



THE WILDLIFE SOCIETY

ALASKA CHAPTER

The Alaska Chapter of The Wildlife Society strives to enhance the ability of wildlife professionals to conserve biological diversity, sustain productivity, and ensure responsible use of wildlife resources in Alaska for the benefit of society.



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RE: Alaska Chapter of The Wildlife Society Comments on the Proposed Incidental Harassment Authorization for Polar Bears in the Arctic National Wildlife Refuge

Dear Mr. Hamilton,

This letter represents the Alaska Chapter of The Wildlife Society's public comments on the proposed Incidental Harassment Authorization (IHA) for polar bears in the Arctic National Wildlife Refuge (Arctic Refuge). We appreciate the opportunity to comment on this important document for a project that has the potential to affect a sensitive and iconic arctic species.

The Wildlife Society (TWS) was founded in 1937 and is a non-profit scientific and educational association of over 15,000 professional wildlife biologists and managers, dedicated to excellence in wildlife stewardship through science and education. Our mission is to inspire, empower and enable wildlife professionals to sustain wildlife populations and habitats through science-based management and conservation. Our professional membership represents and serves the community of scientists, managers, educators, technicians, planners and others who work actively to study, manage and conserve wildlife and its habitats worldwide. The Alaska Chapter of TWS has about 200 members in Alaska representing wildlife scientists and resource managers including those working for state and federal agencies, Native organizations, universities, non-profit groups and consulting biologists. Our collective knowledge regarding wildlife and its habitat in Alaska is our greatest strength, so we offer these comments in hopes that they will be used to improve the analyses in the proposed IHA.

As we stated in our comments on the Arctic Refuge leasing Draft Environmental Impact Statement on March 12, 2019, "the Alaska Chapter of The Wildlife Society recommends maintaining the coastal plain of the Arctic National Wildlife Refuge in an undeveloped state for the conservation of Refuge resources, as identified in the original purposes for which the Refuge was established, and for long-term studies of the effects of climate change in the Arctic on wildlife resources and ecosystem processes." Thus efforts to conduct seismic exploration for the purpose of facilitating development of the coastal plain are in opposition to our recommendation for best management of the Arctic National Wildlife Refuge. Nonetheless, we respectfully submit the following comments.

We appreciate the rigorous modeling work that underlies the conclusions of the draft IHA. The detailed description of methods, documentation of assumptions, and specification of input parameters, equations, and results represent the kind of analyses we hope to see accompanying all major management decisions. That said,

there are several areas of concern that we believe should be addressed to ensure impacts to polar bears are adequately addressed and reflect the best available scientific information.

Insufficient consideration of Level A/lethal take

The draft IHA states that “no take by injury or death to polar bears is likely and therefore such take is not included in this proposed authorization” (Federal Register p. 79082). However, this statement seems to be at odds with the findings of the analysis reported in the IHA document. The *Analysis of Impact to Denning Bears* section of the IHA reports a 21% probability of one or more Serious Level A or lethal take occurring during the proposed project (p.79110). A one out of five chance of serious injury or death is worth considering given the recorded declines of the Southern Beaufort Sea subpopulation of polar bears (p.79088) and the ongoing threat to polar bears from climate change and sea ice loss. Indeed, subsistence take for the southern Beaufort Sea subpopulation already exceeds the potential biological removal threshold, meaning any additional mortality would be detrimental to the subpopulation (Wilson and Durner 2020). We recommend US Fish and Wildlife Service (USFWS) revise the IHA to account for a real possibility of serious Level A or lethal take, especially in light of the additional concerns below.

The *Analysis of Impact to Denning Bears* states that Level A and lethal take were only applied to cubs, not to adult female polar bears (p.79110), however it is unclear how this determination was made. It seems that this decision was based on the assumption that no dens are driven over and crushed. As we detail below, however, this assumption is questionable. The probability of Level A/lethal take should be reassessed and clearly justified in a revised IHA.

Furthermore, the draft IHA is not clear about what would happen if one or more Level A or lethal takes of polar bears did occur. *Proposed Authorization* section A.2. states that project activities must cease if unauthorized take exceeding the three allowed under the IHA occurs or if “take of one or more polar bears through methods not described in the IHA” occurs (p.79113). It should be specified that this includes if lethal or Level A take occurs. As it stands, those types of take are “described in the IHA” but are not authorized since the IHA assumes they will not occur. Rather than relying on this assumption, the IHA should be explicit about the consequences of such take for the proposed work. We recommend that all seismic operations cease if lethal or Level A take occurs.

Need for improved clarity and guidance regarding use of FLIR for den detection

Forward-looking infrared (FLIR) technology plays an important role in detecting polar bear dens and enabling mitigation. Its use lies at the core of the draft IHA’s assumptions about a lack of Level A or lethal take. The draft IHA assumes that three aerial FLIR surveys, in combination with hand-held or vehicle-mounted FLIR (hereafter, ground-based FLIR), will be sufficient to detect all dens in the travel route and thus avoid the possibility of crushing dens (p.79110). However, insufficient evidence is provided in the draft IHA to support this assumption. The effectiveness of FLIR surveys for detecting polar bear dens is mixed, with a recent study finding less than half (45%) of known dens detected by aerial industry surveys (Smith et al. 2020). Effectiveness of surveys may be affected by multiple factors including 1) den depth, 2) survey conditions, 3) sensor location, 4) survey timing, 5) operator training, and 6) use of complementary methods. We detail each of these below and provide requests for how their requirements should be strengthened in a revised IHA. Detection of dens prior to beginning seismic operations is crucial to avoid lethal, Level A and Level B take through avoidance of polar bear dens. As the first permitted seismic survey associated with Arctic Refuge leasing and development, the regulations USFWS places on this project will set the stage for future actions. It is imperative that a strong, science-based initial set of standards be established to increase the likelihood of detecting and avoiding impacts to polar bear dens in this and any future seismic exploration.

- 1) **Den Depth.** The IHA acknowledges that “snow depth over many dens, therefore, is likely near, or above, the limits of FLIR detection capabilities” (p.79089). This raises the question of how many dens are likely to

remain undetected, and thus unable to be avoided by the proposed mitigation measures. Furthermore, the draft IHA claims that performing three aerial FLIR surveys increases the likelihood of detecting polar bear dens with depth of less than 100 cm, to 98% (p.79089). However, no citation is given for this assertion. A clear rationale for this is needed, as Amstrup et al. (2004), who advocate the use of multiple aerial FLIR surveys, nonetheless found that 17% of known dens were never detected even with multiple surveys. The IHA should be updated to estimate what proportion of dens is expected to be about 100 cm or deeper and thus unable to be detected by FLIR and what additional proportion will remain undetected by repeat surveys even in shallower dens.

- 2) **Survey Conditions.** Den detection using FLIR is strongly influenced by survey conditions, including weather conditions such as air temperature, wind speed, precipitation level and presence of solar radiation (Pedersen et al. 2020, Smith et al. 2020). Despite this, no clear guidelines are given in the draft IHA for the conditions that must be met for a FLIR survey to count as valid, other than that surveys are not conducted during daylight hours (p.79114). The IHA does state that “exact dates will be determined by weather such that the surveys are conducted during the best practicable atmospheric and surface snow conditions” (p.79114). Such a statement, however, leaves a wide range of uncertainty. USFWS should add minimum conditions that must be met for a survey to count as valid (e.g., Amstrup et al 2004, York et al. 2004, Robinson et al. 2014, Pedersen et al. 2020, Smith et al. 2020). Such specifications are especially important as detrimental environmental conditions for FLIR detection are expected to increase in a warming climate (Smith et al. 2020).
- 3) **Sensor Location.** Additional clarity is also needed regarding requirements for ground-based FLIR. While the guidance provided for conditions in which aerial surveys can be conducted is minimal in the draft IHA, no similar guidance is given for ground-based FLIR. The IHA should be updated to specify that if weather conditions are insufficient to reliably detect polar bear dens in areas where vehicles are proposed to intersect potential denning habitat, seismic activities must halt until conditions resolve sufficiently to allow such detection. Even in such situations, reliance on ground-based FLIR is likely insufficient to provide certainty of den detection, as is assumed in the IHA analyses. Pedersen et al. (2020) found that hand-held FLIR use resulted in lower detection probabilities than vertical FLIR, with den detections being four times more likely with vertical, compared to horizontal perspectives. Thus, reliance on ground-based FLIR to avoid Level A/lethal take through detection and avoidance of dens appears unsubstantiated. The assumption that no dens will be run over should be reassessed and the likelihoods of Level B, Level A, and lethal take updated. Furthermore, the Pedersen et al. (2020) study was not cited in the draft IHA but should be, with its findings incorporated into a revised IHA.
- 4) **Survey timing.** The timing proposed for FLIR studies is also a concern. Recent studies recommend that FLIR surveys be conducted early in the season (early December – Smith et al. 2020; December or January – Pedersen et al. 2020), before snow accumulation increases over dens and reduces FLIR detection probabilities. However, the proposed action would employ FLIR surveys in late January and early February. USFWS should demonstrate why it believes survey conditions during this period will be sufficient to support optimal den detection. Furthermore, a reduced likelihood of detection due to increased snow cover should be incorporated into the analyses described in *Analysis of Impact to Denning Bears*.
- 5) **Operator training.** Pedersen et al. (2020) point out that training and experience with FLIR imagery is necessary for effective den detection. It is thus concerning that no clear description is given of the minimum training to be provided for ground-based FLIR crews. While the IHA requires that a trained scientist participates in aerial FLIR surveys for real-time analysis of survey data (p.79114), no similar requirement is made for the Tucker truck operators that will survey for bear dens along travel routes. Given that the primary role of these operators is to evaluate snow and ice conditions along the proposed

route (KIC 2020), it is unlikely that they will be experts with experience in the use of FLIR technology. This increases the likelihood of missed dens and thus of Level A or lethal take, as well as of Level B harassment. The KIC application for the IHA mentions “increased training for all crew members to identify signs of dens and bears” (KIC 2020, p.60) but there is not clarity on what this training will include. Given the importance of polar bears and the threats the Southern Beaufort Sea subpopulation already experiences, USFWS should take steps to further minimize disturbance by specifying content and duration of training, conducted by qualified scientists, regarding the use of ground-based FLIR. This training should include practice with artificial dens, similar to described by Pedersen et al. (2020), with defined minimum success rates to ensure crews are able to accurately detect all dens in a variety of conditions and thus comply with the stated assumptions of the IHA. There should also be specific requirements, similar to those stated in the draft IHA for aerial FLIR, regarding scientific review of all ground-based FLIR data and sharing of data with USFWS. All of these should be specified in a revised IHA.

- 6) Use of complementary methods.** Because of the issues identified with den detection using FLIR, Pedersen et al. (2020) recommend coupling FLIR surveys with reliable secondary methods, such as the use of trained scent dogs. While the IHA states that use of dogs is not feasible due to the large study area, it may be possible to combine their use with that of ground-based FLIR and only to search in areas where vehicle paths are expected to intersect with potential polar bear denning habitat and within 1 mile of temporary airstrips. Use of dogs would also enable detection of bears in dens deeper than 100 cm, which the IHA acknowledges will be missed by FLIR (p.79110). We request that USFWS update the IHA to require such secondary confirmation or demonstrate clear rationale regarding why such recommended practices will not be accommodated.

Finally, the draft IHA does not sufficiently account for direct disturbance from ground-based seismic operations. The effective range of ground-based FLIR is limited. The KIC application acknowledges that ground-based surveyors must be within 60 m of dens for effective detection (KIC 2020, p.81). This is well within the potential disturbance distance for denning polar bears. A recent study found that the probability of detecting ground-based Tucker vehicles, such as are proposed for these surveys, was at least 75% for distances of 60-130 m from dens, all within the distance proposed for surveys in the draft IHA (Owen et al. in press). This raises the risk of Level B, Level A, or lethal take (see Table 8 in the draft IHA). It is unclear whether these risks have been accounted for in the draft IHA analyses, especially given that such surveys will occur prior to the primary seismic operations within a sub-block. These risks need to be clearly described and quantified in a revised IHA, with resulting updates to estimated take at all levels. Also, the Owen et al. (in press) study is not cited in the draft IHA and the document should be updated to include this important study and its findings, with the estimated IHA results revised accordingly.

Analyses do not appear to account for aircraft impacts to denning bears

The *Analysis of Aircraft Impact to Surface Bears* section describes use of noise modeling software and empirical observations of polar bear response to aircraft overflights to identify expected response of polar bears to aircraft. We appreciate such detailed attempts to model aircraft noise effects on bears. We were surprised, however, that this analysis appears to have only been based on surface bears and that no attempt appears to have been made to model aircraft sound effects on denning bears, even though the draft IHA acknowledges that Larson et al. (2020) reported a 22.6% probability of exposure to aircraft activity leading to den abandonment (p.79096). The *Analysis of Impact to Denning Bears* section mentions “exposure” as including aircraft overflights within 1500 feet above ground level (p.79104), but there is no clear description of how aircraft overflights were incorporated in the model. Aerial FLIR surveys were included in the model, but only in the context of den detection not of disturbance to denning bears (p.79110). Modeled disturbance appears to only have included on-ground seismic activities, not overflights, based on the description in the draft IHA. Table 8 claims that the estimated take of denning bears includes those impacted by aerial FLIR (p.79111), but it is not described how this was incorporated. This is a

serious omission, given the relatively high potential for disturbance from aircraft (greater than 1 in 5, based on the draft IHA's own acknowledgement) and the severe consequences of den abandonment for Level A/lethal take of cubs and for Level B take of adults (Table 7, p.79105). The IHA needs to clearly indicate how such disturbance was accounted for and to revise estimates of Level B, Level A, and lethal take accordingly.

Other concerns

The *Analysis of Surface-Level Impact* section of the IHA indicates that a zone of influence of 0.5 miles was used to indicate the distance within which surface disturbances would affect polar bears (p.79094). However, the three distances cited to support this decision were observations of disturbance at 0.47 miles or less, at an average distance of 0.52 miles, and at 0.95 miles (p.79094). It thus seems that an argument could be made for 0.5 miles or 1.0 miles. Greater justification should be given for use of the lower distance threshold for a threatened species. In the interest of fully accounting for potential impacts to polar bears, it would also be helpful for the IHA to be revised to include an analysis of what the estimated take would be if a 1-mile distance was used instead. Such results would indicate how sensitive the results are to the inputs selected by USFWS.

Figure 9 displays the relative density of polar bear dens across the Arctic Refuge (p.79109). This was crucial input data for the modeling of seismic impacts on denning polar bears, as described in the *Analysis of Impact to Denning Bears* section. However, the seismic sub-blocks are displayed in an opaque color, making this crucial information unavailable in the area of greatest interest. This figure should be revised to clearly display the underlying data across the entire coastal plain, especially in the area proposed for seismic activities. This will allow better evaluation of potential effects by the public.

The summary of *Potential Impacts on the Polar Bear Stock* in the draft IHA concludes that "the greatest proportion of the stock that may experience Level B harassment in a given year during KIC's activities is 0.33 percent" (p.79111). However, this seems to not account for the credible intervals around the analysis results. For example, Table 8 lists 1.26 as the total estimated Level B take of denning polar bears and uses this towards the total estimated take of 2.534 bears, which is in turn used in the calculation of 0.33% of the subpopulation potentially affected. However, the *Analysis of Impact to Denning Bears: Model Results* section reports a 95% CI around this 1.26 of 0-8 takes (p.79110). Thus, while 2.534 is the average estimated number of Level B takes, this number could be lower or higher with some credible interval. It is, then, inappropriate to use that average as a representation of the greatest possible impacts. It should instead be revised to describe 0.33% as the average expected proportion of the stock that may experience Level B harassment. This is semantics, but for a threatened species like polar bears, the impression given by the semantics used is important.

In summary, we appreciate the extensive work that went into analyzing impacts of seismic exploration to polar bears in this draft IHA. However, we have several concerns that should be addressed prior to the IHA being finalized. We appreciate your review and consideration of these comments and requests. We look forward to your response.

Sincerely,



Kim Jochum
President
Alaska Chapter of The Wildlife Society

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