



Project acronym: ANSABS

Project title: Application of Nanopore sequencing to investigate carriage of microbial risks in Arctic bird species

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Discipline: Earth Sciences & Environment: Ecosystems & Biodiversity

Station(s): Rif Field Station (Iceland)

The global spread of zoonotic diseases and antimicrobial resistance (AMR) is of increasing concern to human and animal health. Migratory birds, which are often exposed to anthropogenic sources of pathogens and AMR, are believed to be vectors of these microbial contaminants across vast geographical expanses. This is of particular concern for 'pristine' environments, such as the Arctic, where faecal shedding of pathogens and AMR by migratory birds can threaten the health of these natural ecosystems and their inhabitants. Our previous successful RA visit to the Rif field station, Iceland, found greylag geese (*Anser anser*), sampled toward the end of the breeding season carried relatively low levels of the zoonotic pathogen *Campylobacter*, as well as antibiotic resistant bacteria. Previous and ongoing research by the user group has indicated higher rates of *Campylobacter* in greylag geese on the wintering grounds in Orkney, UK, where they co-graze with livestock. We hypothesise that pathogenic bacteria and AMR carriage is high on arrival to Iceland and subsequently declines, due to habitat and diet shifts, which reduce exposure to pathogenic bacteria and AMR. We aim to expand on our previous visit, to collect goose faecal samples during the arrival and just prior to the departure of geese from Iceland. This temporal comparison of the microbiome, via bacterial culturing and genomic (Nanopore) sequencing, will allow us to test whether pathogen and AMR burden is high on arrival to Iceland, and whether greylag geese are high risk spreaders of zoonotic pathogens and AMR genes into the sub-Arctic environment.