



CoastalPlain\_EIS, BLM\_AK &lt;blm\_ak\_coastalplain\_eis@blm.gov&gt;

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**[EXTERNAL] Audubon scoping comments**

1 message

**Culliney, Susan** <sculliney@audubon.org>

Tue, Jun 19, 2018 at 5:36 PM

To: "Blm\_ak\_coastalplain\_EIS@blm.gov" &lt;Blm\_ak\_coastalplain\_EIS@blm.gov&gt;

Hello,

Please find attached a comment letter from the National Audubon Society and Audubon Alaska for the *Notice of Intent to Prepare an Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program, Alaska*.

Thank you!

Susan Culliney

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Susan Culliney

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VIA ELECTRONIC MAIL

Nicole Hayes  
Attn: Coastal Plain Oil and Gas Leasing Program EIS  
222 West 7<sup>th</sup> Ave., Stop #13  
Anchorage, Alaska 99513  
Blm\_ak\_coastalplain\_EIS @blm.gov

**Re: Comments on the Notice of Intent to Prepare an Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program, Alaska.**

June 19, 2018

Dear Ms. Hayes,

For over a century, the National Audubon Society has worked to protect birds and the places they need, using science, advocacy, education, and on-the-ground conservation. Audubon Alaska is the state office for the National Audubon Society and for over 40 years has worked to conserve Alaska's birds and wildlife and their habitats. The Arctic National Wildlife Refuge is public land of immense national, international, and historical importance. The Arctic Refuge merits the strongest possible protection and the highest standards of environmental review. Audubon strongly opposes development in the coastal plain of the Arctic National Wildlife Refuge.

Audubon provides these comments on the *Notice of Intent to Prepare an Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program* in order to draw attention to the concerns and issues associated with developing an oil and gas program in the Arctic Refuge. To the extent that the administration pursues this objective, it must describe, quantify, address, and analyze the impacts, as well as thoroughly and rationally explain its final decision to the public. Below, we articulate the overarching issues, procedural issues, widespread environmental issues and impacts, impacts to terrestrial ecosystems and wildlife, impacts to aquatic ecosystems and wildlife, impacts to wilderness and scenery, impacts to human uses, and scientific needs.

**Overarching issues for the Refuge**

*Complete intact Arctic ecosystem.* Over 60% of the U.S. Arctic coastal plain is available or already leased for oil and gas development, while the coastal plain within the 1002 Area comprises only 5% of the coastal plain in the U.S. Arctic. That small section of coastal plain is part of a larger ecosystem that

has been comprehensively protected for decades. Between 1980 and December 2017, the Arctic National Wildlife Refuge was the only complete Arctic ecosystem in the United States protected by statute. This wholly complete Arctic ecosystem encompasses boreal forest, through mountains and foothills, to coastal plain, and finally to the coastal and marine ecosystems of the Arctic Ocean. An oil and gas leasing program in the 1002 Area therefore jeopardizes our current and future ability to conserve this Arctic ecosystem as an intact unit. The agency must explain that one major consequence of this leasing program is the reduced likelihood that in the future there will remain an unimpeded, completely protected Arctic ecosystem in the United States. Eliminating the protection for the Arctic Refuge also has ramifications for the Arctic's scientific baseline; without protected areas it will be difficult for future researchers to compare ecological and biological changes that are due to development and infrastructure versus natural background fluctuations and climate change.

*Refuge purposes.* In 1980, Congress established the Arctic National Wildlife Refuge under the Alaska National Interest Lands Conservation Act and directed the Refuge be managed for four purposes:

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears muskox, Dall sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the refuge.<sup>1</sup>

In 2017, Congress used a budget reconciliation process to add the oil and gas program as a fifth purpose.<sup>2</sup> The agency must explain how it will satisfy the oil and gas program purpose while also adhering to the original Refuge purposes.

*Scope of cumulative impacts.* The agency must consider cumulative impacts across the North Slope of Alaska and Canada, and into the federal Outer Continental Shelf of oil and gas and other development activities between the years 1900 to 2100.<sup>3</sup> The agency should calculate miles of roads, number of vessels, total acres of oil and gas development for roads, pipelines, drill pads, total cumulative North Slope gravel footprint, and offshore infrastructure. The cumulative impacts of the

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<sup>1</sup> 16 U.S.C. 668dd(2)(B)(i)-(iv).

<sup>2</sup> Pub. L. 115-97, Title II, sec. 20001(b)(2)(B)(iii).

<sup>3</sup> See e.g. U.S. Department of the Interior, Bureau of Land Management, *Final Integrated Activity Plan/Environmental Impact Statement Volume 4* (2012).

EIS should explain how the accumulation of energy infrastructure has increased, slowed, or accelerated over the years and describe the projection for acceleration or deceleration in the future. Given the development of the 1002 Area, the agency should quantify the percentage of the American Arctic coastal plain that will be directly and indirectly impacted by infrastructure. The agency must couple this model of cumulative activities with an ecological model of the intact ecosystem in order to understand how stressors, concurrently and through time, will affect biological and ecosystem function.<sup>4</sup> In sections below, we further articulate the needs for cumulative effects analysis in the EIS that are associated with particular species or ecological aspects.

### **Preliminary scientific needs**

*Landscape-level ecological model.* The agency will preliminarily need to build a conceptual ecological model of the North Slope region, which will serve as a basis for designing a monitoring program, detecting impacts, assessing cumulative impacts, and developing adaptive management.

*Inventory and monitoring.* The EIS should include an inventory of resource populations and conditions, and provide a detailed plan for biological and ecological monitoring. The agency should use the inventory and monitoring program to initially assess the health of biological resources, the location and significance of these resources, and over the long term use this program to analyze adaptive management, restoration, and the effectiveness of management practices in protecting these resources.

*Research and baseline studies.* The EIS should describe the agency's plan for conducting the necessary research and baseline surveys to be completed prior to leasing tracts in the project area. The taxa and species that require immediate data collection include but are not limited to freshwater fish, anadromous fish, polar bears, muskox, grizzly bears, caribou, rodents, shrews, small mammals, shorebirds, raptors, passerines, waterfowl (particularly endangered eiders), lichens, and moss. In addition to these biological baseline studies, physical baselines should also be established. Important physical factors include: extent of thermokarst; extent and depth of permafrost; depth, size, and density of freshwater lakes; in-stream gravel resources; and freshwater connectivity. We recommend that the agency collect additional baseline data for at least these species and these variables before undertaking an oil and gas program in the coastal plain.

*Scientific gaps and studies needed.* The agency should identify and address scientific gaps for our understanding of biological and ecological resources on the coastal plain. These gaps are articulated in resources such as the North Slope Science Initiative ongoing projects, as well as in conclusions sections in each paper included in the body of literature collected in the 2017 USGS *Summary of Wildlife-Related Research on the Coastal Plain of the Arctic National Wildlife Refuge, Alaska, 2002-17*.

### **Procedural issues**

*Extend scoping period.* A 60-day comment period has proved insufficient for scoping an area that has no precedent for oil and gas leasing and that is of such extraordinary value and public interest. The

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<sup>4</sup> National Research Council. 2003. *Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/10639>.

agency should extend this comment period by another 60 days and provide for a 120-day comment period during the upcoming DEIS comment period.

*Analyze all development stages.* The agency must comprehensively consider all stages of development in the EIS, including seismic work, leasing, exploration, development, production, and restoration/remediation.<sup>5</sup>

*Limitation to 2000 acres.* The 2017 tax bill limits the surface footprint of “production and support facilities (including airstrips and any area covered by gravel berms or piers for support of pipelines) during the term of the leases” to 2000 acres.<sup>6</sup> The DEIS must clearly articulate what structures, facilities, and other activities (e.g. winter infrastructure like ice roads and ice pads) will be counted toward the total 2000 acre limitation. The agency must also explain how it will guarantee that the two lease sales authorized under the law will collectively adhere to this strict limitation. The agency must offer the public a clear vision of how it will navigate this requirement, including a series of hypothetical development scenarios<sup>7</sup> to illustrate how the footprint will comply with law.

*Regulatory authority.* The agency should cite the regulations that authorize the development of this oil and gas program. The Tax Cuts and Jobs Act of 2017 indicates that the Arctic Refuge oil and gas program will be managed “in a manner similar to the administration of lease sales under the Naval Petroleum Reserves Production Act of 1976 (42 U.S.C. 6501 et seq.) (including regulations).”<sup>8</sup> The agency must cite the regulatory regime that is “similar to” the NPRPA and its associated regulations that will be used as authority for the Arctic Refuge oil and gas program. The agency should also articulate the relationship and roles between the Bureau of Land Management and the U.S. Fish and Wildlife Service in this environmental review process and in the management and operation of the oil and gas program.

*Leasing stipulations, performance-based metrics, best management practices, and mitigation measures.* The agency should explain in detail whether and how it will use a process to add performance-based requirements and mitigation in conjunction with leasing. What requirements, standards, stipulations, best management practices, and/or required operating procedures will be attached to leases? What waivers, exceptions, or modifications of stipulations may be used through permitting?

*Provide development scenarios.* The agency should offer the public hypothetical development plans in the DEIS, based on technically and economically recoverable resources, biological data, ecological data, and acreage limitations.

*Applicable laws, regulations, and policies.* The agency must comply with applicable statutes, treaties, department policies, and permitting regimes. These include the Endangered Species Act, the Marine

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<sup>5</sup> For example, the Final Integrated Activity Plan and Final Environmental Impact Statement for the National Petroleum Reserve – Alaska in 2012 analyzed seismic activity and reclamation as part of its cumulative impacts analysis and included stipulations and management for seismic work.

<sup>6</sup> Pub. L. 115-97, Sec. 20001(c)(3).

<sup>7</sup> See e.g. U.S. Department of the Interior, Bureau of Land Management, *Final Integrated Activity Plan/Environmental Impact Statement Volume 2* (2012), at 25.

<sup>8</sup> Pub. L. 115-97, Sec. 20001(b)(3).

Mammal Protection Act, Migratory Bird Treaty Act, Golden and Bald Eagle Protection Act, the Refuge Administration Act as amended by the Refuge Improvement Act, the International Agreement for the Conservation of the Porcupine Caribou Herd of 1987, the Alaska National Interest Lands Conservation Act, the Clean Air Act, Clean Water Act, Federal Land Policy Management Act, the Wilderness Act, the Arctic NWR Comprehensive Conservation Plan, Oil Pollution Act, Natural Resource Damage Assessment and Restoration, Comprehensive Environmental Response, Compensation, and Liability Act, the Paleontological Resources Preservation Act, and the National Contingency Plan.

## **Widespread environmental impacts and issues**

*Seismic impacts.* The EIS should include analysis of seismic activity and must explain the regulatory authority under which the agency will issue seismic permits. The agency should provide potential scenarios for seismic exploration, including methods for creating ice roads and snow roads, while explaining that 3D seismic technology requires laying down more tracks, in a denser grid pattern, than does 2D seismic technology. The agency should address the seismic tracks that remain in the coastal plain from activities in the 1980s, and whether the same type of tracks would be created again by any potential seismic work in the planning area. The agency should conduct a fine-scale analysis of snow, tundra soil, vegetation types, and hydrology throughout the planning area in relation to potential seismic work in those areas, in order to understand the sensitivity of different areas, the availability of water sources, the potential depletion of water sources, impacts to vegetation, and the disturbance to permafrost including formation of and contribution to thermokarst. Surveys should be conducted annually to show accumulation and monitor vegetation to record impacts and recovery from seismic trails and ice roads.

*Climate change and cumulative effects.* Climate change is occurring globally and nowhere are its effects more apparent than in the Arctic.<sup>9</sup> The agency must assess the impacts of climate change on the wildlife, habitat, landscape, and other values in the Arctic Refuge, as articulated in other sections of this comment letter. Beyond those analyses, the agency must also include a robust analysis of the cumulative effects of climate change, particularly when coupled with direct, indirect, and cumulative effects of development and infrastructure. To the extent that the agency is unable to explain how climate change coupled with an oil and gas program in the Arctic Refuge will cumulatively impact the wildlife, habitat, landscape, and other values in the Refuge, the agency must include an acknowledgement to that effect.

*Water withdrawals & water use.* Winter exploration work requires ice roads, snow trails, ice airstrips, ice bridges, and ice drilling pads, all of which use snowpack and water withdrawals. An ice-road uses about 1 million gallons of water per mile of road.<sup>10</sup> Ice pads can require about 5 million gallons to build.<sup>11</sup> Drilling operations may also require water to create fluid drilling operations. Just one oil well

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<sup>9</sup> AMAP, 2017. Snow, Water, Ice and Permafrost. Summary for Policy-makers. Arctic Monitoring and Assessment Programme (AMAP), Oslo, Norway. 20 pp.

<sup>10</sup> See U.S. Department of the Interior, Bureau of Land Management, *Final Integrated Activity Plan/Environmental Impact Statement Volume 2* (2012), at 18.

<sup>11</sup> See U.S. Department of the Interior, Bureau of Land Management, *Final Integrated Activity Plan/Environmental Impact Statement Volume 2* (2012), at 19.

will require tens of thousands of gallons per day.<sup>12</sup> Crews that live on-site will also require water for living. The agency must identify the water sources for oil and gas activities in the planning area, and explain how the agency will regulate water use while remaining in compliance with refuge purposes, legal requirements, and ecological needs. The agency should explain how water requirements will compare to snow depth and water availability; how water withdrawals will affect salinity, hydrology, and ecological needs of fish (e.g. overwintering populations), wildlife, and invertebrates at different times of year. The agency should inventory and monitor water and climatological resources in the planning area in relation to water use by development activities.

*Cumulative impacts on water resources.* The EIS should explain the cumulative impacts to the project area's water resources and their drainage patterns from past, present and future activities including water withdrawal and use, gravel structures, gravel mine sites, spills and contaminants, drilling waste disposal, abandonment and reclamation work, climate change and permafrost melt.

*Gravel use.* The agency should describe how it will source gravel for roads, pads, and airstrips. The EIS should analyze how gravel removal will affect the ecology and hydrology at sites of removal, materials staging, and the area where the gravel will be used. The agency should describe the effects to the tundra and vegetation and other natural resources from gravel excavation, transport, staging, and use in creating oil and gas infrastructure. This issue is closely tied to the 2000 acre issue, and it is imperative for the agency to explain that the gravel footprint in fact results in an impact area that is much greater. For example, the 2003 NRC Report on cumulative effects on the North Slope found that 10,000 acres of gravel resulted in 1000 square miles of affected area.<sup>13</sup>

*Sensitive area identification.* Will the agency identify areas and features that will remain unavailable for leasing and infrastructure, due to reasons of fish & wildlife, cultural resources, scenery, and other sensitive values?

*Invasive species.* The agency should identify the regulatory regime, stipulations, and best management practices it will use to address the issue of invasive plants and animals.

*Permafrost.* Numerous factors contribute to permafrost impact, including infrastructure, roads, a warming climate, and human activity including seismic work. Melting permafrost is increasing thermokarst in the Arctic landscape. The agency should conduct a fine-scale analysis of permafrost risk in the program area and identify how it plans to address this issue.

*Mitigation and reclamation.* Oil and gas activities eventually result in exhausted well sites, spent drilling muds, abandoned or partially buried hazardous materials and waste, old gravel strips and infrastructure, and piles of refuse. This is an ongoing issue in the Western Arctic, where old plugged and partially unplugged wells remain an expensive problem to clean up. Over time, rivers may erode areas and expose solid wastes. The agency should provide to the public its overall restoration goal

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<sup>12</sup> See U.S. Department of the Interior, Bureau of Land Management, *Final Integrated Activity Plan/Environmental Impact Statement Volume 2* (2012), at 21.

<sup>13</sup> National Research Council. 2003. *Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/10639>.

for this oil and gas program, and explain in detail its plans to require leaseholders to plug wells, remove all equipment, restore and revegetate sites with native species, conduct environmental studies and long-term monitoring.<sup>14</sup> The agency should take particular care to explain how its intended plan for the Arctic Refuge will function successfully, given that the success of mitigation and reclamation programs elsewhere are still pending (e.g. the gas fields in Wyoming and in the Western Arctic legacy wells program).

*Transportation systems.* The agency should explain how it will permit and manage roads, pipelines, aviation systems, and aquatic transportation systems. The DEIS should include analysis regarding how new transportation systems will interact with existing transportation modes that people use in the Refuge.

*Spills of oil and other materials.* Spills during production can include crude and refined oil, water or seawater,<sup>15</sup> gas releases, drilling mud, and other industrial materials. The agency should describe and analyze spill scenarios and response capacity for small, large, and very large spills with crude and refined oil and other materials, for both direct and cumulative effects, and apply these scenarios to the current legal and regulatory regime, including the Oil Pollution Act, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) among others. The agency should assess the impacts from oil spills to aquatic, marine, and terrestrial systems; and the biological resources of vegetation, birds, and wildlife. The agency should further explain and analyze how any current or pending regulatory rollbacks may change the compliance landscape and increase the on-the-ground impact from oil spills.

*Toxins and air pollution.* The agency should consider oil spills and industrial activities causing toxic exposure to humans, hydrology, and flora and fauna, and the potential for exacerbation of toxic materials when combined with climate change and permafrost melt. The EIS should include analysis of heavy metals, saline and radioactive materials from melting permafrost, coupled with chemicals resulting from oil spills and industrial activities. The agency must also analyze direct and cumulative air quality issues and the impacts to vegetation, wildlife, and humans, especially in North Slope communities.

*Vegetation, soils, and wetlands.* Explain impacts to coastal plain vegetation, soils, water, and wetland resources and their recovery patterns from past, present and future activities including vehicle activity, ice infrastructure, gravel structures, air pollution, gravel mine sites, dust from gravel roads,

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<sup>14</sup> For example, the Bureau of Land Management will restore the NPRA to its previous condition as fish and wildlife habitat after oil and gas activity ceases, as governed by 43 CFR Part 3160, subpart 3162, which requires lessees to reclaim the land in accordance with plans approved by the BLM (43 CFR §§ 3162.3-4 and 3162.5-1). The Integrated Activity Plan that operates in the NPRA also requires all lessees to include financial assurances for facility removal and reclamation (43 CFR Part 3130, subpart 3134).

<sup>15</sup> See U.S. Department of the Interior, Bureau of Land Management, *Final Integrated Activity Plan/Environmental Impact Statement Volume 2* (2012), at 37 (“If local freshwater sources are inadequate to meet the demands of waterflood programs, seawater is used.”), at 80 (“For instance, seawater and produced water spills can be quite large and have the potential to affect large areas. Seawater spills to fresh water can have significant impact.”); IAP Vol 4 at 117 (“A vast amount of seawater has been pumped from the Beaufort Sea to use for waterflooding of current North Slope production wells.”)

spills and contaminants, abandonment and reclamation work, climate change and permafrost melt. In order to properly consider the development impacts and mitigation opportunities for these resources, the agency should conduct a fine-scale analysis of vegetation, soil, and wetlands, and include data on permafrost, hydrology, and snow, with analysis of different development scenarios.

*Noise impacts.* Noise from all stages of industrial activity can impact terrestrial wildlife, marine wildlife, humans, and wilderness areas. Catalog the existing noise in the planning area, explain the changes in noise that will occur with the development of an oil and gas program, describe impacts, and provide a method for addressing and monitoring this issue.

*Subsistence advisory panel.* In order to ensure local participation in the decision-making process as it relates to subsistence use in the National Petroleum Reserve-Alaska, the BLM established a local subsistence advisory panel. The agency should create a similar panel for the Arctic Refuge that includes subsistence hunters and gatherers from all communities who use the subsistence resources originating in the Arctic Refuge.

## **Impacts to terrestrial ecosystems and wildlife**

*Sensitive species.* The agency must identify and closely consider plant and animal species that are specifically identified as sensitive or of conservation concern, including listing under the Endangered Species Act, designation as a USFWS Bird of Management Concern, designation as “BLM Special Status Species” or “BLM Sensitive,” inclusion on the IUCN Red List, inclusion on the Audubon Alaska 2017 WatchList,<sup>16</sup> inclusion in the U.S. Shorebird Conservation Plan, or species identified as “climate-sensitive” in agency reports. The agency must ensure each of these particularly sensitive species receives appropriate attention and analysis.

*Rodents, hares, and small mammals.* The DEIS should identify the species of rodents, hares, and small mammals on the coastal plain of the Arctic Refuge, explain the impacts that will stem from the oil and gas program, and detail the relationship of population trends of small mammals to the population health for larger predators. The agency should include a monitoring program in the EIS for tracking the impacts of the oil and gas program on these species.

*Muskoxen.* Muskoxen tend to be sedentary in winter in order to conserve their fat stores. These animals are vulnerable to winter conditions that cover the tundra in deep snow or ice (e.g. rain-on-snow events), cutting them off from foraging on the tundra plants. The need for muskoxen to avoid travel while also accessing prime foraging areas makes them extremely sensitive to disturbance in the winter. Disturbance can chase muskoxen away from good foraging areas and cause them to expend fat stores, and both factors can contribute to starvation and death. The agency should explain how the stages of development will avoid disturbing muskoxen with noise, seismic work, and

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<sup>16</sup> Nils Warnock, *The Alaska Watchlist 2017* (2017), available at <http://ak.audubon.org/conservation/alaska-watchlist>. WatchList species that merit analysis in the EIS are Brant, Greater Scaup, King Eider, American Golden-Plover, Whimbrel, Dunlin (*Calidris alpina articola*), Buff-breasted Sandpiper, Pectoral Sandpiper, Ivory Gull, Ross’s Gull, Yellow-billed Loon, Snowy Owl, and Spectacled Eider.

development patterns. The DEIS should include analysis of how disturbance interacting with climate change, predation, and other impacts may cause cumulative effects on muskoxen.

*Caribou.* The EIS should catalog the current population numbers and historical trends of the Porcupine Caribou Herd, the Central Arctic Caribou Herd, the Teshekpuk Caribou Herd, and the Western Arctic Caribou herd, and identify the broad factors and best available science that help explain how caribou in the project area will respond to an oil and gas program. The DEIS should delve into the impacts that noise, infrastructure, and industrial activity can have on male, female, and calf caribou at different times of year and at different life stages, and explain how these individual impacts can manifest in impacts at the herd level. The agency must include analysis of roads and infrastructure as barriers to caribou migration.<sup>17</sup> The EIS must also analyze effects from climate change on caribou habitat and natural history. The agency should compare development scenarios with knowledge of caribou movements, migrations, and habitat use, factoring in caribou population trends and herd numbers. The EIS should include a monitoring plan for caribou demographics, movement, and seasonal range use of the Porcupine Caribou Herd and Central Arctic Caribou Herd in relation to potential oil and gas activities.

*Caribou calving grounds.* The EIS should describe the calving grounds for the Porcupine Caribou Herd and the Central Arctic Caribou Herd, both historically and through time. The EIS should provide maps of the caribou calving ranges at the 90% density level, and provide the public with access to the relevant data sets. The EIS must analyze how development, infrastructure, and noise in the Arctic Refuge will affect the calving grounds for both of these herds. The agency should take care to explain how the Central Arctic Caribou Herd calving grounds have shifted away from development in the Prudhoe Bay area,<sup>18</sup> and in the EIS apply this behavioral response to the Porcupine Caribou Herd in the Arctic Refuge, where the coastal plain is much narrower than in the central and western Arctic. The analysis in the DEIS should further consider the quality of available alternate habitats and estimate the nutritional impacts of caribou displacement from preferred calving areas.<sup>19</sup>

*Cumulative impacts on caribou.* The cumulative impacts analysis on the Porcupine Caribou Herd must include consideration of factors external to the project area, including impacts that could occur in other areas of the herd's migration. The cumulative impacts analysis in the EIS should also include the interaction of industrial activity, habitat quality, the effects of air pollution on forage, project area topography, and climate change, and the potential for these individual impacts to compound and have a greater effect on caribou within the project area.

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<sup>17</sup> Dau, J. R. and R. D. Cameron. 1986. *Effects of a road system on caribou distribution during calving*. Rangifer 6:95-101; Dau, J. 2015. *Units 21D, 22A, 22B, 22C, 22D, 22E, 23, 24 and 26A caribou management report*, In Caribou management report of survey and inventory activities 1 July 2012–30 June 2014. P. Harper and L. A. McCarthy eds., pp. 14-11:14-89. Alaska Department of Fish and Game, Juneau, Alaska; Wilson, R. R., L.S. Parrett, K. Joly, and J. R. Dau. 2016. *Effects of roads on individual caribou movements during migration*. Biological Conservation 195:2-8.

<sup>18</sup> See e.g. Cameron, R. D., D. J. Reed, J. R. Dau, and W. T. Smith. 1992. Redistribution of calving caribou in response to oil field development on the arctic slope of Alaska. *Arctic* 45:338-342.

<sup>19</sup> See Barboza, P. S., L. L. Van Someren, D. D. Gustine, and M. S. Bret-Harte. 2018. The nitrogen window for Arctic herbivores: Plant phenology and protein gain of migratory caribou (*Rangifer tarandus*). *Ecosphere* 9.

The development and implementation of an oil and gas program in the Arctic Refuge should also be considered within the context of industrial development across the North Slope of Alaska. The Porcupine Caribou Herd is currently the only herd in the American Arctic that does not have industrial activity within its calving grounds and can serve as a control group for more broadly understanding industrial impacts to caribou. With the loss of that baseline, the agency must explain the long-term effects to our scientific understanding.

*Grizzly bears.* The development and implementation of an oil and gas program in the Arctic Refuge has the potential to impact grizzly bears, particularly with seismic activity affecting denning behavior. The agency should survey and monitor grizzly bears in the planning area to document population levels and trends, as well as to reduce human-bear conflict, including preventing bears from consuming garbage and waste at industrial sites.

*Wolverines.* The agency should survey and monitor wolverines in the planning area, explain the impact of infrastructure on wolverines, and particularly analyze whether seismic activity will impact wolverines and denning behavior. The agency should also analyze the impact of development on caribou abundance as a factor for wolverine population health. The agency should explain whether wolverine habitat loss may occur in riparian areas from gravel excavation for infrastructure and road building.

*Birds.* There have been 201 species of birds documented in the Arctic National Wildlife Refuge.<sup>20</sup> Of these 201 species, there are 109 confirmed breeding birds, 35 are likely breeders, 22 use the Refuge during migration or are regular visitors, and 35 species are irregular or vagrants.<sup>21</sup> The DEIS must include a catalog of the species of terrestrial, aquatic, and marine birds that use the coastal plain of the Arctic Refuge at various life stages, and include details on each species' status, distribution, abundance, and available conservation resources. Audubon WatchList<sup>22</sup> species that merit analysis in the EIS are Brant, Greater Scaup, King Eider, American Golden-Plover, Whimbrel, Dunlin (*Calidris alpina articola*), Buff-breasted Sandpiper, Pectoral Sandpiper, Ivory Gull, Ross's Gull, Yellow-billed Loon, Snowy Owl, and Spectacled Eider. The coastal plain of the Arctic Refuge is also an Important Bird Area for Golden Eagle, Snow Goose, Red-throated Loon, two phalaropes, and nine species of shorebirds.<sup>23</sup> The DEIS should provide a monitoring plan to track effects of development, activity, noise, and climate on birds that breed, feed, molt, and stage in the planning area. The agency must review existing literature and identify gaps in knowledge.

*Birds and oil spills.* An oil and gas program in the Arctic terrestrial environment will cause spills of oil and associated noxious fluids and materials.<sup>24</sup> Oil spills on land can have devastating effects on

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<sup>20</sup> U.S. Fish and Wildlife Service, *Arctic National Wildlife Refuge Comprehensive Conservation Plan* (2015) Appendix F, available at [https://www.fws.gov/home/arctic-ccp/pdfs/07\\_AppF\\_Species.pdf](https://www.fws.gov/home/arctic-ccp/pdfs/07_AppF_Species.pdf).

<sup>21</sup> U.S. Fish and Wildlife Service, *Arctic National Wildlife Refuge Comprehensive Conservation Plan* (2015) Appendix F, available at [https://www.fws.gov/home/arctic-ccp/pdfs/07\\_AppF\\_Species.pdf](https://www.fws.gov/home/arctic-ccp/pdfs/07_AppF_Species.pdf).

<sup>22</sup> Nils Warnock, Audubon Alaska WatchList 2017 (2017), available at <http://ak.audubon.org/conservation/alaska-watchlist>.

<sup>23</sup> <https://databasin.org/maps/new#datasets=f9e442345fb54ae28cf72f249d2c23a9>

<sup>24</sup> See e.g. Alaska Department of Environmental Conservation, *Annual Summary of Oil and Hazardous Substance Spills Fiscal Year 2014* (2015), available at <https://dec.alaska.gov/spar/ppr/spill-information/spill-data>.

birds<sup>25</sup> and can be particularly impactful when the spill reaches a water source such as a lagoon, estuary, or marine environment. The agency should provide oil spill scenarios that include the likelihood, potential frequency, times of year, and potential volume of oil spills from development and vessel activity. The agency should then compare these oil spill scenarios with where they may occur in the planning area using hypothetical development scenarios. The agency should compare oil spill scenarios and hypothetical occurrences on the landscape with range maps, movement timing, and life histories of the bird species that occur in the Arctic Refuge. Areas of particular concern are along rivers, river deltas, and barrier island lagoons in the fall and spring, where birds concentrate for migration and post-nesting staging.

*Birds and collisions.* Collisions with infrastructure is a prominent cause of bird mortality around the globe.<sup>26</sup> The DEIS should discuss the potential for migrating and commuting birds to collide with aircraft, stationary vehicles, buildings, pipelines, and other infrastructure associated with all stages of this oil and gas program, particularly during migration periods, within migratory corridors, and within migratory staging areas. The agency should include discussion of lighted structures at night or in foggy conditions that may attract or disorient birds as they migrate or commute to foraging areas. The coastal plain of the Arctic Refuge is also an important migratory staging area for some bird species.<sup>27</sup> The agency should describe the migratory staging phenomenon, and explain the ways that an oil and gas program in the program area may impact migratory staging.

*Birds and habitat loss.* The oil and gas program will result in the direct and indirect loss of bird habitat from roads, infrastructure, and human activity. The program will also result in impacts to wetlands and aquatic habitat through water use and contamination. The agency should quantify and describe the acreage that will be disturbed, destroyed, or covered in the process of seismic work, gravel excavation, gravel staging areas, building roads, pipelines, drill pads, crew housing and support, water withdrawals, and other activity stemming from the oil and gas program. The DEIS must explain the impacts to birds that will result from these activities and what remedies and mitigation measures the agency will apply to address these problems.

*Birds and predation.* Buildings, human activity, and waste products attract mammalian predators. Infrastructure, vehicles, buildings, and other vertical structures can offer nesting and perching habitat for avian predators as well.<sup>28</sup> Infrastructure, therefore, may have an impact on tundra nesting birds via increased predation. The DEIS should describe, quantify, and analyze the increased

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<sup>25</sup> See Frederick A. Leighton, *The toxicity of petroleum oils to birds*, 1 Environmental Reviews 92 (1993), available at <http://www.nrcresearchpress.com/doi/abs/10.1139/a93-008#.WxGaQkgvzIU>.

<sup>26</sup> Graham R. Martin, *Understanding bird collisions with man-made objects: a sensory ecology approach*, 153 Ibis 239 (2011), available at <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1474-919X.2011.01117.x>; Andrew R. Jenkins, Jon J. Smallie, and Megan Diamond, *Avian collisions with power lines: a global review of causes and mitigation with a South African perspective*, 20 Bird Conservation International 263 (2010), available at <https://www.cambridge.org/core/journals/bird-conservation-international/article/avian-collisions-with-power-lines-a-global-review-of-causes-and-mitigation-with-a-south-african-perspective/8C0875430F0C4376693820CA3A90369C>.

<sup>27</sup> See e.g. Jerry W. Hupp and Donna G. Robertson, *Forage site selection by lesser snow geese during autumn staging on the Arctic National Wildlife Refuge, Alaska*, 138 Wildlife Monograph 3 (1998).

<sup>28</sup> Liebezeit, J. R., J. Kendall, S. Brown, C. B. Johnson, P. Martin, T. L. McDonald, D. C. Payer, C. L. Rea, B. Streever, A. M. Wildman, and S. Zack, *Influence of human development and predators on nest survival of tundra birds, Arctic Coastal Plain, Alaska*, 19 Ecological Applications 1628 (2009), available at <https://www.ncbi.nlm.nih.gov/pubmed/19769108>.

predation on nesting birds that will occur from development infrastructure and compare the increased predation potential with the distribution and abundance of vulnerable bird species.

*Birds and acoustic impacts.* Noise from all stages of industrial activity can impact birds including causing stress, fright or flight, avoidance, changes in behavioral habits like nesting and foraging, changes in nesting success, modified vocalizations, or interference with the ability to hear conspecifics or predators.<sup>29</sup> The DEIS should catalog the existing noise in the planning area, explain the changes in noise that will occur with the development of an oil and gas program, describe impacts that will occur for birds, and provide a method for addressing and monitoring this issue.

*Cumulative effects to birds.* The agency should consider impacts to birds within the project area at the project-, state-, national-, and global-population levels. Impacts that the DEIS should include in its cumulative impacts analysis include collisions, acoustic effects, disturbance from vehicle and vessel traffic on water and land, habitat fragmentation and loss, road effects, increased predation from predator attraction to infrastructure, oil spills, water withdrawals and water contamination, and climate effects such as warmer soil temperatures, vegetation changes, and any shift in phenology that may affect foraging and nesting opportunities.

Considering the impacts to migratory birds during other parts of their migratory journey is another key component in analyzing cumulative effects of this oil and gas program. The cumulative impact analysis is particularly critical for migratory birds because their life histories take them around the globe along migratory routes, where they require suitable stopover habitat and wintering habitat in addition to their Arctic nesting habitat. The effects on birds from one part of their life history can impact them in surprising ways at other times of their life cycle.<sup>30</sup> Threats and influences beyond the North Slope should be considered for migratory bird populations in the project area.

## **Impacts to aquatic and marine ecosystems**

*Marine Protected Area.* The agency should address threats and rules applicable to any Marine Protected Areas<sup>31</sup> that could be impacted by an oil and gas program in the 1002 Area.

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<sup>29</sup> Clinton D. Francis and Jessica L. Blickley, *The influence of Anthropogenic Noise on Birds and Bird Studies*, 74 Ornithological Monographs 6 (2012), available at <http://americanornithologypubs.org/doi/pdf/10.1525/om.2012.74.1.6?code=coop-site>.

<sup>30</sup> See e.g. Jan A. Van Gils, Simeon Lisovski, Tamar Lok, Wlodzimierz Meissner, Agnieszka Ozarowska, Jimmy De Fouw, Eldar Rakhimberdiev, Mikhail Y. Soloviev, Theunis Piersma, and Marcel Klaassen, *Body shrinkage due to Arctic warming reduces red knot fitness in tropical wintering range*, 13 Science 819 (2016).

<sup>31</sup> See US Fish and Wildlife Service, *Arctic National Wildlife Refuge Revised Comprehensive Conservation Plan* (2015) at 4-13 ("In 2005, all marine waters located within Refuge boundaries were nominated as part of the National Marine Protected Area System. Currently, approximately 91,000 acres of marine waters and lagoons located off the northern coast of the Refuge are a designated marine protected area (MPA). Given the uncertainty of shifting shorelines and the point at which to differentiate between freshwater and saltwater at river mouths, the acreage estimate for the MPA is plus or minus several hundred acres. Executive Order 13158, issued in 2000, strengthened and expanded the nation's system of MPAs and defined them as "...any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein."").

*Marine and coastal activities.* An oil and gas program in the planning area could potentially connect to marine and coastal areas by way of infrastructure, water use and hydrology, and vessel traffic. In order to analyze these activities, the agency will need to present a thorough documentation and analysis of coastal and marine hydrology during different seasons, coastal and underwater geology, characteristics of sea ice coverage and movement, coastal and marine currents along the mainland and between nearby barrier islands, and the physical and chemical characteristics of marine and coastal zones.

*Marine mammals and oil spills.* The EIS should catalog the marine mammal species that could be implicated by marine and coastal activities under the proposed oil and gas program and must discuss impacts from oil spills, vessel traffic, and acoustic effects. The EIS must describe the likelihood, potential frequency, and potential volume of oil spills from development and vessel traffic activity. The agency should compare these oil spill scenarios with where they may occur in the planning area using hypothetical development scenarios, and then compare the oil spill scenarios and hypothetical occurrences on the coasts and marinescape with range maps, movement timing, and life histories of the marine mammals implicated by the oil and gas program.

*Polar bears.* The EIS must describe presence, habitat use, and the population trend for polar bears in the project area. The EIS must analyze impacts to polar bears from seismic activity, noise, toxins, and air pollution; whether and how infrastructure and increased human presence could result in harassment of bears, human-bear conflict, and elimination of problem bears; and the higher potential for conflict given that bears are increasingly denning in coastal areas as the sea ice forms later in the season. Consider these issues in light of the Southern Beaufort Sea subpopulation decline and the potential for further severe reductions in population from climate change in the coming decades. The EIS should include a polar bear monitoring program including denning, demographics, summer onshore habitat use, behavior, health, and status of polar bear populations.

*Legal requirements for polar bears.* Harassment of, elimination of, and impacts to polar bears and their designated critical habitat are subject to the Marine Mammal Protection Act and the Endangered Species Act. The agency must assess the level of impact and explain these actions in relation to legal requirements, including how it will assess take of polar bears and how it will legally mitigate the impact to polar bears.

*Fish.* The EIS should identify and describe the fish-bearing water bodies, survey and catalog the fish species known to be found within, and identify water bodies that require surveys and monitoring for fish presence and status. The EIS should include a complete description of Essential Fish Habitat under the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801-1882) within the project area.<sup>32</sup> The agency must analyze whether and how Essential Fish Habitat will potentially shift in response to climate change, and what will be the biological response to such habitat shift. The EIS should detail how all stages of an oil and gas program in the planning area will directly impact fishes, or potentially exacerbate a climate effect on fishes. The agency should include

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<sup>32</sup> National Marine Fisheries Service, *Final Environmental Impact Statement for Essential Fish Habitat Identification and Conservation in Alaska* (2005), Appendix D, Figure D-75. See also IAP Vol 6 at 66.

discussion of winter industrial activities shifting spring hydrology patterns, effects to overwintering fish in water bodies used for ice infrastructure, and effects to fish at seawater intake sites.

*Fish and oil spills.* The EIS should discuss the impacts to fish from oil spills and describe the likelihood, potential frequency, times of year, and potential volume of oil spills. The agency should compare these oil spill scenarios with where they may occur in the planning area using hypothetical development scenarios. The agency should then compare the oil spill scenarios and hypothetical occurrences on the landscape with range maps, movement timing, and life histories of the fish species that occur in the Arctic Refuge.

### **Impacts to wilderness and scenery**

*Wilderness and wild and scenic rivers.* The agency should catalog and monitor the wilderness character and values of the project area. The agency should also assess impacts to designated Wilderness areas, including noise and air quality changes, from an oil and gas program in the project area. Similarly, the EIS must catalog and explain how the agency will monitor the wilderness character and values of rivers in the project area, and assess impacts to designated wild and scenic rivers.

*Scenic and visual resources.* Seismic activities, development work, and infrastructure will contrast with the form, line, color, and texture of a primarily low-relief natural landscape. Oil and gas activity in planning area may be visible by people traveling in the foothills or mountains. Activity and infrastructure could be visible to visitors and locals who are flying in or over the project area. The EIS must describe and, where necessary, collect and compile data on the scenic values and visual resources that may be impacted by an oil and gas program in the 1002 area. The agency should determine the objectives for each scenic and visual resource area, and evaluate how development will impact these objectives.<sup>33</sup> The agency should use a visual impact distance of 25 miles or more to assess the viewshed, and consider vantage points from foothills and mountains overlooking development scenarios on the coastal plain.

### **Impacts to human uses**

*Access for human uses.* The EIS should articulate which human uses (rafting, kayaking, skiing, and other non-motorized transportation, dogs and dog teams, fishing, hunting, snowmachining and other motorized transportation for accessing subsistence resources, subsistence egg collection, berry picking, firewood gathering, hiking and walking, wildlife watching, photography and videography, camping, aircraft and helicopter flyovers, landing zones for aircraft, scientific research activities, traditional ecological knowledge gathering, and others) will be impacted by an oil and gas program. The EIS should catalog the extent, timing, and location for each of these human uses that are occurring in the project currently, have occurred in the past, or are estimated to occur in the future. The EIS must articulate which of these human uses would be legally restricted on privately leased

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<sup>33</sup> See e.g. U.S. Department of the Interior, Bureau of Land Management, *Final Integrated Activity Plan/Environmental Impact Statement Volume 2* (2012), at 328 (BLM uses a “Visual Resource Management” system to protect scenic values by reducing visual contrasts in the landscape, with each class assigned objectives for obtaining a particular management level).

lands and on developed lands. The agency must define the legal regime that will apply to each of these uses when land is privately leased or when land is developed. The EIS should also explain how the agency will communicate to locals and visitors that these uses are or are not allowed on leased and developed lands.

*Subsistence harvest patterns & economics.* The EIS must evaluate how energy development on the North Slope has already changed, disrupted, or affected subsistence hunting patterns and how these effects may apply to the oil and gas program in the Arctic Refuge. The EIS should quantify and describe the subsistence harvest levels of caribou for communities utilizing caribou that rely on the Arctic Refuge. The EIS should explain the link between an oil and gas program, caribou population health, community harvest levels, and the economic impacts from shifting harvest patterns. The agency should further explain the effects of industrial waste and air pollution on the health of caribou and the real or perceived health and safety of humans consuming harvested animals.<sup>34</sup>

*Polar bear subsistence hunting.* In light of impacts to polar bears from an oil and gas program in the planning area, the EIS should explain how it will assess the taking of polar bears under the Marine Mammal Protection Act and the Endangered Species Act and how it will mitigate the impact to subsistence hunting of polar bears.

*Recreation, tourism, and visitor experience.* The EIS should analyze how an oil and gas program will conflict with recreational use and impact the tourism economies of the State of Alaska, as well as communities of Fairbanks, Kaktovik, Bettles, Arctic Village, Coldfoot, and other visitor destination and departure points on the North Slope. The agency should provide detail on development scenarios that may result in changes to the availability of recreation permits. The agency must also explain the disruption of visitor experience resources from development scenarios, including visuals, scenery, feelings of solitude, spirituality, and quietness, particularly in high-use areas of the Refuge.

*High-use areas.* The EIS should describe the potential for oil and gas program development scenarios to divert and displace recreation and other human uses from dispersed areas on the coastal plain into concentrated use at other sites. Potential problems that the EIS should analyze include restrictions of visitor numbers, waste disposal, and conflict between user groups. The agency should provide a plan for how it will work through these conflicts.

*Archeological sites.* The EIS should provide an inventory of ancient cultural, paleontological, and anthropological sites in the planning area, and include a plan to monitor these resources in order to identify, evaluate, and protect those resources that are potentially affected by oil and gas exploration, development, and production activities. The agency must detail the method by which it will assess and handle any new discoveries, and explain how it will track, avoid, and mitigate effects from the oil and gas program on archaeological resources.

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<sup>34</sup> See e.g. IAP Vol 2, at p. 202 (“The issue of contamination is complex, and the potential for harm due to ingestion of contaminants has not been definitively answered. Nonetheless, the perception of contamination (regardless of whether or not any “real” contamination exists) may lead people to avoid healthy traditional foods and rely more heavily on store-bought foods, with resulting health consequences.”).

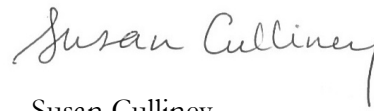
## Conclusion

Audubon opposes oil and gas development in the Arctic National Wildlife Refuge. As public land with immense national, international, historical, and future value for Americans and global citizens, the Arctic National Wildlife Refuge merits the strongest possible protections and the most stringent adherence to regulatory processes. To the extent that the administration pursues this program, it must fully and carefully analyze the issues described herein and address scientific gaps before proceeding. Thank you for the opportunity to describe our concerns and raise the issues associated with developing an oil and gas program on the coastal plain of the Arctic National Wildlife Refuge.

Sincerely,



Sarah Greenberger  
Senior Vice President, Conservation Policy  
National Audubon Society



Susan Culliney  
Policy Director  
Audubon Alaska