National Environmental Research Program

Australian Government

TSRA www.tsra.gov.au

JAMES COOK UNIVERSITY AUSTRALIA

Tracking turtle and dugong

NERP Tropical Ecosystems Hub Marine Wildlife Team:

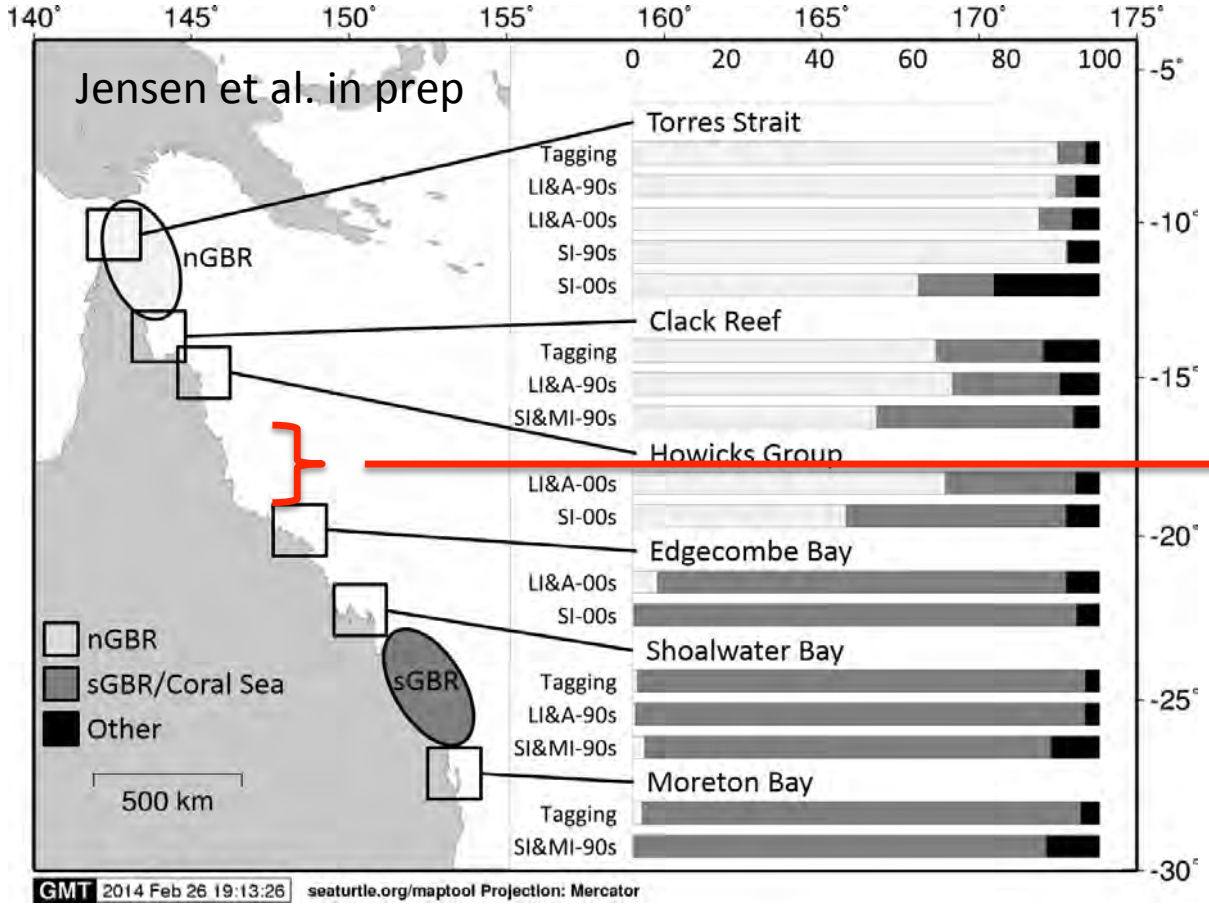
Mark Hamann, Mariana Fuentes and Helene Marsh

Assisted by:

Ron Fuji, Alana Grech, Christian Gredzens, Julia Hazel, Frank Loban, Stan Lui, Shane Preston, Susan Sobtzick and Torres Strait Rangers

Photo: Burnet River in flood by Chris Hadfield

Stock/regional distribution

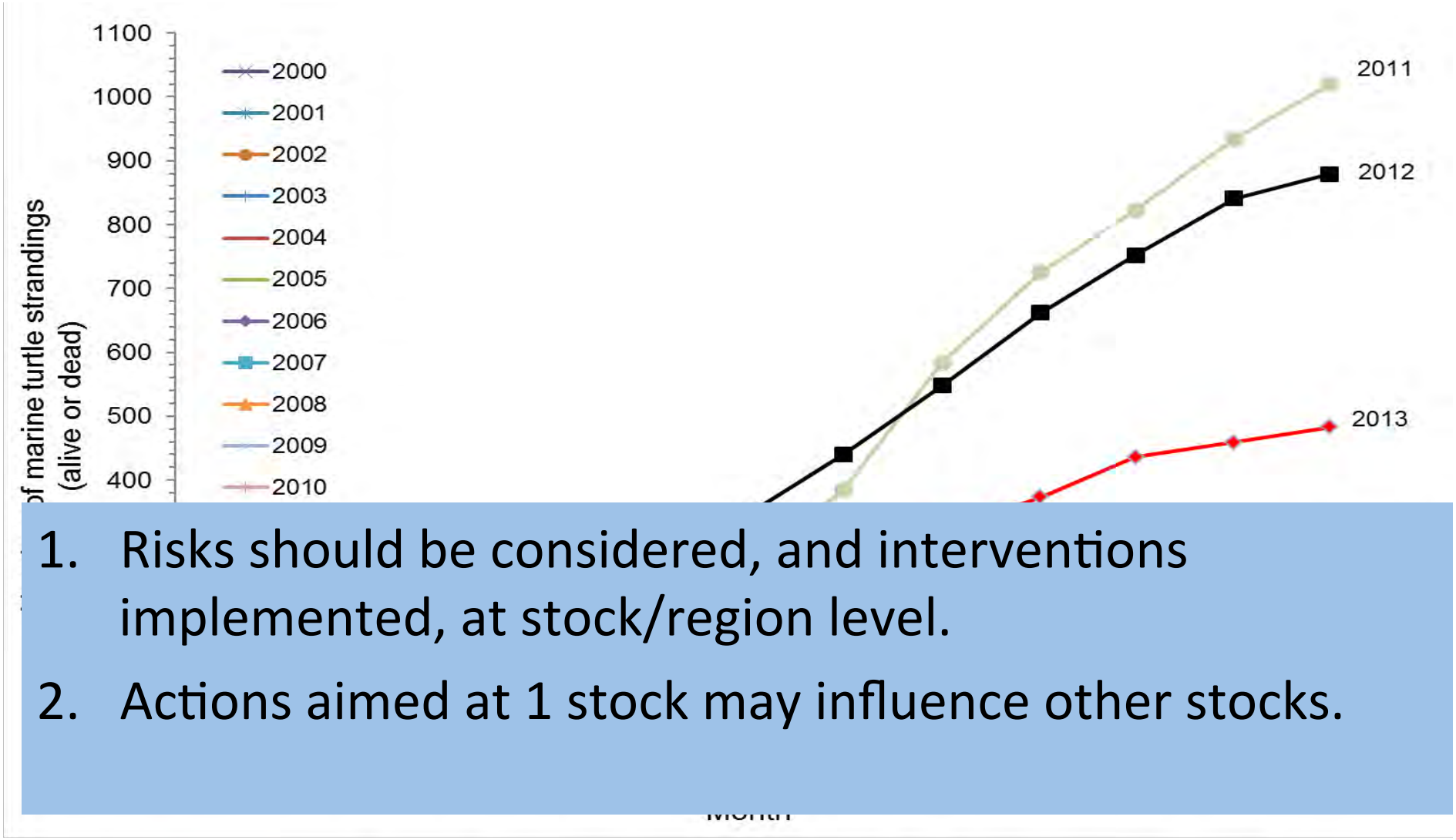


nGBR/sGBR split

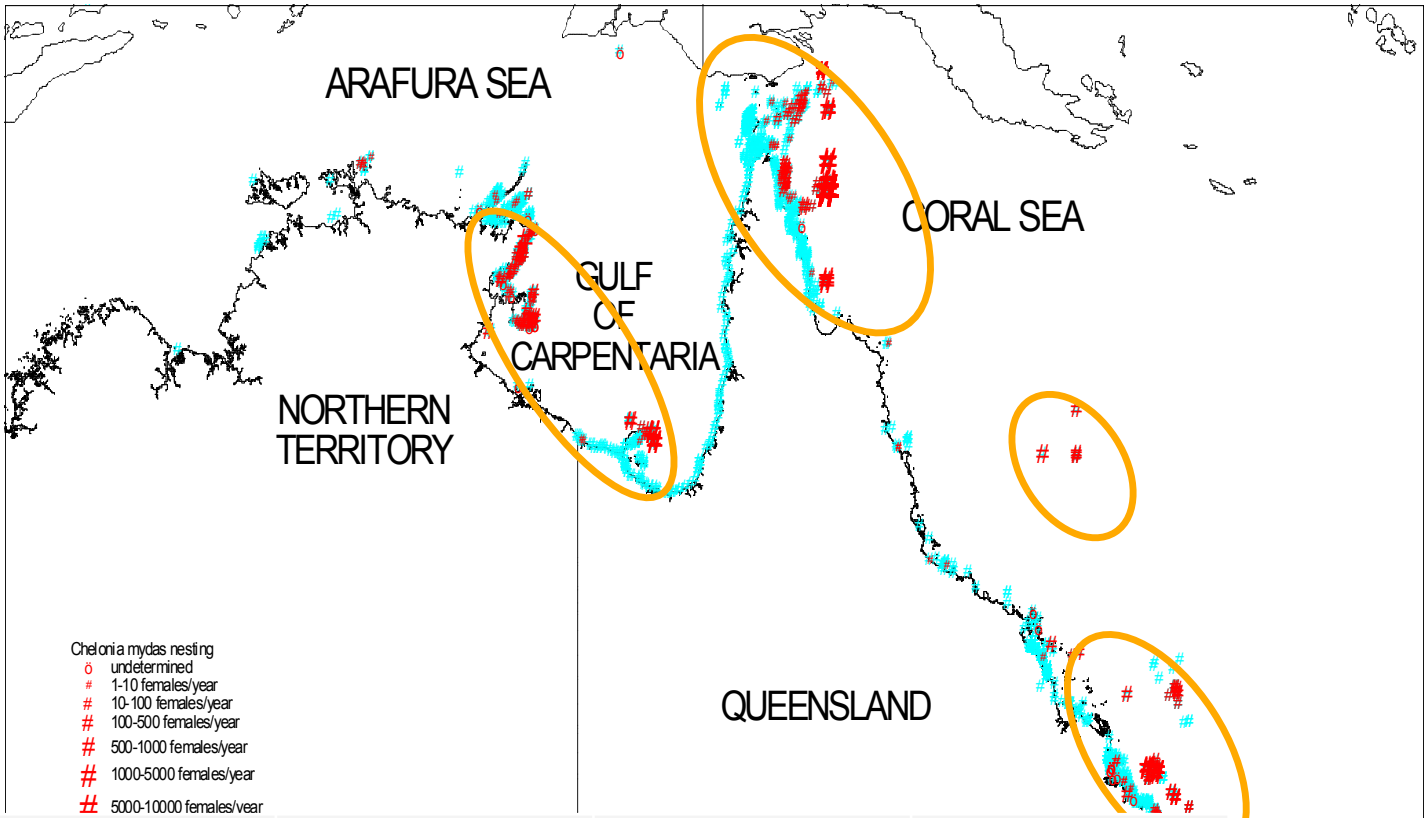
Green turtles have genetic stock structure in GBR

Dugong have regional differences in status & threats

Coastal impacts from cyclones + floods



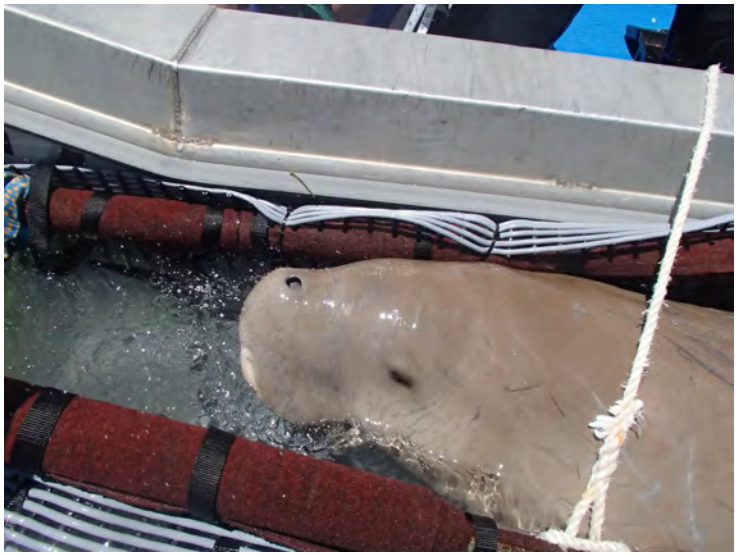
1. Risks should be considered, and interventions implemented, at stock/region level.
2. Actions aimed at 1 stock may influence other stocks.



	Torres Strait	NGBR	SGBR
Dugongs			
Green turtles			

Green turtle – space use & patterns of connectivity

Dugong – space use & spatial management



What information is needed to understand futures of dugongs and turtles ?

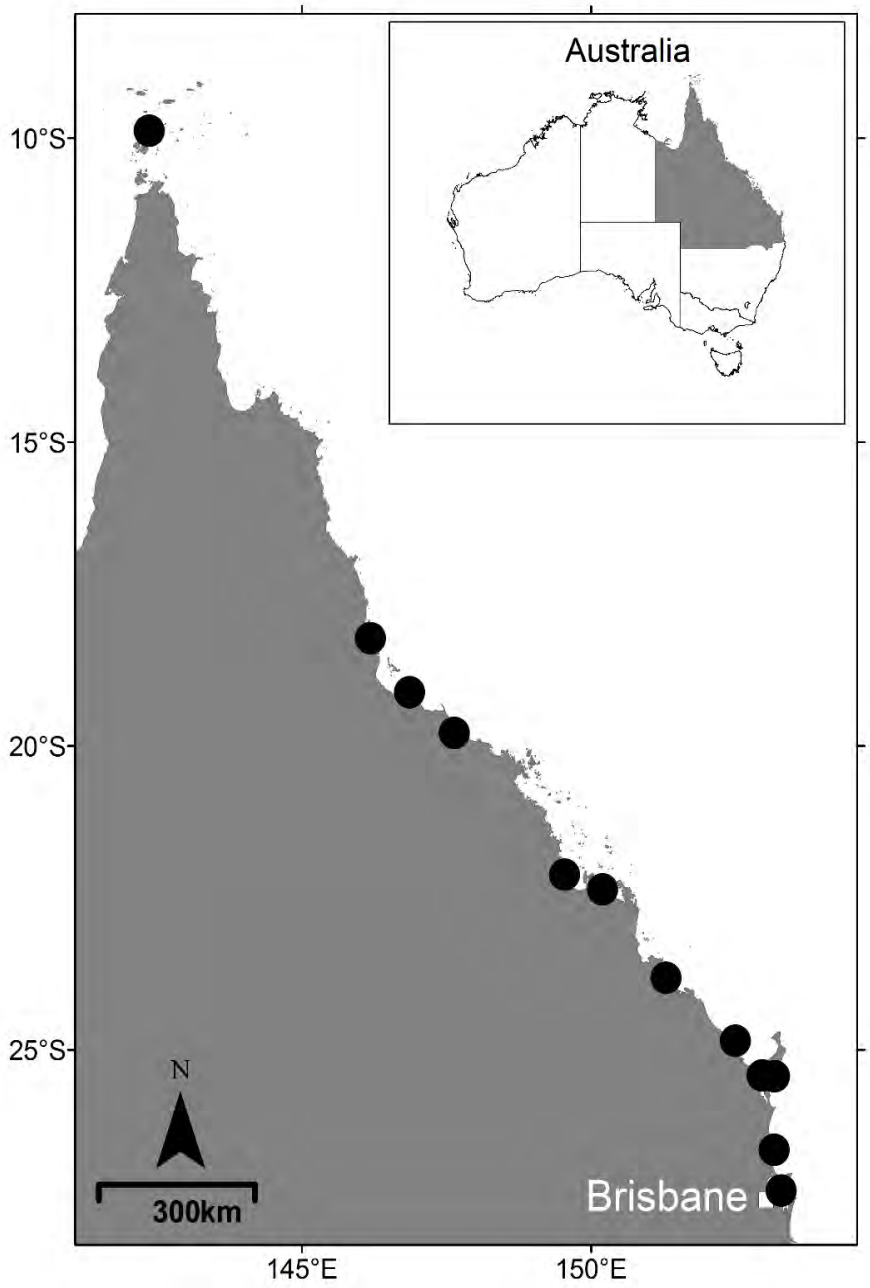
1. How many breeding adults in population? ✔
2. What are recruitment rates of juveniles? ✔
3. What are survivorship rates of each age class? ✗
4. Where do they live in relation to threats?

Research goals

What habitats do dugong & turtle use in relation to threats?

How do green turtles and dugong share space?

Turtles and site fidelity



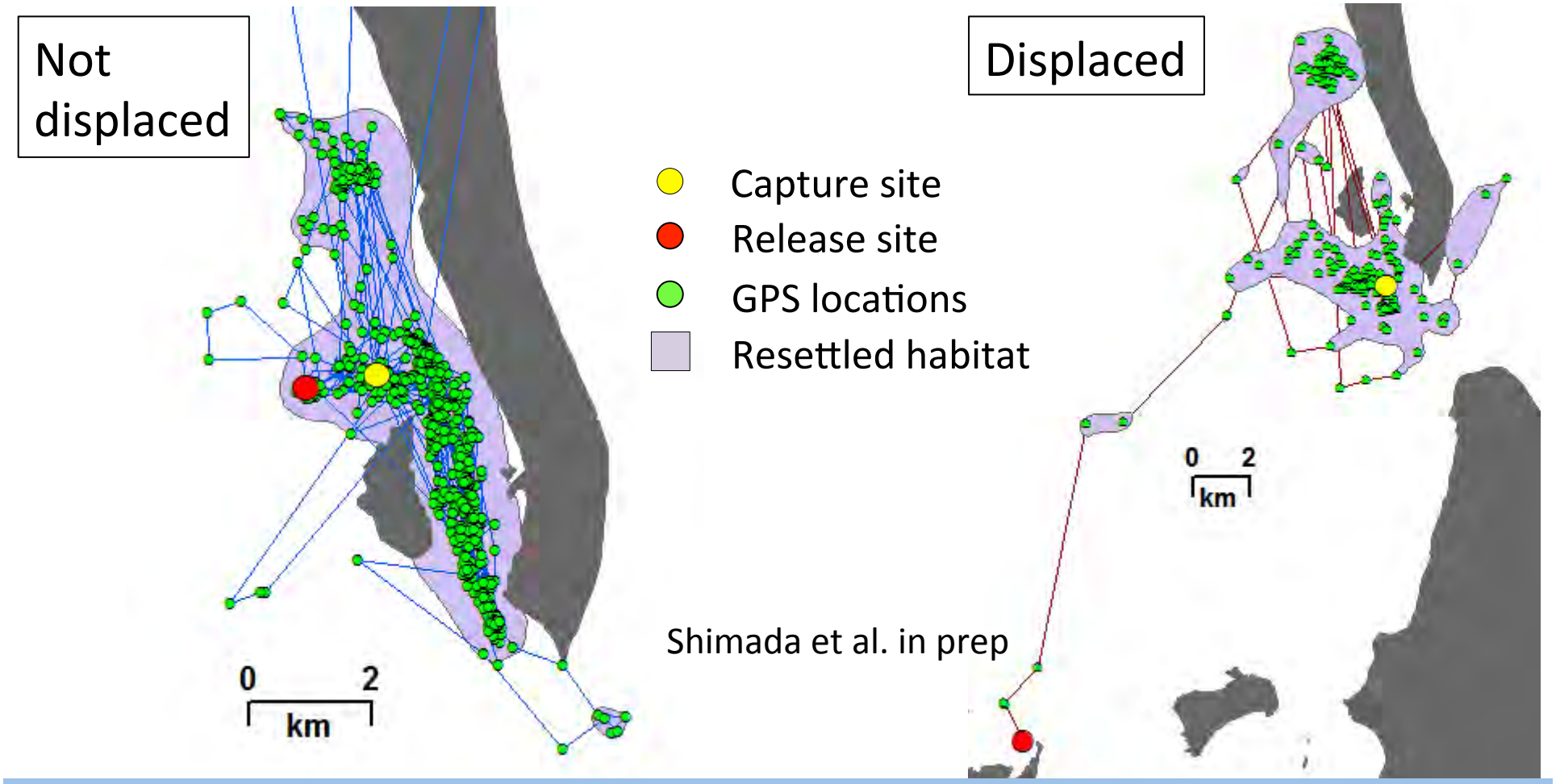
78 satellite tracked turtles (JCU, TSRA, QDEHP, GHD)

4 rehab turtles Reef HQ

3 decades of mark-recapture data from QDEHP

If you take a turtle away from its foraging area does it go back?

Turtles and site fidelity

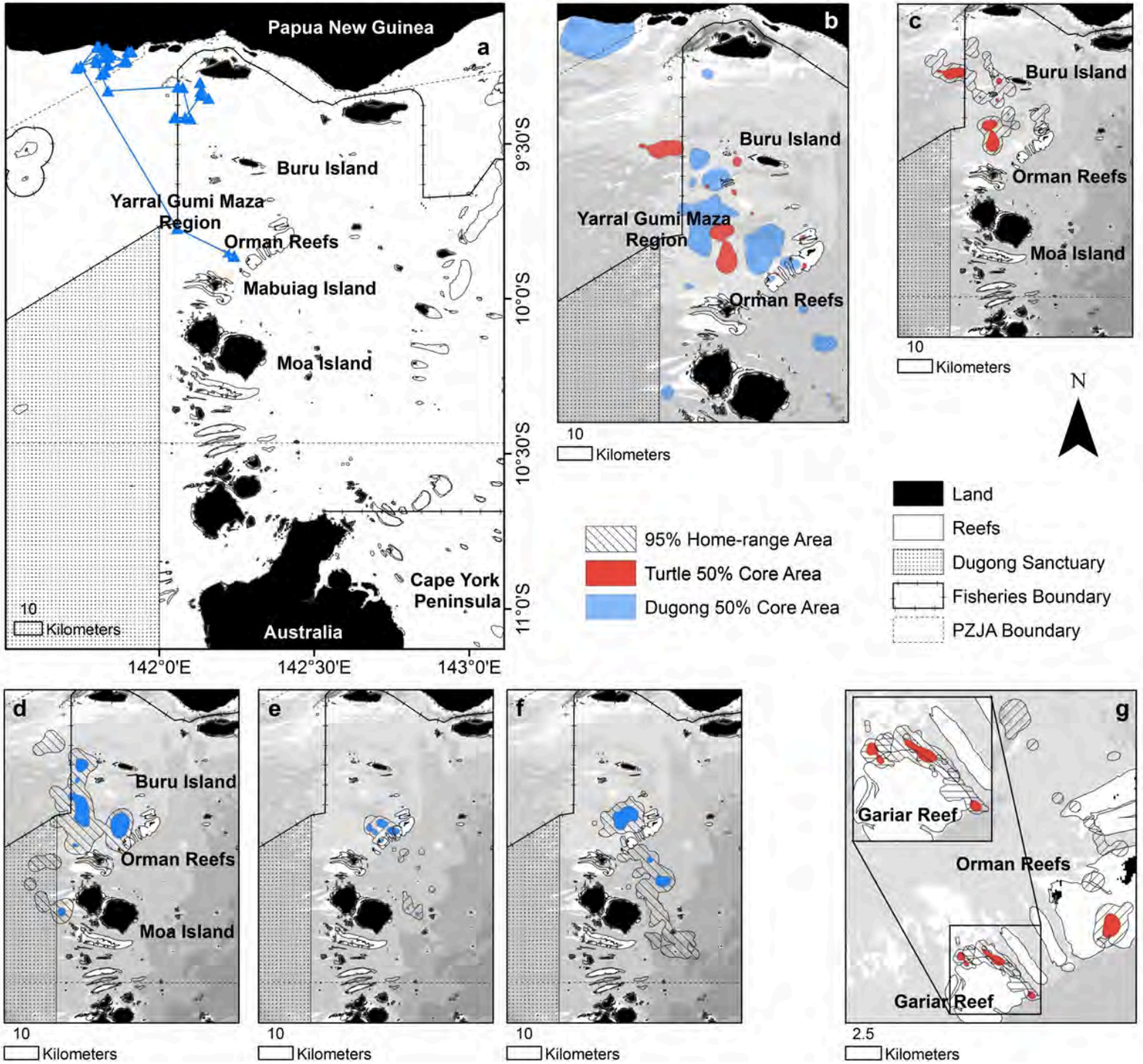


All non-displaced turtles stayed around capture site.

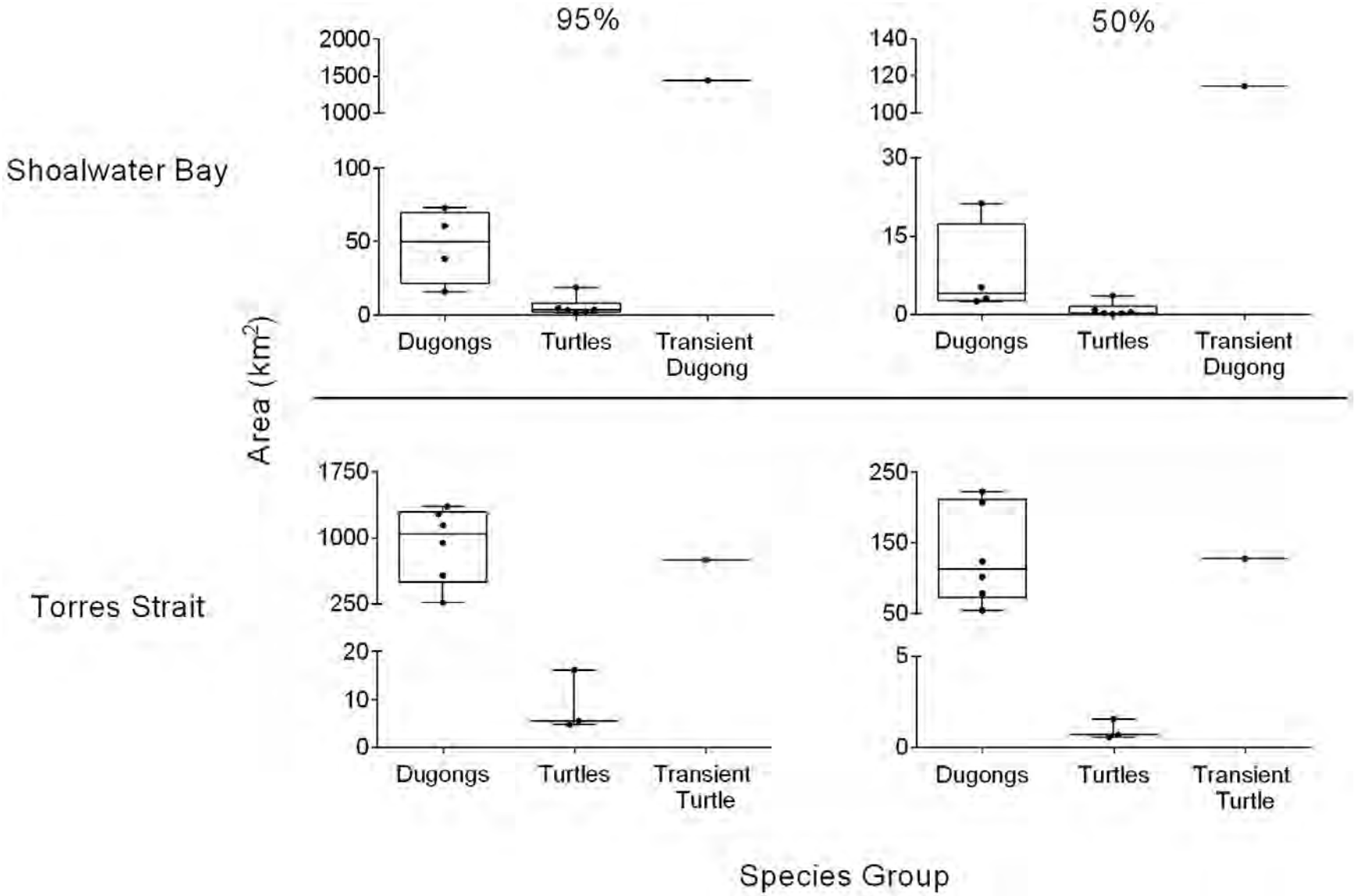
Following migration – turtles tracked back to capture site

79 of 82 displaced turtles returned to the area of capture.

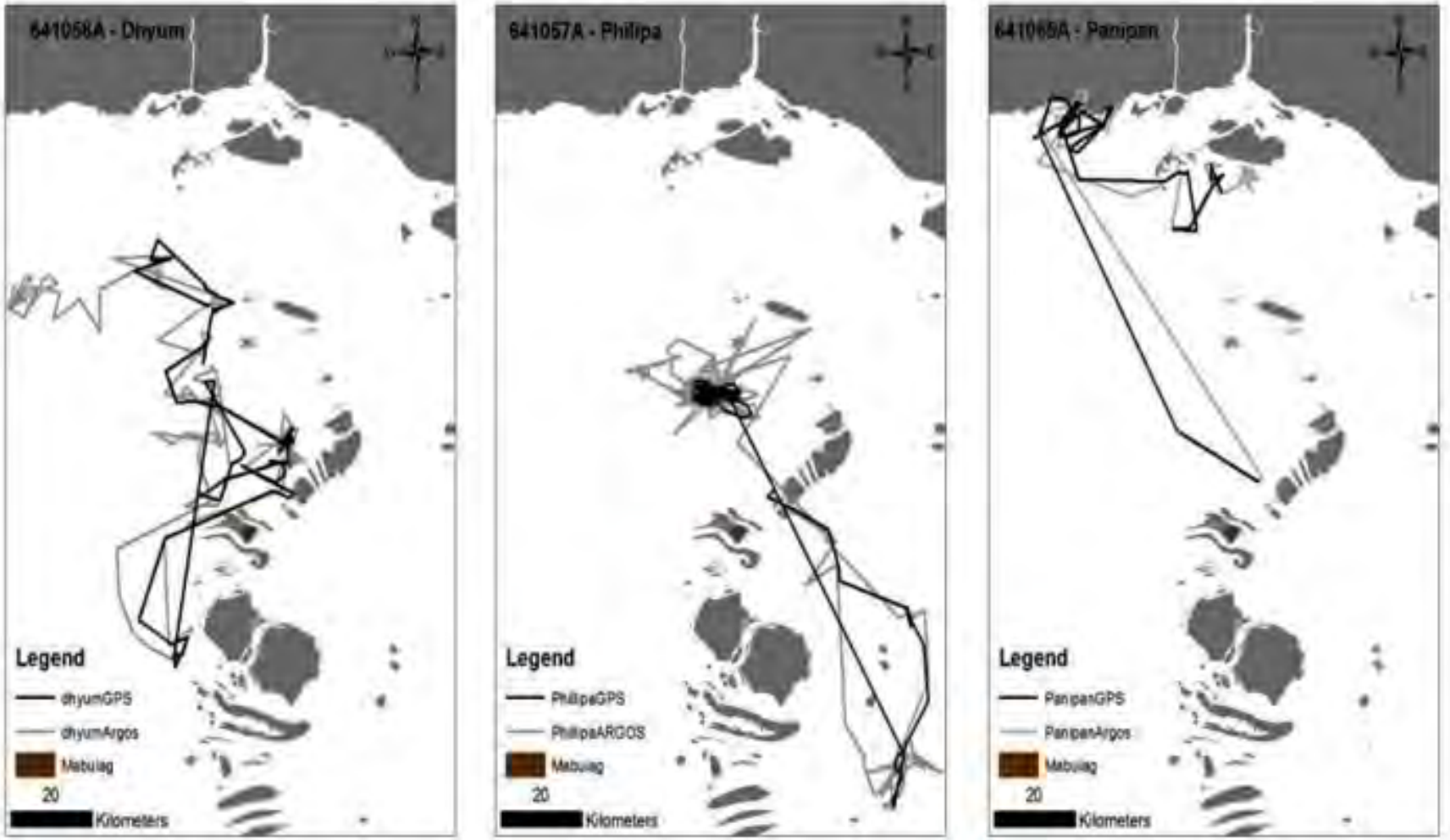
How do dugongs and green turtles share space?


a
Papua New Guinea
Buru Island
Yarral Gumi Maza Region
Orman Reefs
Mabuiag Island
Moa Island
Cape York Peninsula
Australia
9°30'S
10°0'S
10°30'S
11°0'S
142°0'E
142°30'E
143°0'E
10
Kilometers
b
Buru Island
Yarral Gumi Maza Region
Orman Reefs
10
Kilometers
c
Buru Island
Orman Reefs
Moa Island
10
Kilometers
N
95% Home-range Area
Turtle 50% Core Area
Dugong 50% Core Area
Land
Reefs
Dugong Sanctuary
Fisheries Boundary
PZJA Boundary
d
Buru Island
Orman Reefs
Moa Island
10
Kilometers
e
10
Kilometers
f
10
Kilometers
g
Gariar Reef
Orman Reefs
Gariar Reef
2.5
Kilometers

Turtle and dugong sharing space



Dugongs make individualistic, wide ranging movements across sea country boundaries & turtles stay



Gredzens et al. 2014

Turtles have more varied diet than dugong

Marine Turtle Newsletter

Mangroves in the Diet of *Chelonia mydas* in Queensland, Australia

Colin J. Limpus & Duncan J. Limpus
Queensland Parks and Wildlife Service, P.O. Box 155, Brisbane, 4002, Australia.

Foraging turtle – policy implications

Protecting habitat for dugong will benefit green turtles.

Management plans need to be coordinated across Govt, communities & with PNG.

Dugong sanctuary also important for green turtles.

Policy implications

Linking management goals across communities and also into southern PNG is essential.

Continuing support for community-based management initiatives & ranger programs in northern Australia is essential.

Need to consider cumulative risks to animals and also habitats at various scales

Research & monitoring priorities

- Developing tools to prioritise management actions (among and within stocks/regions).
- Communication of research findings and key messages to communities.
- Improving population estimates through use of dive and GPS trackers.
- Continued monitoring of mortality, hatchling production (annual), juvenile recruitment & impacts of climate change.

Emerging issues / priorities

- Impacts of plastic pollution – all marine wildlife (e.g. Vegter et al. (2014)
- Lack of framework for prioritising risk mitigation
- Need for international collaboration (e.g. hawksbill turtles)
- Need to understand noise pollution impacts on marine wildlife
- Need to evaluate the efficacy of management interventions

National Environmental Research Program

Thank you - questions

Mark Hamann
James Cook University
mark.hamann@jcu.edu.au