



Thick-billed Murres in the Fast Lane:

Linking Acceleration with Foraging Behavior

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Introduction

Climate change will affect the fish species composition in Arctic marine ecosystem

The **Thick-billed murre**, a generalist diving predator present throughout the Arctic, already samples the marine ecosystem throughout its diet.

Why not use the **bird's diet to indirectly monitor the aquatic ecosystem?**

Problem:

We need an efficient, remote way to assess thick-billed murre diet. **Camera loggers** can record prey captures, but are short-lived. **Accelerometers** record for a long time, but we must first link acceleration profile and feeding behaviour for murres.

Objective:

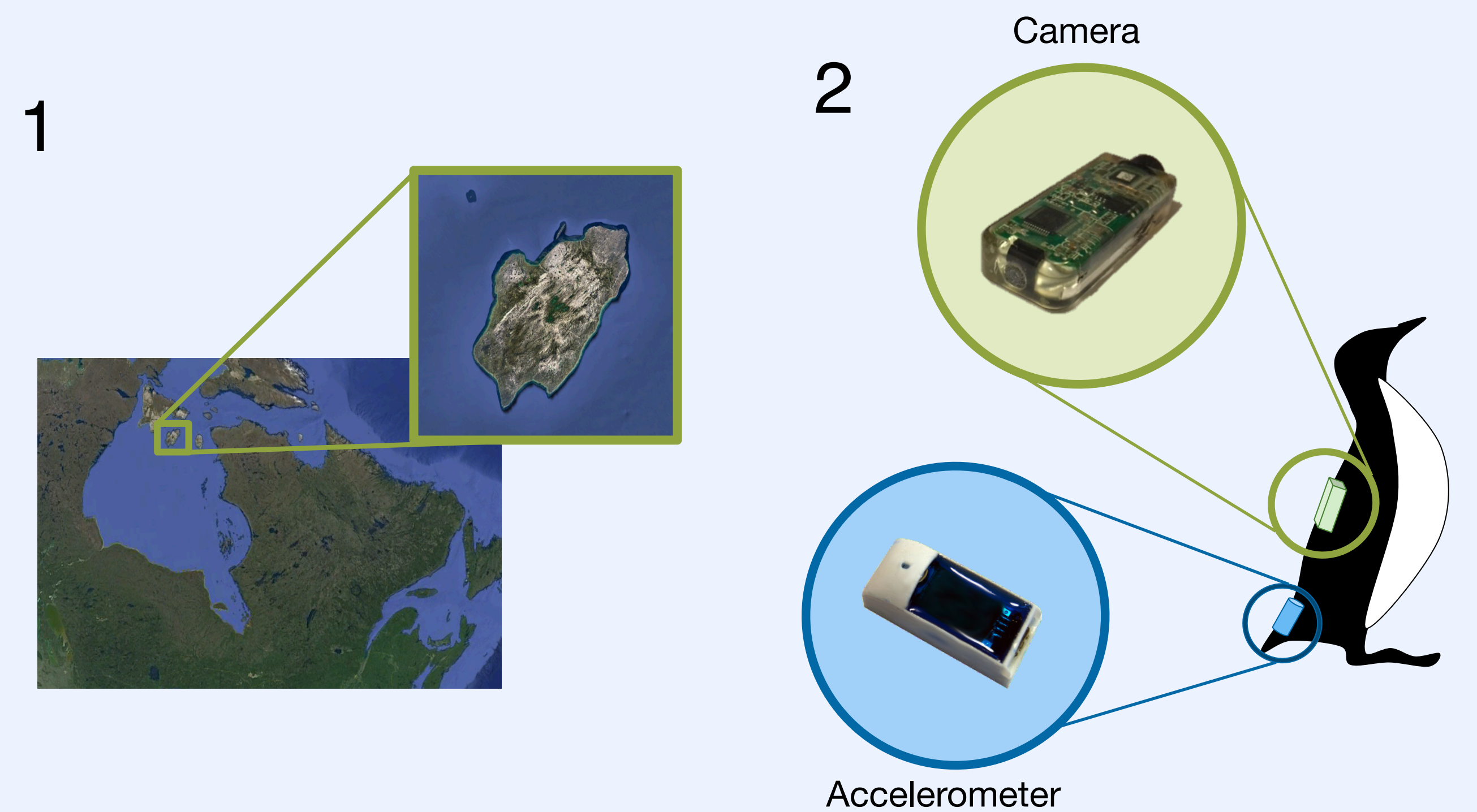
Pair camera loggers with accelerometers to establish the **link** between **acceleration** and **foraging**, so that accelerometers alone can be used in the long term.



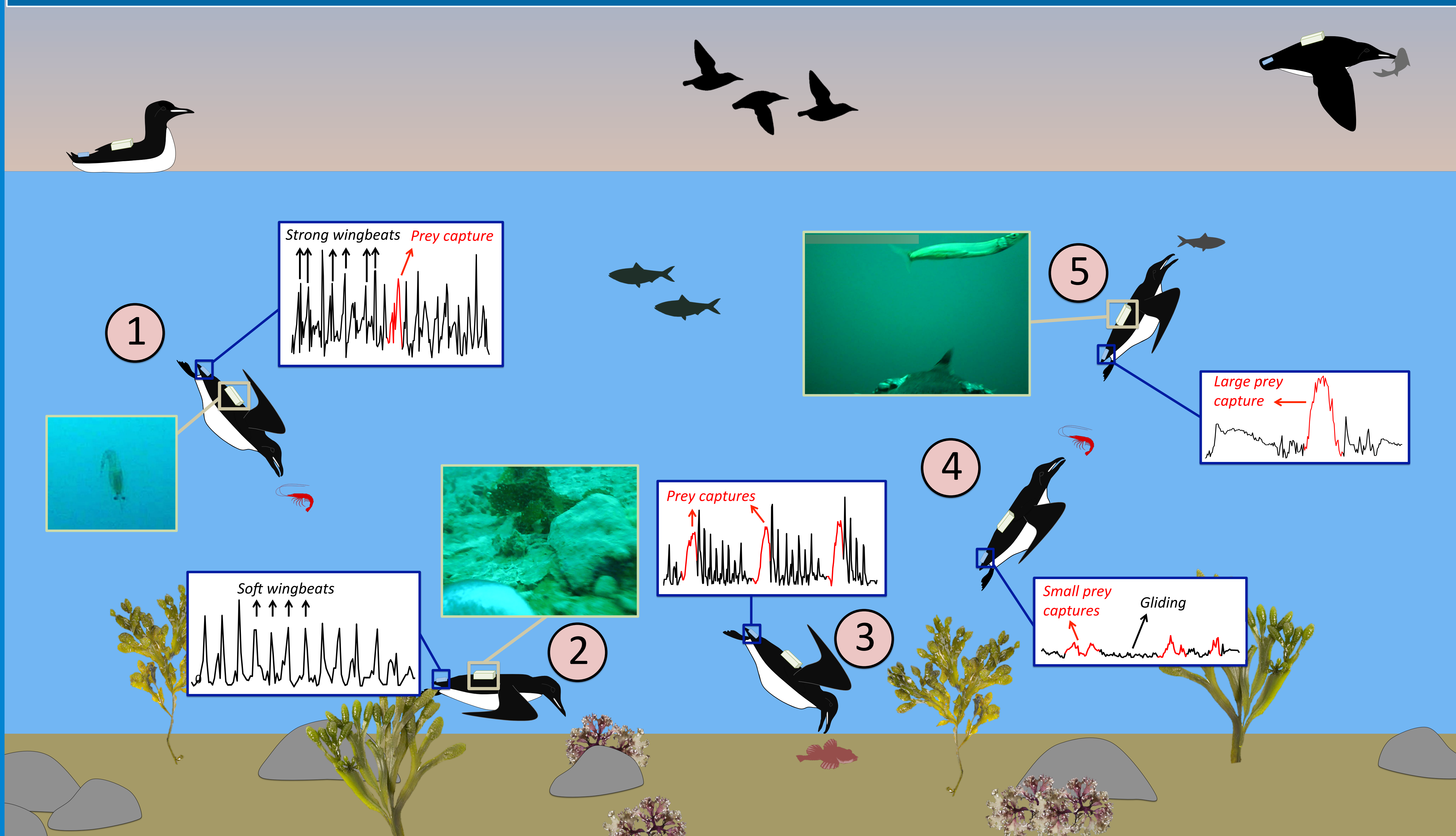
Material & Methods

1: Study area: **Coats Island**, Nunavut

2: Equip murres with **camera loggers** and **accelerometers** and link the behaviour recorded by the camera with acceleration



Results



1

Descending:

Vigorous flapping masks the prey capture acceleration signature

2

3

Bottom searching:

Wingstrokes are less pronounced. Prey captures are discernable.

4

5

Gliding back up:

Small prey captures are distinct, large prey even more

Discussion

Acceleration signature of a prey capture varied depending on:

- 1 - **Dive phase** (descending, bottom search, ascending)
- 2 - **Prey size** (small static prey vs large mobile prey)

Accelerometers could be used to determine the murre diet during the **bottom** and **ascending phase**, but **not** during the **descending phase**.



Main Sources

Elliott et al. (2008). Seabird foraging behaviour indicates prey type. Marine Ecology Progress Series, 354, 289-303.

Gaston, Woo, & Hipfner (2003). Trends in forage fish populations in northern Hudson Bay since 1981, as determined from the diet of nestling thick-billed murres *Uria lomvia*. Arctic, 227-233.

