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Via first class mail and e-mail: [Polar Bear Finding@fws.gov](mailto:Polar_Bear_Finding@fws.gov) (Polar_Bear_Finding@fws.gov)

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**Re: Comments on New USGS Reports and Proposed Rule to List
the Polar Bear as Threatened**

Dear Dr. Meehan:

Although Safari Club International and Safari Club International Foundation (collectively “SCI/SCIF”) appreciate the opportunity to comment on the nine new U.S. Geological Survey Reports (“USGS Reports”), Reopening of Comment Period, 72 Fed. Reg. 53749-751 (Sept. 20, 2007), SCI/SCIF continue to support a decision not to list the polar bear. The nine new USGS Reports do not change the conclusion that a threatened listing under the ESA:

- (1) is not warranted at this time, primarily due to
 - a. the continuing great scientific uncertainty concerning the nature and extent of global climate change and the impact on the arctic ecosystem and the polar bear, and
 - b. an incorrect assessment of the standard for a “threatened” listing and the “foreseeable future”;
- (2) would be detrimental to conservation efforts based on sustainable use by U.S. hunters and others; and
- (3) would potentially require the FWS to use an improper regulatory mechanism (the ESA) to try to deal with global climate change.

Although dressed in the clothes of hard scientific analysis, the grand conclusions on the future population status of the polar bear, found in the USGS Reports, are premised on continuing speculation and uncertainty about incredibly complex events occurring over the next 50 years and longer. As SCI/SCIF explained in their opening comments (April 9, 2007), the ESA standard for listing a species requires an affirmative finding that the species is “likely” to be in danger of extinction in the “foreseeable future” (“April 2007 Comments”).¹ The uncertainty about the status of the polar bear in the foreseeable future (incorrectly chosen by the FWS to be 45 years) remains despite the nine USGS

¹ ESA Section 4 calls for “sufficient evidence” to justify finalizing the proposed rule. 16 U.S.C. § 1633(b)(6)(B)(ii). This is necessarily a higher standard than the information necessary to make a 12-month finding to propose the listing of a species; if this was not the case, a proposed rule would almost inevitably lead to the listing of the species. *Id.* § (b)(3)(B).

Reports and the FWS cannot meet this standard. For this reason, and all those presented in SCI/SCIF's April 2007 Comments, the FWS should decline to list the polar bear at this time. If the FWS is determined to list the species, it should use the information in the nine USGS Reports and elsewhere, and information about the benefits of sustainable use conservation, to create and list only those distinct population segments ("DPS") where it is the most certain that such DPSs will be in danger of extinction within 45 years (or some more appropriate and shorter "foreseeable future").

SCI/SCIF also continues to protest the inadequate 32-day comment period the FWS provided the public to review and analyze the USGS Reports. For the reasons described in letters to the Secretary and Director dated September 14 and September 24, 2007, from SCI/SCIF and other groups, this time period is completely inadequate considering the extent of scientific information contained in those reports. Those letters are Attachments 1 and 2 and are incorporated into these comments by reference. In this short comment period, SCI/SCIF were unable to retain all the qualified experts they would have chosen to review and comment on the nine new USGS Reports. By filing the comments below, SCI/SCIF are in no way (1) conceding that 32 days was sufficient time to prepare comments or (2) waiving any rights in this administrative proceeding or any judicial proceeding. Because of the FWS's refusal to extend the public comment period for a full 60 days, the public comment the FWS receives on the new USGS Reports will not represent the best scientific information available and the FWS will continue to have insufficient information on which to base its final decision.

Safari Club International, a nonprofit IRC § 501(c)(4) corporation, has approximately 53,000 members worldwide, including many who legally hunt polar bears in Canada, and in doing so, contribute to the conservation and management of this species. Its missions include the conservation of wildlife, protection of the hunter, and education of the public concerning hunting and its use as a conservation tool. Safari Club International Foundation is a nonprofit IRC § 501(c)(3) corporation. Its missions include the conservation of wildlife, education of the public concerning hunting and its use as a conservation tool, and humanitarian services. More specifically, the conservation mission of SCIF is: (a) to support the conservation of the various species and populations of game animals and other wildlife and the habitats on which they depend, and (b) to demonstrate the importance of hunting as a conservation and management tool in the development, funding and operation of wildlife conservation programs. SCI, its members, and its chapters have supported polar bear research and management efforts.

SCI/SCIF will address below the following main points about the nine USGS Reports:

1. Substantial uncertainty still remains about the status of the polar bear in the foreseeable future and the scientific information still does not meet the listing standard of "likely to be endangered in the foreseeable future."
2. The climate models on which the FWS and USGS continue to rely assumed no policy-based actions to address global climate change.
3. The best available science standard does not require adoption of uncertain and speculative predictions to constitute the accepted conditions in 45 years.
4. The fact that the USGS Reports were designed to support the listing undermines their value as the best available science.

5. If necessary, the FWS has the authority to make listing determinations of distinct population segments or of populations within portions of the range of the polar bear.
6. The FWS has the authority to and should take additional time to make a final listing decision in order to properly assess the nine new USGS Reports and the public comment on them.

As requested by the FWS, SCI/SCIF will not repeat points and arguments already made in their April 2007 Comments except as relevant to the nine new USGS Reports. The FWS should read these two comments together.

1. Substantial Uncertainty Still Remains About the Status of the Polar Bear in the Foreseeable Future and the Scientific Information Does not Meet the Listing Standard of “Likely to be Endangered in the Foreseeable Future”

Substantial uncertainty still remains in the predictions about the future status of the polar bear in 45 years, both in terms of the underlying models of future climate change and sea ice reductions and in the modeling predicting the future status of polar bears in the various populations and eco-regions around the world. The USGS Reports themselves acknowledge these uncertainties, although they attempt to discount their impact on the FWS’s application of the listing standards to the available scientific information. But the fact remains, the climate and sea ice models are inherently speculative and uncertain because they deal with incredibly complex and variable systems and attempt to do so at least 45 years into the future. In their April 2007 Comments, SCI/SCIF extensively documented the uncertainty acknowledged in the IPCC and ACIA reports, and similar scientific materials. SCI April 2007 Comments at 7-10. Below, SCI/SCIF address uncertainty by reference to the USGS Reports’ own discussion of the issue, the scholarly research on Bayesian Network modeling, and the expert report of Dr. KC Chang commissioned by SCI/SCIF.

a. The USGS Reports Acknowledge the Uncertainty Inherent in their Analyses

The USGS Report entitled “Uncertainty in Climate Model Projections of Arctic Sea Ice Decline: An Evaluation Relevant to Polar Bears,” DeWeaver (2007) (“Uncertainty Report”), addresses the uncertainty of the climate and sea ice models. This report confirms there is ample uncertainty surrounding this crucial underlying scientific information:

A key point in the discussion is that the inherent climate sensitivity of sea ice leads inevitably to uncertainty in simulations of sea ice decline. [page 1]

...

I describe the kinds of uncertainty inherent in climate models, particularly those uncertainties that directly affect the reliability of their projection of future Arctic sea ice conditions. [page 1]

...

While most aspects of climate simulations have some degree of uncertainty, uncertainty in projections of Arctic climate change is relatively high (Randall et al. 2007, Section 8.3). To some extent, the high level of uncertainty is a simple consequence of the small spatial scale of

the Arctic, since climate simulations are reckoned to be more reliable at continental and larger scales (Meehl et al. 2007, Section 105.4.3; Randall et al. 2007). The uncertainty is also a consequence of the complex processes that control the ice, and the difficulty of representing these processes in climate models. [page 2]

...

In assessing Arctic sea ice simulations, two prominent sources of uncertainty should be considered. First, uncertainties in the construction of climate models should be identified. While all models are constructed using the same physical laws, different approximations and simplifications are used in different models, and these differences lead to different sea ice simulation outcomes. Second, the degree of uncertainty due to unpredictable natural variability of the climate system should be examined. The atmosphere, ocean, and sea ice comprise a nonlinear chaotic system with a high level of natural variability unrelated to external climate forcing. Even if climate models contained a perfect representation of all climate system physics and dynamics, inherent unpredictability would prevent us from issuing detailed forecasts of climate change beyond about a decade. ... In principle, intermodel sea ice variations are attributable to differences in model construction, but attempts to relate simulation differences to specific model differences generally have not been successful (e.g., Flato et al. 2004). [pages 2-3]

...

A variety of simplifications are necessary for the relevant physical laws to be implemented as computer programs. [page 5]

...

One way in which this parameterization simplifies the dependence is by ignoring the role of aerosols in cloud formation. [page 5]

...

Since tuning introduces arbitrary choices into climate models, and even into the same model when used at different resolutions, it constitutes a large source of uncertainty in climate model construction. [page 6]

...

Studies including Vavrus (2004), Beesley and Moritz (1999), and Walsh et al. (2002) note that models have difficulty in simulating cloud fraction (the fraction of the sky covered by clouds) over the Arctic, and the mean annual cycle of cloudiness averaged over the Arctic ocean is generally not captured in either stand-alone atmospheric models or climate models. [page 10]

...

Uncertainty does not arise because the models are bad, but because the climate system is sensitive. The most dramatic forms of climate change, sea ice decline in particular, will always be the most difficult to simulate. [page 22]

In particular, two of the USGS Reports rely on these models for establishing the status of the polar bear and its habitat at certain time periods in the future. "Forecasting the Range-wide Status of Polar Bears at Selected Times in the 21st Century," Amstrup et al., at 8, 10, 23-24 (2007) ("Forecasting Report"); "Predicting the Future Distribution of Polar Bear Habitat in the Polar Basin from Resource Functions Applied to 21st Century General Circulation Model Projections of Sea Ice," Durner et al., at 1, 5-6 (2007) ("Habitat Report"). The modeling in the Forecasting Report not only relies on speculative

sea-ice conditions at the 45, 75, and 100 year time points, but itself attempts to make predictions about the future of polar bears based on mathematical modeling that cannot replicate natural variable conditions in such a complex and incompletely understood system, and relies on “interpretation of data,” and the expert judgment of only one polar bear expert. *Id.* at 16.² The Forecasting Report acknowledges that using a single expert is undesirable and was done only because of the perceived deadline by which the FWS must make a final determination. *Id.* The report also acknowledges that the Bayesian Network model the authors devised is only a “prototype” that needs significant refinement. *Id.*

b. Scholarly Materials Generally Recognize the Limitations of Predicting the Ecological Future of the Polar Bear Through Bayesian Network Modeling

Commentary on the limitations of BN modeling also help establish that the Forecasting Report does not remove the great uncertainty attending to the FWS’s determination of the future population and habitat status of the polar bear in 45 years. One article analyzed the use of Bayesian Network modeling (“BN modeling”) in the ecological context. Mead et al., “Application of Bayesian Networks in Ecological Modeling,” Attachment 3. This article discussed the use of BN modeling in two cases, both involving analysis of current impacts on river systems. Although generally supportive of the use of BN modeling in the ecological context, at least those involving current (*i.e.*, not future looking) situations, the article identified several “drawbacks” and caveats to BN (or BBN – Bayesian Belief Network) modeling:

Another drawback is that BBNs do not in themselves offer a solution to the problem representing structural uncertainty. The uncertainty in the causal structure of the network is unaccounted for, leading to model predictions that underestimate the level of uncertainty. [page 3]

...

It was important that the knowledge used to construct the model be peer reviewed because personal bias can easily be built into a BBN, as it can be in other knowledge-based methods.

A cautionary note to remember is that although BBNs can combine many different forms of knowledge, it is important to remember that without any empirical data, the models provide little advantage over an educated guess. This potential to overstate expert opinion demands that BBNs be used responsibly and ethically, as is true of other knowledge-based methods. [page 4]

As the Forecasting Report used BN models to predict population status 45, 75, and 100 years into the future and relied on the expert judgment of a single person (apparently without peer review of the actual modeling creation and data input), these drawbacks and cautionary notes are amplified significantly.

² The Uncertainty Report does not address the uncertainty inherent in any Bayesian Network or carrying capacity modeling, including that used in the Forecasting Report.

An article co-authored by one of the authors of the Forecasting Report also lays out some of the limitations of using BN models in the ecological area. McCann, Marcot, Ellis, “Bayesian belief networks: applications in ecology and natural resource management,” *Can. J. Res.* 36: 2053-62 (2006), Attachment 4. This article focuses on BN models’ role as a tool “that researchers and managers, committed to making more informed and disclosed decisions about resource management, should place in their toolbox, with appropriate caveats.” Page 2054. “By representing different potential outcomes of management options with probabilities, managers can use BBNs to rank management options according to decisions that will most likely lead to desired outcomes.” *Id.* The FWS faces a different task – to determine factually whether it is likely that polar bears will be in danger of extinction within the next 45 years (or some more appropriate shorter time period) – than those espoused to be supported by BN modeling.

One caveat is particularly important considering the Forecasting Report relies on only one polar bear researcher to provide the expert judgment that makes up most of the input nodes of the model.³

The use of expert judgment necessitates documenting, defending, and where possible, validating the basis for the model structure and conditional probabilities. BBNs based mainly on expert experience should be used to generate testable hypotheses and should follow a rigorous procedure for developing, testing, and updating the model, such as that suggested by Marcot et al. (2006). [page 3054]

...

Elicitation of expert judgment should follow structured approaches, particularly to address rare but important events and to minimize the potential for bias. [page 3059]

The article further discusses the uncertainty problem and explains BN models’ most effective use:

Models are not intended to be perfect descriptions of reality, and resultant predictions will always be imperfect.... Nonetheless, models have contributed greatly to resource management when they have used and invoked further field research leading to new insight, model revisions, and more accurate predictions of the potential effects of management decisions. [pages 3055-56]

...

Temporal dynamics are important considerations in ecology and resource management because biotic systems change over time. BBNs represent temporal dynamics poorly, however, through a cumbersome process of time expansion (Nybert et al. 2006) that involves discretizing time-based variables, replicating the entire BBN structure for each instance of time, and establishing links between nodes in adjacent replicates of the BBN. ... In general, the difficulty of handling temporal dynamics highlights two additional drawbacks of BBNs: (1) the requirement to discretize continuous functions, which can result in lower precision of variable values, and (2) their inability to handle the feedback loops that are often important in ecology and other disciplines (Nyberg et al. 2006).

³ According to the expert report of Dr. Chang, data from 14 of the 17 data nodes in the model “were specified by the same expert who constructed the model.” Chang Expert Report at 3-4, Attachment 5.

Although BBNs offer some advantages in addressing uncertainty and variability, they are still prone to many of the general limitations of other modeling approaches. In most applications it is unlikely that all sources of causality, uncertainty, and variability are incorporated in the model or enumeration without errors and inaccuracies. [page 3060]

Finally, this article warns:

BBNs, like other modeling approaches should not dictate management decisions (Conroy 1999) but could aid decision-making as components of a larger process of management, research, and monitoring. ... Decision-makers should not assume that all relevant uncertainties (either informational or with respect to management objectives) and variability have been identified and included in the model. [page 3060]

c. Expert Report of Bayesian Expert Dr. KC Chang

SCI/SCIF retained Bayesian Network expert Dr. KC Chang to review, analyze, and comment on the Forecasting Report in the limited time the FWS provided the public to comment on the USGS Reports. His analysis and C.V. are Attachment 5. Dr. Chang makes the following observations and conclusions regarding the Forecasting Report:

- Although the Forecasting Report did a very thorough job for polar bear population projections using a relatively complex Bayesian network model, including extensive sensitivity analysis, due to the inherent uncertainty in the data and the intrinsic weakness of the modeling technique, it is difficult to judge the validity of the report's conclusion.
- Although Bayesian Network modeling can be a very effective way to reason under uncertainty, the method is only as good as the underlying data or domain expert that is used in the model.
- If the constructed BN model is incorrect/biased or the input data supplied to the model is inaccurate, then the conclusions drawn from the model are likely to be unreliable.
- The Forecasting Report [page 16] is correct in the statement that "...because BN models combine expert judgment and interpretation with quantitative and qualitative empirical information, inputs from multiple experts are usually incorporated into the structure and parameterization of a "final" model... however, we were not able to seek and incorporate the input of multiple polar bear experts. Therefore, the model presented here should be viewed as a first-generation prototype."
- The quoted scholarly passages above concerning limitations of BN modeling are generally correct.

- Based on the report, it is very difficult to judge the fidelity of the model and the accuracy of the input data and therefore not possible to measure the reliability of the resulting conclusion, due to the following observations.
 - Only a single domain expert was used in the “knowledge engineering” process to model the stressing factors. It could potentially bias the BN model and predictions based on the subjective opinion. This is the single most critical concern about the Forecasting Report and its conclusions.
 - The purpose for using the BN model was to address the uncertainty inherent in the complex situation far into the future, but the model assumes no or low adaptability of the polar bear in response to any changing or uncertain environment.
 - While most aspects of climate simulations have some degree of uncertainty, uncertainty in projections of Arctic climate change is particularly high. The Uncertainty Report [page 2] confirms the uncertainty inherent in climate and sea ice modeling.

- Regardless of the quality of the data in the inputs, because of the complexity of this particular circumstance, BN modeling may not be able to predict with a high level of certainty what the actual outcome will be, particularly considering the long time horizons.

- In general, if a BN model is built and applied correctly, the mathematical aspect of the model is well understood and would not be subject to challenge or criticism.

- Several shortcomings in the model developed for the study deserve a closer look.
 - The three most important input nodes in the model (B, C, and N) are continuous variables. In the study, they were discretized in a somewhat ad hoc manner [1, p.104]. However, artificially “discretizing” the continuous variables without careful consideration could significantly degrade the accuracy of the prediction performance.
 - Another potential problematic area comes from the fact that there was a high discrepancy between the assessment results of the two outcome nodes, Numerical Response and Distribution Response. This type of inconsistency might signal a potential problem in the model.
 - Although the assessment results of the two responses (C3 and C4) were quite different (“extirpated” for C3 and “reduced density” for C4), the overall population outcome (D1) [1, p.66-67, Table 8], which was the combination of the two responses, was essentially the same as the distribution response (C3). The rule [1, p.126] of combining the two responses to arrive at the final overall outcome is obviously too pessimistic. It could significantly bias the final conclusion of the study.

- Although a sensitivity analysis was done in the study, only the range of ice conditions available from GCMs were used for the study [1, p.18]. According to the report [1, p.23], “... The sea ice parameters we used in our polar bear models were derived from GCM outputs, which possess their own wide margins of uncertainty. Hence, the magnitude and distribution of errors associated with our sea ice parameters were unknown...”

- Other data related to the causes and trends associated with possible climate change, and the polar bear's response to it, were not taken into account.

2. The Climate Models on Which the FWS and USGS Continue to Rely Assumed no Policy-Based Actions to Address Global Climate Change

In their April 2007 Comments, SCI/SCIF explained that (1) the current international agreements and statutory and regulatory schemes are adequate to deal with any current threats to the polar bear, as evidenced by the relatively healthy populations of the animal that exist in the world today,⁴ and (2) the FWS bases its proposal on the speculation that within the next 45 years, the polar bear is likely to become in danger of extinction and ignores current and future actions to address global climate change. Although the USGS Reports suggest that the USGS's conclusions about the future population status of the polar bear in 45 years will not be significantly different regardless of human activities, they appear to be addressing local on-the-ground human activities, not global reductions of greenhouse gas emissions. *E.g.*, Forecasting Report at 2, 33. Thus, the FWS and USGS continue to omit this important and relevant factor from their modeling and their assessment of the future status of the polar bear and its habitat.

3. The Best Available Science Standard Does not Require Adoption of Uncertain and Speculative Predictions to Constitute the Accepted Conditions in 45 Years

The ESA requires the FWS to base its listing determination solely on the "best available scientific and commercial information." 16 U.S.C. § 1533(b)(1)(A). But this mandate does not mean that the FWS must accept as "fact" speculative and uncertain predictions about the habitat and population status of the species in 45 years for purposes of making the listing determination. The FWS must read the best available science directive in conjunction with the standard for listing a species as threatened. SCI/SCIF discussed this standard at length in their April 2007 Comments, at 6, 10-11. In short, the statutory standard requires some high level of certainty that the species will be in danger of extinction within the "foreseeable future," that period of time into which the agency can peer and ascertain the status of the species, again, with some high level of certainty. Here, the best available science only can indicate that the species may be extinct in some portion of its range in 45 years (the chosen foreseeable future) if certain speculative predictions about climate change and sea ice loss, and the polar bear's inability to respond to a changing environment, come true. It cannot establish the high level of certainty the statute requires. Thus, the best available science establishes that the FWS can not list the species, regardless of "predictions" that the species may be extinct (at least in some portion of its range) in the chosen foreseeable future.

⁴ For example, the government of Nunavut recently announced it was reducing immediately the annual polar bear harvest quota in the Western Hudson Bay population to 38 bears, with possible future cuts to eight. "Reduced quota could help polar bear hunt: biologist," Monday, September 24, 2007, Canadian Broadcasting Corporation, News, <http://www.cbc.ca/canada/north/story/2007/09/24/bear-quota.html>.

The FWS must resist the temptation to treat the nine new USGS Reports, and other uncertain predictions, as the best available science and assume that these “predictions” meet the listing standard for threatened species. In other words, even assuming the information is the best available and it *predicts* extinction (at least for certain populations) within the 45-year foreseeable future, it does not necessarily meet the “likely” – high degree of certainty of occurring – standard demanded by the ESA. The conclusions in the Reports, couched as they must be in varying degrees of uncertainty, must meet this standard regardless of whether the Reports constitute the best available science.

4. That the USGS Reports Were Designed to Support the Listing Undermines Their Value as the Best Available Science

Especially considering the time limitation the FWS imposed on the authors, the nine reports in general represent an impressive body of work. Nonetheless, several factors undermine their status as the “best available” scientific information, or at least suggest that the FWS must lessen the weight to accord these reports. The reports in general, but the Forecasting Report in particular, appear designed to rebut criticisms of the state of the science before the USGS Reports came out. While this may be acceptable in some cases, with the high level of subjective input involved in the Bayesian Network modeling, this situation is ripe for bias and result-driven information to creep into the analysis. For example, the authors used “input nodes” involving four of the five ESA listing factors. All this indicates that these reports do not always represent science done for science’s sake. Also driving the creep of bias into the analysis is the fact that the FWS has already preliminarily determined that the polar bear – throughout its entire range – should be listed as threatened. Finally, an ESA listing would deliver funds and resources to the effort to conserve and manage the polar bear through research and field studies conducted by, among many others, the authors of these reports. Without impugning the scientific integrity of these authors, these unavoidable sources of bias lessen the weight the FWS should give the analysis and conclusions of these reports.

Although the ESA does not itself define the meaning of “best available science,” FWS policy requires a critical evaluation of all information and data the FWS may consider in a listing decision:

- a. To require biologists to evaluate all scientific and other information that will be used to ... (b) support listing actions; This review will be conducted to ensure that any information used by the Services to implement the Act is reliable, credible, and represents the best scientific and commercial data available.
- b. To gather and impartially evaluate biological, ecological, and other information that disputes official positions, decisions, and actions proposed or taken by the Services during their implementation of the Act.
- c. To require biologists to document their evaluation of information that supports or does not support a position being proposed as an official agency position on a status review, listing action, recovery plan or action, interagency consultation, or permitting action.

Endangered and Threatened Wildlife and Plants: Notice of Interagency Cooperative Policy on

Information Standards Under the Endangered Species Act, 59 Fed. Reg. 34271 (July 1, 1994).

Congress also has defined the phrase in other environmental statutes, and in these laws has made clear that objectivity is a necessary component. Take, for example, the Safe Drinking Water Act, in which Congress defined “best available science”:

In carrying out this section, and, to the degree that an Agency action is based on science, the Administrator shall use-(i) the best available, peer-reviewed science and supporting studies *conducted in accordance with sound and objective scientific practices*; and (ii) data collected by accepted methods or best available methods (if the reliability of the method and the nature of the decision justifies use of the data).

42 U.S.C. § 300g-1(b)(3)(A) (emphasis added). Similarly, in a statute pertaining to risk assessments on Energy Policy, Congress stated:

It is the sense of Congress that Federal agencies conducting assessments of risks to human health and the environment from energy technology, production, transport, transmission, distribution, storage, use, or conservation activities shall use sound and objective scientific practices in assessing such risks, shall consider the best available science (including peer reviewed studies), and shall include a description of the weight of the scientific evidence concerning such risks.

42 U.S.C. § 13557. Consequently, the apparent absence of complete objectivity or presence of unavoidable bias in the nine USGS Reports at least undermines reliance on these studies as the “best available science.”

5. If Necessary, the FWS Has the Authority to Make Listing Determinations by Distinct Population Segments or Population Within Portions of the Range of the Polar Bear

SCI/SCIF do not support the listing of polar bears and, for the reasons identified in these comments and SCI/SCIF’s April 2007 Comments, the best available science does not demonstrate the requisite certainty (“likelihood”) necessary for listing the species as threatened under the ESA. However, if the FWS determines that, legally and scientifically, it has no option other than to list, one alternative to the proposed range-wide listing of the species would be to designate distinct population segments (“DPSs”) or portions of the range and to list only those DPSs or range portions that met the listing standard and would benefit from listing. The nine new USGS Reports contain information and analysis that would help guide this determination.⁵

⁵ As explained below, this suggestion assumes that the FWS has determined that the current science, including the new reports, meets the standard for listing, as least for some of the populations. If this is the case, the FWS should use the nine reports to designate and list or not list the DPSs.

a. **The ESA Allows DPSs and Range Designations**

The Proposed Rule to list the polar bear as threatened recognized that the species occurs in 19 relatively discrete populations throughout the Arctic. 72 Fed. Reg. 1064, 1068 (January 9, 2007). The Proposed Rule also noted that the boundaries between the 19 populations are “sufficiently discrete to manage the populations independently.” *Id.* As indicated in the FWS’s 1996 “Policy Regarding the Recognition of Distinct Vertebrate Population Segments Under the Endangered Species Act” (“DPS Policy”), the standard for designating DPSs “does not require absolute separation of a DPS from other members of its species” such that the existence of interaction between these populations should not defeat the designations. 61 Fed. Reg. 4722, 4724 (February 7, 1996). Similarly, the first proposed rule providing alternatives for the designation of the Northern Rocky Mountain Gray Wolf DPS noted that the Service’s DPS policy requires “marked separation” rather than absolute separation. 72 Fed. Reg. 6106, 6114 (February 8, 2007).

An alternative to designating individual DPSs would be to follow the legal conclusions made by the U.S. Department of the Interior Solicitor in the March 16, 2007 Memorandum (M-37013), entitled “The Meaning of ‘In Danger of Extinction Throughout All or a Significant Portion of its Range.’” In that memorandum, the Solicitor examined the legislative history of the ESA to reveal that the drafters of the law intended to give the FWS the authority and discretion to list only portions of a species in certain portions of that species’ range. The Solicitor also referenced the Ninth Circuit’s opinion in *Defenders of Wildlife v. Norton*, 258 F.3d 1136, 1146 (9th Cir. 2001) in which the Court implied that different portions of a species’ range may require different degrees of protection. This interpretation gives the FWS the authority to list or choose not to list less than the entire species (whether “species” is defined as species as a whole, subspecies or distinct population segment). Thus, the FWS has the ability to list certain portions of the polar bears that do not meet the listing standard and currently benefit from regulatory protections that both regulate take of the species and encourage polar bear conservation.

b. **Sustainable Use Conservation Provides one Factor to Establish Separate Listing Units**

Two interrelated factors that create distinction between the populations are how the listing will affect the population and whether the population is currently hunted (particularly by U.S. hunters who would then import their trophies into the United States). These factors relate to the regulatory mechanisms applicable to the populations. The Service’s DPS Policy notes that “international boundaries” are a factor in determining discreteness because of differences between foreign nations’ “management, status, or exploitation of a species.” 61 Fed. Reg. at 4723. Management of the various polar bear populations includes regulation of hunting and authorization of hunting tags being made available to native hunters and to non-native hunters who intend to import their take into the United States. Currently, in six of the populations being hunted by subsistence hunters in Canada (Nunavut and the Northwest Territories), the regulatory authorities have established quotas for the numbers of polar bears that may be taken by hunters. This governmental regulatory authority allows the subsistence hunters to assign some portion of the tags issued pursuant to the quota to non-native hunters, many of whom are U.S. hunters.

The fees paid by the foreign hunters and the money brought into the local economies by these foreign hunters raises the value of the polar bears within the native communities. The value of the animals discourages poaching and encourages acceptance by native hunters of quotas based not only on traditional knowledge but also largely on western scientific management principles (e.g., sustainable use conservation). Consequently, the higher value of polar bears introduced by recreational hunting helps the regulatory authorities maintain a controlled take of the species. The irreplaceable value of U.S. hunting and importation of polar bears is best explained in the comments submitted by Dr. Mitchell K. Taylor, polar bear biologist, in this proceeding:

Currently, Inuit and all northern residents are united in their efforts to keep accidental, defense and illegal kill to an absolute minimum. Nunavut has developed Polar Bear Memorandum of Agreement with all Nunavut communities for every polar bear population within Nunavut to ensure sound conservation practices. Canadian federal, provincial, and territorial governments invest several million dollars each year into the research and co-management activities required to ensure polar bears are managed according to “sound conservation practices using the best available scientific data,” as per the International Agreement for the Conservation of Polar Bears. This significant investment in research and management is strongly supported by aboriginal harvesters who benefit from safe harvesting at levels close to the maximum sustainable yield. The loss of economic benefit may result in a de-valuing of polar bears by both institutions and hunters. Research money for monitoring and collection of essential demographic information, as well as local attitudes toward defense issues, will likely be negatively impacted by a loss of economic value. Ironically, inappropriate up-listing could actually work against conservation of polar bears by disrupting the economic foundation of many of the current management systems. A failure or even reduction in the level of effort put into monitoring polar bear populations could put populations at risk.

Dr. Mitchell K. Taylor, Manager, Wildlife Research, Department of Environment, Government of Nunavut, April 6, 2006; *see also* Comments of Milton M.R. Freeman, Senior Research Scholar, Canadian Circumpolar Institute, University of Alberta, April 5, 2007 (“Freeman Comments”); Comments of the Canadian Polar Bear Administration, at 8-9, June 16, 2006. In deciding whether to list individual populations, the FWS has a statutory obligation to take into account the efforts being made by Canadian territories toward polar bear conservation. Section 4(a)(1) states that the Secretary’s listing determination must be made:

Solely on the basis of the best scientific and commercial data available to him after conducting a review of the status of the species and after taking into account those efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect such species, whether by predator control, protection of habitat and food supply, or other conservation practices, within any area under its jurisdiction, or on the high seas.

16 U.S.C. § 1533(a)(1).

The U.S. listing of polar bears will not change the fact polar bears will continue to be hunted in communities in which the Canadian territorial governments (Nunavut and the Northwest Territories) permit taking of the species. At least, the U.S. decision to list will merely change the identity of those who hunt the animals from U.S. hunters to exclusively native residents (assuming that the FWS does not authorize continued importation of polar bear from approved populations). At most, a U.S. listing will result in a reduced value of polar bears to natives and an increased take of the animals by individuals or communities which no longer find it beneficial to strictly accept regulated quotas. Thus, the listing of the currently importable polar bear populations could undermine, if not harm, Canada's polar bear conservation efforts. See Freeman Comments.

In addition, each polar bear import permit generates fees that currently fund polar bear research. See SCI/SCIF April 2007 Comments at 3. The recent USGS Reports generated to support listing efforts make it abundantly clear that the science still reflects much uncertainty about the nature and extent of any future climate and sea ice change and their impact on polar bear behavior, population and survival. Consequently, the FWS should avoid taking any action that would interfere with activities that support polar bear research, management, and conservation.

The regulatory mechanisms that differentiate between hunted and importable vs. non-hunted or non-importable populations provide one possible mechanism that the Service could use to designate DPSs in such a way that listing could be carried out without undermining existing conservation efforts.

c. The USGS Reports Support Separate Listing Units

The USGS Reports are another source of distinguishing population segments for different listing status. If the FWS concludes that at least some populations of polar bears will be in danger of extinction within 45 years, then it must have accepted the predictions of future habitat and population loss as sufficiently "likely" or certain so as to satisfy the "threatened" standard. If the USGS Reports are the source of the scientific information driving the listing decision, the FWS must carefully review them to analyze the predicted status of each population or eco-region. These Reports indicate that many populations, those in the Archipelago and Convergent Ice regions, do not appear to be in danger of extinction within 45 years (this conclusion is even stronger if the FWS established a shorter time period for "foreseeable future," as SCI/SCIF has suggested). The Forecasting Report concludes that the "[d]ominant outcomes of the BN model were for extinction of the polar bear population[] ... in the Polar Basin Convergent Ecoregion by 75 years from present." Page 1. The carrying capacity model does not predict extinction in this ecoregion at all and, in fact, only predicted potential extinction in the Polar Basin Divergent Ecoregion by year 45 or 75, depending on whether the minimal or maximal ice level predictions was used. *Id.*⁶

⁶ The ultimate prediction in the new USGS Reports is that, if the sea ice loss predictions are realized, by 2050 2/3 of the current polar bear worldwide population will be lost. If estimates of current worldwide population are reasonably accurate, that would mean that the Service/USGS are projecting that 6,500-8,000 polar bears would remain in 2050.

Not listing certain DPSs or populations within certain ranges of the polar bear is consistent with limitations Congress necessarily built into the ESA in recognition of the draconian consequences on other human activities of a threatened or endangered listing. *See Bennett v. Spear*, 520 U.S. 154, 176 (1997) (objective of the best scientific and commercial data available standard was to “avoid needless economic dislocation”). When the impact to the species’ survival will not occur until far into the future (where the likelihood of that impact occurring is less and less), the balance tips toward not listing at this time. There may come a time in the future when the certainty and imminence of the threat is sufficient to warrant listing as “threatened” and apply the ESA safeguards. If the science dominating the media headlines and Congressional debate is accurate, the incentive for humans to address global climate change is great enough that we will do so regardless of a “threatened” listing under the ESA.

6. The FWS Has the Authority to and Should Take Additional Time to Make a Final Listing Decision to Properly Assess the Nine New Reports and Public Comment on Them

In letters to the Secretary of the Interior and Director of the Fish and Wildlife Service, SCI/SCIF and other sporting and conservation organizations explained that the FWS has the authority to extend the final listing decision to fully and properly review and analyze the nine new USGS Reports and public comment on them. See Attachments 1 and 2. SCI/SCIF will not repeat those arguments in full. But it appears obvious that the Secretary commissioned the USGS Reports in recognition that there was substantial disagreement among scientists concerning the issues addressed in the reports, including current and future habitat and population status of the polar bear. Now that those Reports are completed and the public has had an opportunity to comment on them (too short a time in SCI/SCIF’s view), the FWS can and should exercise its statutory authority to extend the deadline for the listing determination as much as necessary up to six months. 16 U.S.C. 1533(b)(6)(B)(i). The FWS’s insistence that it must make its listing determination by January 2008 is not legally or factually justified.

Conclusion

Global climate change is an incredibly complex issue. Great scientific uncertainties and inherent unpredictability about the nature and extent of future climate change and its impact on the arctic ecosystem and the polar bear pervade any analysis. While the new Reports represent a significant piece of analysis, they suffer from the same uncertainty plaguing all conclusions about the status of the polar bear far into the future. The FWS still cannot foresee at this time the polar bear’s future in the next 45 years with the certainty required for a threatened listing. This uncertainty, coupled with the current overall healthy worldwide population of polar bears, militate against determining that within the next 45 years the polar bear is “likely” to become extinct. At the very least, this information supports that the FWS should not list the entire range of the species, if it concludes a listing is required. Instead, the FWS should consider listing by DPS or by portion of the polar bear’s range.

Imposing the ESA regulatory regime on a healthy species, at great cost to the U.S. government and the American (and indigenous Canadian) public, simply is not warranted. Listing would have little

if any practical benefit to the species in terms of the FWS's ability to address the root causes of global climate change. Listing will, however, harm current conservation and management efforts in the United States, Canada, and around the world.

SCI appreciates the opportunity to comment on this important issue. If we can provide any further information, please contact me or Doug Burdin, Litigation Counsel for SCI, at 202-543-8733 or dburdin@sci-dc.org.

Sincerely,

A handwritten signature in black ink that reads "Dennis Anderson". The signature is fluid and cursive, with the first name "Dennis" starting with a large, circular initial 'D' and the last name "Anderson" following in a similar style.

Dennis Anderson
President,
Safari Club International
Safari Club International Foundation

cc: Dale Hall
Ken Stansell
Bryan Arroyo
Tom Melius