



**Project acronym:** ARISA

**Project title:** Arctic seed germination ecology

**Project leader:** Sergey Rosbakh, University of Copenhagen, Denmark

**Discipline:** Earth Sciences & Environment: Ecosystems & Biodiversity

**Station(s):** Polish Polar Station, Hornsund (Svalbard/Poland), NIBIO Svanhovd Research Station (Norway), Kilpisjärvi Biological Station (Finland), Kevo Subarctic Research Station (Finland), Toolik Field Station (USA), Sudurnes Science and Learning Center (Iceland), Barrow Arctic Research Center / Environmental Observatory (USA), Churchill Northern Studies Centre (Canada)

ARISE is a long-term research initiative started in October 2022 by seed ecologists from the universities of Copenhagen (Denmark), Pavia (Italy) and Oviedo (Spain), aiming at filling a large gap in knowledge on arctic plant seed reproduction.

The main objective of ARISE is to study in detail the seed ecology of arctic plants, to understand their adaptations and adaptability to the current and future Arctic climate. Capitalising on our expertise in plant reproductive ecology in cold-adapted plants and the extensive TA/RA network of field stations in the Arctic, ARISE will generate and analyse novel data on seed germination requirements for multiple key arctic species. The participating stations are requested to collect ripe seeds and fruits (thereafter 'seeds') of the most frequent abundant and/or ecologically significant plant species growing in the stations' vicinity. The list of target species will be discussed with the stations' staff individually, depending on their workload, target species phenology and local weather conditions. For every station, we will prepare a site- and species-specific seed collection manual that can be also used by station team members without specific training in biology/botany, based on international standards for wild seed collection (e.g. ENSCONET seed sampling protocol: [www.ensconet.maich.gr](http://www.ensconet.maich.gr)). We will stay in contact with the stations over the growth season 2023, to update the list of sampled species.

Seed collection will take place in July-September 2023 (the exact collection dates depend on

phenology of target species and/or local weather conditions and will be decided by the stations' staff). We request 12 remote access days for every station located in the Arctic and 10 remote access days for every station located in the Subarctic (Table 1).

The collected seeds will be stored in paper bags at room temperature and shipped to the University of Copenhagen, where they will be germinated following the protocols established by our group (e.g. (Rosbakh et al. 2014, 2020, 2022).

The experimental part will be conducted by a PhD student and student assistants funded by the University of Copenhagen.