On-board cameras in New Zealand:
## *Current status and future plans*

Fisheries New Zealand
Tini a Tangaroa

Historical context

- New Zealand has taken several steps to transition to a digital reporting and monitoring systems:
  - From 1 November 2018 we transitioned over 600 vessels from paper-based to electronic catch reporting AND real-time position reporting
  - Government and Industry undertook several trials of on-board cameras in:
    - Inshore trawl fisheries
    - Setnet fisheries
    - Bottom longline fisheries
  - 1 November 2019 we initiated our first regulated on-board camera programme covering almost 20 setnet and trawl vessels fishing in areas where small cetaceans might be encountered (proof of concept)
  - Proof of concept trial government funded
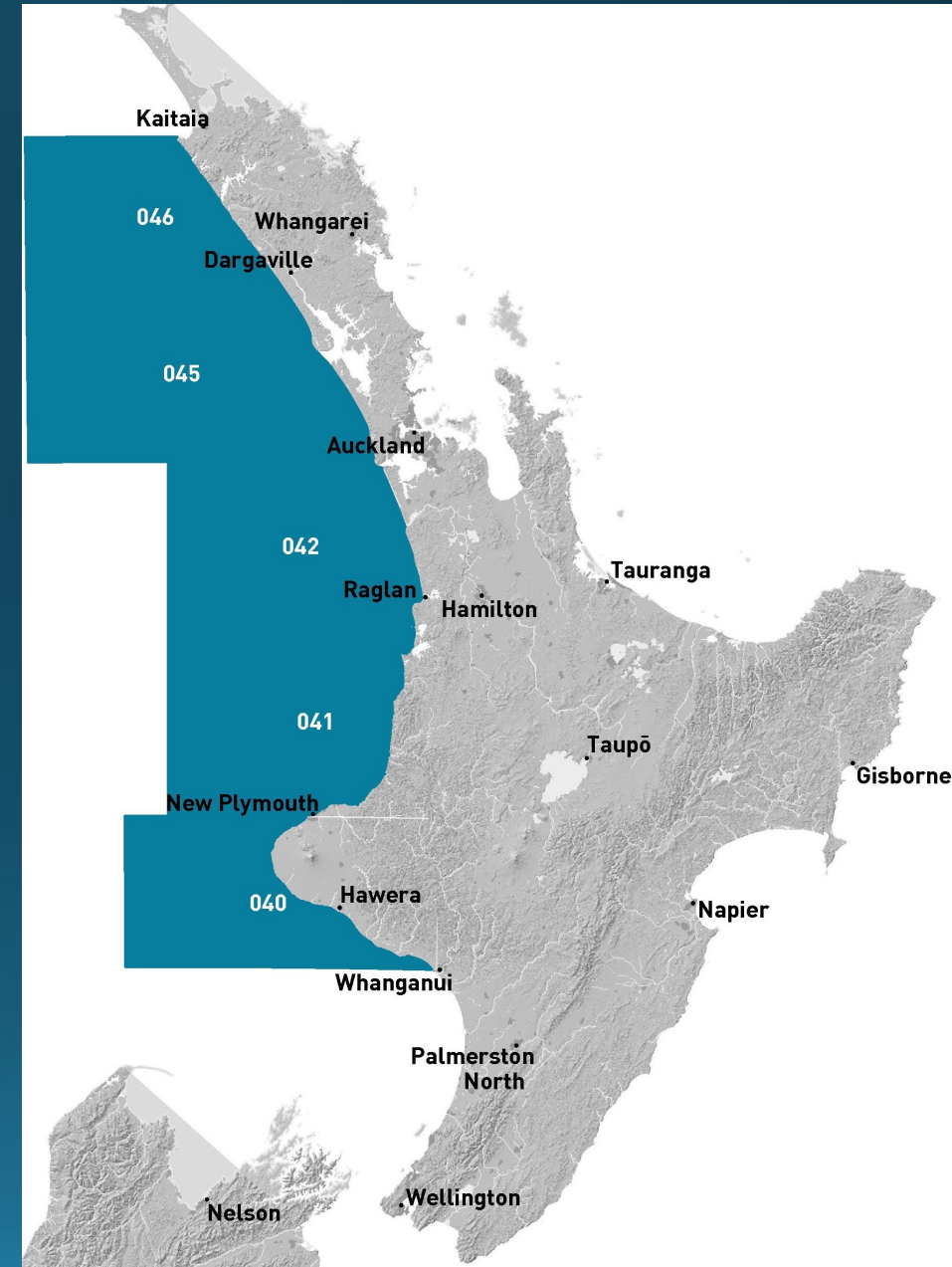
Proposed scope for on-board cameras

We propose that the wider rollout of on-board cameras is focused on inshore vessels that pose the greatest risk to protected species and/or have significant amounts of fish bycatch.

At this time we're not proposing to place cameras on:

- Deepwater trawl vessels as these vessels are well observed
- Other inshore vessels as these use low volume, more selective fishing methods (e.g. potting) and pose less of a risk to protected species.

up to

300 Vessels

are responsible for

85%
of the total catch (by volume) from inshore fisheries

These 300 vessels pose the greatest risk from New Zealand fisheries to these protected species:

Vessels using the following methods are proposed to be included in the wider rollout of on-board cameras

Surface longline
All vessels

Bottom longline
All vessels

Trawl
Vessels ≤32m in length except those targeting scampi

Set net
Vessels ≥8m in length

Purse seine
All vessels

Danish seine
All vessels

ANTIPODEAN ALBATROSS

HECTOR'S AND MĀUI

BLACK PETREL

HOIHO

PRIORITISED FISHERIES		DATE CAMERAS TO BEGIN TRANSMITTING
1	Inshore trawl and set net - West Coast North Island	30 November 2022
2	Set net - North, East and South Coast South Island	14 June 2023
3	Inshore trawl - North, East, South Coast South Island	
4	**Surface longline – All New Zealand**	29 November 2023
5	Bottom longline – Northern New Zealand	
6	Bottom longline – Rest of New Zealand	5 June 2024
7	Inshore trawl – Rest of New Zealand	
8	Set net – Rest of New Zealand	27 November 2024
9	Purse Seine – All of New Zealand	
10	Danish Seine – All New Zealand	

Design Principles

- The purpose of cameras are to **verify fisher reporting**. The benefits to be delivered include improved information, positive behavioural change and improved species protection.

- Principles to the setting or review levels to best achieve this purpose and deliver these benefits:
  - Footage review should be **risk based** with higher levels of footage review in those fisheries where there is a higher risk of misreporting or where the consequences of misreporting are greatest
  - Footage review rates should be **dynamic/agile** and should change in response to improved information or changing incentives
  - There should be a **random element** to footage review across all fisheries and all vessels
  - Footage review should also **be targeted** to events of specific interest (i.e. known protected species captures, intelligence received)

Purpose of footage review

Fishers are required to provide information on:

- All protected species captures
- Mitigation use
- Event/gear details
- All fish catch

Very powerful dataset (census/100% coverage)

Data unverified → Accuracy concerns → Constraints on utility

Purpose of footage review is about enabling the power of fisher reported data to be fully realised

Why review footage	Example
Detect misreporting (or other non-compliance)	Has the fisher failed to report a protected species capture?
Validate the information provided by fishers	Is the protected species identification provided by the fisher correct?
Collect detailed information that fishers do not provide	Where did the seabird capture occur in relation to the nearest line float or weight?

Fisheries New Zealand
Tini a Tangaroa

Spark Business Group

Implementation and support partners

Hanwha Fixed Dome IP Cameras

Data Collection

Activity Recognition Models
(Switches recording ON/OFF,
and adjusts framerate)
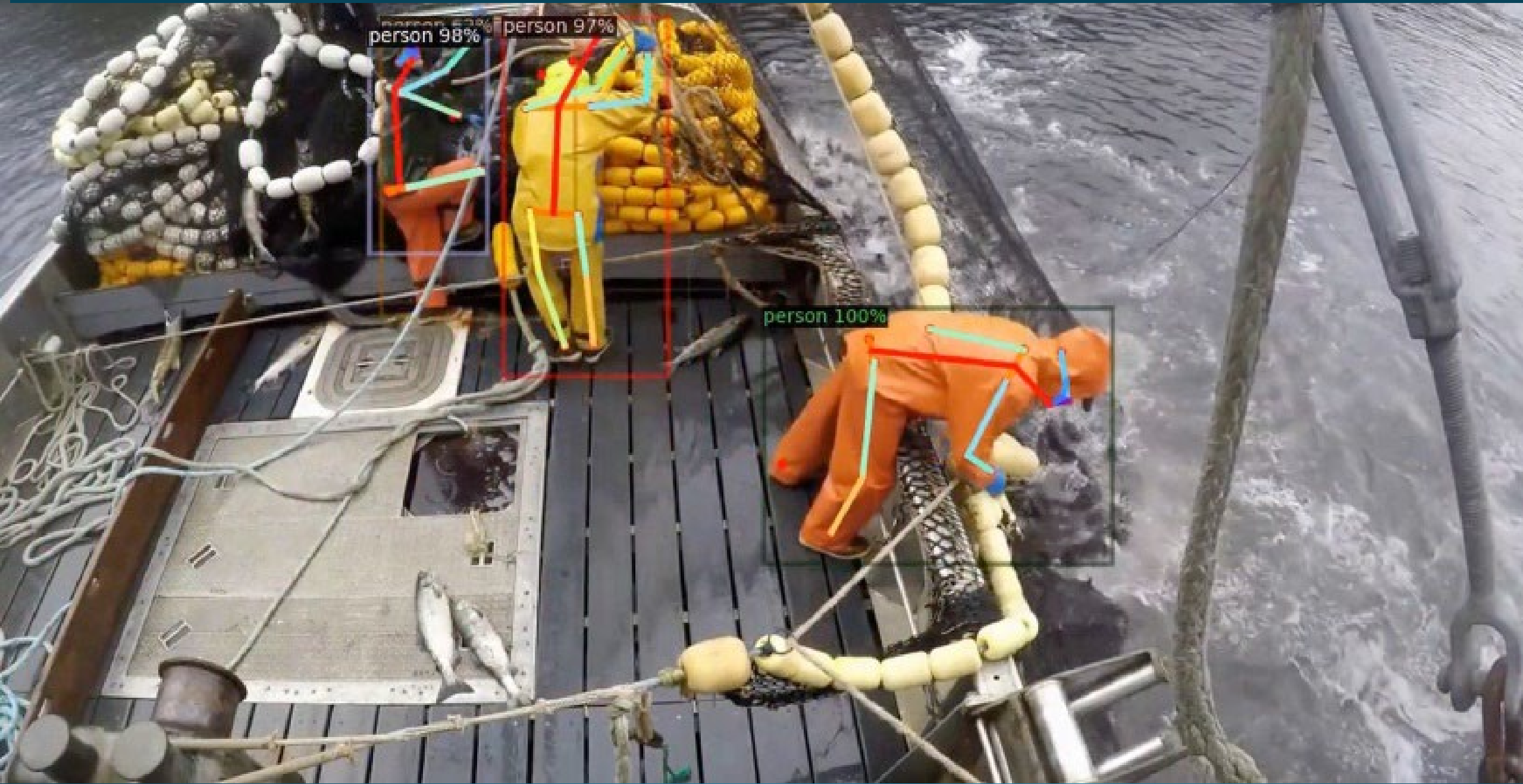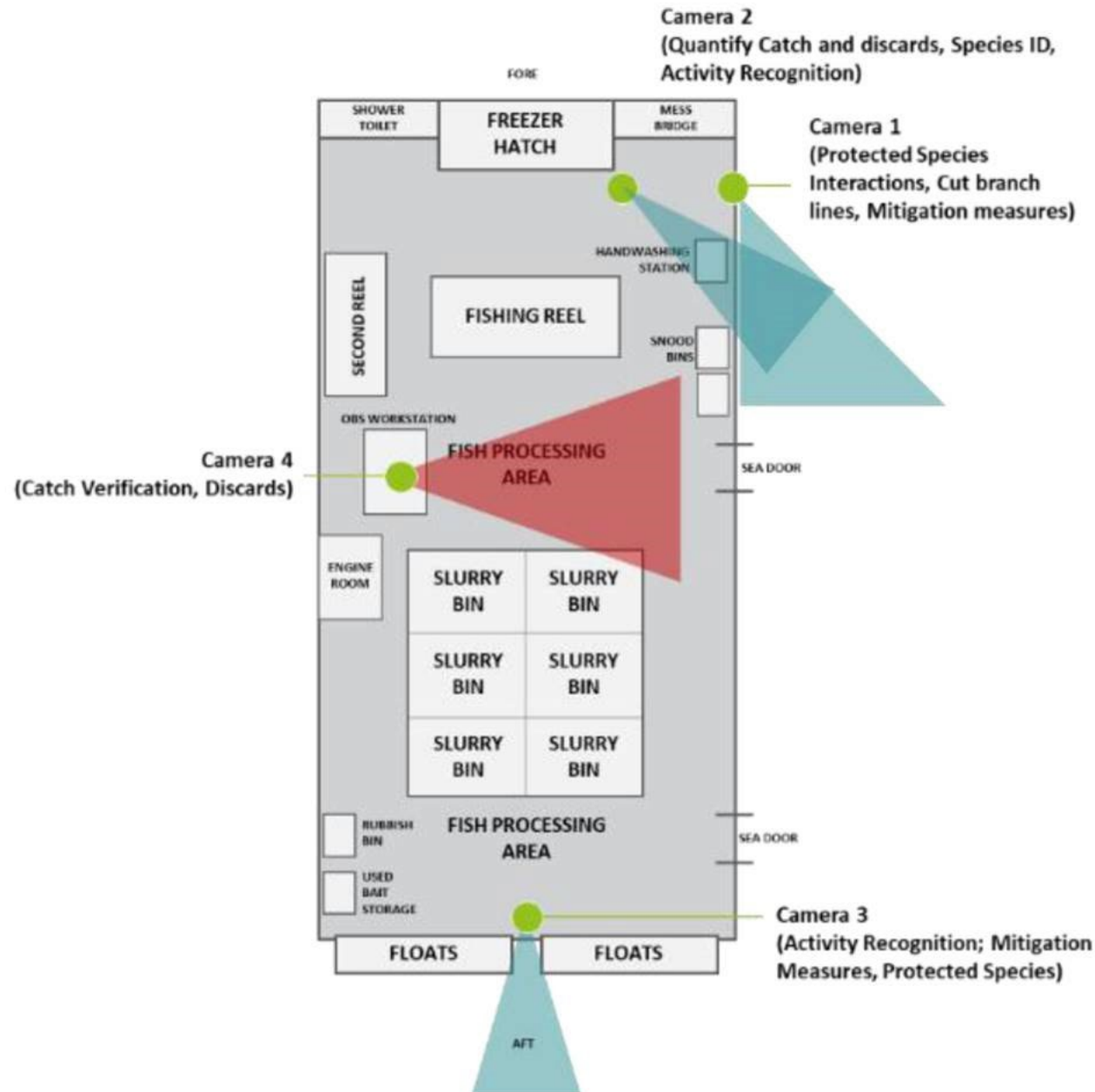
Data Transmission
(When in cellular range)

Onboard: Edge A.I.

Crew Location & Activity Monitoring:

Sample camera layout schematic

Innovation Strategy: looking forward

Electronic Monitoring: Best Practices for Automation

BENJAMIN WOODWARD
MARK HAGER
HEATHER CRONIN

CVision

Gulf of Maine Research Institute
Science. Education. Community.

- The purpose of this Strategy is to '*develop Artificial Intelligence (AI) and other technology innovations to increase functionality and reduce human review, submission, and storage costs*'.