



Northern Cod Fisheries Improvement Project:

Improving the Future through Improved Science

BARCELONA APRIL 2024

ASP/AGC Northern Cod FIP – Our Objectives

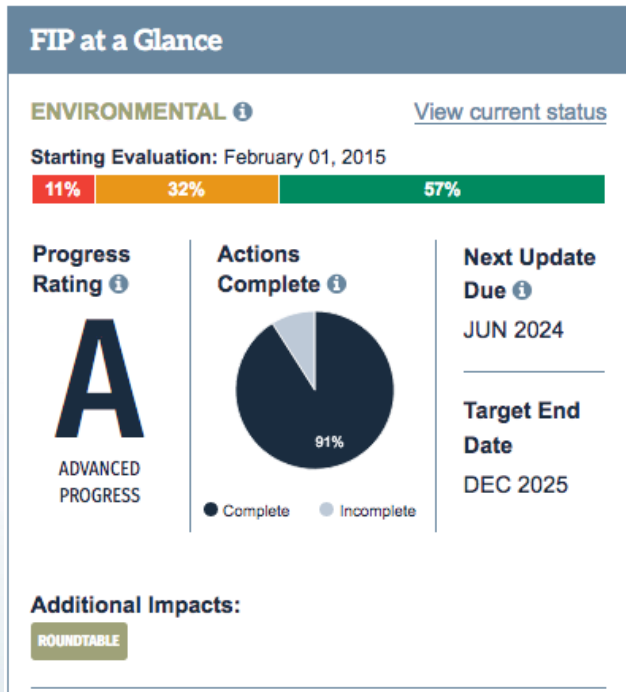
- Address gaps in scientific information to facilitate sustainable management of this important resource
- Prepare information and documentation for eventual MSC certification



Our Partners

- DFO and Govt NL
- Important International Customers
 - Marks and Spencer (M&S)
 - Sysco France
 - High Liner Foods
 - Young's Seafood
 - Thistle Seafoods
- Sustainable Fisheries Partnership
- Academia
 - Ocean Tracking Network
 - Dalhousie University
 - Memorial University
- Inshore Processors + Year-round Harvesters
 - ASP Members
 - AGC Members

FIP Snapshot



- FIP started in 2015
- 10 of 11 FIP Actions completed
- 1 On-going Action Item
 - Northern Cod Acoustic Tracking (NCAT) Project – Phase 3 - Stock migration and composition research
- Need to approve new actions for development of fishery objectives and HCR in Cautious Zone

Human Rights & Social Responsibility (HRSR)

PROTECTING HUMAN RIGHTS AND PROMOTING SOCIAL RESPONSIBILITY IS A BEST PRACTICE FOR ALL FISHERY IMPROVEMENT PROJECTS (FIPS).

The Atlantic Groundfish Council (AGC) and the Association of Seafood Producers (ASP) are actively involved in supporting numerous FIPs in Atlantic Canada, as listed on FisheryProgress.org.

Details on our new Human Rights and Social Responsibility policy for those involved in FIPs can be found at atlanticgroundfishcouncil.ca/HRSR.



SCAN THE QR CODE
TO LEARN MORE.



The 2J3KL Northern Cod FIP is at low risk for HRSR issues

- As required by FisheryProgress.org, the FIP has instituted:
 - Human Rights and Social Responsibility Policy
 - Grievance Mechanism
 - Self-Evaluation of Risk
 - Annual reporting, vessel lists
- Fisher Awareness requirement through digital and hard copy channels will be implemented this season

The background of the slide is a close-up photograph of blue water with gentle ripples and reflections, creating a textured, shimmering effect. The colors range from deep navy blue to lighter, shimmering blues where the light reflects off the water's surface.

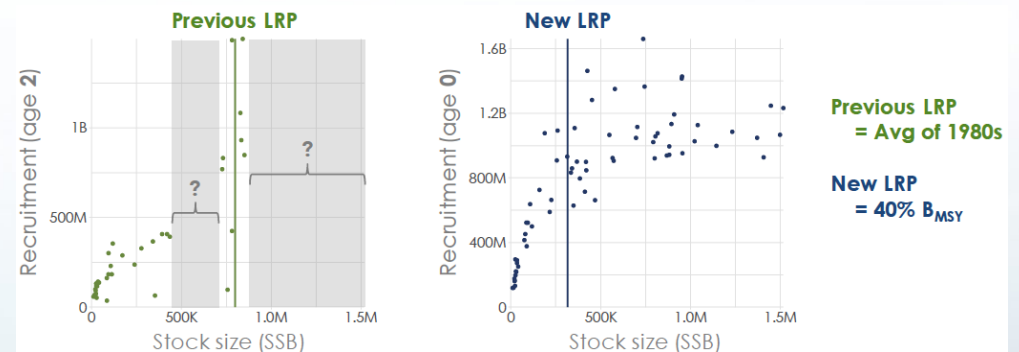
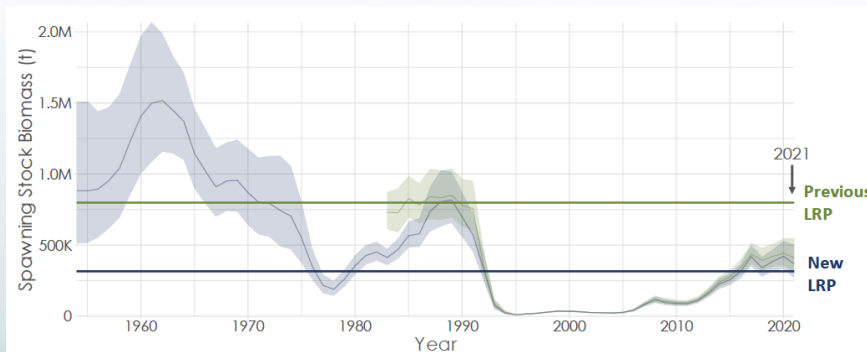
March 2024 Stock Status

LRP Change and Assessment Highlights

2023 LRP Change

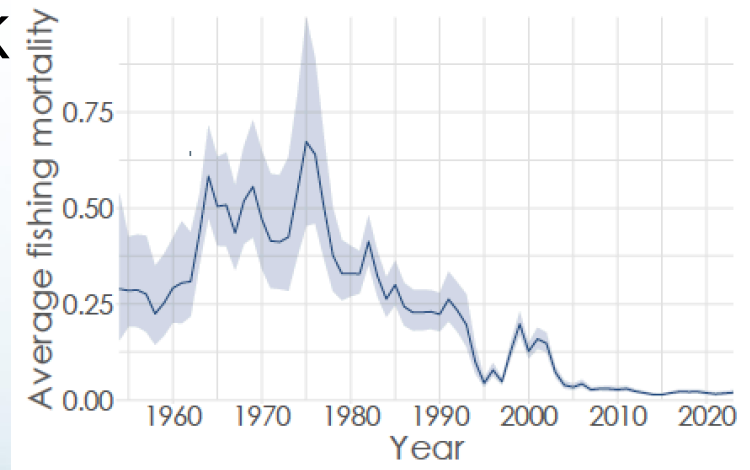
- Fall 2023: Northern Cod Assessment Framework Review:
 - Added 30 years data back to 1950s
 - Included information on young cod
 - Incorporated capelin abundance

- Allowed stock-recruitment relationship estimate and revised LRP based on 40% B_{msy}



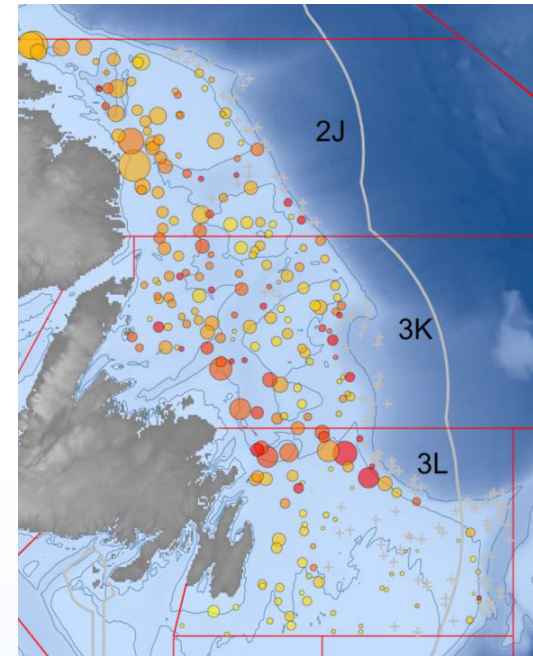
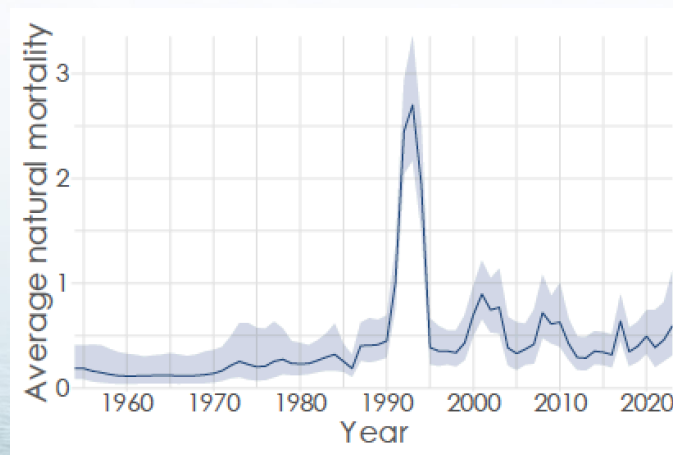
March 2024 Assessment - Positives

- Stock stable & estimated at 1.24x LRP.
- Catch rates good, wide range of age classes
- Lower trophic ecosystem in productive phase
- Stock is widespread throughout 2J3K
- Capelin consumption increasing
- F remains very low at 0.02



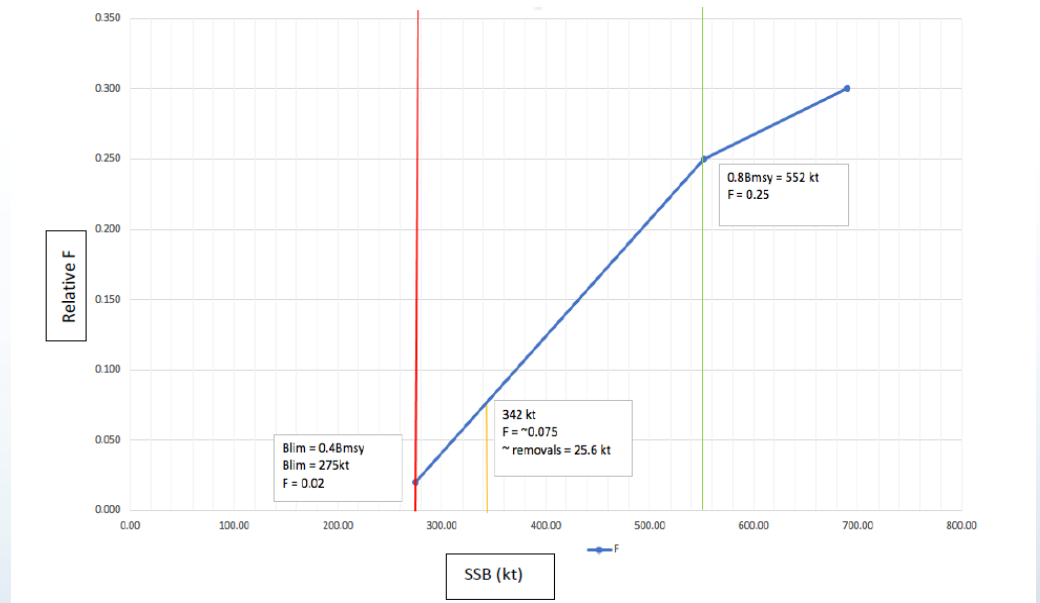
Some of our concerns...

- Fall 2023 RV survey was significantly earlier in 2J and 3K
- Natural mortality is high at 0.59
- Poor control of and data from recreational fishery
- Weight & length at age declined



Our Position...

- We suggest a TAC increase in line with PA Framework and have recommended a TAC of 25.6kt.
- No official USR, assumed Harvest rate of 0.25 at default USR (80% Bmsy).
- Using sloped blue line (rel F) between LRP (275kt) and USR (552kt), and using the current SSB (342kt) gives a rel F of 0.075 or 25.6kt.



Proposed 2024-25 harvest recommendation for Northern cod. Red line = Limit Reference Point, blue line = relative F, yellow line = F at current SSB, green line = USR according to the default Canadian PA approach



Next Steps

- DFO to form a Working Group to develop harvest strategy for the fishery in the PA Cautious Zone (objectives, HCR & other measures). WG includes DFO, industry, ENGO stakeholders.
- DFO have committed to ensuring 2024 RV survey timing consistent with historical windows
- Next assessment will be conducted in spring 2025

The background of the slide is a close-up photograph of blue water with gentle ripples and reflections, creating a textured, shimmering effect. The text is centered over this background.

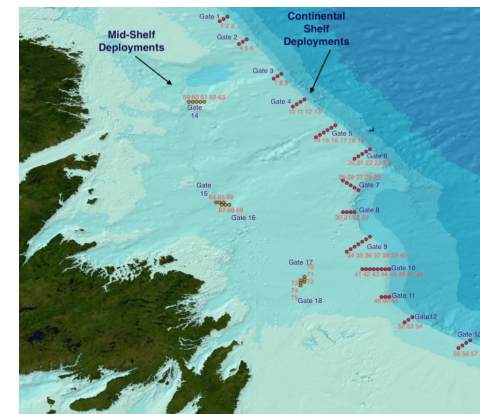
2023 / 24 NCAT Activities

Data Collection and Research Continues

Northern Cod Acoustic Tracking (NCAT) Project Update

- NCAT Project Elements

- Research plan to investigate Northern Cod migration & stock composition
- Genetic studies provided insight into genes linked to behavior, habitat choice & diet
- Objective to acoustically tag 1200 cod & track migrations on Newfoundland Shelf
- 75 receiver acoustic array → installed in 2020
- **1053** deployed tags to date
- Receiver data uploaded via autonomous Wave Gliders

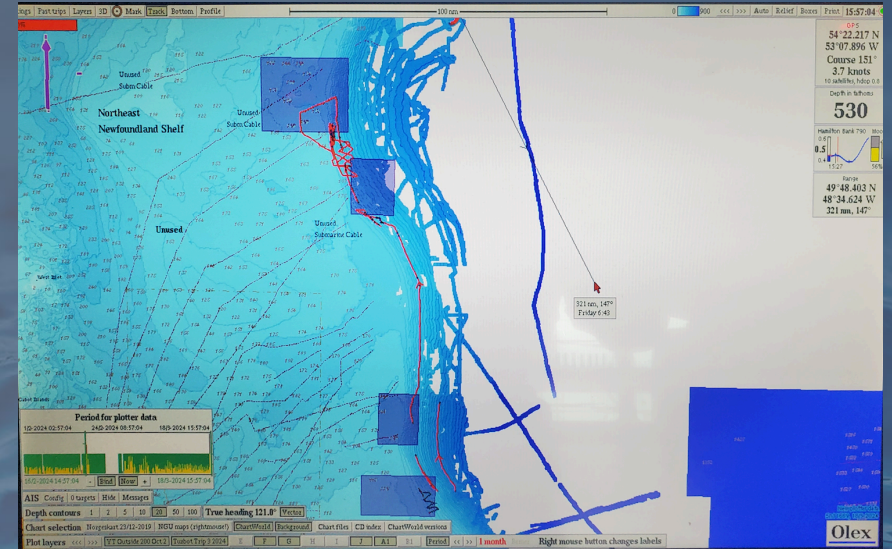


Receiver Data Uploads

- NCAT fish detected on 9 different projects' receivers
- OTN wave glider uploaded detection data late summer 2023
- NCAT also receives detection of its tags from DFO inshore receivers
- As of Sept 2023, ~131k verified detections from ~380 individuals



2023/24 Tagging Results



- DFO deployed 34 tags during fall survey
- FIP acoustic tagged & genetically sampled 232 cod in February 2024
- All tagging conducted in 3K
- ~170 tags remaining to be deployed

The background of the slide is a close-up photograph of blue water with gentle ripples and reflections, creating a textured, shimmering effect. The text is centered over this background.

2023 Telemetry / Genetics Research

PhD Post Doc - Lisette Delgado

- MITACS funded for one six-month term to continue data analyses to investigate:

- Genomic component (Primary focus):

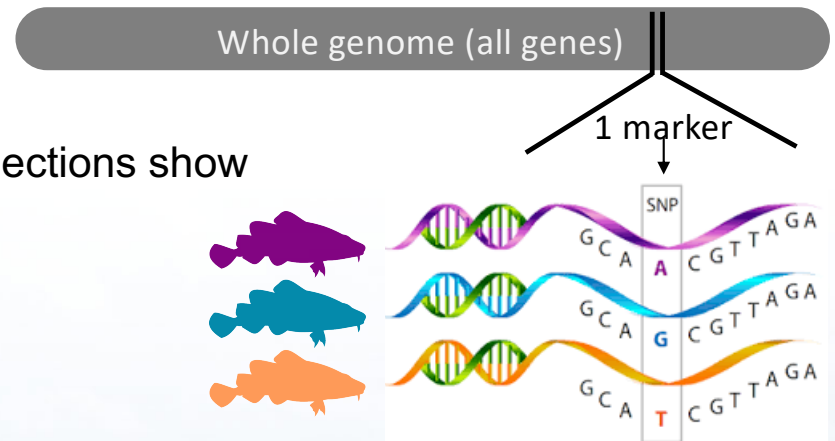
- Temporal analysis completed!
 - Comparison between 1990s and 2010s collections show a reduction in genetic diversity.
 - Manuscript ready to submit for peer review.

- Telemetry component:

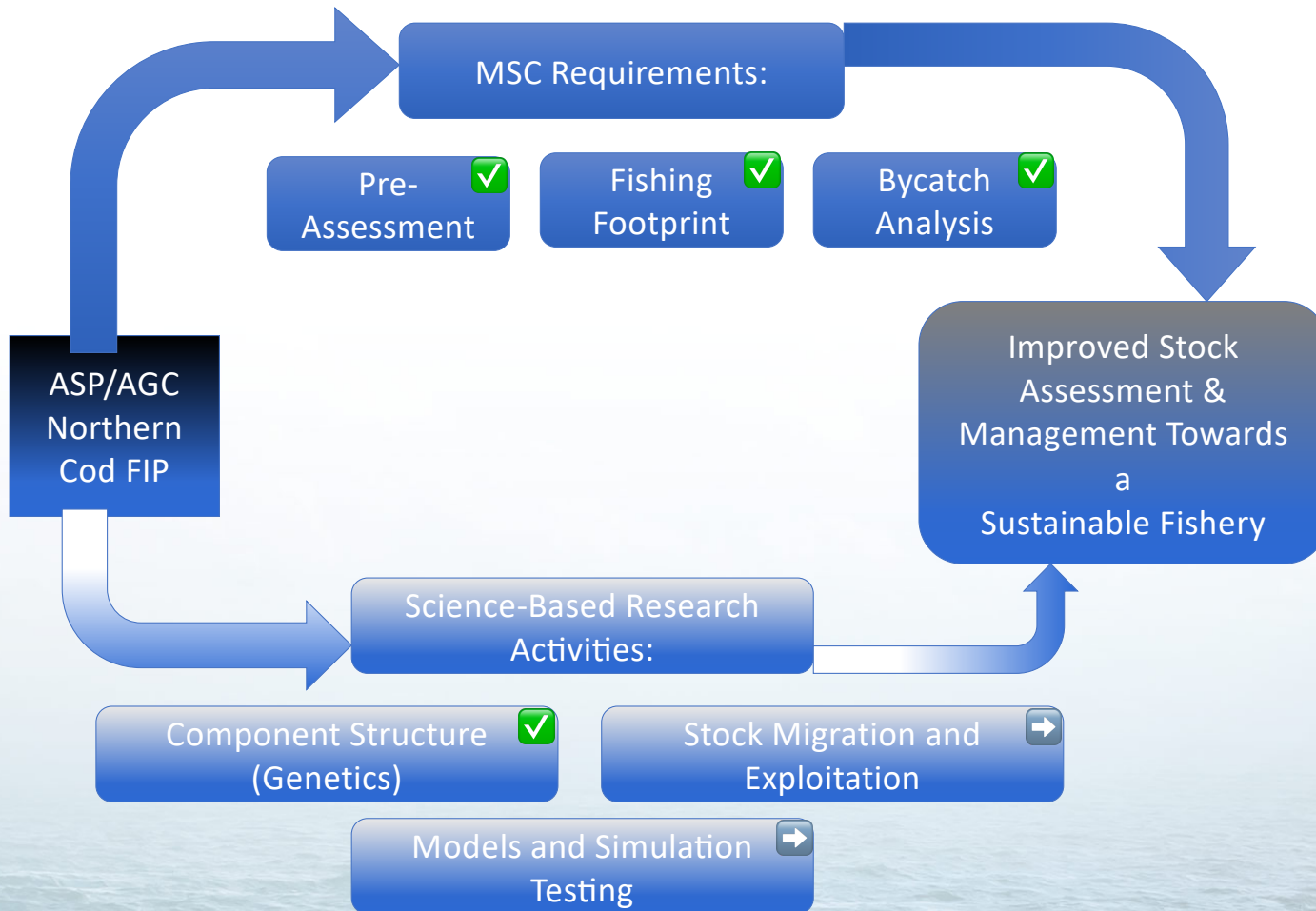
- ~4 years of detection data
- Identified at least 4 types of movement
- Offshore to/from inshore migration is common and the % of inshore-only component is low (12%).

- Whole genome sequencing of 240 NCAT-tagged cod

- Preliminary analysis suggests that genetics might be associated with north (2J) or south (3L) location during spawning time.

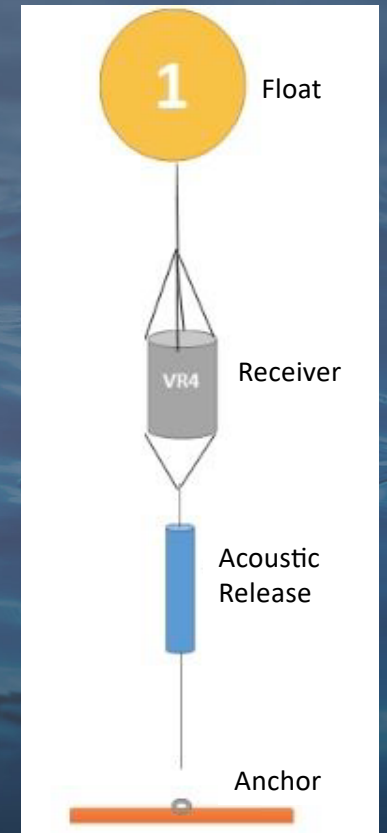


ASP-AGC FIP Roadmap – 2024/25 Workplan



2024/25 Workplan - On the Water

- NC FIP just awarded 80% contribution from Atlantic Fisheries Fund for:
 - **NCAT Array Refurbishment – OTN Summer 2024**
 - Array of 75 stations deployed in 2020.
 - Equipment to be inspected, biofouling removed
 - Receiver & release batteries at all sites to be changed
 - **Cod Tagging – Winter 2025**
 - ~170 of original 1260 tags remain
 - Will evaluate adding more tags
- Negotiating DSA for access to data from DFO inshore cod tagging/ genetics program



2024/ 25 Workplan – 2 Research Projects!

Project 1 – PhD Post Doc – Lisette Delgado

- Apply for additional 2-year NSER-MITACS funding
 - Postdoctoral researcher salary
 - Additional sequencing
 - Scientific conference presentations
- Telemetry
 - With +4 years of data: exploration of mortality estimations, % of time at inshore vs offshore locations, migration patterns, and habitat use.
- Telemetry + genomics
 - Continue with data analyses of genomic regions associated with movement
 - Sex identification, evaluate differences (if any) between male and female movements.
- Once data sharing agreement is finalized: incorporate NLCOD data into the analyses.

Objective: Identifying linkage between genetics, sex and movements will better inform future management considerations.

2024/ 25 Workplan – 2 Research Projects!

Project 2 – PhD Post Doc – Semra Yalcin

- Apply for 2-year NSERC funding
 - Postdoctoral researcher salary & Scientific conference presentations
- Estimating Fish Mortality Rates Using Acoustic Telemetry
 - Investigate spatial/ non-spatial modelling techniques for mortality rate estimation
 - Investigate Biological links to mortality

Objective: Better understanding of mortality rates allow clarification of possible influences and sources

- Integrate Telemetry into Northern Cod Assessment Model (NCAM)

Objective: Incorporation of telemetry data into the NCAM model is the Phase 3 (and final) Deliverable from the 2016 Northern Cod FIP Research Plan

Questions?

Steve Devitt

Director, Sustainability

Atlantic Groundfish Council

sdevitt@atlanticgroundfish.ca

