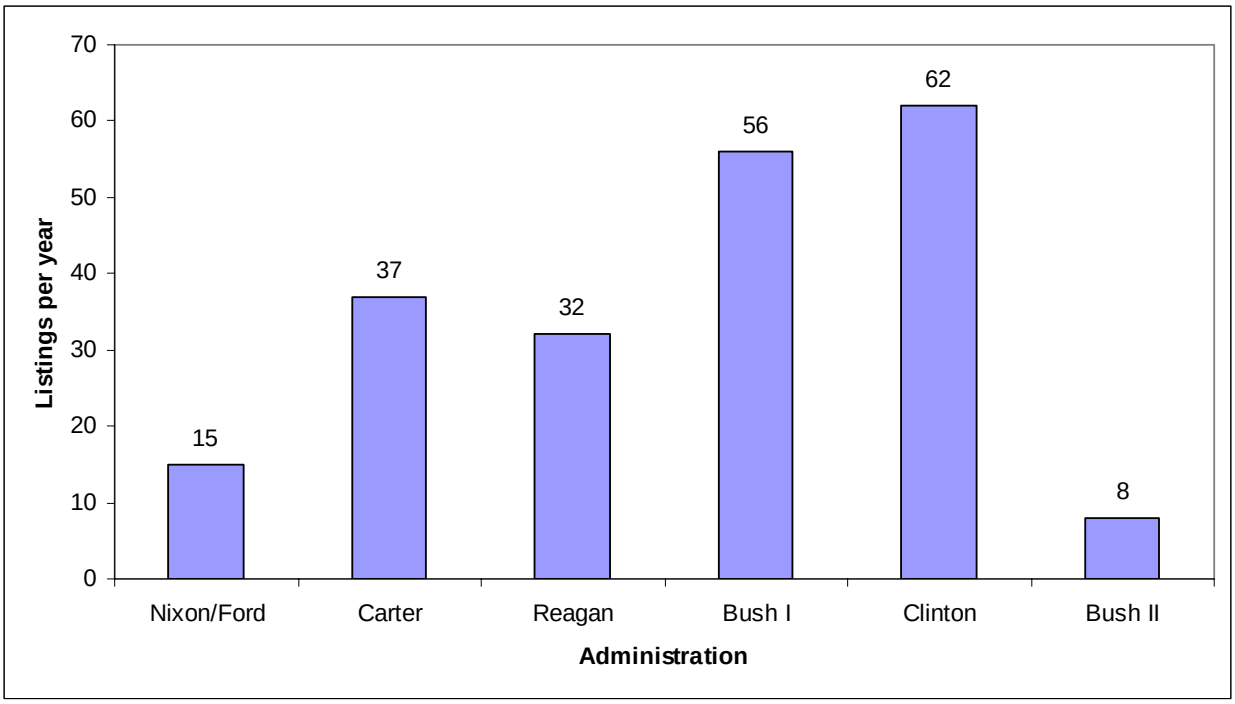
B. An Epidemic of Political Meddling in the Endangered Species Act Listing Process

For the past seven years, the Bush administration has implemented the Endangered Species Act in a manner that undermines, minimizes and eviscerates fundamental protections for the nation's most imperiled wildlife. Political appointees in the administration have consistently interfered in the scientific process with the express purpose of limiting protections for endangered species. They have delayed decisions, bullied government scientists, violated the law, and ignored public concern for the conservation of wildlife. The following discussion reviews the administration's obstruction and interference in three critical aspects of implementation of the Endangered Species Act: protection of new species as endangered, designation of critical habitat, and development and implementation of recovery plans. The administration's malfeasance in these areas has already led to the extinction of species. Further interference in the listing process for the polar bear should not be tolerated.

1. The Bush Administration has Essentially Halted Protection of New Species as Threatened or Endangered

Listing of species as threatened or endangered is the keystone of the U.S. Endangered Species Act because it is only after species are listed that they receive the substantial protections provided by the Act. Over the past 7 years under the Bush administration, listing of species has dropped to the lowest level since the Act was passed and far below any other administration (Figure 6). Since the administration took over in 2001, the FWS has listed just 50 species for a rate of eight species per year. By comparison, the Clinton administration listed 512 species for a rate of 62 species per year and the first Bush administration listed 234 species for a rate of 56 species per year.

Figure 6. Rate of U.S. Fish and Wildlife Service Endangered Species Act listings by presidential Administration.



And Secretary Kempthorne, appointed on May 26, 2006, has essentially shut down the listing process all together. On January 17, 2008, the FWS will not have listed a single new species for 618 days, the longest such delay in the history of the Endangered Species Act. The second longest delay was in 1981, when then Secretary of the Interior James Watt went 382 days without protecting a new species. In response to this shorter delay, Congress quickly responded by amending the Act in 1982 to include firm deadlines for protecting those species.

This sharp drop in the number and rate of species listings is not due to a shortage in the number of deserving species. To the contrary, there are currently 279 species that are candidates for listing that have on average been waiting nearly 19 years for protection.[4] Many of these species, including the elfin woods warbler, mountain yellow-legged frog, and New England cottontail rabbit, are on the brink of extinction.

The consequences of delayed protection are severe, allowing species to decline, making recovery more costly and difficult, and in a number of cases resulting in species extinction. Indeed, at least 25 species have become extinct after being recognized as a candidate species

[4] The FWS began keeping lists of species that warrant review in 1974 and candidate lists in 1980. Prior to 1996, the agency had several categories of candidate species (e.g. C1, C2, C3) based on the available information. Because all of these categories required additional action on the part of the agency, we have calculated wait time based on the first date a species was added regardless of category. In 1996, only category 1 species were maintained on the candidate list.

(Suckling et al. 2004). One of these extinctions was announced as recently as October, 2006, when the FWS concluded that there are "no extant wild individuals and there is no material in genetic storage" of the Hawaiian plant "Haha" (*Cyanea eleeleensis*) and thus that the species "appears to be extinct."[5] Another species extinction on Bush's watch is the summer-run of the Lake Sammamish Kokonee, which formerly lived in Washington State's second largest lake, and is now believed to be extinct after the administration ignored a petition to emergency list the population (Greenwald 2007). A Hawaiian bird called the Akikiki or Kauai creeper, which is only found on the island of Kauai primarily in the Alakai Swamp, may also be nearing extinction (Greenwald 2007).

In the few cases where the administration has been forced to make decisions about whether to protect candidate species by court orders, they have reversed previous determinations and denied the species protection, including decisions over the Montana fluvial arctic grayling, Gunnison sage grouse and others (Greenwald 2007).

Lack of funding and litigation are not to blame for the administration's poor record protecting species, as this has occurred despite substantial increases in funding for the listing program. From 2000 to 2006, the listing budget increased from $6,208,000 to $17,630,000, which is a 280% increase. Since 2002, Congress has capped the amount of listing dollars that can be spent on critical habitat, providing a dedicated source of funding for listing of new species. This dedicated funding has increased from $3,077,000 in 2002 to $4,778,000 in 2006, which is a 55% increase.

With increased funding and decreased efficiency, the number of species protected per dollar has declined dramatically under the Bush Administration. The FWS listed nearly 30 species per million dollars in 1997 and over seven species per million in 1998. Between 2002 and 2006, in contrast, the agency listed an average of just 2.4 species per million dollars of budget.[6] Had the agency maintained efficiency, they would have listed 563 species between 2002 and 2006 based on the 1997 rate and 136 species based on 1998 rate, instead of the 44 species they actually listed.

FWS officials have repeatedly claimed the reason they are not protecting more species, particularly candidate species, is because they are flooded by litigation and court orders to conduct other listing activities. Under the Clinton Administration, however, the agency completed substantially more listing determinations under court order and still managed to complete hundreds of non-court ordered listing determinations. Between 1995 and 2001, the agency completed 290 court ordered determinations, as well as an additional 402 other determinations.[7] Since 2001, in contrast, the agency has only completed 178 court ordered

[5] U.S. Fish and Wildlife Service, Endangered and Threatened Wildlife and Plants; Review of Native Species That Are Candidates or Proposed for Listing as Endangered or Threatened, Federal Register: September 12, 2006, Volume 71, Number 176, Page 53806

[6] We used 1997, 1998 and 2002-2006 because in these years it is possible to determine the budget for listing independent of critical habitat.

[7] A listing determination is a decision whether to not list (negative) or list (positive) an individual species, and includes 90-day, 12-month, and final listing decisions. One listing rule can contain determinations for multiple species .

listing determinations, and only 28 non-court ordered determinations. These numbers clearly indicate that litigation is not the reason the agency has listed so few species in the last six years.

In reality, the administration is making so little progress protecting new species because of the opposition of political appointees in the Department of Interior, who have slowed decision making with multiple reviews and edits and bullied agency scientists to reverse their conclusions. Documents obtained by the Center for Biological Diversity and others through the Freedom of Information Act reveal that Department of Interior officials interfered with – and in many cases, reversed – FWS biologists' recommendations to list species as "threatened" or "endangered" under the Act, including decisions concerning Gunnison sage-grouse, greater sage-grouse, Mexican garter snake, marbled murrelet, Delta smelt, wolverine, trumpeter swan, Gunnison's prairie dog, white-tailed prairie dog, and roundtail chub.

Delay and interference have effectively closed the gates to protection of new species under the Endangered Species Act. Overall, the agency issued far fewer listing determinations, as discussed above, and a greater proportion of negative determinations since 2001 than in the previous six years (1995-2001). Of the 692 listing determinations completed between 1995-2001, only 13% denied protection to species. Of the 206 listing determinations issued since 2001, 52% denied protection to species. This quadrupling in the rate of negative determinations is reflective of the Administration's opposition to protecting species under the Endangered Species Act and indicative of the degree to which politics is overriding important decisions concerning the protection of the nation's wildlife.

Interference in listing determinations to the detriment of species protection is also demonstrated by a recent survey of FWS biologists conducted by the Union of Concerned Scientists. The survey found that nearly half of all respondents whose work is related to endangered species scientific findings (44 percent) reported that they "have been directed, for non-scientific reasons, to refrain from making jeopardy or other findings that are protective of species" (UCS 2005).

Political pressure and bullying of agency scientists to reverse their conclusions to protect species was also recently documented in a report by the Inspector General of the Department of Interior, which found that Assistant Secretary of Fish, Wildlife and Parks Julie MacDonald, who has no biological training, rode roughshod over numerous decisions by agency scientists concerning protection of the nation's endangered species (OIG 2007). The report also found that MacDonald violated federal rules by sending internal documents to industry lobbyists (OIG 2007).

In the OIG report, numerous former and current high level staff of the FWS stated that MacDonald's interference in scientific decisions concerning endangered species was pervasive, aggressive, designed to limit protection and exposed the agency to litigation over poorly supported and politically motivated decisions (OIG 2007). The former director of endangered species, for example, concluded that MacDonald "regularly bypassed managers to speak directly with field staff, often intimidating and bullying them into producing documents that had the desired effect" and that "the overall effect was to minimize the Endangered Species Act as much as possible or ensnare it in court litigation, which often happened" (OIG 2007).

Following release of the OIG report, Ms. MacDonald resigned and the FWS stated its intention to review Endangered Species Act determinations for eight species for political interference. Following that review, the FWS stated its intention to "revise" decisions relating to seven of the species, but made no firm commitment to do so, making statements including that the work will be undertaken "as funding becomes available."[8] This inadequate response has not addressed the problem. The Center for Biological Diversity has identified an additional 55 species where political interference appears to have occurred, and which the administration has refused to address.

Political interference from the Bush administration has repeatedly been overturned by Courts. In one case in which the administration was under a court order to make a final listing determination for the California tiger salamander, the FWS sought and received additional time from the Court to meet the deadline. In later overturning the reclassification of two populations of the salamander from "endangered" to "threatened," the Court noted that the extension had been used instead simply for political interference.

> While FWS argued that it needed the extension to resolve a factual discrepancy over the extent of any decrease in grazing land for the Central California tiger salamander, it is now evident, upon review of the transcript of the hearing and the administrative record, that FWS was simply buying time to draft a final rule that also incorporated the down-listing of the Santa Barbara County and Sonoma County tiger salamander populations.[9]

In sum, despite increased funding and hundreds of species in need of immediate protection, the Bush administration has engineered a near collapse in protection of new species as threatened or endangered under the Endangered Species Act. The unlawful delay in the polar bear listing decision fits this pattern of political interference and raises concerns that political appointees will use the delay to tamper with the conclusions of agency scientists.

2. The Bush Administration has Slashed Critical Habitat Designations and Interfered in Recovery Planning

One of the most important protections for many listed threatened and endangered species is the designation of critical habitat. In particular, critical habitat allows for the protection of areas where species do not currently reside, but could one day do so, and is thus a key tool for recovery of species. A recent study found that listed species that had critical habitat for two or more years were more than twice as likely to have an improving status and less than half as likely to be declining than listed species without critical habitat (Taylor et al. 2007).

Throughout much of the late 1980s and 1990s, the FWS did not routinely designate critical habitat for listed species, despite a clear statutory mandate. Beginning in the late 1990s conservation organizations began suing to obtain critical habitat for species before being barred by the statute of limitations. Unfortunately, the great majority of these designations (387) have

[8] Letter from Kenneth Stansell, Acting Director, U.S. Fish and Wildlife Service, to the Honorable Nick J. Rahall, II, Chairman, Committee on Natural Resources, House of Representatives, dated Nov. 23, 2007.
[9] August 19, 2005 Order in *Center for Biological Diversity et al. v. U.S. Fish and Wildlife Service et al.*, No. 04-4324 (WHA) (N. Dist. Cal.)

been under the direction of the Bush Administration. Unable to stop the flow of court orders to designate and protect critical habitat areas, the Bush Administration has resorted to drastically scaling back the size of critical habitats.

In general, proposed critical habitats were developed by field-level staff who are familiar with the particular species in question and have been fairly inclusive of species habitat. Proposed critical habitat under the Bush administration included nearly 120 million acres with an average of over 310,000 acres per species. Final critical habitats, however, included only just over 48 million acres with an average of only 125,000 acres per species. On average, critical habitats were reduced by 70% between the proposed and final rules. In total, 90% of all critical habitats were reduced between proposed and final and 14 were canceled all together. Only four were increased and only for a total of 18,544 acres.

In many cases, excluding large tracts of land has made critical habitats practically useless. In 2001, political appointees in Washington DC ordered local FWS biologists to remove 8.9 million acres of proposed critical habitat from the Mexican spotted owl. The result was a designation that excluded 95% of all known owls, 80% of owl habitat, and virtually all areas under threat of logging. An agency biologist objected: "the designation would make no biological sense if the [U.S. Forest Services land] was excluded since these lands are the most essential for the owl." Two years later a federal court agreed, calling the designation "nonsensical."

Another essential protection afforded listed species is the recovery plan, developed by teams of expert scientists and land managers to detail the necessary actions to recover species to the point at which they no longer require the protection of the Endangered Species Act. Recovery plans involve compilation of extensive and highly specific information related to the threats to and status of the species in question, and thus by necessity, recovery teams have historically operated with a fair degree of independence. Recovery plans provide important guidance to federal land management agencies, who must ensure that their actions are consistent with the survival and recovery of threatened and endangered species.

The Bush administration has completed fewer recovery plans than any administration since the Carter administration, has interfered with development of recovery plans to an unprecedented degree, and has ignored recovery plan criteria in a rush to strip species of protection. To date, the Bush Administration has completed just 100 recovery plans, compared to 577 under the Clinton administration and 174 under the first Bush administration.

The administration has also repeatedly interfered in the recovery planning process. For example, in 2004, the Apache Trout Recovery Team, which consists of a diverse group of professional biologists, developed a draft revised recovery plan based on many months of deliberation and consideration of the best available scientific information. This plan, however, did not allow for delisting the species fast enough for then southwest regional director of the FWS Dale Hall, who unbeknownst to team members worked with officials of Arizona Game and Fish to substantially revise the plan. In order to speed delisting of the trout, the new plan lowered population targets, and removed requirements to replicate different genetic lineages.

In response to the revised plan, three respected members of the recovery team sent a letter to Mr. Hall, concluding:

> "As members of the Apache Trout Recovery Team (Team), we are writing you to express our dissent with the ongoing revision of the Apache Trout Recovery Plan. Specifically, we do not believe that the Plan's revised recovery strategies and objectives are sufficient to allow the species to be delisted. We have expressed to the Team our reservations about the Plan's adequacy toward recovering Apache trout on several occasions, yet the Plan continues toward finalization despite our stated concerns. Because our views apparently will not be incorporated into the final Plan, we wanted to make you aware of alternative approaches to the recovery process that are based on the best scientific information available… We believe that implementation of the revised Plan as currently written will not conserve Apache trout according to provisions outlined in ESA, and will eventually result in its further genetic degradation and possible extinction."[10]

Following his decision to ignore recovery team scientists and lower the recovery criteria for the rare Apache Trout, Mr. Hall was promoted to Director of the FWS.

Other species for which interference in the recovery planning process have been documented include the northern spotted owl, West Virginia flying squirrel, Florida manatee, gray wolf, Yellowstone population of the grizzly bear, Gila trout, and marbled murrelet (Greenwald 2007).

Given the administration's widespread practice of illegal political interference in Endangered Species Act decision-making, it is no surprise that the listing process for the polar bear has also been subject to illegal delays and interference.

III. The Endangered Species Act Will Provide Substantial Benefits to the Polar Bear

The Endangered Species Act is our nation's safety net for plants and animals on the brink of extinction, and our strongest and best law for the protection of imperiled wildlife. The Endangered Species Act listing process has already benefited the polar bear, will provide additional protections once the species is formally listed, and has an important role to play in addressing global warming.

The Endangered Species Act listing process has already benefited the species by prompting additional research and analysis on the future of the polar bear, its sea-ice habitat, and the Arctic more generally. Most important among these research efforts are the recent reports released by the USGS, discussed *supra*. In the nine reports produced for the polar bear listing process, the USGS significantly advanced the understanding of sea-ice loss and its implications for polar bears.

The media scrutiny of the listing process has also greatly increased public awareness of the polar bear's plight. The proposal to list the polar bear was greeted by worldwide media

[10] Letter from Apache trout recovery team members, Robert Clarkson, Jerry Ward and Alex Puglisi to Regional Director Dale Hall, U.S. Fish and Wildlife Service, March 9, 2005.

attention, resulting in over 250 television stories, more than 1000 print stories and over 240 editorials. Over 680,000 comments were submitted during the public comment periods on the proposal. The Endangered Species Act listing process has helped cement the polar bear as the icon of global warming.

The listing process has also forced the administration to confront the science of global warming. The Endangered Species Act requires all listing decisions be made "solely" on the basis of the "best scientific…data available." 16 U.S.C. § 1533(b)(1)(A). A decision not to list a petitioned species is subject to judicial review. It is this "best available science" standard that provides a vehicle through the petitioning process to force the FWS to squarely address the science of global warming. The Bush administration has consistently denied and downplayed the science of global warming for seven years, but cannot ultimately do so in the polar bear listing process without facing a legal challenge that would place the science of global warming squarely before a federal court, and which the administration would almost certainly lose.

While the listing process has already been beneficial, the polar bear will not receive any regulatory protection until it is formally listed. Once this occurs, an array of statutory protections will apply. Two of the primary Endangered Species Act's primary regulatory mechanisms are contained in Sections 7 and 9 of the statute. 16 U.S.C. §§ 1536, 1538. Section 7 directs all federal agencies to "insure through consultation" with FWS (or the National Marine Fisheries Service (NOAA Fisheries) if the listed species is a marine species under that agency's jurisdiction) that all actions authorized, funded, or carried out by such agencies are "not likely to jeopardize the continued existence" or "result in the destruction or adverse modification" of "critical habitat" of any listed species." 16 U.S.C. § 1536(a)(2). In contrast to the National Environmental Policy Act (NEPA), 42 U.S.C. § 4321-4375, which requires only informed agency decision-making and not a particular result, and is therefore strictly procedural, Section 7 of the ESA contains both procedural ("through consultation") and substantive ("insure" the action does not "jeopardize") mandates for federal agencies. As such, the statute, and litigation under it, can force analysis through the consultation process of the environmental effects of a given project and, if the project is determined to jeopardize a listed species or adversely modify its critical habitat, trigger modification or cancellation of the project so as to avoid such impacts.

Consultation under Section 7 results in the preparation of a biological opinion by FWS that determines if the proposed action is likely to jeopardize the continued existence of a listed species or adversely modify its critical habitat. If the action is determined to jeopardize a species or adversely modify its critical habitat, FWS must provide "reasonable and prudent alternatives" that would allow the action to proceed in a manner that avoids jeopardy and adverse modification. In making the jeopardy and adverse modification determinations, FWS or NOAA Fisheries must utilize the "best available science." 16 U.S.C. § 1536(a)(2).

As exemplified in the seminal case *Tennessee Valley Authority v. Hill*, 437 U.S. 153 (1978), the Section 7 consultation process is the heart of the ESA. The Supreme Court stated that Section 7 "admits of no exception," and affords endangered species "the highest of priorities." 437 U.S. at 173-174. Through the Section 7 process, federal agencies should examine the direct, indirect, and cumulative impacts of any action that may impact the polar bear. This includes not only actions that directly harm polar bears or their habitat, but also large sources of anthropogenic greenhouse gas emissions which contribute to global warming. While

Bush administration officials have stated that global warming is "beyond the scope" of the Endangered Species Act, there is no reason greenhouse gas emissions which harm polar bears should be treated any differently than pesticides that harm salmon or logging that harms owls. While clearly we as a society should not be waiting to address greenhouse gas emissions and global warming until faced with looming extinctions, the Endangered Species Act must be rigorously applied now that we have, unfortunately, already reached this point.

And while Section 7 of the Endangered Species Act is certainly not a complete solution to global warming, the law has an important role to play. As Justice Stevens wrote in Massachusetts v. EPA, 127 S. Ct. 1438 (2007), "Agencies, like legislatures, do not generally resolve massive problems in one fell swoop, but instead whittle away over time, refining their approach as circumstances change and they develop a more nuanced understanding of how best to proceed." Section 7 consultation will provide an important opportunity for agencies to analyze the cumulative impact of the greenhouse gas emissions of their actions on the polar bear, and to incorporate measures to reduce or eliminate those emissions.

Section 7 consultation is required for "any action [that] may affect listed species or critical habitat." 50 C.F.R. § 402.14. Agency "action" is defined in the ESA's implementing regulations to include "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. Examples include, but are not limited to: …. *actions directly or indirectly causing modifications to the land, water, or air*." 50 C.F.R. § 402.02 (emphasis added).

This regulatory definition of "action" is sufficiently broad to encompass actions that result in greenhouse gas emissions, as it would be hard to argue that such emissions are not "causing modification to the land, water, or air." Many federal agency actions result in greenhouse gas emissions that are sufficiently large that they "may affect" the polar bear.

Because the goal of Section 7 consultation is to avoid jeopardizing any listed species, the regulatory definition of "jeopardy" offers some guidance as to how the consultation requirement for a greenhouse gas emitting action may be interpreted. To "jeopardize" a species means "to engage in an action that reasonably would be expected, directly or indirectly, to reduce *appreciably* the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species." 50 C.F.R. § 402.02 (emphasis added). If an action "appreciably" contributed to global warming, that action could then be found to jeopardize a listed species. "Appreciably" is defined in the Oxford English Dictionary as being "to the degree that can be estimated," while something is "appreciable" if it is "large or important enough to be noticed."[11] So if an action contributes an appreciable amount of greenhouse gas emissions to the atmosphere, that action should undergo the consultation process.

While many federal actions may not contribute appreciable amounts of greenhouse gases to the atmosphere, many clearly do so. For example, the corporate average fuel economy (CAFE) standards for sport utility vehicles and light trucks are set via regulation by the National Highway Transportation Safety Administration. Since the transportation sector represents a

[11] Oxford English Dictionary online, http:www.askoxford.com/concise_oed/appreciable?view=uk.

large component of United States greenhouse gas emissions, the volume of greenhouse gases represented by this single rulemaking are certainly "appreciable." Similarly, the Minerals Management Service approves offshore oil and gas leasing which will result in billions of barrels of oil, the lifecycle of the production and use of which is certainly "appreciable." The greenhouse gas emissions from numerous other actions, ranging from the approval of new coal-fired power plants, oil shale leasing programs, or limestone mines for cement manufacturing, and scores of other projects are individually and cumulatively having an appreciable effect on the atmosphere. These are all agency "actions" as defined by the ESA, which "may affect" listed species, and therefore trigger the consultation requirements of Section 7.

The vast majority of federal agencies are not yet consulting on the impacts of greenhouse gas emissions and global warming on ESA-listed species. This may be changing, however. The Supervisor of the New Mexico Ecological Services Field Office of FWS, for example, recently requested additional information relating to the formal Section 7 consultation on the Desert Rock coal fired power plant proposed in New Mexico:

> The estimated annual carbon dioxide emissions [of the coal fired power plant] is 12.7 million tons….The recent summary of the United Nation's Intergovernmental Panel on Climate Change 4th assessment report calls the evidence of climate warming "unequivocal" and expresses over 90% confidence that most observed warming is due to human influence. Because this project directly and cumulatively contributes to increased concentrations of green house gases which have been identified as a principle driver of climate change, please provide an analysis of a) the potential effects of climate change on the hydrology and water resources of the San Juan River basin; specifically address in your analysis the results of modeling of future water availability; and b) the effects of any changes in hydrology and water resources of the San Juan River basin on Colorado pikeminnow, razorback sucker, bald eagle, and Southwest willow flycatcher.[12]

While Section 7 only applies to federal actions and agencies, the prohibitions of Section 9 apply far more broadly, reaching the actions of private entities and corporations. Section 9 prohibits the "take" of listed species, which includes "harming" and "harassing" members of the species in addition to simply killing them directly. Both the legislative history and case law support "the broadest possible" reading of "take." *Babbitt v. Sweet Home Chapter of Communities for a Great Oregon*, 515 U.S. 687, 704-05 (1995). Section 9 will clearly apply to direct impacts to polar bears and their habitat; it remains to be seen how and if Section 9 will be applied to greenhouse gas emissions.

In addition to the prohibitions of Sections 7 and 9, global warming will be implicated in virtually every other aspect related to the listing of the polar bear. Critical habitat will have to be designated for the species. Sea ice is obviously essential to the species' survival so such areas will ultimately have to be designated as critical habitat. The ESA also requires that a recovery

[12] July 2, 2007 Memorandum to Regional Director, Navajo Regional Office, Bureau of Indian Affairs, Gallup, New Mexico from Supervisor, New Mexico Ecological Services Field Office, U.S. Fish and Wildlife Service, Albuquerque, New Mexico.

plan for the polar bear be prepared and *implemented*. There is no hope for recovery, much less survival, of the polar bear absent substantial reductions in greenhouse gas emissions. Any legally adequate recovery plan must therefore include mandates to reduce such emissions.

It is important to note that the protections of the Endangered Species Act are far broader than those provided by the Marine Mammal Protection Act ("MMPA"). The MMPA has no procedural requirement akin to Section 7 that requires agencies to affirmatively look at the impacts of their activities on marine mammals or to avoid jeopardy. The MMPA has no requirement to protect critical habitat. The MMPA has no requirement to develop a recovery plan for a species. Significantly, the MMPA does not have a citizen suit provision, so enforcement is left entirely to FWS. This is no academic matter as from March 2005 until August 2006 no operative MMPA take authorizations for oil and gas operations existed in the Beaufort Sea in Alaska but industry activities resulting in take of polar bears continued with no enforcement from FWS.

In sum the Endangered Species Act will provide broad protections to polar bears once they are listed, and will address both direct threats to polar bears and their habitat as well as the greenhouse gas emissions that cause global warming. The Endangered Species Act listing, however, while an essential first step towards saving the polar bear, will not on its own be sufficient save them. If "business as usual" emissions trends continue, the polar bear will be driven extinct irrespective of Endangered Species Act listing or any other management actions. Business as usual is simply no longer an option. If the polar bear is to have a future, we as a nation and as a global community must immediately begin implementing deep greenhouse gas emissions reductions as well as change our management paradigms to reflect the new realities presented by a warming Arctic. The remainder of this paper sets forth an action plan to do so.

IV. A Rapid Action Plan to Protect the Polar Bear

The situation in the Arctic has reached a critical threshold. But with immediate action it is still possible to slow the melting of the Arctic. In addition to broader local, national, and international efforts to reduce U.S. and global carbon dioxide (CO_2) emissions, saving the Arctic requires prompt reductions of other greenhouse gases, along with specific efforts to address direct threats to the region from industrial activities such as oil development and shipping. Reducing emissions of methane and black carbon, which both have short atmospheric lifetimes and a large warming impact on the Arctic, is a critical component of any effective action plan. Immediate methane and black carbon emissions reductions can buy the world a little more time to achieve the deep reductions in CO_2 emissions that are necessary to protect the far north. But the window of opportunity to act, like the ice, is shrinking rapidly.

A. Reducing Greenhouse Gas Pollutants Rapidly Enough to Address Arctic Melting

The essential first component of an action plan to save the polar bear is a mandatory reduction in carbon dioxide ("CO_2") pollution. Beginning CO_2 reductions immediately and eventually reducing them to a small fraction of current levels is essential to saving polar bears. But the Arctic has reached such a critical threshold that CO_2 reductions alone, even if undertaken rapidly, will almost certainly not be enough to sufficiently slow the Artic melting to save the

polar bear. This is because CO_2, once emitted, tends to remain in the atmosphere for centuries, and therefore the benefits of reductions today will not be fully felt for some time.

Our window of opportunity to save polar bears relates to the fact that the warming impact of short-lived greenhouse pollutants including methane, tropospheric ozone, and black carbon (soot) is larger in the Arctic than it is globally. The non-CO_2 pollutants are responsible for at least half of the warming in the Arctic (Hansen et al. 2007), as opposed to about 30% globally (Forster and Ramaswamy 2007). Black carbon has a disproportionately large warming impact in the Arctic, and both black carbon and methane have much shorter atmospheric lifetimes than CO_2. This means that immediately reducing these pollutants can buy some desperately needed time and presents our best opportunity for slowing the Arctic melting before it is too late.

Fortunately, there are many feasible reduction measures available today for these pollutants, with literally hundreds of millions of metric tons of CO_2eq[13] "no-cost" reductions on the table, including many that could be undertaken at a net economic benefit. According to conservative projections by the U.S. EPA, about 500 $MtCO_2$eq of global methane emissions reductions could be achieved globally by 2020 at a cost benefit or no cost (EPA 2006). Nearly 70 $MtCO_2$eq of these available reductions are in the United States (EPA 2006). The EPA estimates total technically feasible methane reductions for 2020 at over 2400 $MtCO_2$eq globally and nearly 280 $MtCO_2$eq in the US, many of which can be achieved at low cost (EPA 2006).

Reductions in CO_2, methane and black carbon will have major public health benefits as well. Many of the measures necessary to reduce global warming pollution, including increasing energy efficiency, increasing the use of renewable energy and phasing out fossil fuels, and ultimately changing our land use, transportation, and consumption patterns, will improve our quality of life, improve our economy, and make the world a healthier, safer, and more equitable place. Congress should act immediately to explicitly cap and then rapidly reduce not only CO_2, but also the short-lived greenhouse pollutants. A detailed discussion of available reductions short-lived pollutants is given in our report *Not too Late to Save the Polar Bear — A Rapid Action Plan to Slow the Arctic Meltdown* (Center for Biological Diversity 2007).

B. A New Management Paradigm for a Warming Arctic

Greenhouse gas emissions must be rapidly reduced to a small fraction of current levels not only to save the polar bear, but to avoid the most catastrophic impacts of global warming for the rest of the world as well. But even under a rapid greenhouse gas reduction scenario, the Arctic will still undergo significant additional warming with the concomitant additional loss of sea ice. Approximately 0.6° C of additional warming is already in the pipeline due to the excess energy in the Earth's climate system from past greenhouse gas emissions (Hansen et al. 2005; Alley et al. 2007). As with the warming observed to date, the Arctic will continue to warm more rapidly than the global average. Substantial additional reduction of Arctic sea ice over the course

[13] For ease of comparison, the volume of each pollutant is expressed as its "carbon dioxide equivalent" in millions of metric tons. Thus, 1 million metric tons of methane is equivalent to 21 million metric tons of CO_2 equivalent ($MtCO_2$eq).

of this century is therefore likely unavoidable. For the polar bear, things are going to get much worse before they begin to get better.

As grim as the outlook for the polar bear is, it is not hopeless. Unlike the terrestrial ice-sheets of Greenland, the melting of which may become irreversible on human-relevant timeframes, the Arctic sea ice, portions of which melt and reform every year, may be capable of relatively rapid recovery following climate stabilization. Assuming greenhouse emission targets can be met, the climate can be stabilized, and with subsequent reductions in atmospheric CO_2 levels, the Arctic sea ice can recover to levels supporting long-term viable populations of polar bears and other ice-dependant species. The key to polar bear persistence then, is weathering the very bumpy ride through the next half-century. To shepherd the polar bear through the ensuing decades, we must reduce all other stressors on the species and its habitat and tailor national and international management of the sensitive Arctic ecosystem to the new reality of a rapidly changing Arctic.

While the ongoing changes in the Arctic are now readily apparent, for the most part, U.S. federal agencies have utterly failed to incorporate this new reality into their decision-making affecting the Arctic. With the possible exception of the Department of Defense (*see, e.g.* ONR 2001), federal agencies are making planning decisions and issuing permits, authorizations and leases in and affecting the Arctic with a near-total disregard for the rapidly changing conditions in the region. This is leading to uninformed and unwise decision-making negatively affecting the polar bear and the entire Arctic ecosystem.

If U.S. agencies have been slow to recognize and respond to new conditions as the sea ice recedes, the rest of the world has been quick to claim the spoils of a warming Arctic. Russia, Norway and Denmark have all recently staked competing territorial claims to portions of the oil-rich Arctic seabed while Canada has asserted sovereignty over the increasingly ice-free Northwest Passage. Similarly, the specter of a seasonally ice-free Arctic carries with it the likelihood of greatly increased shipping in the region.

Many of these elements of a changing Arctic carry a double threat to the polar bear. Increased oil and gas development in the Arctic threatens not just to degrade important polar bear habitat, but will also lead to further fossil fuel commitments, making emissions reduction targets all the more difficult to reach. Increased shipping in the Arctic not only carries increased risks of oil spills and further disruptions of the polar bear's habitat, but also, perhaps more importantly, would lead to a substantial injection of additional black carbon directly where it would do the most damage to the Arctic climate. Finally, territorial disputes in the Arctic will lead to an increased military presence in the Arctic leading to disruption and pollution from vessels and aircraft as well as increasingly frequent polar bear/human interactions — encounters that the polar bears almost always lose.

If we are to respond to the warming Arctic in a manner compatible with the long-term survival of the polar bear, we must directly confront the changes taking place in the region. Federal agencies must incorporate the best available information about global warming and its impacts on the Arctic into all decisions directly or indirectly affecting the Arctic. We must also reduce direct impacts on polar bears and their habitat from shipping and industrial activities through such measures as a moratorium on the expansion of such activities in areas subject to

U.S. control. Finally, because protecting the polar bear and the Arctic is only possible with the cooperation of not only all Arctic nations, but with the global community more broadly, we should initiate and engage in proactive multilateral efforts to protect the Arctic and its resources so it remains largely unspoiled for future generations in a manner similar to what has been accomplished under the Antarctic Treaty. Each of these measures is described in more detail below. All are necessary if polar bears are to survive in the very different Arctic we have given them.

1. Incorporate Global Warming into Federal Agency Decisions

Congressional action and new laws explicitly capping and reducing CO_2 and non-CO_2 pollutants are clearly necessary if we are to slow and ultimately reverse global warming and save the Arctic and the polar bear. Nevertheless, existing law allows, and in some cases requires, the executive branch to take significant action to address the current and future impacts of global warming on vulnerable human landscapes, natural ecosystems, plants and wildlife. Use of this authority will benefit all imperiled species, including the polar bear. Unfortunately, such statutory mandates have largely been underutilized, ignored, or explicitly rejected by the current administration.

Existing laws governing federal agencies that relate to global warming and the Arctic fall into three broad categories: laws requiring the compilation and analysis of information relevant to decision-makers; laws requiring the contribution of a given agency decision or action to greenhouse gas emissions and global warming be analyzed and in some cases mitigated; and laws requiring the changing status of species and resources in a warming climate be properly considered in decision-making. Several laws address more than one of these categories. Examples of each, relevant to the polar bear, which the administration has ignored or underutilized are briefly discussed below.

Information-generating statutes:

The Global Change Research Act (GCRA) requires the administration to provide to Congress and agencies an assessment of the trends and effects of global climate change on the United States, to be updated every four years. 15 U.S.C. Sec. 2936(2)-(3). The last such assessment was prepared in 2000. The administration is under court order to prepare a new assessment by May 2008, as the result of a lawsuit brought by the Center for Biological Diversity, Friends of the Earth, and Greenpeace.

The Marine Mammal Protection Act (MMPA) requires regularly updated stock assessment reports for all marine mammals subject to U.S. jurisdiction. 16 U.S.C. § 1361 *et seq*. Updated stock assessments for polar bears and walrus are three years overdue. Stock assessments for ice-dependant seals relied upon by polar bears for food, while regularly updated, do not incorporate recent information on global warming and sea-ice declines.

Analysis of greenhouse gas emissions from federal actions:

The Outer Continental Shelf Lands Act (OCSLA) governs the leasing of tracts for offshore oil development in federal waters, including those areas of the Beaufort and Chukchi

seas utilized by polar bears. In approving the 2007-2012 Program covering all offshore leasing in the U.S. the Secretary of Interior refused to quantify the greenhouse gas emissions from the oil and gas expected to be produced under the program and failed to monetize CO_2 and non-CO_2 pollutants in calculating the economic costs and benefits of the program.

The National Environmental Policy Act (NEPA) requires the preparation of an environmental impact statement analyzing all significant impacts of proposed federal actions. Few NEPA documents for significant greenhouse gas generating projects prepared to date analyze the impacts of such emissions. None that we are aware of analyze the impacts of greenhouse gas or black carbon emissions on Arctic warming or the polar bear.

The Endangered Species Act requires each federal agency to ensure through consultation with the FWS that any federal action does not jeopardize the continued existence of any listed species or destroy or adversely modify its critical habitat. 16 U.S.C. § 1536. To date, despite the fact that existing regulations require consultation on any action "directly or indirectly causing modifications to the land, water, or air," 50 C.F.R. § 402.02, most federal agencies are not consulting regarding the impacts of greenhouse gas emissions flowing from agency actions.

Analysis of the changing Arctic in federal decision-making:

Each of the statutes mentioned above require informed decision-making and the use of the best available science. Nevertheless, few if any agency decisions directly affecting the polar bear's Arctic habitat have properly taken into account the changing status of the species. Perhaps the best example is Chukchi Lease Sale 193. At the same time that one Interior Department agency, the FWS, has stated that it cannot yet determine which areas are "essential to the conservation" of the polar bear, another Interior Department agency, the MMS, proposes to lease over 46,000 square miles of the polar bear's habitat for oil and gas development. If the Interior Department doesn't have enough information to designate critical habitat for the polar bear, then it certainly doesn't have enough information to rush forward with the lease sale.

Another example is that in August 2006, the FWS issued regulations under the MMPA allowing unlimited take of polar bears from all oil and gas related activities in the Beaufort Sea region for a period of five years. Despite a request from the Marine Mammal Commission to consider the impacts of global warming in making the required determination of "negligible impact" under the statute, the Service issued the authorization assuming impacts would be similar to those documented when similar authorizations were issued more than a decade previously and prior to the substantial changes of sea ice and polar bear population size and distribution evidenced by recent scientific observations. *See* 71 Fed. Reg. 43926 (Aug. 2, 2006).

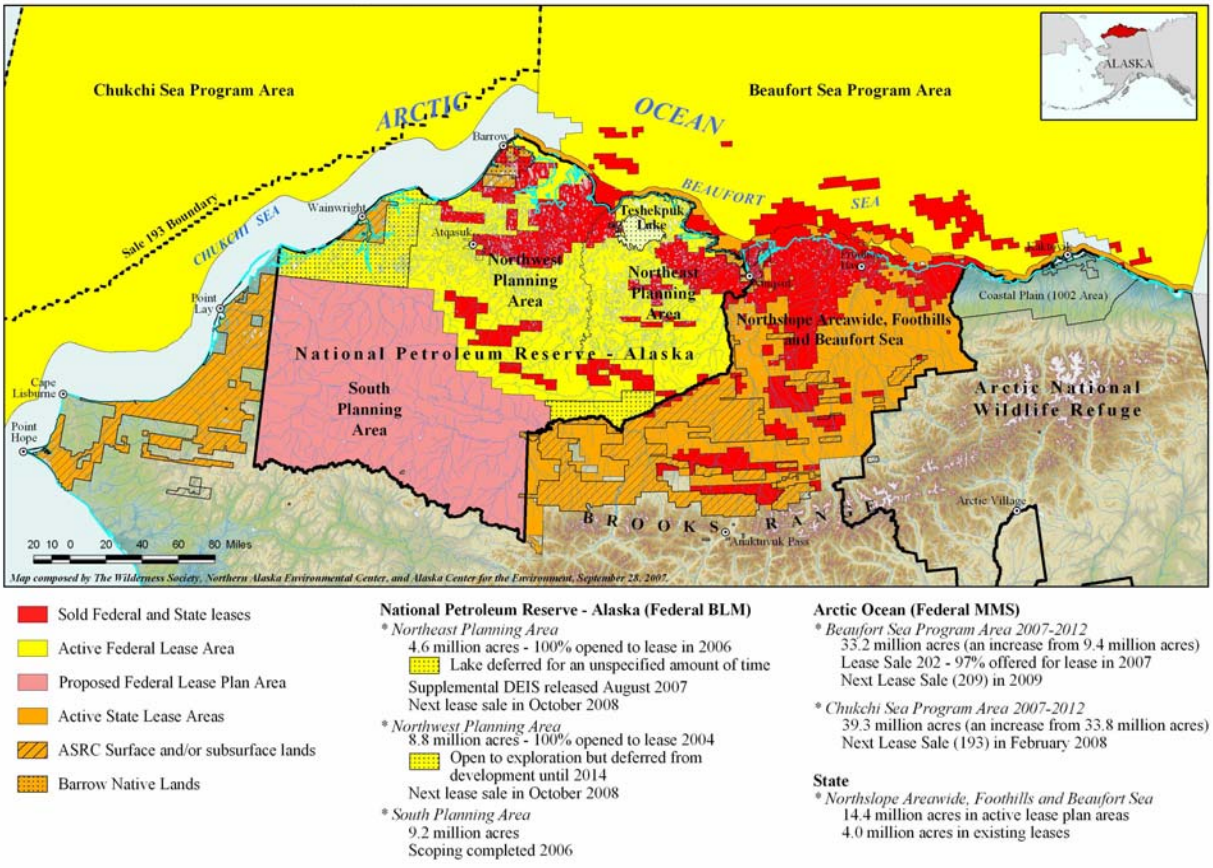
As the above examples demonstrate, management decisions directly affecting the polar bear have not caught up with the science demonstrating significant changes in the status of the species and its Arctic ecosystem. As uninformed decision-making is often unwise decision-making, the polar bear will continue to be harmed by federal agency actions until and unless all relevant agencies start incorporating the most recent information regarding global warming and its impacts on the Arctic into their decision-making. Climate-informed decision-making is already the law; now it needs to be translated into action.

2. Reduce Other Stressors on Polar Bears and the Arctic

While a business-as-usual warming scenario would doom the polar bear to extinction and render any other conservation efforts irrelevant, saving the polar bear will require not just dramatically changing greenhouse gas emission trajectories but also addressing other cumulative threats to the species. While climate-informed decision-making will probably be better decision-making, and will reduce cumulative impacts to the polar bear, certain activities, no matter how thoroughly vetted, should simply no longer be allowed in polar bear habitat. Among these are activities that directly add black carbon to the Arctic (e.g. shipping) and activities that directly disturb polar bears and degrade their essential habitats (e.g. oil and gas activities).

In 2003 the National Research Council noted that "[c]limate warming at predicted rates in the Beaufort Sea region is likely to have serious consequences for ringed seals and polar bears, and those effects will accumulate with the effects of oil and gas activities in the region." (NRC 2003). Since the NRC report, both the impacts of global warming on the polar bear and the cumulative impacts of oil and gas activities have greatly accelerated. With the lease sales in the Beaufort and Chukchi seas scheduled under the 2007-2012 Program, and the ongoing rapid leasing and development of the NPR-A, the vast majority of polar bear habitat subject to U.S. jurisdiction, whether at sea or on land, is now open for oil and gas leasing and development. *See* Figure 7 (Map of existing and proposed leases in the Beaufort and Chukchi seas).

Figure 7: Current and Proposed Oil and Gas Leases on Alaska's North Slope



Polar bears in the Beaufort Sea and elsewhere are already undergoing food stress, and as a consequence resorting to cannibalism or simply starving (Amstrup et al. 2006; Regehr et al. 2006; Aars et al. 2006). Cub survival is down. (Regehr et al. 2006; Aars et al. 2006). Denning has shifted from occurring mostly on ice to mostly on land and numerous bears now congregate on land pending the fall freeze-up of the sea-ice (Regehr et al. 2006; Aars et al. 2006). At the same time, the Beaufort Sea coast is becoming increasingly industrialized. This combination is potentially devastating for the species. Denning bears with reduced fat stores from a shorter hunting season are both more vulnerable to disturbance from oil industry activities and increasingly dependant upon areas subject to such industrial development. Similarly, hungry bears, trapped on land, are more likely to wander into oil camps and facilities looking for food, where their odds of being directly killed by humans acting in self-defense or being exposed to oil and other chemicals increases dramatically.

In addition to direct impacts on polar bears, oil industry activity also impacts their prey, such as ice seals which may be exposed to seismic surveys, icebreakers and other disturbances which could either harm these animals or render them less available for bears to hunt. Oil industry activity also results in methane and black carbon emissions in the Arctic from production activities, and of course substantial CO_2 emissions from the ultimate combustion of the recovered oil and gas.

Given the rapidly changing Arctic, the precarious status of polar bears, and the numerous adverse impacts of oil and gas industry activities on the species, we believe that there should be a moratorium on new oil and gas leasing and development in the range of the polar bear. Such a polar bear based moratorium should be implemented immediately and remain in effect until and unless such activity can be demonstrated to not have adverse impacts on the polar bear, and any greenhouse emissions directly or indirectly associated with such activities are shown to be consistent with a comprehensive national plan to reduce CO_2 and non-CO_2 pollutants to levels determined necessary to sufficiently slow the loss of sea ice.

In addition to oil and gas activities, a growing cumulative threat to the polar bear is likely to be increased shipping in the Arctic which brings with it black carbon emissions, the risk of oil spills, and direct disruption and disturbance of polar bears and their prey. The U.S. should work in appropriate international fora such as the International Maritime Organization and the Arctic Council to prevent the establishment of new shipping routes in the Arctic. Simultaneously, the U.S. should require that any vessel transiting Arctic waters subject to U.S. jurisdiction utilize fuels and engine technologies that minimize black carbon emissions, and apply for and operate consistent with take authorizations under the MMPA and Endangered Species Act so as to minimize direct impacts to polar bears and their prey.

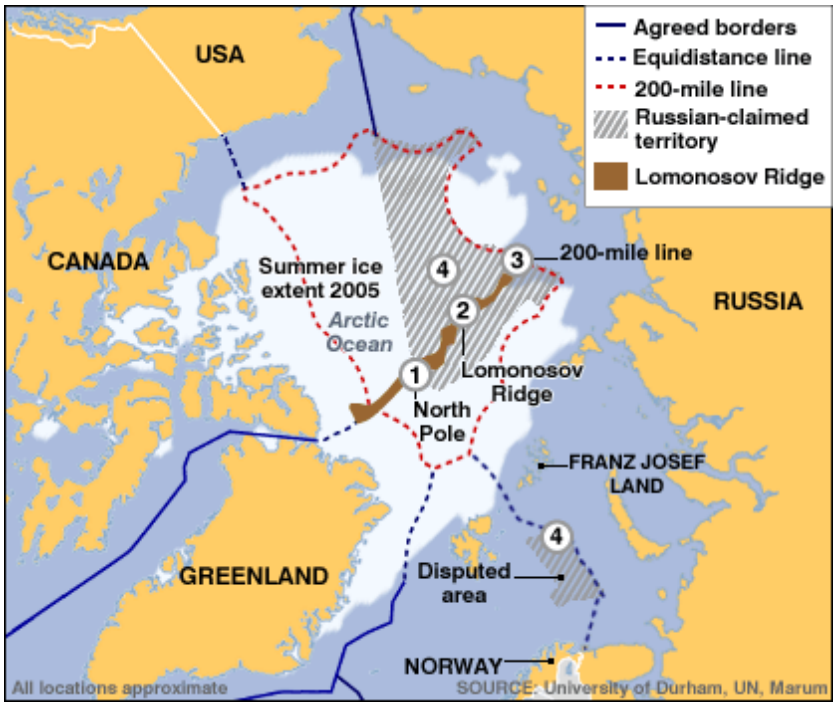
Finally, persistent organic pollutants (POPs) represent a significant threat to polar bears and other Arctic species. As polar bears operate in an increasingly food-stressed state, they are likely to metabolize body fat containing unhealthy concentrations of POPs. The impact of POPs on individual polar bears can have both lethal and sub-lethal effects. As polar bear populations decline, and individual bears become more vulnerable, the disruptive cumulative effects of POPs on the species are likely to grow. Reduction or elimination of these compounds, both through application of U.S. law and international effort will likely provide substantial benefit to polar bears.

While many of the cumulative threats to the polar bear are subject to direct regulation by the U.S. and can and must be addressed immediately, the ultimate survival and recovery of the polar bear will require international efforts, not just to reduce greenhouse gas emissions and stabilize the climate system, but to protect the fragile Arctic habitat upon which the polar bear depends.

3. Towards an International Protection Regime

Ultimately, the protection of the polar bear and its Arctic habitat is the shared responsibility of not only the U.S., or even the five Arctic nations with polar bear populations, but of the broader global community. As global warming transforms and increases human access to the Arctic, we must be as proactive as possible in protecting this area. Since much of the Arctic is beyond any country's control, and many portions are now contested by competing national claims, a key component of an Arctic protection strategy rests in the international arena (*See* Figure 8).

Figure 8: Arctic Territorial Claims



1) North Pole; 2) Lomonosov Ridge; 3) 200-nautical mile (370km) line; 4) Russian-claimed territory

Just as the Antarctic Treaty arose in the context of competing national claims to that continent, the territorial disputes that are shaping up in the Arctic as the sea ice recedes and commercial exploitation of the region becomes foreseeable, present not just a threat, but an opportunity. Given we are entering the International Polar Year, the time is right to push for international action to permanently protect the shared treasure of the Arctic. The U.S. should

proactively promote the large-scale protection of the Arctic through all existing international mechanisms, including the International Agreement for the Conservation of Polar Bears, the Arctic Council, and the United Nations Commission on the Law of the Sea. The U.S. cannot remain a spectator as other nations compete to divide up the resources of a newly accessible Arctic. We need to become a participant, not to stake our own claims, but to lead efforts to render any such claims irrelevant, and protect the Arctic and the polar bear through the rapid changes of the coming decades.

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VI. Curriculum Vitae

Kassie Siegel
Center for Biological Diversity
P.O. Box 549
Joshua Tree, CA 92252
(760) 366-2232 x. 302
ksiegel@biologicaldiversity.org

Kassie Siegel is Director of the Climate, Air, and Energy Program at the Center for Biological Diversity, a non-profit membership organization which combines conservation biology with litigation, policy advocacy, and an innovative strategic vision in working to secure a future for animals and plants hovering on the brink of extinction, for the wild areas they need to survive, and by extension for the physical, spiritual, and cultural welfare of generations to come.

Siegel is a graduate of the Boalt Hall School of Law at the University of California, and has worked for the Center for Biological Diversity since 1998. She develops and implements campaigns and strategies for the reduction of greenhouse gas pollution and the protection of wildlife threatened by global warming, and also litigates cases addressing global warming under federal and state law.

Siegel is the author of the Petition submitted by the Center for Biological Diversity in February 2005 seeking protection of the polar bear under the Endangered Species Act, and lead counsel of the lawsuit filed in December 2005 by the Center, Greenpeace and NRDC to compel the Bush Administration to respond to the Petition, which resulted in the January, 2007 proposal to list the polar bear as threatened under the Endangered Species Act. She has drafted similar petitions for other species threatened by global warming, such as twelve of the world's penguin species, including the Emperor penguin. Siegel is also a volunteer presenter for the Climate Project.

SELECTED PUBLICATIONS AND PRESENTATIONS

Cummings, B., and K. Siegel (in press). Biodiversity, Global Warming and the United States Endangered Species Act: The Role of Domestic Wildlife Law in Addressing Greenhouse Gas Emissions *In* Adjudicating Climate Control: Sub-National, National, and Supra-national Approaches (W. C. G. Burns and H.M. Osofsky, *eds*), Cambridge University Press.

Cummings, B., and K. Siegel. 2007. *Ursus maritimus*: Polar Bears on Thin Ice. *Natural Resources and Environment* 22, Number 2, Fall 2007:3-7.

Siegel, K. 'CEQA and Global Warming Matters' Private Enforcement of Environmental Law: Prosecuting and Defending Citizens' Suits, The Environmental Law Section of the State Bar of California, May 2007, Oakland, California.

Siegel, K., R. Fairbanks, and S. Sakashita 'Global Warming and Biodiversity,' 25th Annual Public Interest Environmental Law Conference, March 2007, Eugene, OR.

Siegel, K. 'Global Warming, Biodiversity, and the Endangered Species Act,' Environmental Law Conference at Yosemite, The Environmental Law Section of the State Bar of California, October 2006, Fish Camp, California.

Siegel, K. 'The No Surprises Litigation,' The Endangered Species Act Conference, CLE International
June 2004, Santa Barbara, CA.

BAR MEMBERSHIPS

- Active member of California Bar (No. 209497); admitted to practice before the California Supreme Court, the U.S. District Courts for the Northern, Southern, Central, and Eastern Districts of California, and the U.S. Court of Appeals for the Ninth Circuit.

- Inactive member of Alaska Bar (No. 0106044); admitted to practice before the Alaska Supreme Court.

EDUCATION

- J.D., Boalt Hall School of Law, University of California, May 2000.

- B.A., College of William and Mary, Williamsburg, Virginia, May 1995.