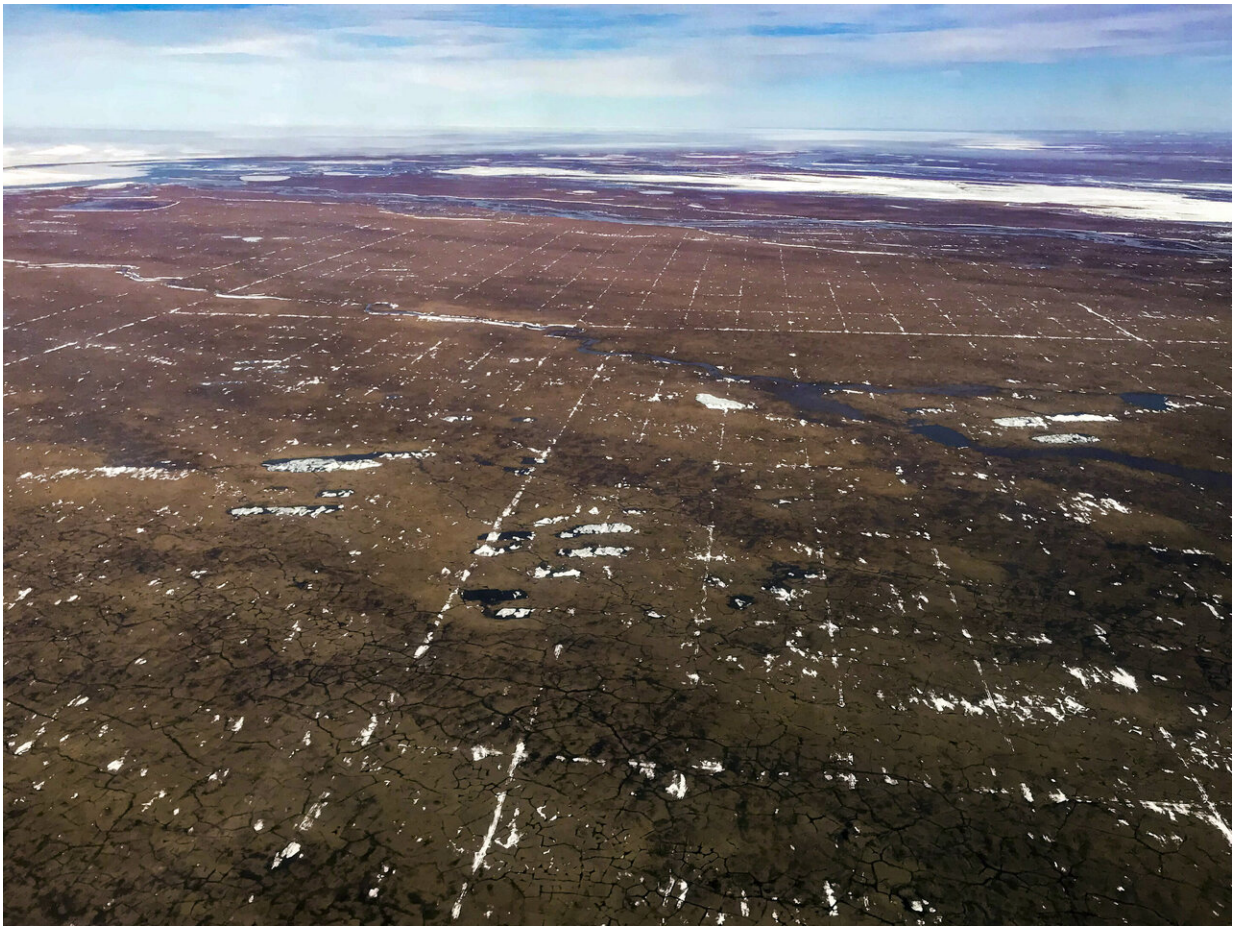
Proposed seismic surveys in Arctic Refuge likely to cause lasting damage

June 10 2020



An early spring view of tracks left by a 3D seismic survey conducted in winter 2017-2018. The spacing of the tracks in the photo is 200-by-400 meters, rather than the 200-by-200-meter grid proposed by SAExploration. The photo is not an example of the long-term damage found by researchers in other areas. Credit: Matt Nolan

Winter vehicle travel can cause long-lasting damage to the tundra, according to a new paper by University of Alaska Fairbanks researchers published in the journal *Ecological Applications*.

Scars from seismic surveys for oil and gas exploration in the Arctic National Wildlife Refuge remained for decades, according to the study. The findings counter assertions made by the Bureau of Land Management in 2018 that seismic exploration causes no "significant impacts" on the landscape. That BLM determination would allow a less-stringent environmental review process of seismic exploration in the Arctic Refuge 1002 Area.

UAF's Martha Raynolds, the lead author of the study, said she and other scientists have documented lasting impacts of winter trails throughout years of field research. Their paper, authored by an interdisciplinary team with expertise in Arctic vegetation, snow, hydrology and permafrost, summarizes what is currently known about the effects of Arctic seismic exploration and what additional information is needed to effectively regulate winter travel to minimize impacts.

A grid pattern of seismic survey lines is used to study underground geology. These trails, as well as trails caused by camps that support workers, damage the underlying tundra, even when limited to frozen, snow-covered conditions. Some of the existing scars on the tundra date back more than three decades, when winter 2-D seismic surveys were initiated. Modern 3-D surveying requires a tighter network of survey lines, with larger crews and more vehicles. The proposed 1002 Area survey would result in over 39,000 miles of tracks.

"Winter tundra travel is not a technology that has changed much since the '80s," said Raynolds, who studies Arctic vegetation at UAF's Institute of Arctic Biology. "The impacts are going to be as bad or worse, and there are proposing many, many more miles of trails."

Conditions for winter tundra travel have become more difficult, due to a mean annual temperature increase of 7-9 degrees F on Alaska's Arctic coastal plain since 1986. Those warmer conditions have contributed to changing snow cover and thawing permafrost. The impact of tracks on the vegetation, soils and permafrost eventually changes the hydrology and habitat of the tundra, which affects people and wildlife who rely on the ecosystem.

The paper argues that more data are needed before proceeding with Arctic Refuge exploration efforts. That includes better information about the impacts of 3-D seismic exploration; better weather records in the region, particularly wind and snow data; and high-resolution maps of the area's ground ice and hydrology. The study also emphasizes that the varied terrain and topography in the 1002 Area are different from other parts of the North Slope, making it more vulnerable to damage from seismic exploration.

More information: Martha K. Raynolds et al. Landscape impacts of 3D-seismic surveys in the Arctic National Wildlife Refuge, Alaska, *Ecological Applications* (2020). DOI: 10.1002/eap.2143

Provided by University of Alaska Fairbanks

Citation: Proposed seismic surveys in Arctic Refuge likely to cause lasting damage (2020, June 10) retrieved 26 April 2024 from https://phys.org/news/2020-06-seismic-surveys-arctic-refuge.html

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.