Review of the manuscript titled “Linking geomorphological processes and wildlife micro-habitat selection: nesting birds select refuges generated by permafrost degradation in the Arctic”,

by Madeleine-Zoé Corbeil-Robitaille et al.

The reviewed manuscript is an important contribution to comprehending the functioning of the Arctic tundra ecosystem amidst rapid climate change. The paper stands as a rare exemplar of adeptly interconnecting geomorphological processes with bird habitat preferences, both of which are accelerating alongside climate change in the Arctic. These changes yield diverse effects on Arctic fauna, occasionally diverging from the anticipated negative impacts. Perhaps the discussion on the ramifications of climate change in the Arctic, particularly the ice loss, on the abundance, distribution and availability of breeding and feeding places of birds is worth expanding. An example is the relatively well-recognized effects of the rapid melting and retreat of tidal glaciers, which create attractive feeding places for birds and marine mammals (see, e.g. https://doi.org/10.1038/srep43999; https://doi.org/10.1007/s10584-016-1853-4; https://doi.org/10.1016/j.jmarsys.2013.09.006).

The authors of the study emphasize the importance of safe refuges for maintaining the population of prey species and, consequently, the diversity of Arctic fauna. In this instance, such refuges take the form of mid-lake islands, which are inaccessible to foxes. This situation brings to mind the anthropogenic refuges utilized by certain other Arctic birds. For example, the extensive eider colony in Longyearbyen, Spitsbergen, is situated just beyond the confines of the large barking city kennel. No fox goes there.

The studies were appropriately designed and implemented, and the results were analyzed using advanced statistical procedures and models. I believe that the manuscript meets the criteria outlined by "Biogeosciences" in terms of both content and formal relevance. Therefore, I recommend its approval and publication.

Below are some my comments and suggestions.

- In my opinion, there is a lack of information on the number of foxes and the predation pressure they exert on birds in the study area. The authors assumed that the pressure is so significant that it forces birds to select safer nesting places. However, if there are few foxes and their pressure is negligible, the conclusions from the work lose some weight.
- Are there seasonal fluctuations in the water level and therefore the area of ponds and islands, which would mean changes in their availability for foxes, and have they been taken into account?
- The description of the study area refers to lowland and coastal areas. Were there any differences found in the colonization of ponds by birds between these two areas?
- It is difficult to spot Bylot Island on the attached map. It is indeed black, but small enough that an arrow would certainly be useful.
- The distance and abundance of feeding grounds used by birds also influence the selection of nesting sites by birds. This has different meanings for gulls, loons and geese. The latter graze on tundra vegetation, usually near nesting sites. Sometimes they can also move with their chicks to more abundant pastures, but they always need to have a body of water nearby to escape from predators. I don't know what the situation is like in Bylot I. and whether it may be important for the habitat preferences of Cackling Geese.