



Connectivity and population structure of blacktip reef sharks, *Carcharhinus melanopterus*, in two islands of Terengganu, Malaysia



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PROJECT SUMMARY

WHO?

- *Carcharhinus melanopterus* [1]
- Viviparous shark of the Carcharhinidae family
- Top-down control in coral reef habitats
- Sedentary species - high level of site attachment

WHY?

- A) Importance of blacktip reef shark for the dynamics of the coral reef ecosystem.
B) The high shark sensitivity to overfishing and anthropological activities (due to their long gestation period, slow reproduction rate, slow growth and high level of maternal investment) [2].

OBJECTIVE:

Through the use of mtDNA control regions, the objective of the research is to investigate the genetic and haplotype diversity of black tip reef sharks (*Carcharhinus melanopterus*) in Terengganu (Malaysia) and to compare the obtained results to the genetic diversity from other places around the world, and finally to understand its worldwide phylogeography (French Polynesia, Australia and Red Sea sequences [3]).

WHERE?

- Sampling area
- Malaysia
- ▲ Sampling sites
- Ocean

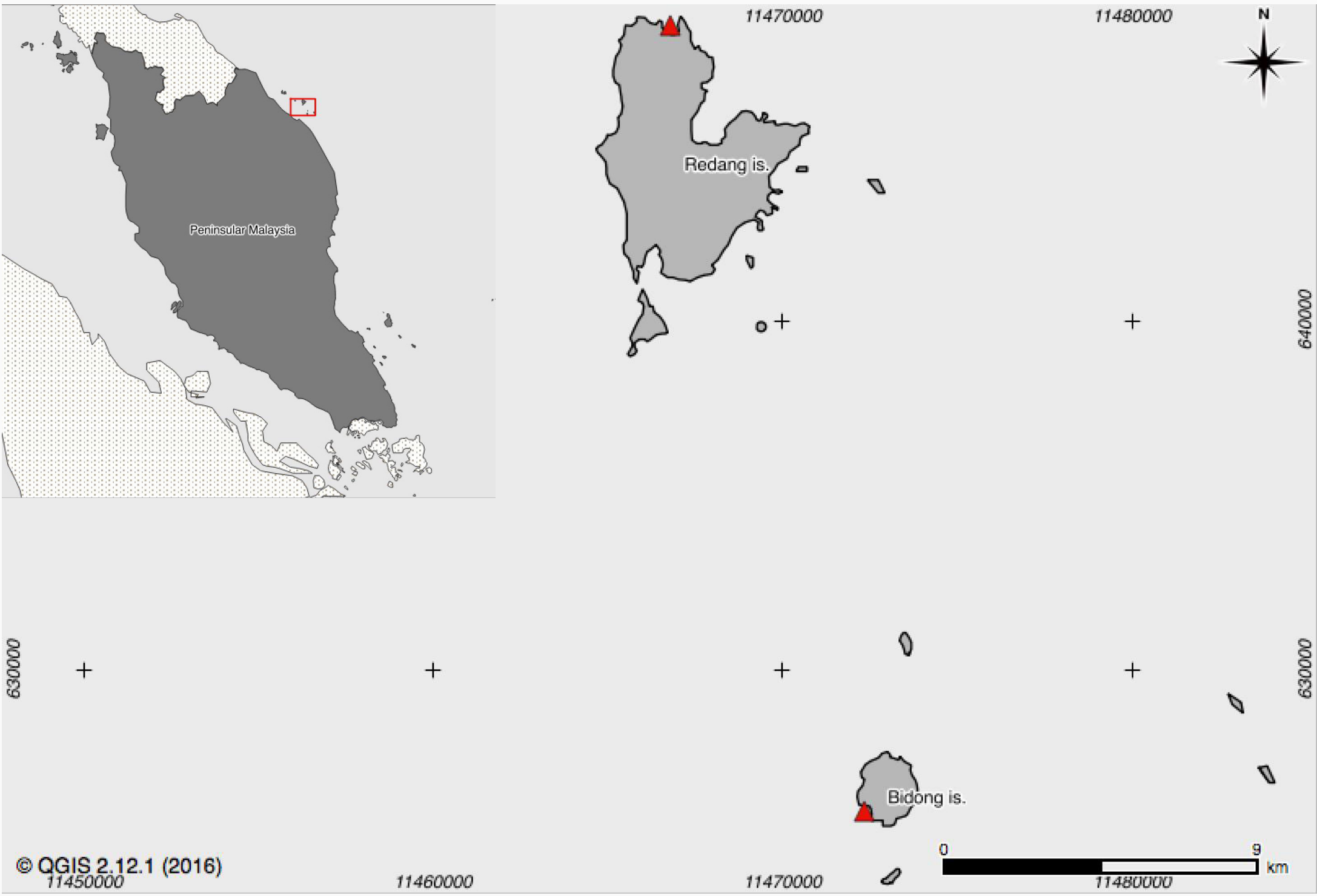


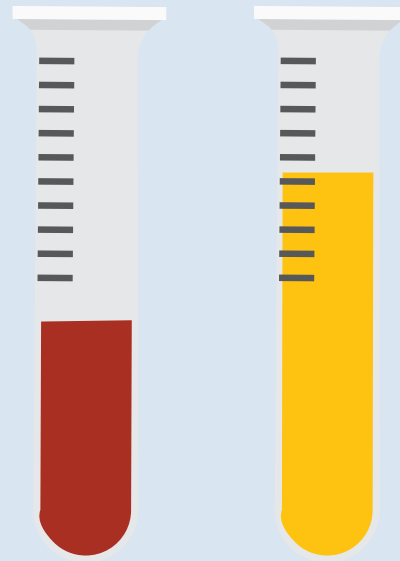
Fig1. Sampling sites in 2 islands in Malaysia: Redang Island and Bidong Island (red triangles).

MATERIALS AND METHODS



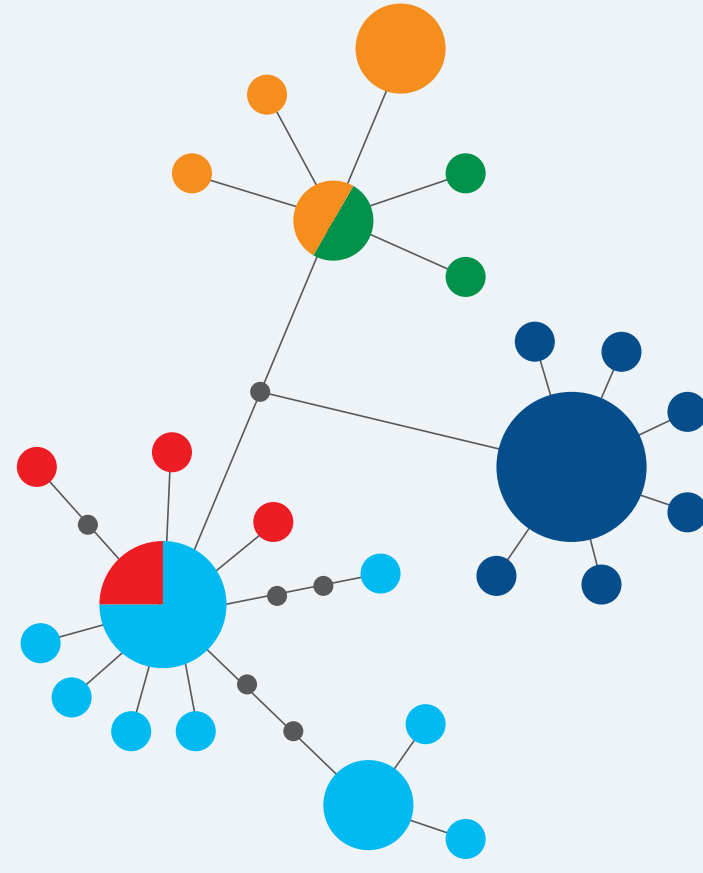
SAMPLES COLLECTION

1. CATCH THE SHARKS
2. MEASURE (length and weight)
3. DORSAL FIN PICTURE
4. TISSUE SAMPLE



GENETIC ANALYSIS

5. DNA EXTRACTION
6. PCR
7. SEQUENCING



- New Caledonia
- French Polynesia
- Red sea
- Malaysia
- East Australia

GENETIC DATA ANALYSIS

8. SEQ. ALIGNMENT
9. GENETIC DIVERSITY
10. PHYLOGEOGRAPHY

EXPECTED RESULTS

- A) No genetic structure on a small scale.
B) A lower genetic and haplotype diversity in our study area comparing to French Polynesia, due to the number of individuals, the fishing activities and the sample site size.
C) Considering the low migration rate of blacktip reef sharks [3], we expect to observe a strong structuration between Malaysia and French Polynesia but we can hypothesize only few mutations across the sequences comparing to the closer East Australia, suggesting a common lineage.

CONTACTS

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FUTURE STUDIES

- A) A larger sampling area and the use of high resolution microsatellite genetic markers may improve the small-scale analysis.
B) The use of the PHOTO-ID and the Baited Remote Underwater Video (BRUV) approaches, acoustic monitoring and tagging-release methods can help understanding the daily migration and population size of this species in the area of study.
C) Pulau Redang is a Marine park with a southern area characterized by strong touristic activities, and a northern area characterized by a turtle sanctuary with controlled access for tourists. Deeper studies can be made to study the anthropogenic effect on this species.

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