

# Monitoring litter and microplastics in Arctic mammals and bird



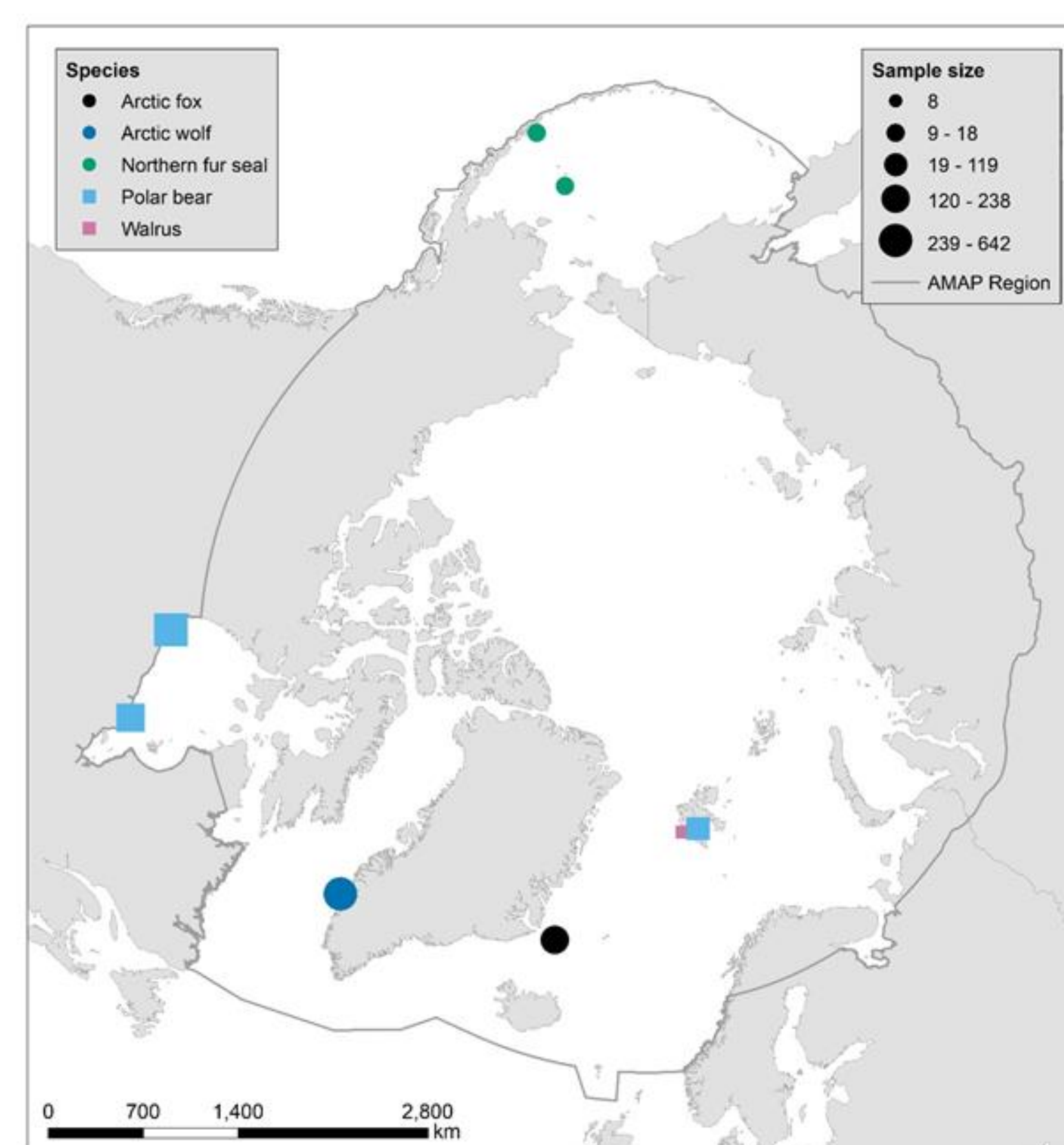
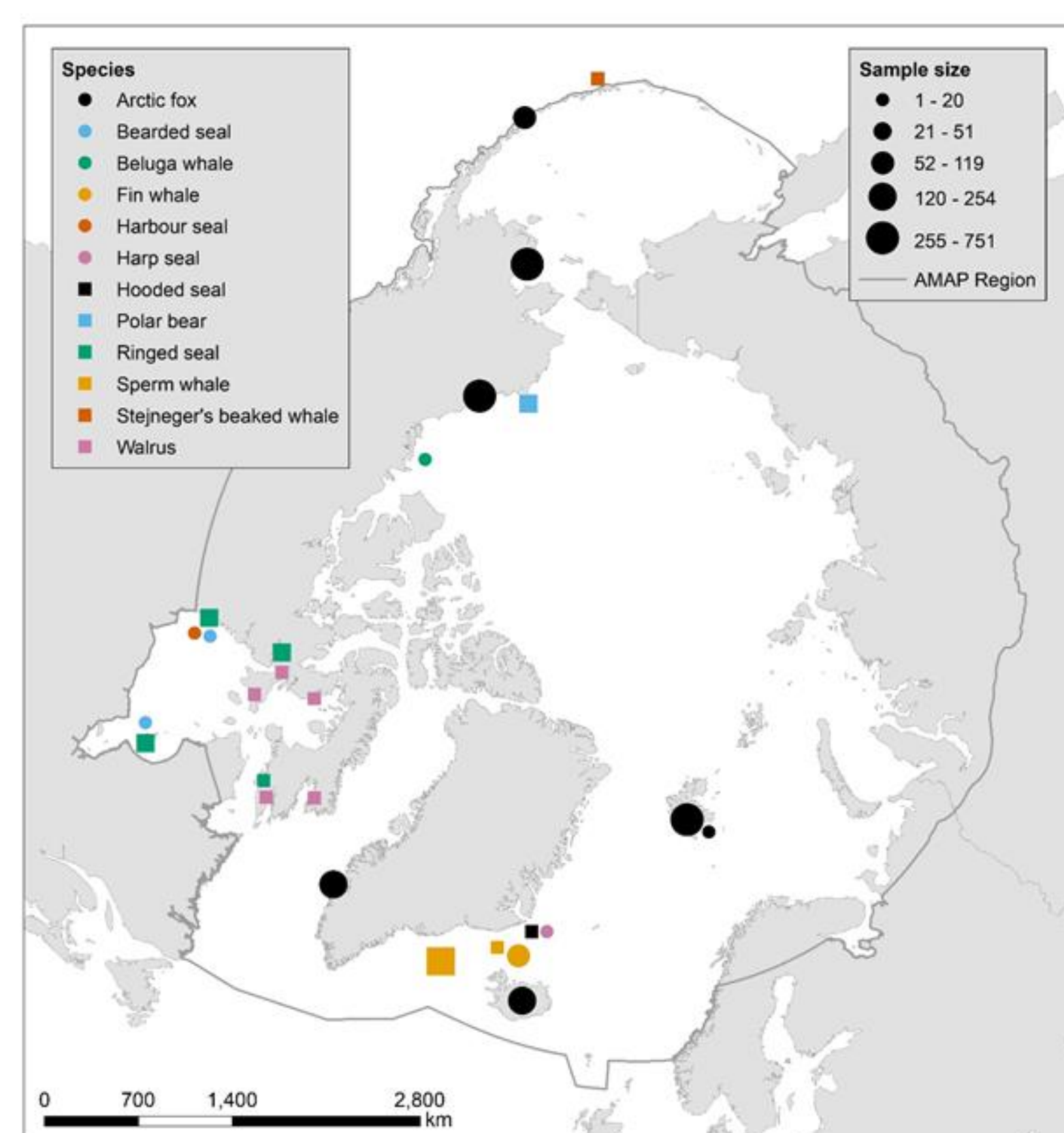
Lusher AL, Provencher JF, Baak JE, Hamilton BM, Vorkamp K, Hallanger IG, Pijogge L, Liboiron M, Bourdages MPT, Hammer S, Gavrilov M, Vermaire JC, Linnebjerg JF, Mallory ML, Gabrielsen GW

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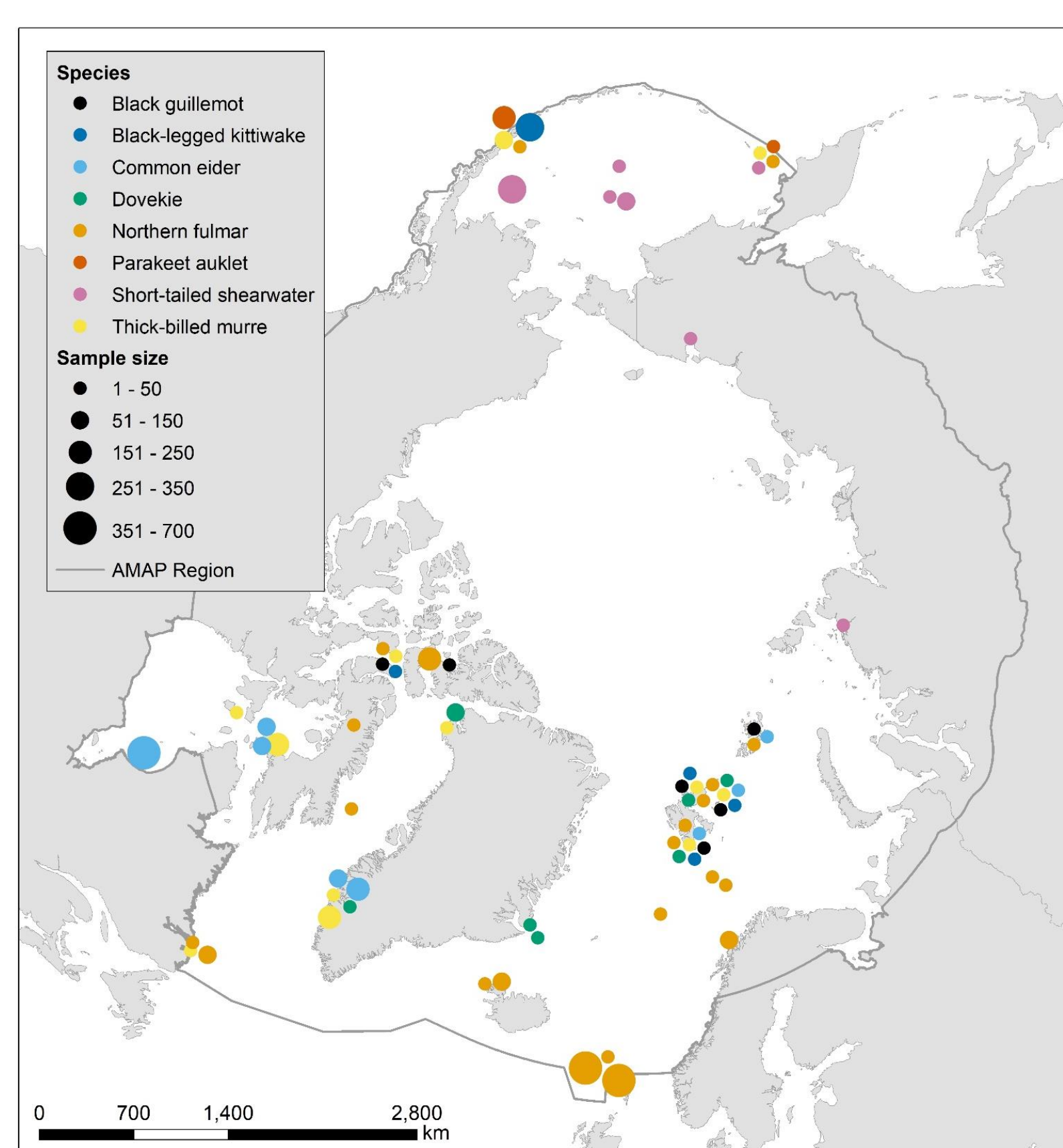
**The Issue:** Plastic pollution has been reported to affect Arctic mammals and birds. There are strengths and limitations to monitoring litter and microplastics using Arctic mammals and birds. One strength is the direct use of these data to understand the potential impacts on Arctic biodiversity as well as effects on human health, if selected species are consumed. Monitoring programs must be practically designed with all purposes in mind, and a spectrum of approaches and species will be required.



## What is known about litter and microplastics in Arctic mammals and birds?



**Existing data for mammals** - Research on detecting litter and microplastics in mammals is still developing although pinniped and polar bear scat look promising for food web monitoring targeting bigger plastics. Currently available information is limited and should be extended prior to tracking litter and microplastics at the pan-Arctic scale. However, studies on mammals are important for addressing questions related to regional food security and safety.



**Existing data for seabirds** – Given the current state of knowledge, a primary recommendation is that northern fulmars should be used to monitor litter and microplastics where possible in order to contribute to pan-Arctic spatial and temporal trend analysis and to link to monitoring outside the Arctic. Other species (e.g., black-legged kittiwakes, thick-billed murres and common eiders) should also be considered for monitoring to better inform questions relating to plastic pollution in food webs and trophic transfer.

**Next Steps** – Monitoring of litter and microplastics in the pan-Arctic requires a multi-matrix approach which can build on existing monitoring programmes and modify methods accordingly. Local or regional efforts are not being discouraged; rather further research is required to consider scaling to the pan-Arctic. Indeed, local and Indigenous researchers and community representatives should be part of decision-making processes for priority species and research questions in their areas. The ethics of reporting back and publishing contamination results for wild food, even if the results are null or low, is an area of crucial importance. Seabird and marine mammal tissues should be considered for monitoring of plastic additives and nanoplastic burdens, coupled with existing contaminant monitoring programmes, to better understand the extensive effects from litter and microplastics.

