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Submitted via e-mail

Dear Ms. Jones:

This public comment letter addresses the Bureau of Land Management's (BLM's) proposed action plan for a seismic survey in the 1002 Area of the Arctic National Wildlife Refuge (Arctic Refuge)[1]. We are professional biologists and ornithologists who have observed or studied shorebirds in the Arctic Refuge or elsewhere on Alaska's North Slope and Arctic Coastal Plain. As such, we are deeply concerned about the confused signals given to the public about the public process being followed in regard to the SAExploration, Inc. proposed seismic survey as well as BLM's apparent determination to prepare only an Environmental Assessment (EA), not an Environmental Impact Statement (EIS), and to follow the EA with a Finding of No Significant Impact. Given our histories and collective experience in Arctic Alaska, we conclude that there is ample reason to find that an extensive and intensive program of seismic exploration in the 1002 Area likely will have a significant, long-term and cumulative impact on shorebirds using habitats in the Arctic Refuge. Hence, BLM has the responsibility to prepare a full EIS on this application to conduct winter seismic exploration and that, in doing so, it must thoroughly consider the best available scientific information and insights in regard to the impacts of the seismic activity.

The Arctic Refuge's Importance to Breeding Shorebirds

Shorebirds are the most diverse and abundant group of avifauna in northern Alaska (Johnson and Herter 1989, Bart et al. 2012), and the Arctic Refuge provides some of the most productive breeding shorebird habitat in the region for 14 shorebirds species (Table 1, Brown et al. 2007). Some of the higher densities of breeding shorebirds in northern Alaska occur within the 1002 Area of Arctic Refuge (26.6 ±2.6 individuals/km^2). The most abundant species include Pectoral and Semipalmated Sandpipers, Red-necked and Red Phalaropes, American Golden-Plover, and Dunlin (listed in descending order of abundance). Within the 1002 Area, conservative population estimates for these species total 229,960 ±22,487 individuals (104,122–362,938 95% CI), which exceeds the biological criterion for recognition as a site of international importance in the Western Hemisphere Shorebird Reserve Network (> 100,000 birds, international level) and protection under the Ramsar Convention on Wetlands of International Importance (>20,000

[1] Bureau of Land Management (BLM). (2018). Seismic Exploration of the Coastal Plain. https://eplanning.blm.gov/epl-front-office/projects/nepa/111085/151625/185842/Seismic_Proposed_Action.pdf.

birds). The Arctic Refuge provides highly suitable shorebird breeding habitat and is the second most important breeding area on the Arctic Coastal Plain of Alaska (Saalfeld et al. 2013).

Several of the shorebird species using the 1002 Area are either highly imperiled or are species of high concern in various federal and state plans. Typically these species are classified because their populations are small or declining, their distributions are limited, or there are high threats to individuals or habitats (Brown et al. 2001, Andres et al. 2016). Of the 14 species breeding in the Arctic Refuge, 9 are determined to be of either High or Moderate Conservation Concern or have declining population trends (Table 1).[2]

How are breeding shorebirds likely to be impacted by seismic surveys?

Shorebirds are extremely susceptible to negative impacts of habitat alteration due to their dependence upon low-lying fragile mesic to xeric tundra habitats (Cunningham et al. 2016). Dunlins, Long-billed Dowitchers and Red Phalaropes select breeding habitats based on their degree of wetness, as well as other microhabitat features that assist with nest concealment and proper thermoregulation of the nest cup and proximity to water (Rodrigues 1994, Cunningham et al. 2016). The degree of variation in tundra topography from mounds, ridges and polygon landforms is also an important criterion for nesting shorebirds (Cunningham et al. 2016).

Post-seismic vegetation surveys have documented long-term changes to tundra habitats in the 1002 Area and Canada (Kemper et al. 2009a, Kemper et al. 2009b, Jorgenson et al. 2010). These changes include damage due to compression and thermokarsting that degrade tundra habitats and alter fine scale hydrology. In our opinion, any such changes will—over time—likely impact habitats used by breeding shorebirds at the micro- and meso-scales. We are not aware of studies specifically addressing the impacts of winter seismic work on Arctic nesting shorebirds, but one study in nearby Arctic Canada found reduced abundance of nesting songbirds on 10-30 year-old seismic tracks, apparently due to the impacts of those tracks on tundra vegetation (Ashenhurst and Hannon 2008).

There are several interacting factors that make predicting how shorebirds will be impacted by seismic surveys challenging. The extent of the proposed seismic surveys is yet unplanned or at least unknown to the public. In addition, thousands of kilometers of high-density gridded seismic tracks will not avoid sensitive areas, including underlying habitats that already have been shown to be adversely impacted by seismic surveys (e.g., dry sites that are less robust to compaction and recover slower, Jorgenson et al. 2010). There are also changes occurring within the landscape on the Arctic Coastal Plain due to climate change, including coastal erosion, thermokarsting and draining of lakes with permafrost melting (Martin et al. 2009). These changes will interact and accumulate with any lingering impacts of the seismic activity. In addition, shorebirds vary in their ability to withstand disturbance, and population sizes of individual species will likely change through time due to factors occurring at other places in their annual cycles.

[2] U.S. Shorebird Conservation Plan Partnership (USSCPP). 2016. U.S. Shorebirds of Conservation Concern ─ 2016. http://www.shorebirdplan.org/science/assessment-conservation-status-shorebirds/.

Conclusion

The bottom line is that there is ample evidence that seismic exploration can result in long-term (decadal scale) impacts on Arctic tundra vegetation, soils and hydrology. These changes will in turn almost certainly influence and negatively impact nesting habitats for several hundred thousand shorebirds nesting within the 1002 Area. Several of the shorebirds nesting in the region are of high conservation concern, and any negative impacts on nesting habitat may influence nesting success and ultimately have effects at a population level. The absence of research on the impacts of winter seismic exploration on breeding shorebirds is not a basis for concluding that the impacts of such activities will be insignificant. Indeed, our collective experience working on Arctic nesting shorebirds points toward likely significant impacts. Hence, the BLM should prepare a full EIS with extended time for public comment before making any decisions on a winter seismic exploration program in the Arctic Refuge.

Thank you for considering this public comment. We note again the confusion about the process in which BLM is engaged, and we can only hope that these comments are given due consideration.

Thank you,

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Table 1. Shorebird species that breed in the 1002 Area of Arctic National Wildlife Refuge.

Species[1]	**Scientific Name**	**Species of Conservation Concern 2016**[2]	**Population trend**[3]
American Golden-Plover	*Pluvialis dominica*	HC	dec
Semipalmated Plover	*Charadrius semipalmatus*	LC	INC
Whimbrel	*Numenius phaeopus rufiventris*	HC	dec
Ruddy Turnstone	*Arenaria interpres interpres*	MC	UNK
Semipalmated Sandpiper	*Calidris pusilla*	HC	STA
Western Sandpiper	*Calidris mauri*	MC	dec
Baird's Sandpiper	*Calidris bairdii*	LC	UNK
Pectoral Sandpiper	*Calidris melanotos*	HC	DEC
Dunlin	*Calidris alpina arcticola*	HC	DEC
Stilt Sandpiper	*Calidris himantopus*	LC	dec
Buff-breasted Sandpiper	*Tryngites subruficollis*	HC	DEC
Long-billed Dowitcher	*Limnodromus scolopaceus*	MC	UNK
Red-necked Phalarope	*Phalaropus lobatus*	MC	DEC
Red Phalarope	*Phalaropus fulicaria*	MC	dec

Notes:[1]Species list from standardized surveys conducted in the 1002 Area (Brown et al. 2007). [2]Conservation Concern Scores from U.S. Shorebird Conservation Plan Partnership (USSCPP 2016). HC=high concern, MC= Moderate concern, LC= Least Concern.[3]Population trend scores from Andres et al. 2012. INC: substantial increase; inc: small increase or increase suspected; STA: stable or UNK: unknown; dec: moderate decrease or decrease suspected; DEC: substantial decrease.