

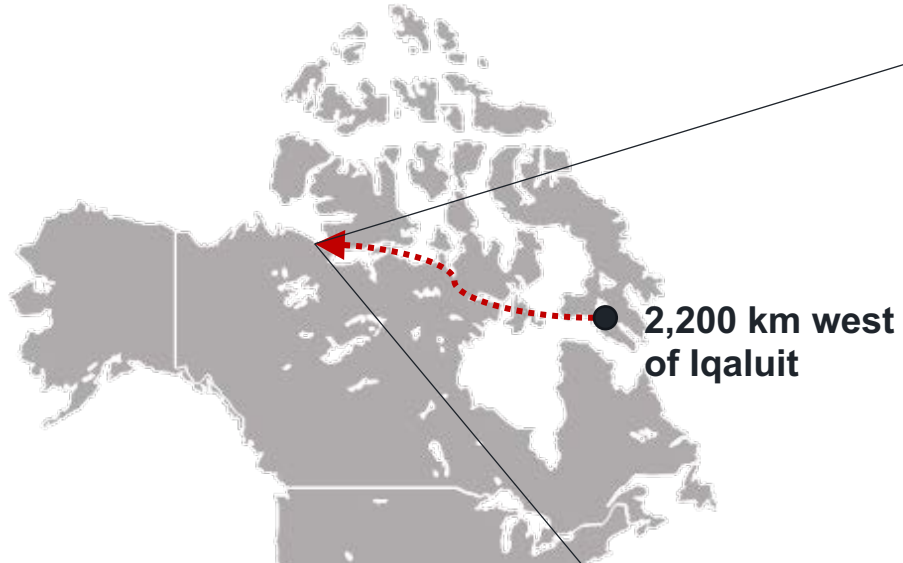
Community-Directed Offsetting for A New Mine in the Canadian Arctic

Nunavut Mining Symposium, April 2023
Presented by: Cam Stevens

Offsetting Policy for Major Development Projects

FISH HABITAT

- Offsets are used to preserve ecosystem function and services when environmental impacts cannot be avoided or mitigated
 - Founded in the no net loss (NNL) principle
 - Methods include creation, restoration, or enhancement of habitat
- New concept, often experimental with high uncertainties regarding its effectiveness and feasibility
 - Linked to regulatory requirements imposed on proponents where development affects ecosystems
 - In Canada, the *Fisheries Act* requires all 'water takers' to avoid, mitigate and offset fish losses.



Bernard Harbour

BASELINE INVESTIGATIONS

- Historical (1913-1918) evidence of thriving Arctic Char fishery
- Reports from Inuit fishers that the fishery was in decline since the 1970s
- Inuit-Golder expeditions in 2004 and 2012 collected data:
 - Confirmed local knowledge
 - Identified low flows as causes of decline
 - Tested a conceptual remediation plan



Reference: Diamond Jenness, Canadian Museum of History

Goal – design a community-based restoration project as an offset for a new mine in Nunavut



PLACEHOLDER FOR VIDEO

What is the current state of the spawning population?

Stream /tidal zone interface

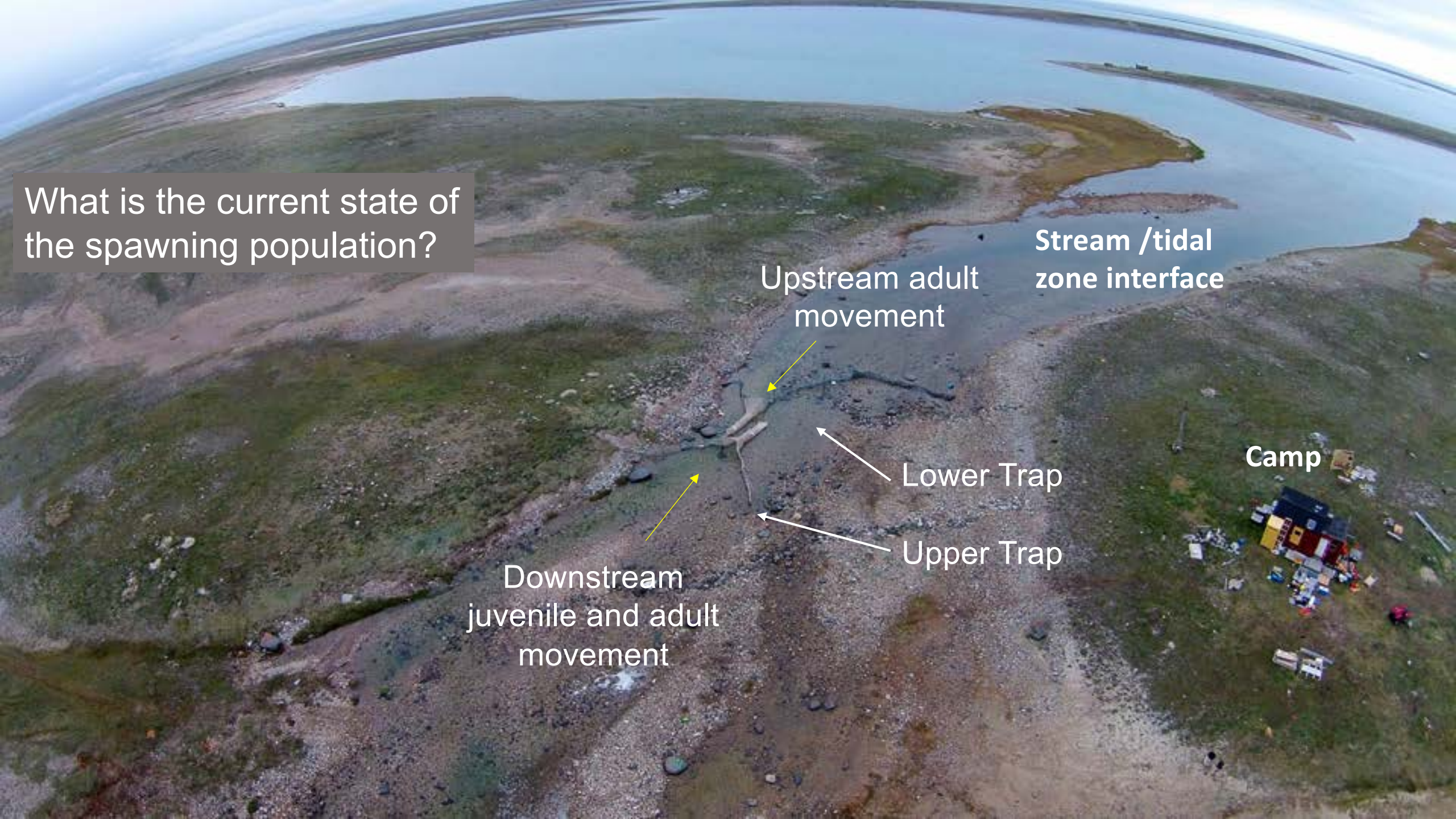
Upstream adult movement

Lower Trap

Upper Trap

Camp

Downstream juvenile and adult movement



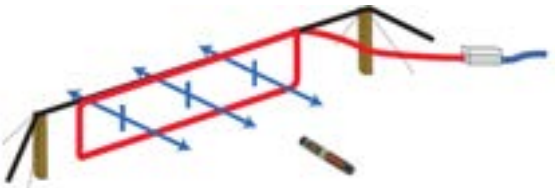
Nulahugyuk Creek

Bernard Harbour, NU

Capture & Tag Location

Key question:
What is the migration success rate from the ocean to spawning lake?

RFID Antennae Arrays

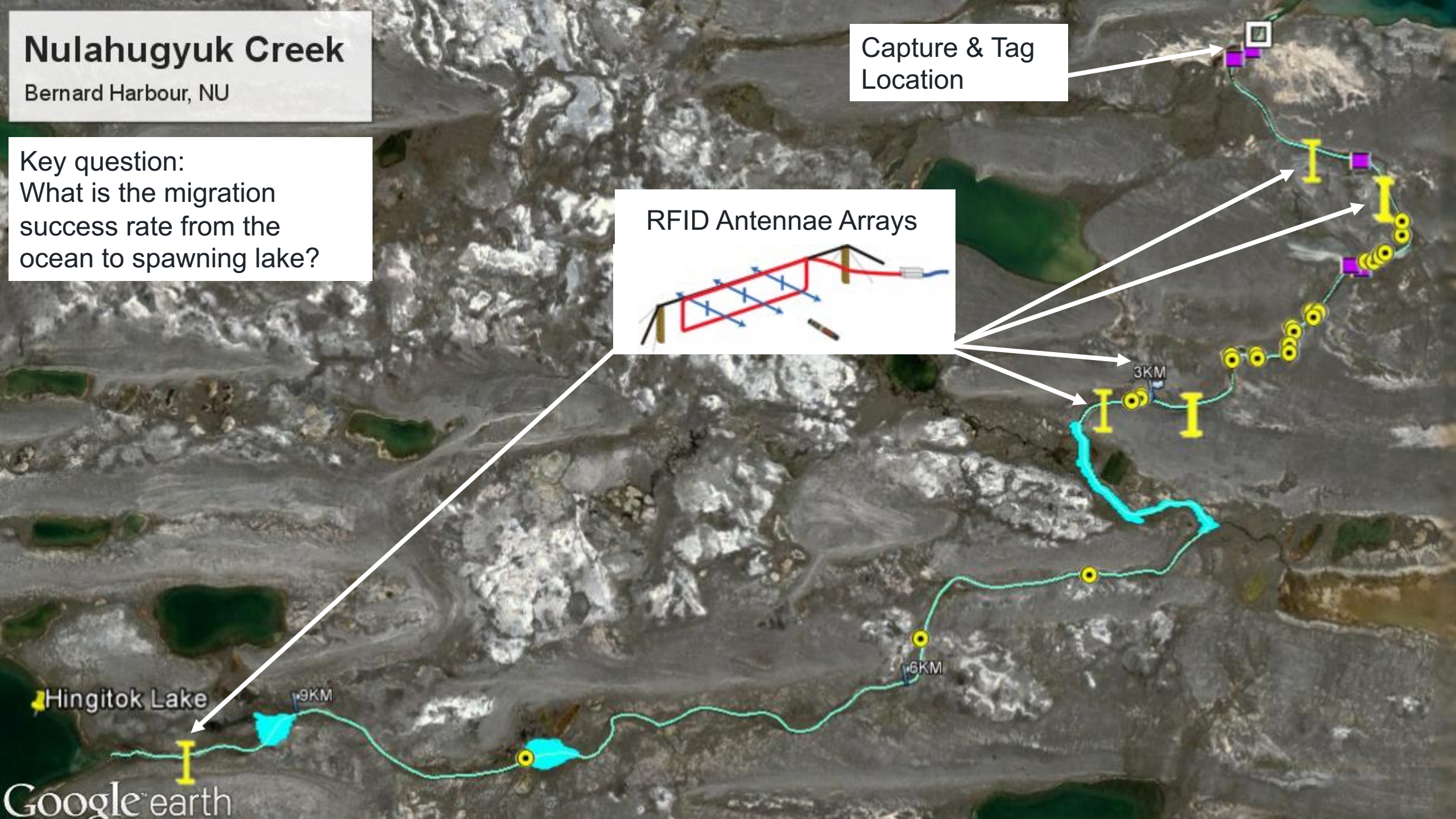


Hingitok Lake

9KM

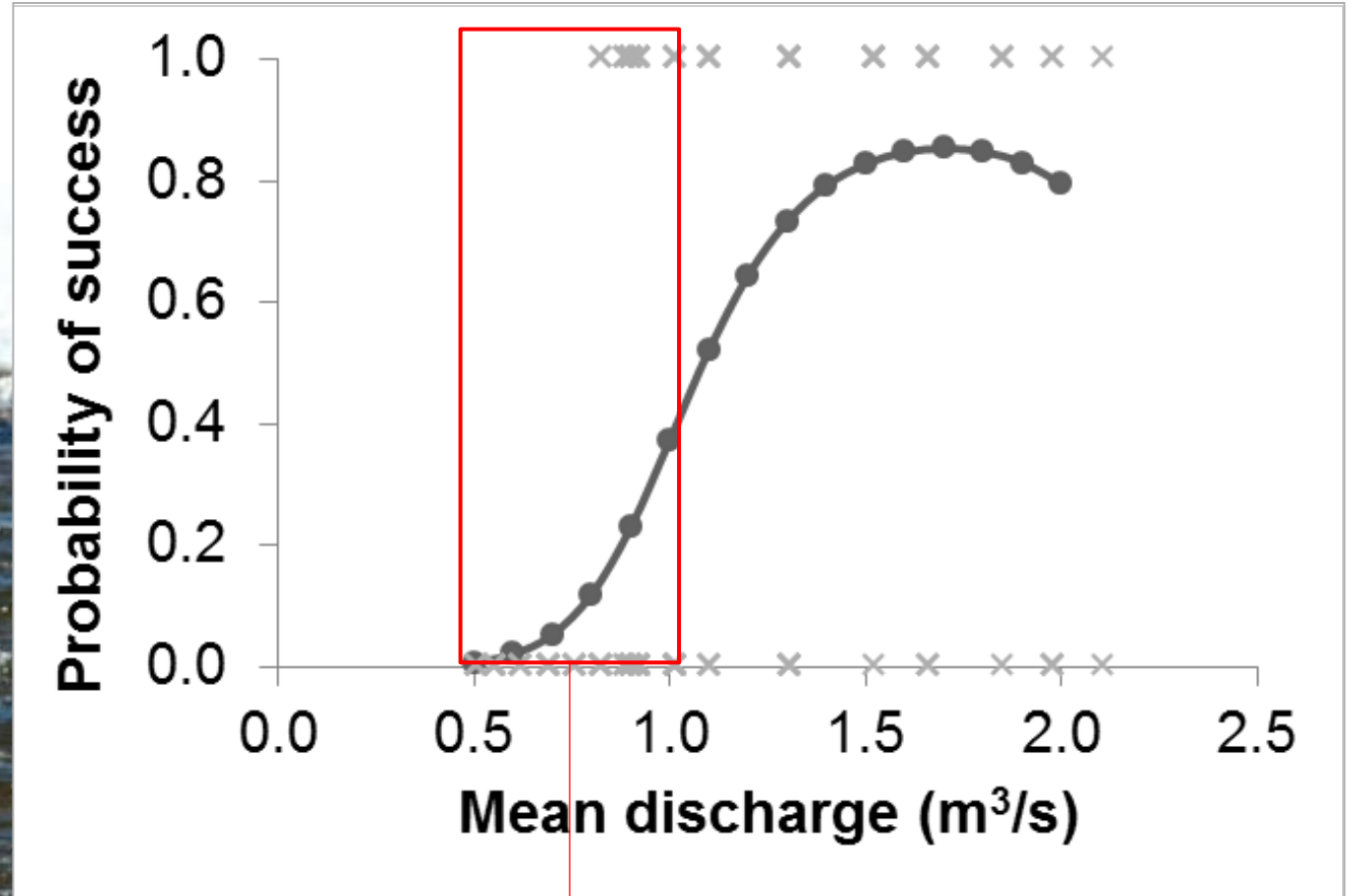
6KM

3KM



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QUANTIFYING MIGRATION SUCCESS



Problem – Mismatch of timing of migration that overlaps with low flows



Sabina's Back River Project

- ✓ Sabina engages Golder in 2014 for support
- ✓ Small fish-bearing lakes to be dewatered for mining
- ✓ Bernard Harbour selected as a suitable offset, which is remediated in 2016
- ✓ Environmental assessment certificate received in 2018
- ✓ Fisheries Act Authorization received in 2019



Low-Flow Channel Construction – Site 6



Low-Flow Channel Construction – Site 8



Before

- 34% migration success in 2014
- 10% migration success in 2016



After

- 80% migration success in 2019

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NEXT STEPS AND DISCUSSION

- Post-remediation monitoring of the Arctic Char run will continue (2-3 years)
- How will changes in water temperature after migration success?
- How adaptable are Arctic Char to continued changes in flow conditions?



Beyond Bernard Harbour

ACHIEVEMENTS

- Built capacity in the community with local youth now entering environmental fields
- De-risked the Back River Project to attract investors to advance the mine
- Showcased Golder and Sabina in numerous publications and media coverage



Thank you

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