**Project title**

Acoustic Monitoring of Avifauna: Bird Ecology Detection Using Microphone Arrays in Siberian Arctic Tundra

**Background and Relevance**  
*Introduce your project, including the need you want to address. Tell us why the issue is important. Cite relevant literature, media coverage, or previous work where applicable (include citations in the Works Cited section below).*

Located at the top of northern hemisphere in Asia, Siberian arctic tundra is a heaven of many migratory birds (cite). Several permanent rivers flow into the Siberian tundra, creating wetlands and supporting birds with the food and the nesting locations they need during the breeding season. The tundra between the Yana and Kolyma rivers, the Indigirka Delta, is some of the most productive wetland areas in northeastern Russia (cite). The lower basin of Indigirka Delta serves as the breeding ground of critically endangered species, such as Siberian Crane and other 50-60 species (cite). Indigirka Delta tundra is said to have one of the greatest biome of the world.

Previous research had been done for investigating the birds around Indigirka Delta areas (cite), however, environmental restrictions prevented researcher to further understand the area. The Indigirka river channel will not open until May-June, and the tundra will not be clear of ice and snow until mid-June (cite). These two facts plus the lack of transportation limited the spatial and temporal scale of the avian studies can be achieved. Questions about phenology and species distributions, abundances are still keep unanswered. A long-term, wide spatial scale of bird monitoring is urgently desired in the area. Acoustic monitoring might be the solution.

Acoustic monitoring has been applied in diverse bioregions to study bird species distributions, abundances and even phenology (cite). The advantage of using acoustic monitoring is its remote and non-invasive characteristics. It has been shown the probability of detecting birds is higher when listening to audio recordings than during the field survey.

In 2019 summer, we proposed to set up the recorders in the tundra for monitoring bird population. We are especially interested in the following target species:

1. Siberian Crane: The rarest species breeding in tundra
2. Rough-legged Buzzard: wintering in south Asia, where people poison rats and mouse and cause the population decline.
3. Sandhill Crane: A competitor of the Siberian Crane
4. Tundra’s Swan: A competitor of the Siberian Crane
5. Ross’s Gull: Not yet well studied in Indigirka river
6. Jack Snipe: The nest hasn’t been found in Yakutia.