

# How we survey polar bears using genetic biopsy

Population estimates are key to monitoring the health of the Nanuk, also known as polar bear. To survey polar bears in Davis Strait, our research team has used genetic biopsy mark-recapture: a survey method that collects key information without needing to physically handle the bears.

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## How the genetic biopsy sample is collected:

The survey team fires a biopsy dart at the bear from a helicopter.

Small barbs on the end of the dart collect a very small piece of skin and hair and fat.

The bear is not put to sleep, and the dart falls off the bear on its own, where it can be safely retrieved.

## How the genetic biopsy is used:

Each bear is identified by its unique DNA.

By comparing DNA samples, researchers can tell whether the same bear has been sampled before.

First sample round

Second sample round



Already sampled



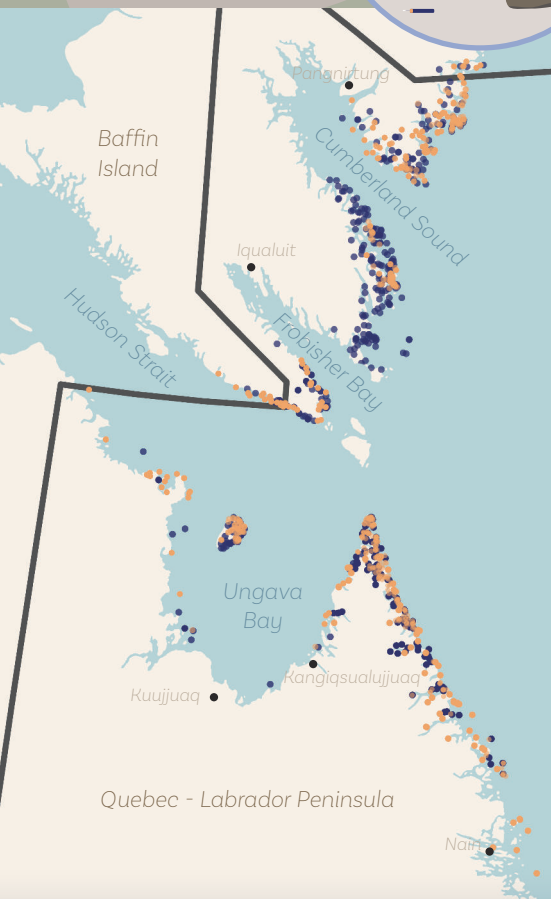
All new samples

New bear

New bear

The proportion of new bears vs previously sampled bears is used to calculate an estimate of the total population size.

Total population estimate



## Genetic biopsy mark-recapture

### What it can tell us:



Total population estimate



Body condition, age class, and the size of family groups.



Male:Female ratio



Survival estimates

### What it cannot tell us:



What habitats bears are using in different seasons



Exact age



Bear movements

- 2018 Biopsies
- 2017 Biopsies
- Davis Strait Subpopulation Boundary

No bears have been put to sleep for research purposes in Davis Strait since 2008.