

# Caught in ghost nets

## a regional collaboration to manage threats to sea turtles

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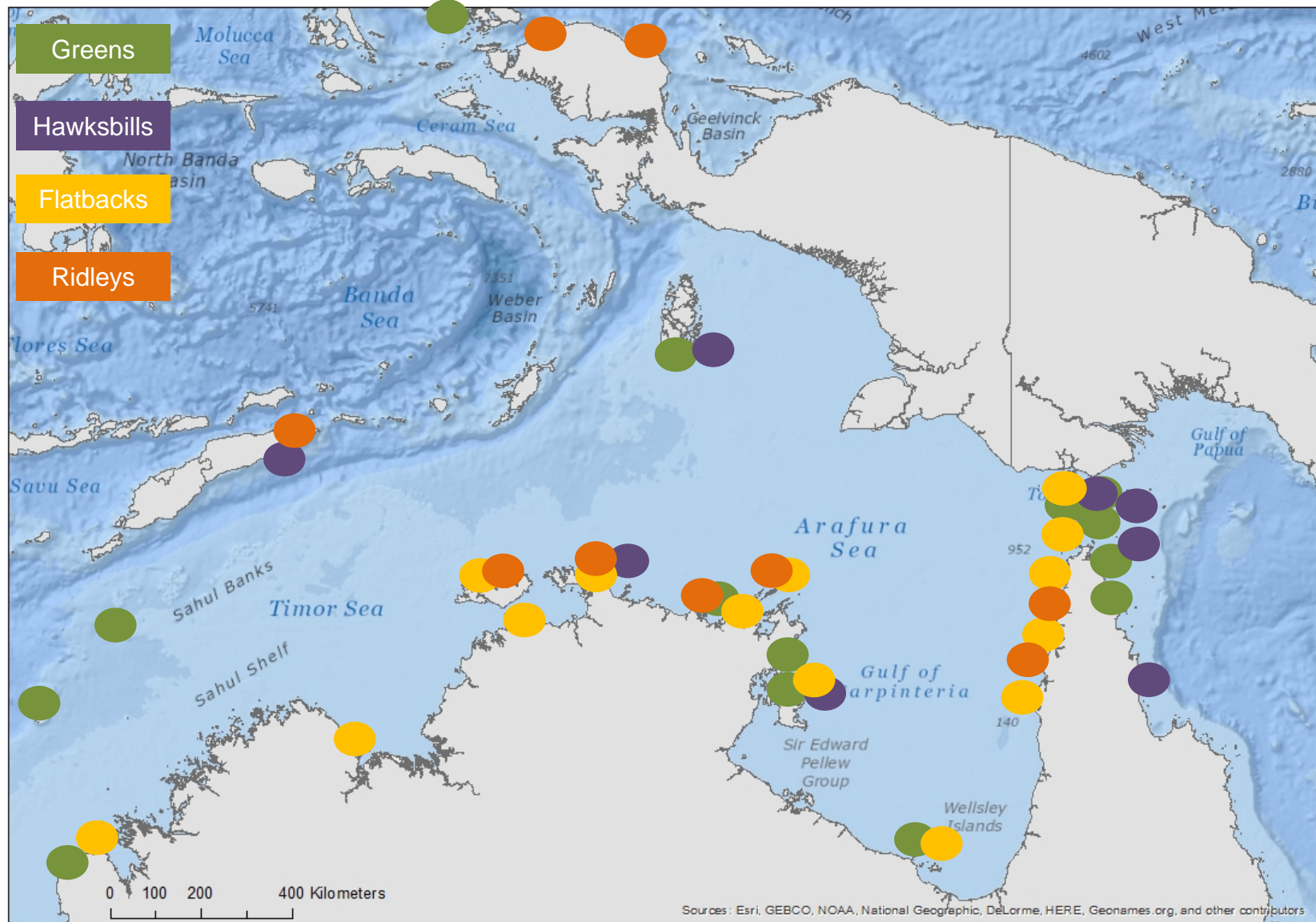
<sup>4</sup> Crocodile Island Rangers



Ellarose Savage © Australian Museum



# Distribution of 4 main turtle species in ATS



# Threats to sea turtles

Exploitation – consumption & illegal trade



Loss of critical habitat – nesting & foraging



Marine pollution – oil spills & invasive species



By-catch – trawl & long-line fisheries



Marine debris – entanglement & ingestion

↳ Ghost nets →



# Ghost nets – the problem

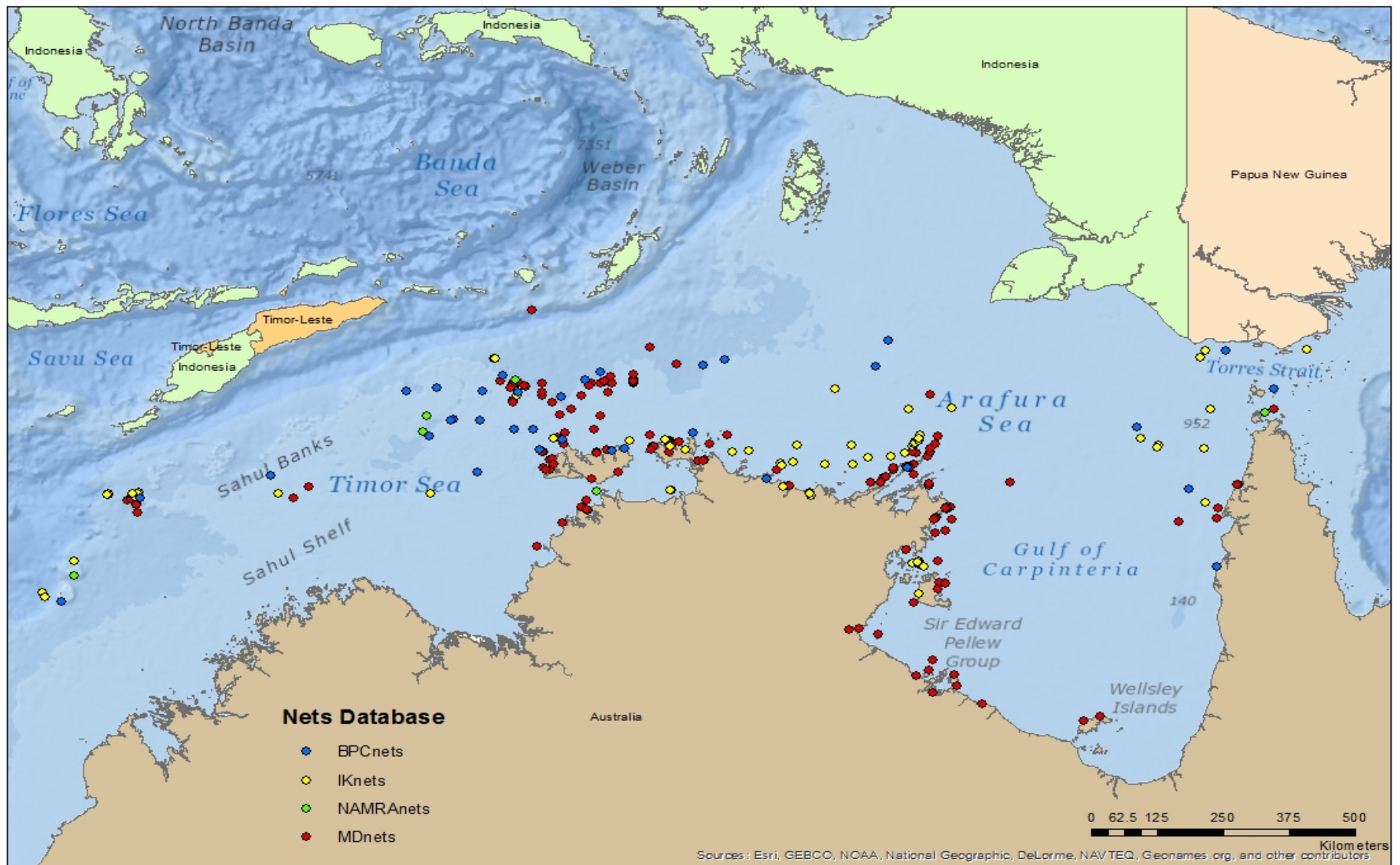
6.4 m tons fishing gear lost globally each year

Less than 10% of lost gear found here is from Australian fisheries

- Many ghost nets drift around in the Arafura & Timor Seas
- Ghost nets injure & kill marine wildlife – 80% are sea turtles
- Removal of ghost nets usually happens once washed ashore
- Little known about impact as they drift at sea



# Ghost nets in the ATS (2000 – 2014)



# Research objectives & approach

1. Predict movement patterns of ghost nets in the ATS
2. Discover retention areas – “aggregations”
3. Geographic origin of entangled turtles?
4. ID areas of high risk for ghost net/turtle interaction

## How?

Oceanographic circulation (particle tracking & global drifter tracks)

Turtle ecology and migration (population genetic structure & satellite tracking)



# A collaborative approach

Need: turtle skin biopsies for genetic analysis & ghost net info

Enlist the help of:

Skippers & crew of professional fishing boats  
Australian Fisheries Management  
Marine Rangers

Results:

2709 ghost net observations

372 nets with entanglements (13.7%)

50% of entanglements were turtles

34% - Hawksbills



27% - Olive ridleys



14% - Greens



7% - Flatbacks



# Stories from the field - Rangers

- In 2014 Dhimurru released 26 turtles from ghost nets in their IPA
- Rangers fly the coast in helicopters during the early dry season – peak time for strandings
- This work is very important to rangers as the turtle is a really significant species culturally for our people & we don't like seeing them caught in nets
- We also pick up a lot of rubbish off our remote beaches – between 800 kg & 1000 kg per kilometre





# Stories from the field - Rangers

- This research helps us work out where the nets are coming from & where the turtles are getting caught in the nets.
- The answer to these questions is very important to us. We want to know why we are getting so many nets & how we can stop them.
- Our partnerships are very important
- Ngilimurru bukmak djaka wangawu – All of us together looking after country

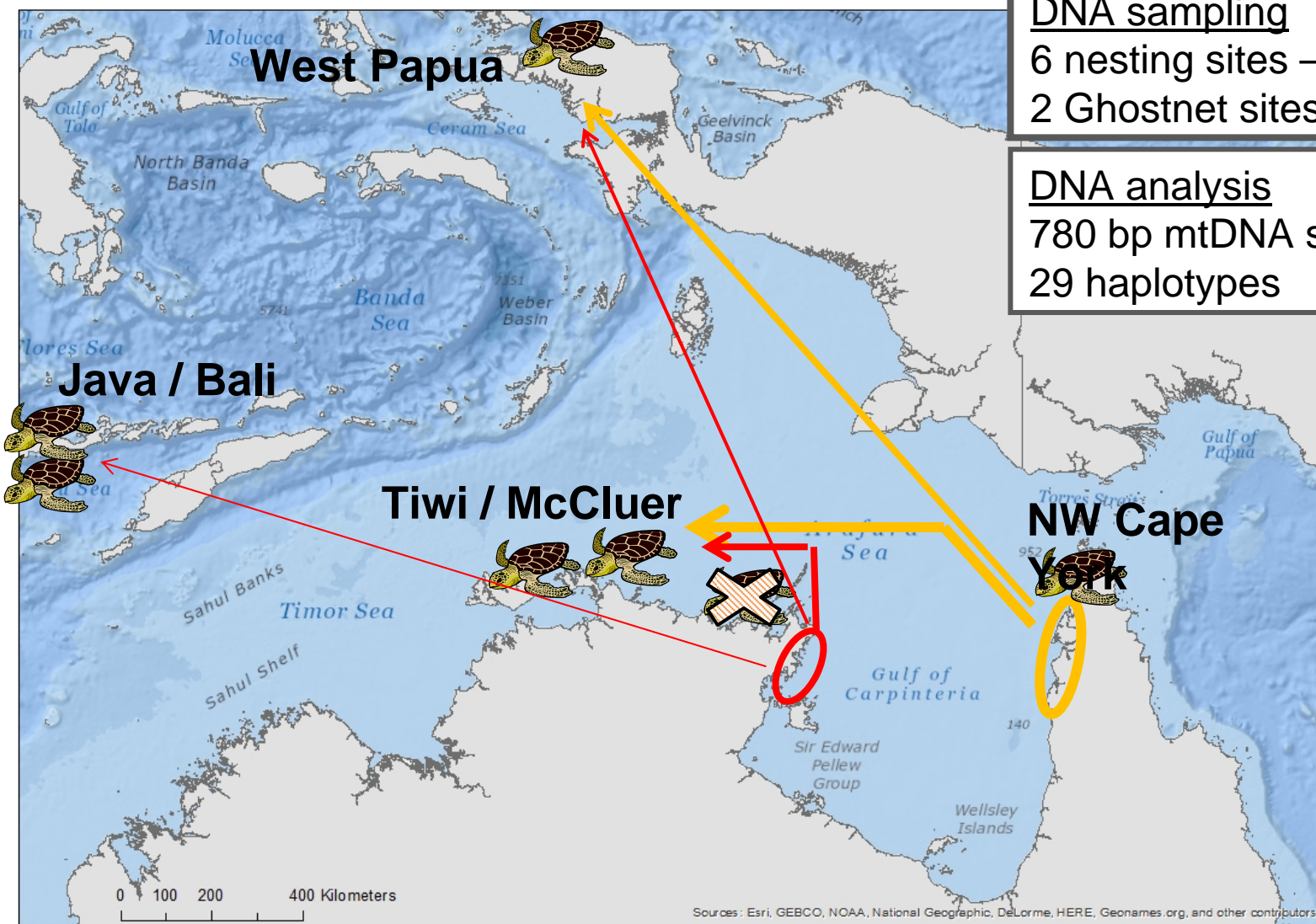


# Stories from the field - Fishers

- Pro fishos regularly encounter ghost nets at sea & try to retrieve them, or report if too big
- Some boats have spent days towing large nets ashore
- Fishermen understand the cost to endangered wildlife – & fish
- Ghost nets are also a significant danger to boats & their gear
- Several boats & crew have helped with ghost net observations & turtle DNA samples



# Origin of entangled ridleys in the GoC



## DNA sampling

6 nesting sites – 150 ridleys  
2 Ghostnet sites – 41 ridleys

## DNA analysis

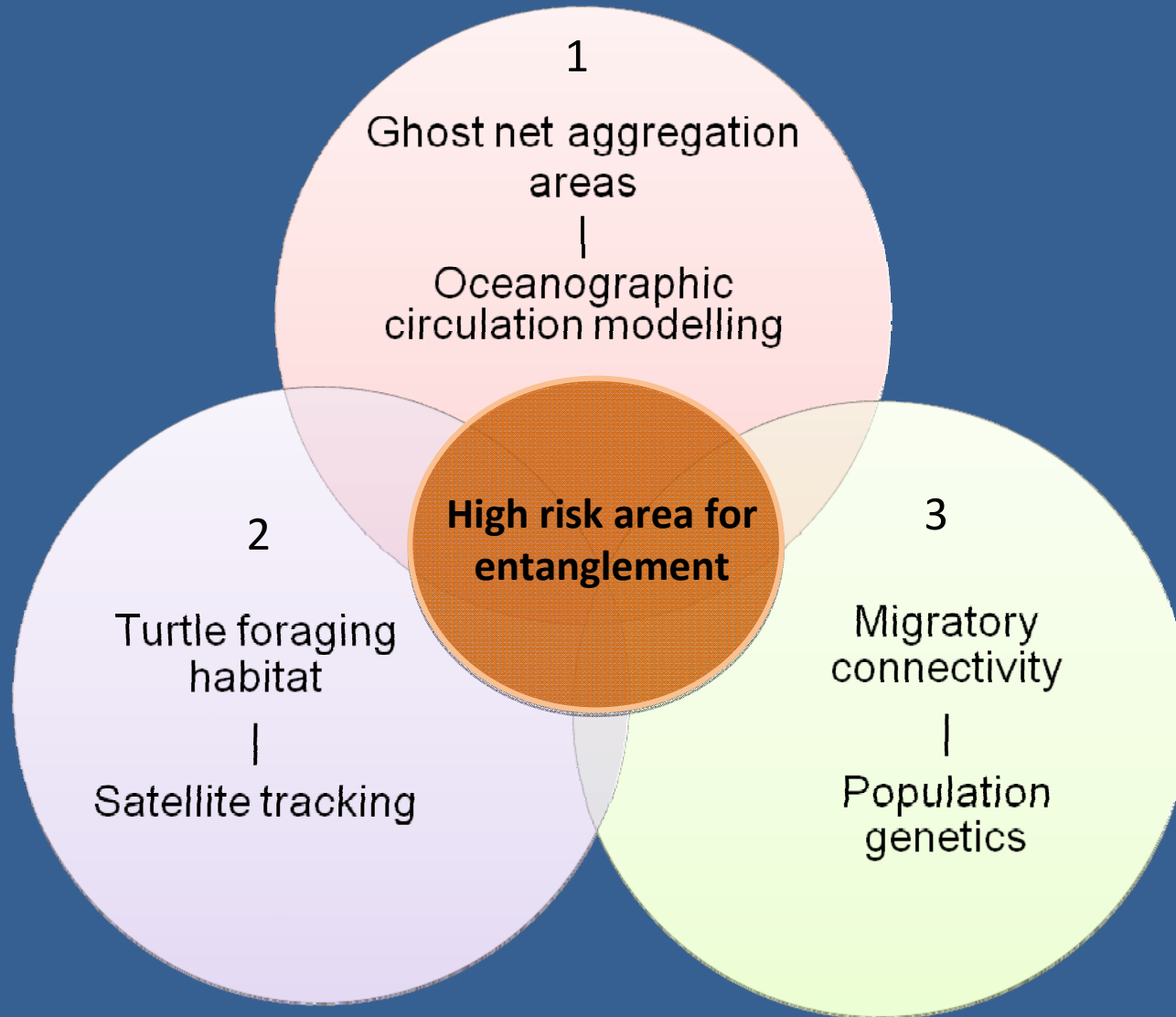
780 bp mtDNA sequence  
29 haplotypes

# Preliminary conclusion for Olive ridleys



Result	Consequence
27 % of entangled turtles are ridleys	Ridleys are vulnerable to ghost nets
Entangled ridleys originate from different genetic stocks	Ghost nets have a geographically wide impact
Ridleys likely become entangled at foraging area	This potential interaction hotspot area should be a focus area for management
Majority of nets never reach the coast	Impact of ghost nets on ridleys possibly much larger than currently believed

# Research Approach and Future Output



# What is needed to continue?

## Collaboration:

- working together to solve a problem affecting us all

## Sharing:

- data, information, expertise and resources to increase the chances of success

