

Multi-species Marine Communities

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Hauraki Gulf Seminar

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 Marine Mammal Ecology Group



the team...



'Pulse of the Gulf'

Focus - all large marine animals - sharks, rays, dolphins, whales, seabirds...

Determining large- and fine-scale distribution, habitat use drivers & cues

Multi-species feeding associations & community ecology

Soundscape ecology



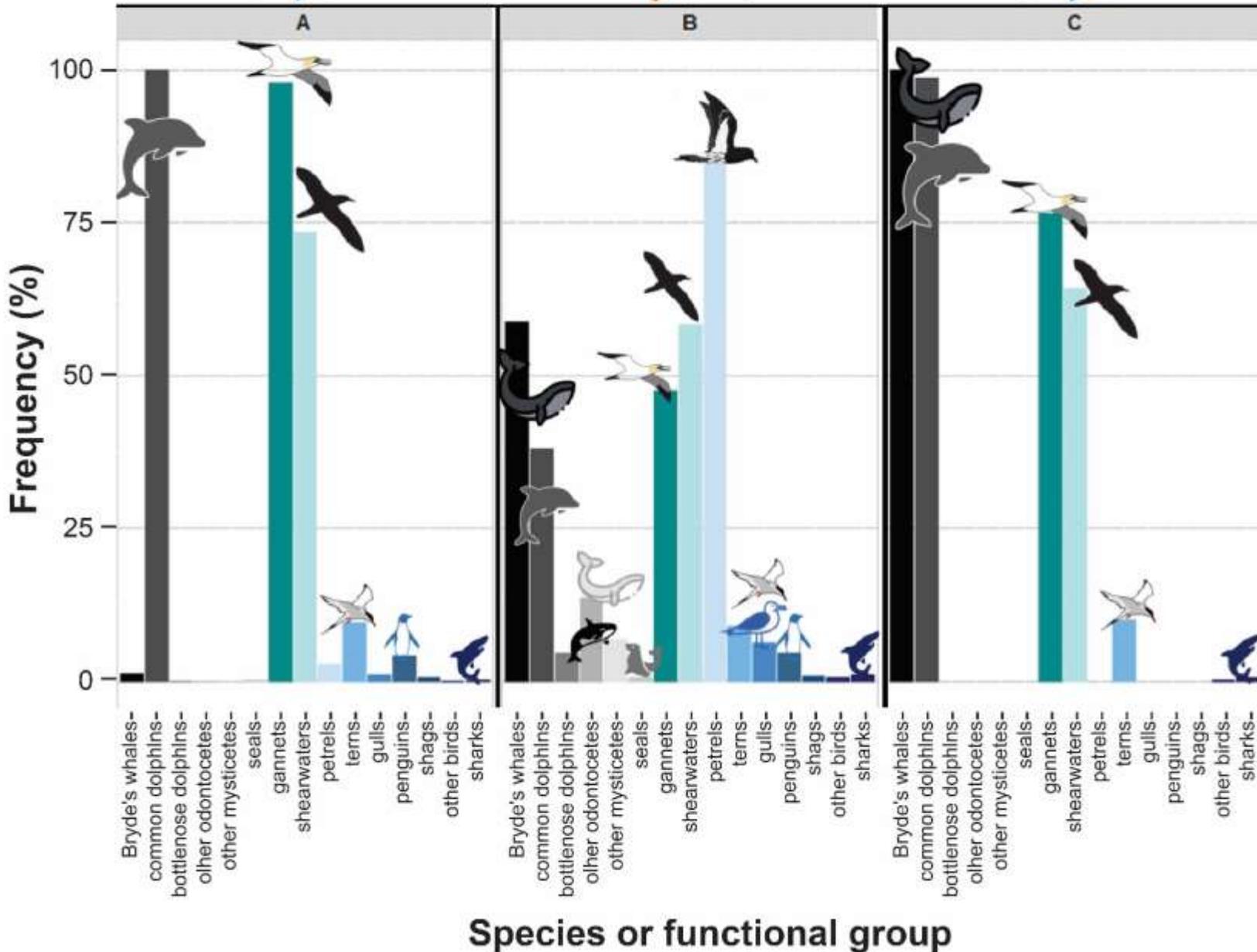
small, quiet communities





big, busy communities





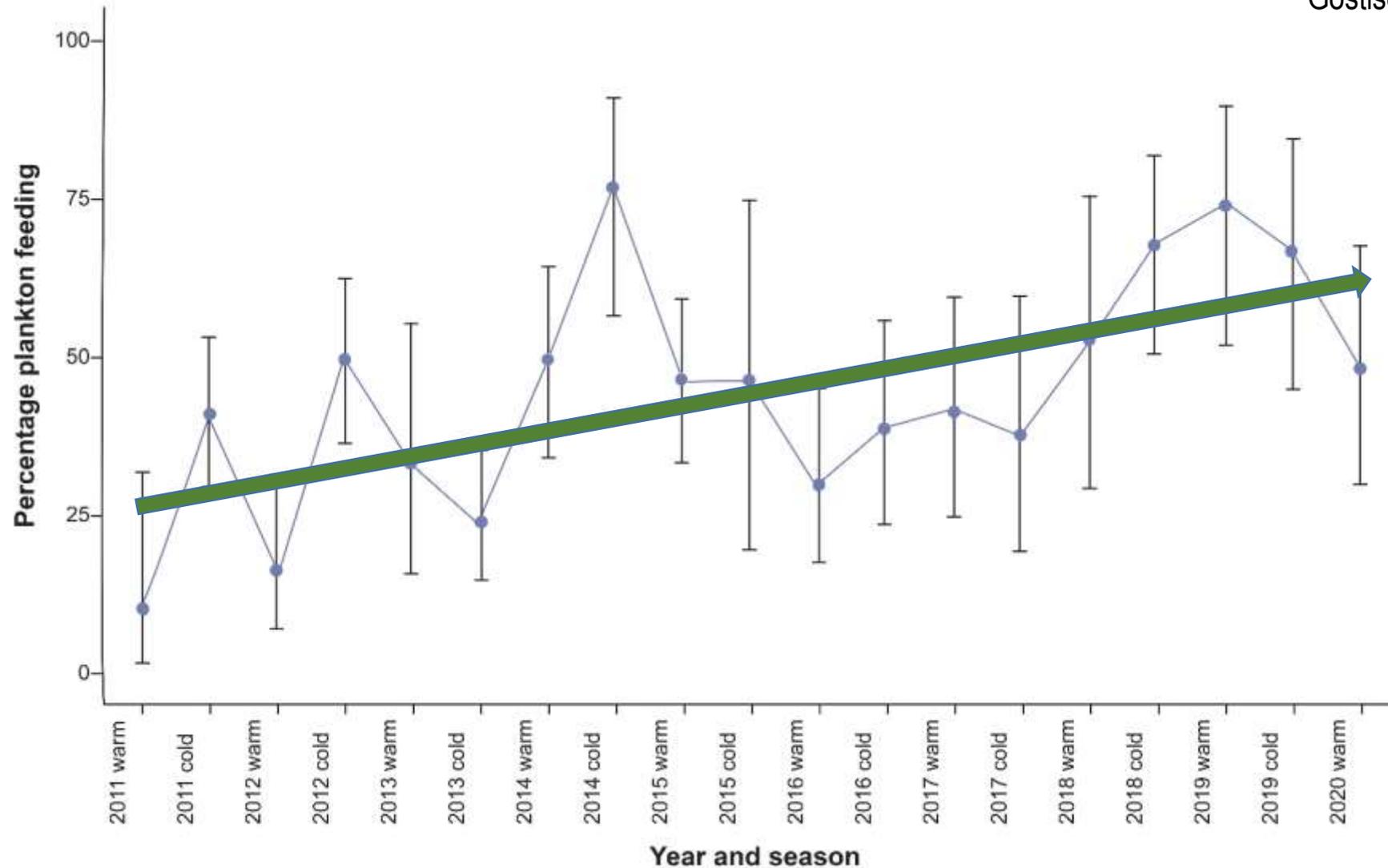
foraging
communities
2011 - 2020

Broad-scale
Mostly seabird groupings
rather than species ID



Bryde's whale diet: 2011 - 2020

Gostischa et al. 2021 Frontiers in Marine Science



Bryde's diet shift

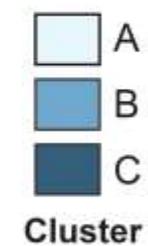
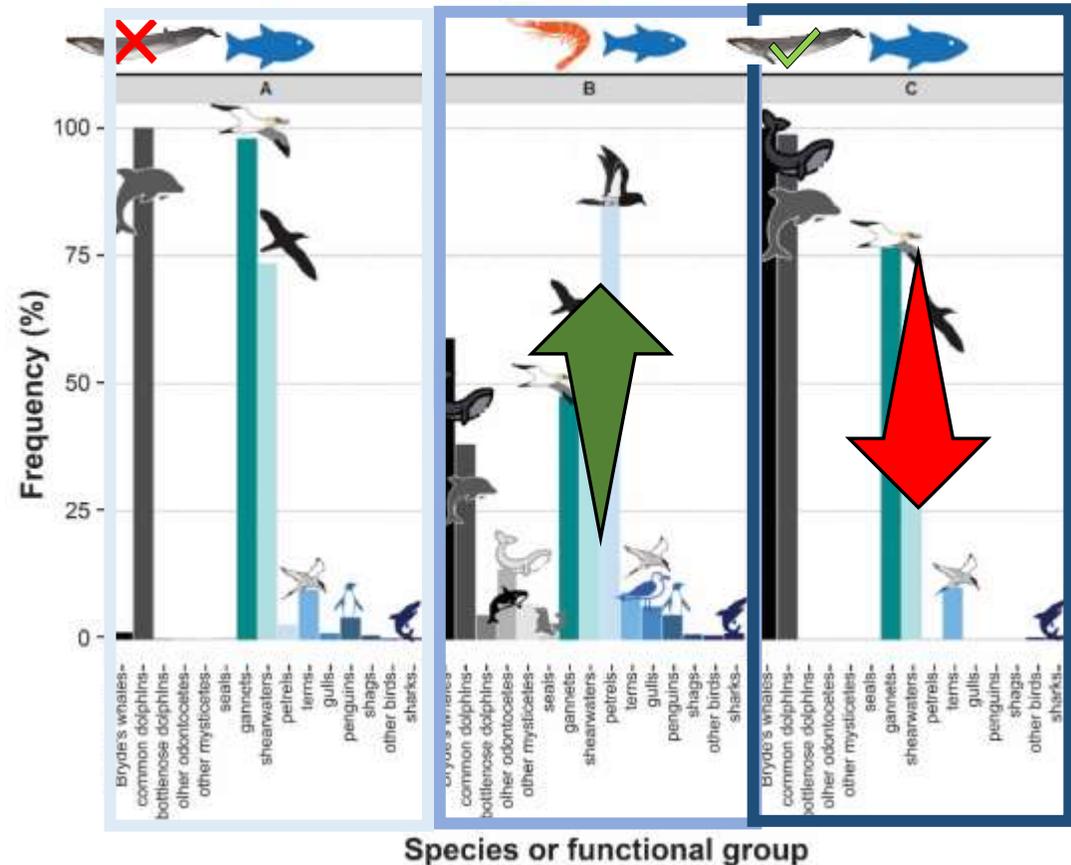
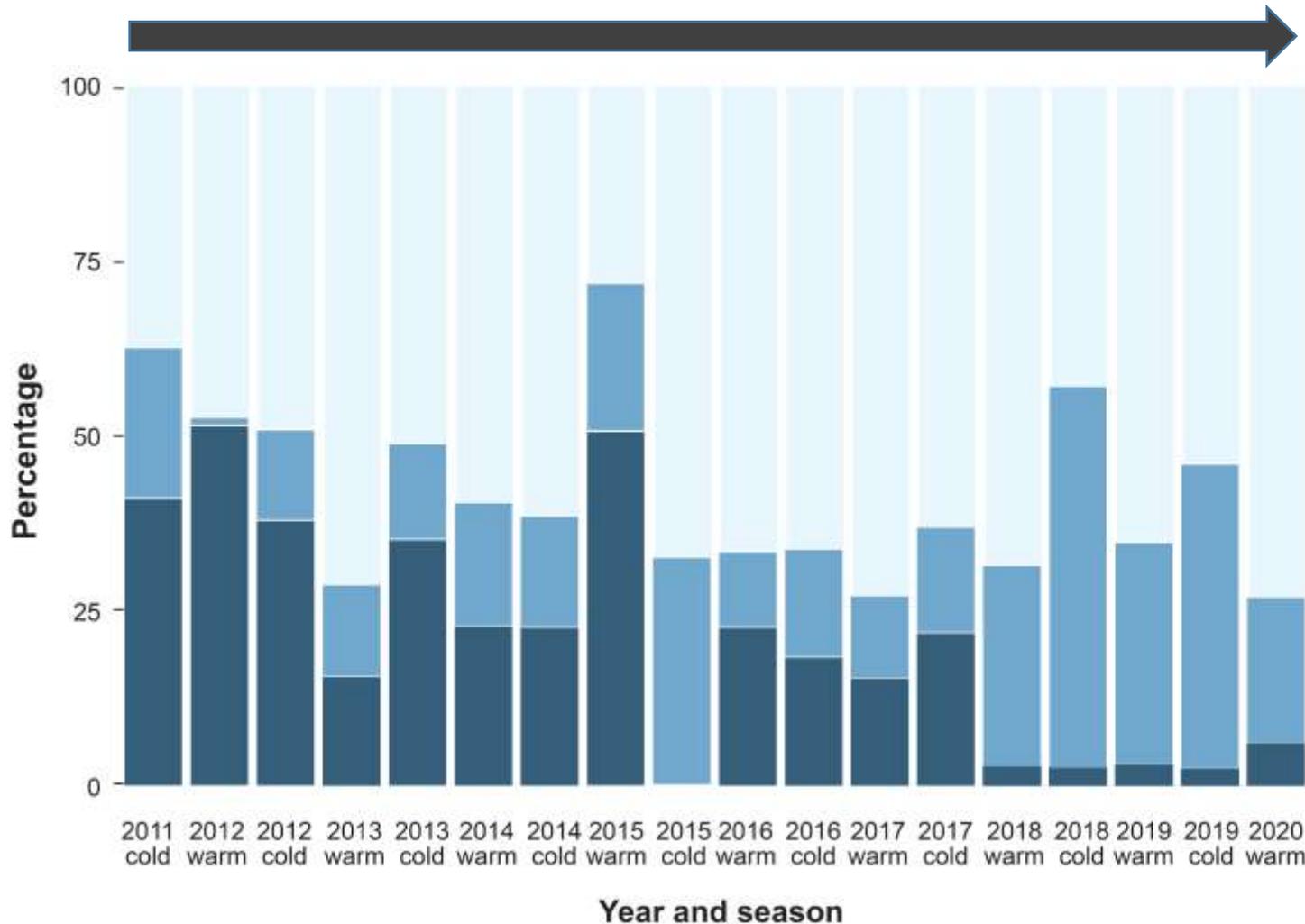
Fewer fish

More zooplankton

Significant change over time Community structure altered with shift in whale diet

2011

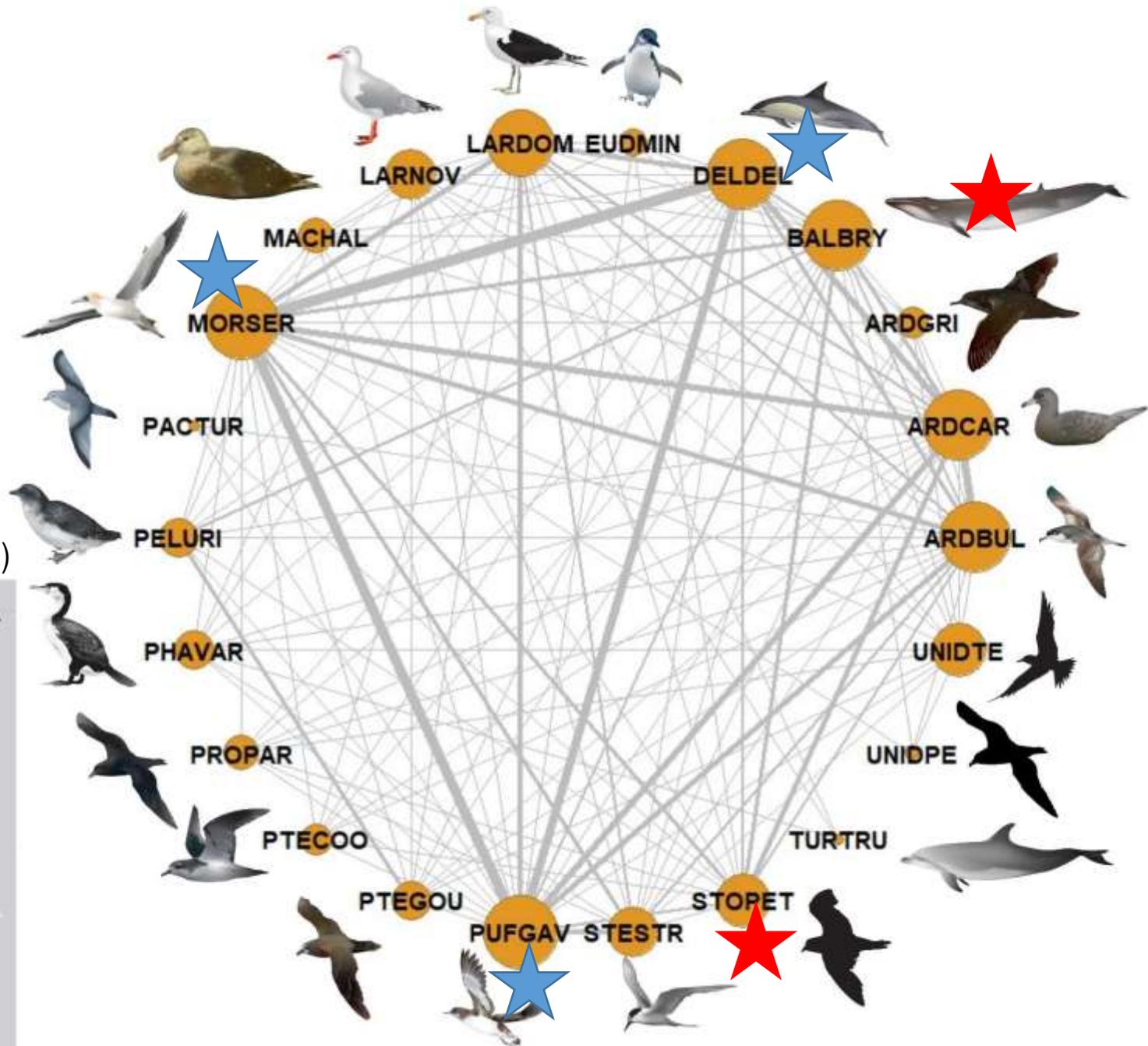
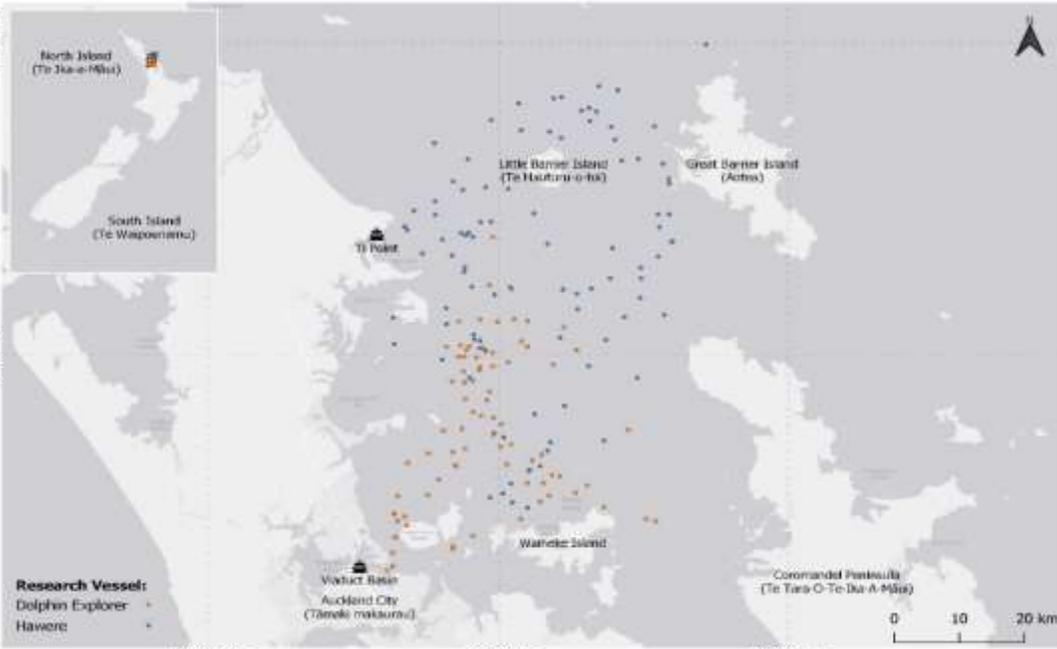
2020



social interactions

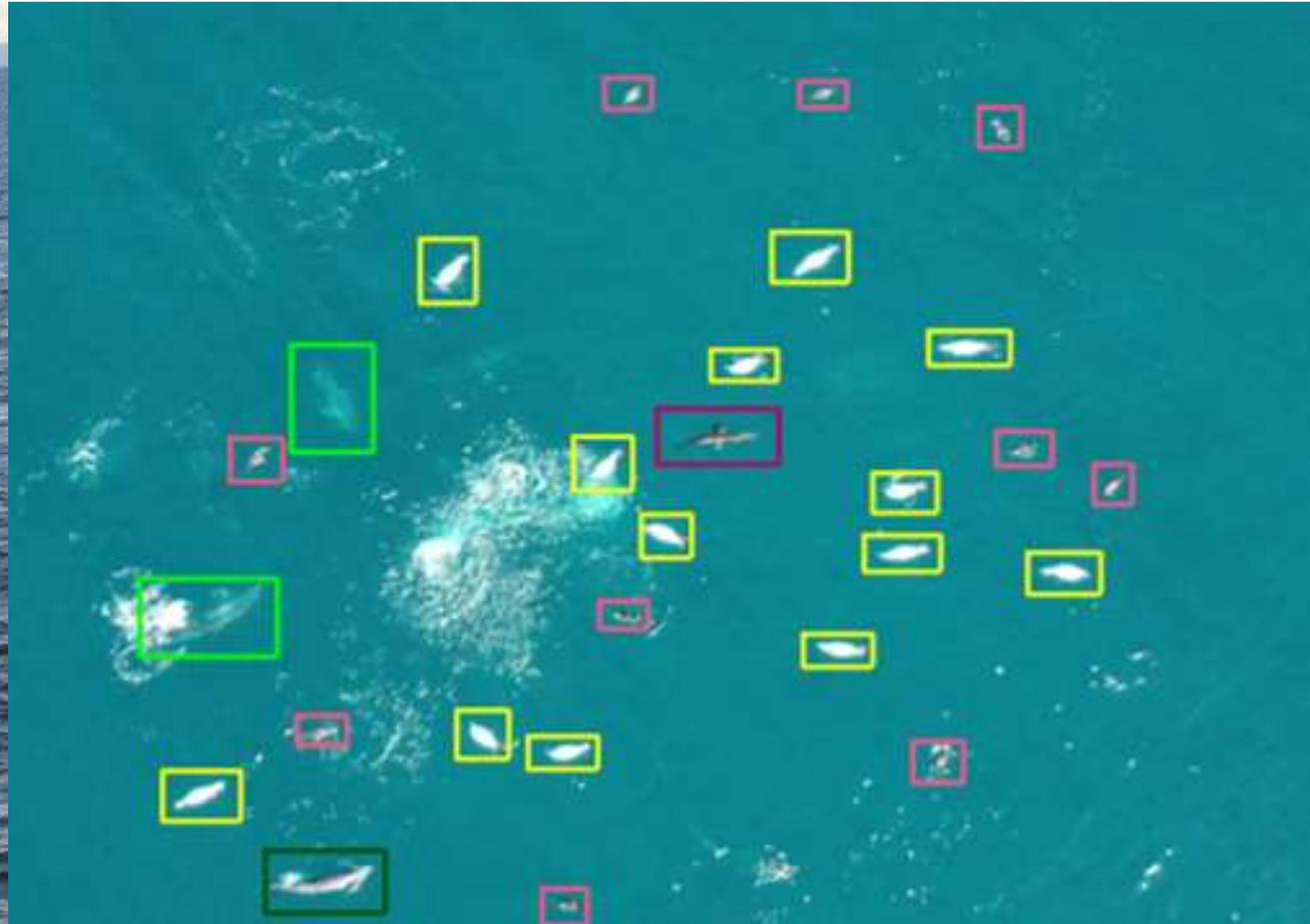
- 179 multi-species feeding events
- Described 8 fine-scale community types
- Frequency varies by season
 - migration/ behaviour

Davis MSc (2022)



the drone's (birds) eye view

- Artificial Intelligence (AI) tools developed using machine learning
- Brydes whale, common dolphin, manta ray + 5 seabird species
- Detailed interactions & associations





PUFGAV (50%)

MORSER

PUFGAV (56%)
PUFGAV (25%)

MORSER (59%)

MORSER (27%)

STESTR (66%)

MORSER (64%)

STESTR (41%)

MORSER (65%)

MORSER (73%)

MORSER (52%)

STESTR (28%)

MORSER (27%)

PETREL (45%)

STESTR (46%)

STESTR (31%)

STESTR (45%)

MORSER (78%)

MORSER (26%)

final thoughts...

Large marine animals & their communities are critical for thriving ecosystems

Communities change in time & space – ephemeral yet predictable

Have been formed long before humans arrived

A shift by a single species can disrupt communities

Change the social fabric of inter-species relationships

Communities are fragile & they are changing



GENEROUSLY SUPPORTED BY...

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