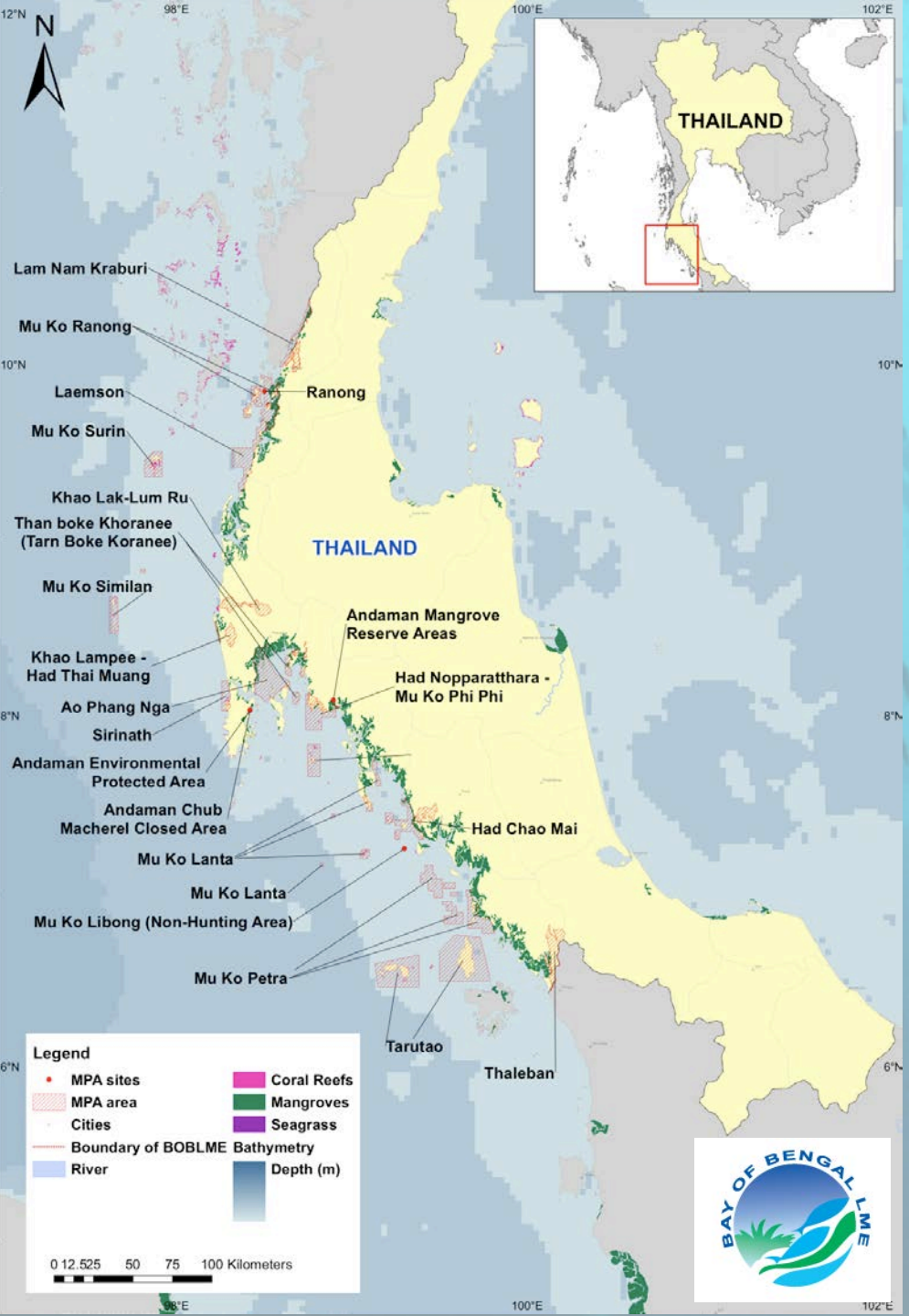
Building ecosystem resilience through transboundary Marine Protected Area Network in the Andaman Sea between Thailand and Myanmar



Petch Manopawitr
Deputy of IUCN Southeast Asia Group
Email: petch.manopawitr@iucn.org
James True, Philip Dearden,
Niphon Phongsuwan and Rudolf Hermes

Contents

- Introduction:
  - Thailand's MPAs, Andaman Bioregion and BOBLME
  - Climate change impacts
- Method:
  - Synthesizing long-term database
  - Resilience assessment
  - Systematic spatial planning
- Result
  - Proposed optimal Resilient MPA network (ongoing)
  - Recommendation
  - The need for transboundary conservation and large scale marine spatial planning



Thailand's Andaman MPAs

- A string of 17 Marine National Parks, 3 non-hunting areas and 1 biosphere reserve
- Protect 62% of coral areas, 41% of seagrass and 20% of mangroves
- About 300 hard coral species
- ~1/3 of total marine fisheries
- ~10 million visitors/year
- Under World Heritage Nomination



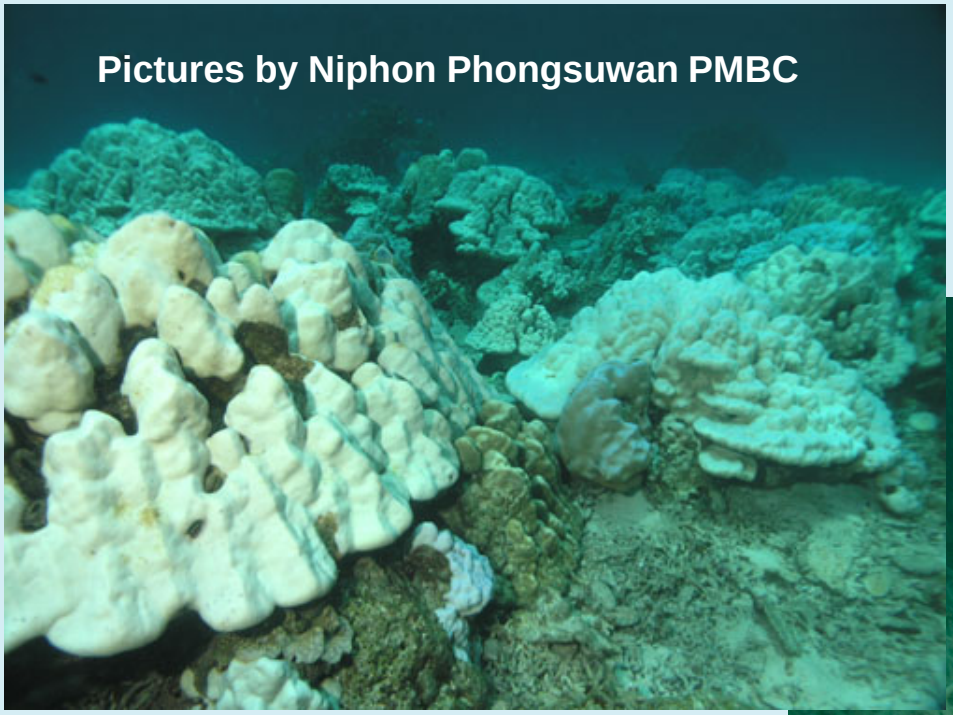


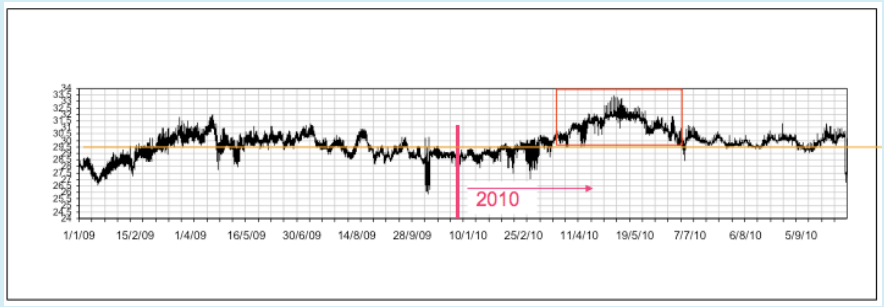






Extreme climatic events or climate changes affecting the PA

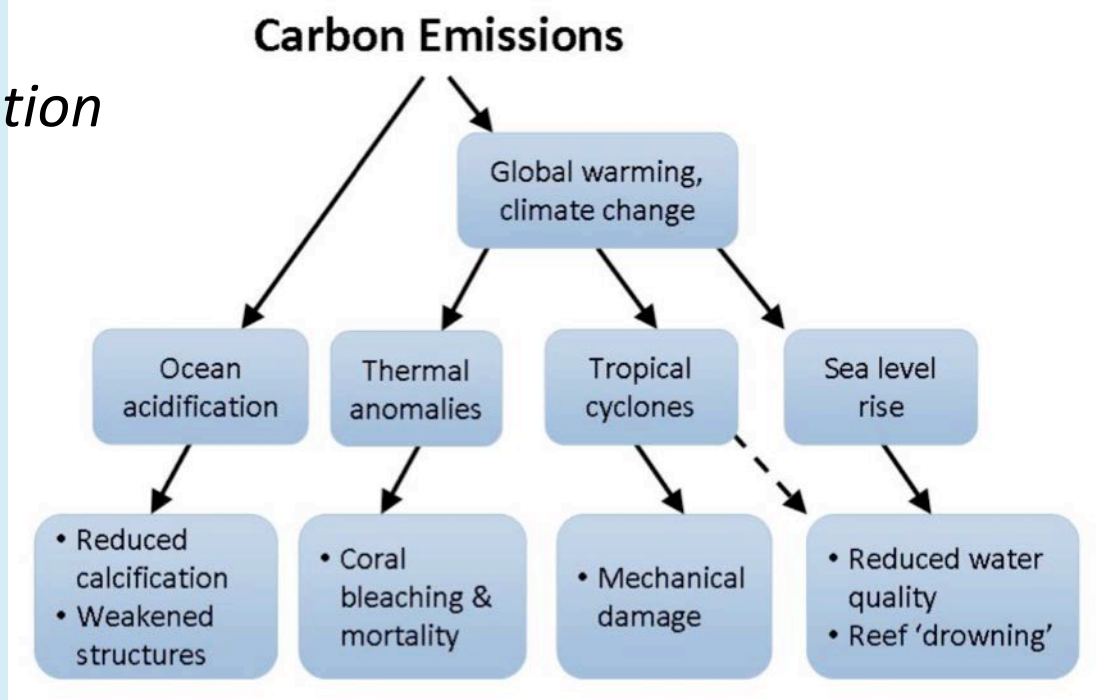




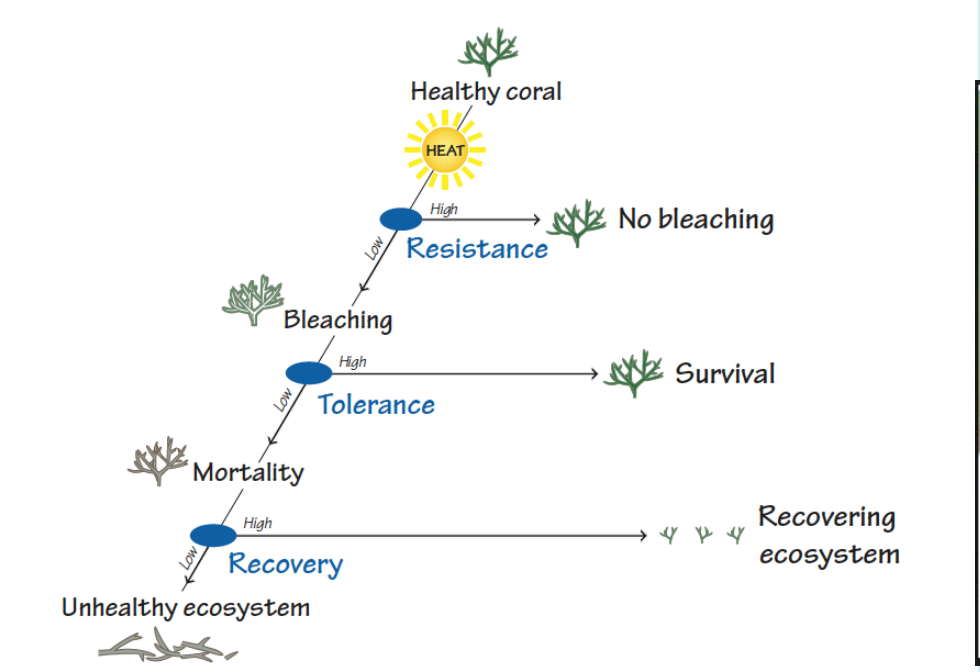
- 30-90% of coral reefs bleached across the region
- 26-100% mortality reported at monitoring sites

Projected climate changes and likely impacts on species and habitats

- *Ocean warming leading to*
  - *Frequent mass coral bleaching event*
  - *Ocean acidification*
- *More frequent intense and extreme storm surge*
- *Sea level rise*
- *Changes in ocean circulation*

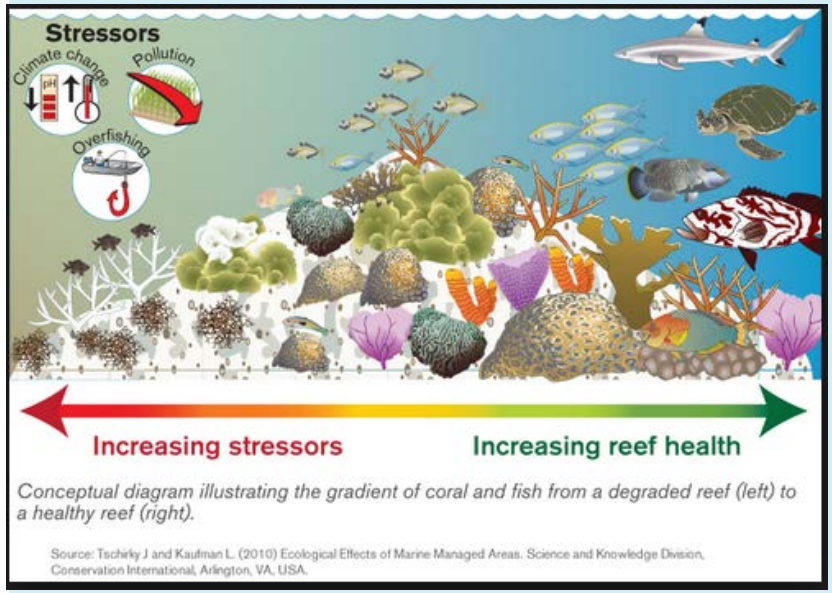


Climate change adaptation measures in the PA



Coral reef ecosystem resilience to mass coral bleaching

Marshall&Shuttenberg 2006



Conceptual Framework to build Reef Resilience


Hygienic Nile Tilapia
120.-



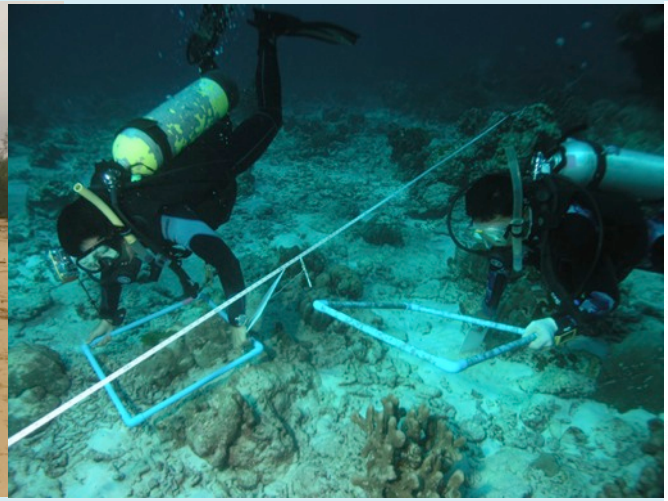


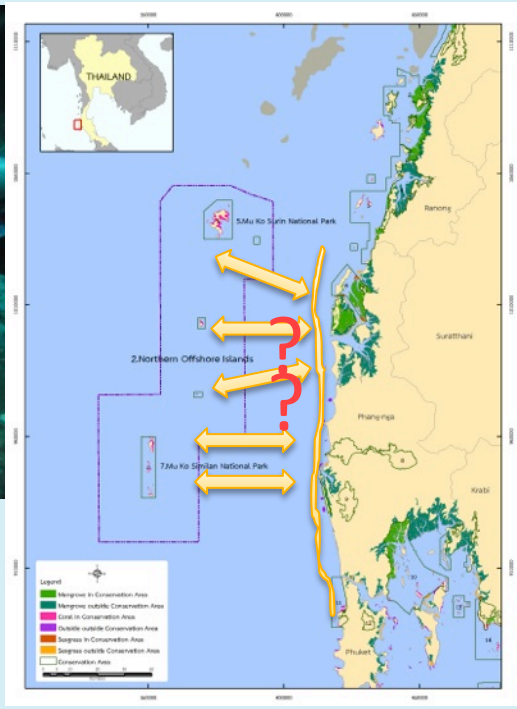
Building ecosystem resilience measures in the PA

- Short-term: Temporal closure
  - Many key dive sites closed to recreational diving (Jan ’11),
  - Management recommendations submitted to PM (Feb ‘11)

- Long-term: Reducing human-induced stressors to improve reef health and develop resilient MPA network
  - Identifying resilient areas for maximum protection
  - Reduce pollution and improve waste management in the park using a combination of recycling and organic waste management
  - Improve law enforcement to address illegal fishing by developing Marine SMART Patrol
  - Promote environmental-friendly dive practices through Green Fins and Reef Guardians Programme
  - Incorporating bleaching information in MPA network design
  - Initiate transboundary marine conservation with Myanmar

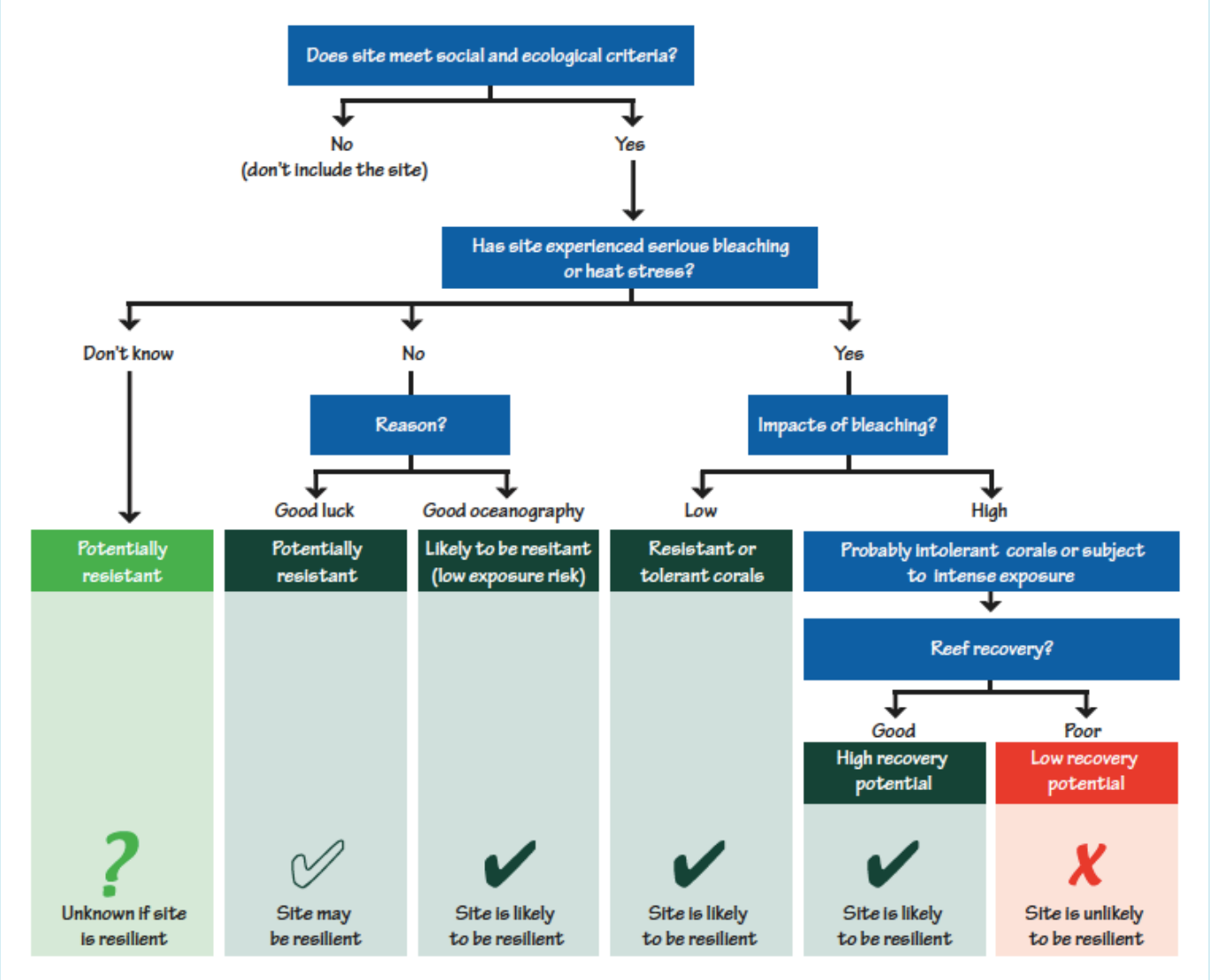
Management responses

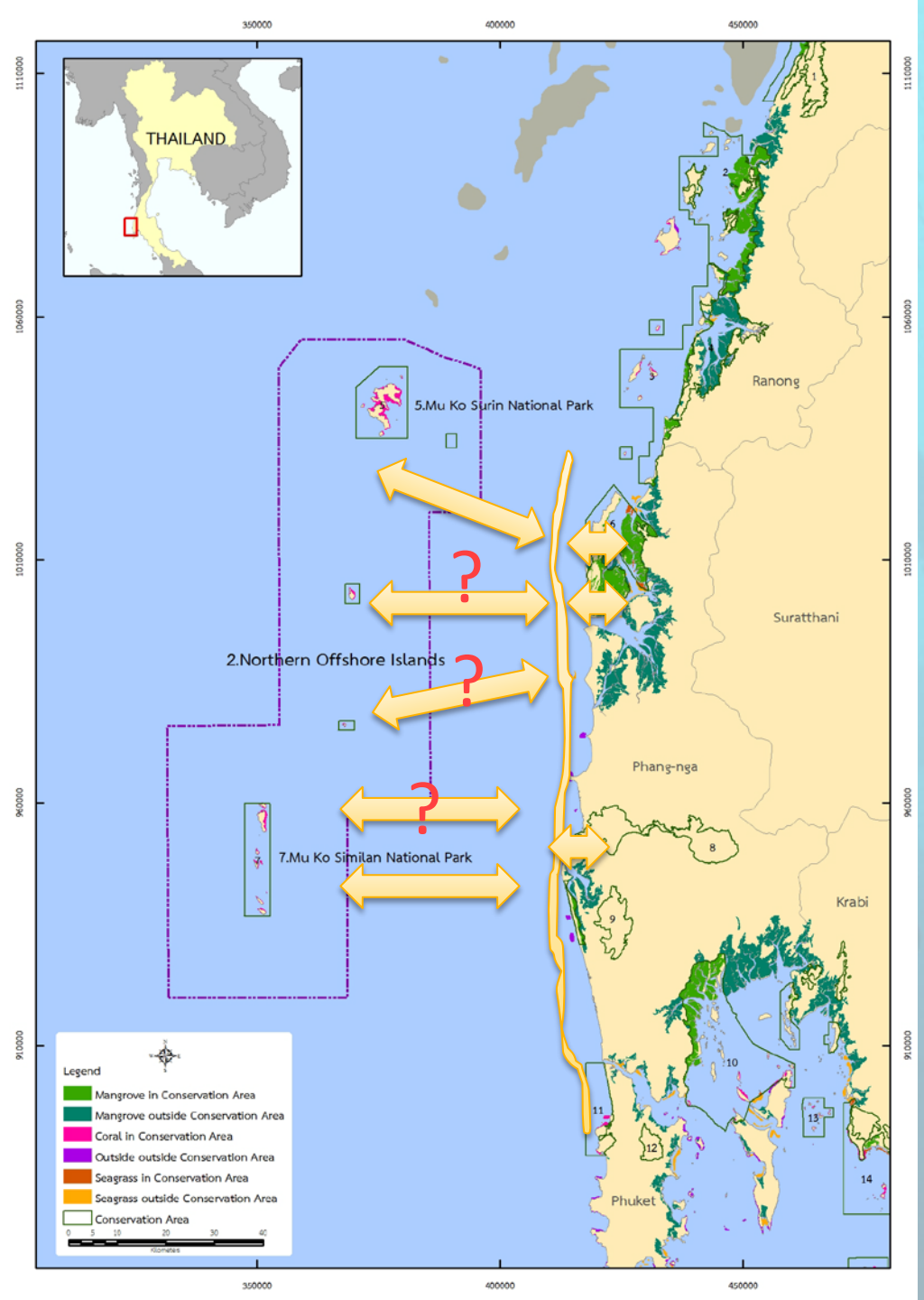




REEF GUARDIAN
ผู้พิทักษ์แนวปะการัง จังหวัดสตูล

Identifying resilient reef areas: decision tree for identifying resilient areas for increased management

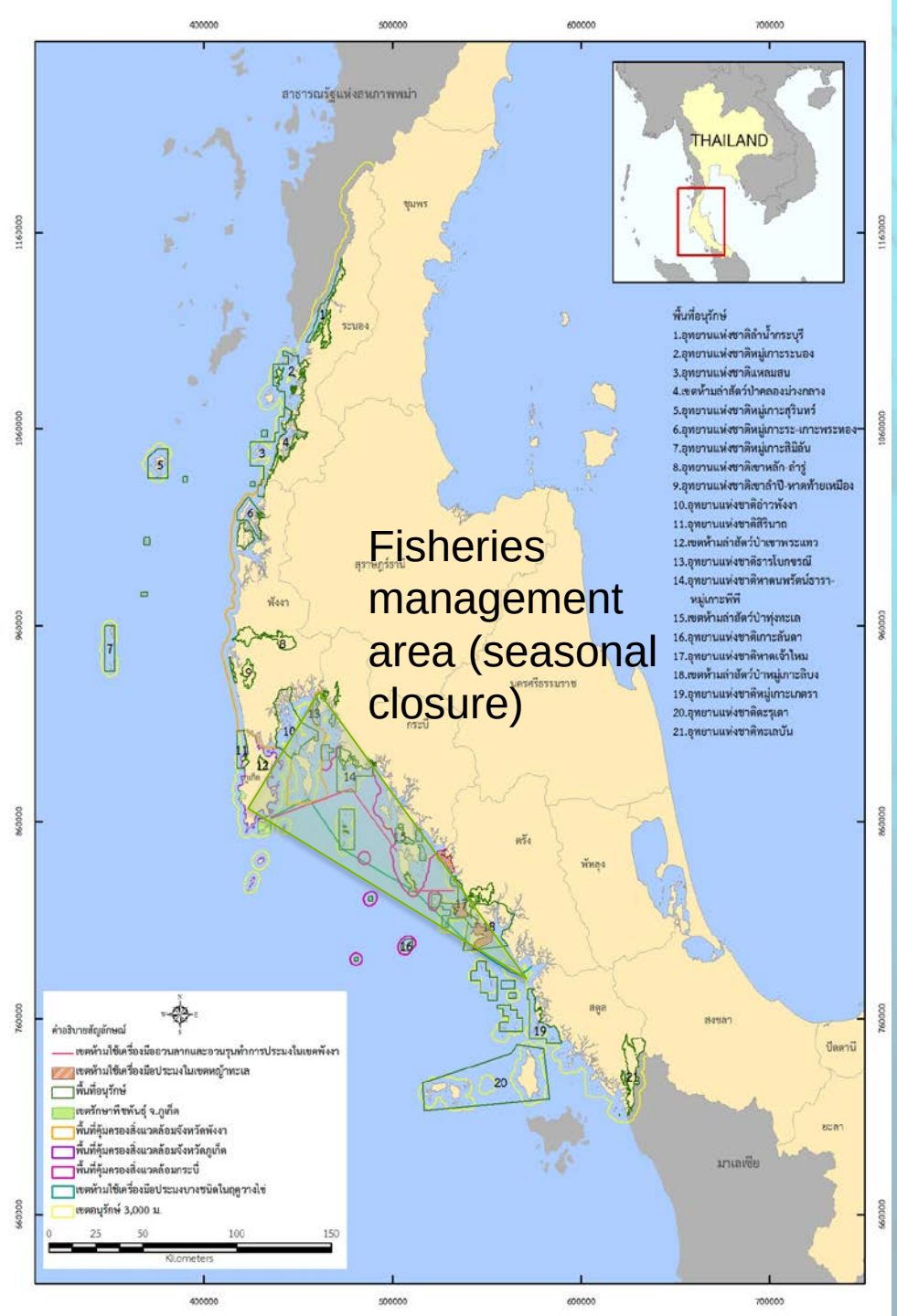




Systematic spatial planning to enhance ecosystem resilience

Connectivity: enhancing marine connectivity into MPA system

Ecological corridor areas/stepping stones to enhance marine connectivity
e.g. newly discovered reefs, river mouth areas



Systematic spatial planning to enhance ecosystem resilience

Incorporating other types of Marine Managed Areas into conservation planning (different rules and jurisdiction)

- *Environmental Protection area (coastal management)*
- *Fisheries management area (temporal closure)*
- *Trawling and Push net free zone (3-5 km from shoreline)*
- *Fish&Plant sanctuary*
- *Community-based conservation area (not formally recognized)*

2012 Survey: 2 years after mass coral bleaching crisis in 2010



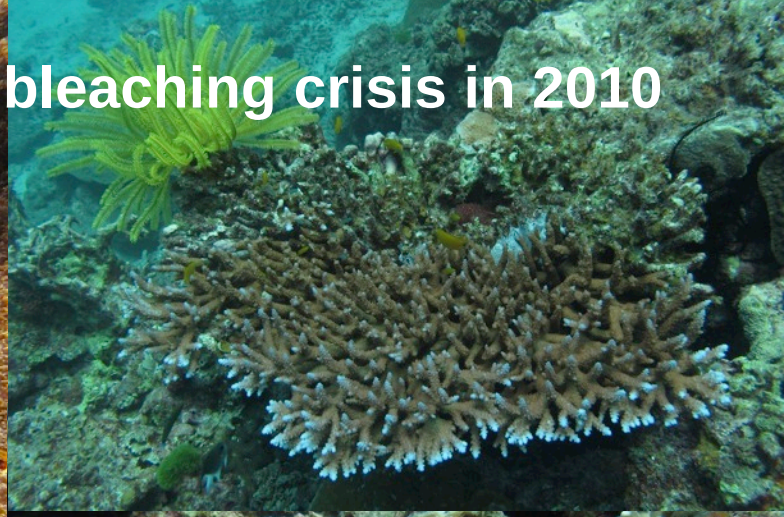




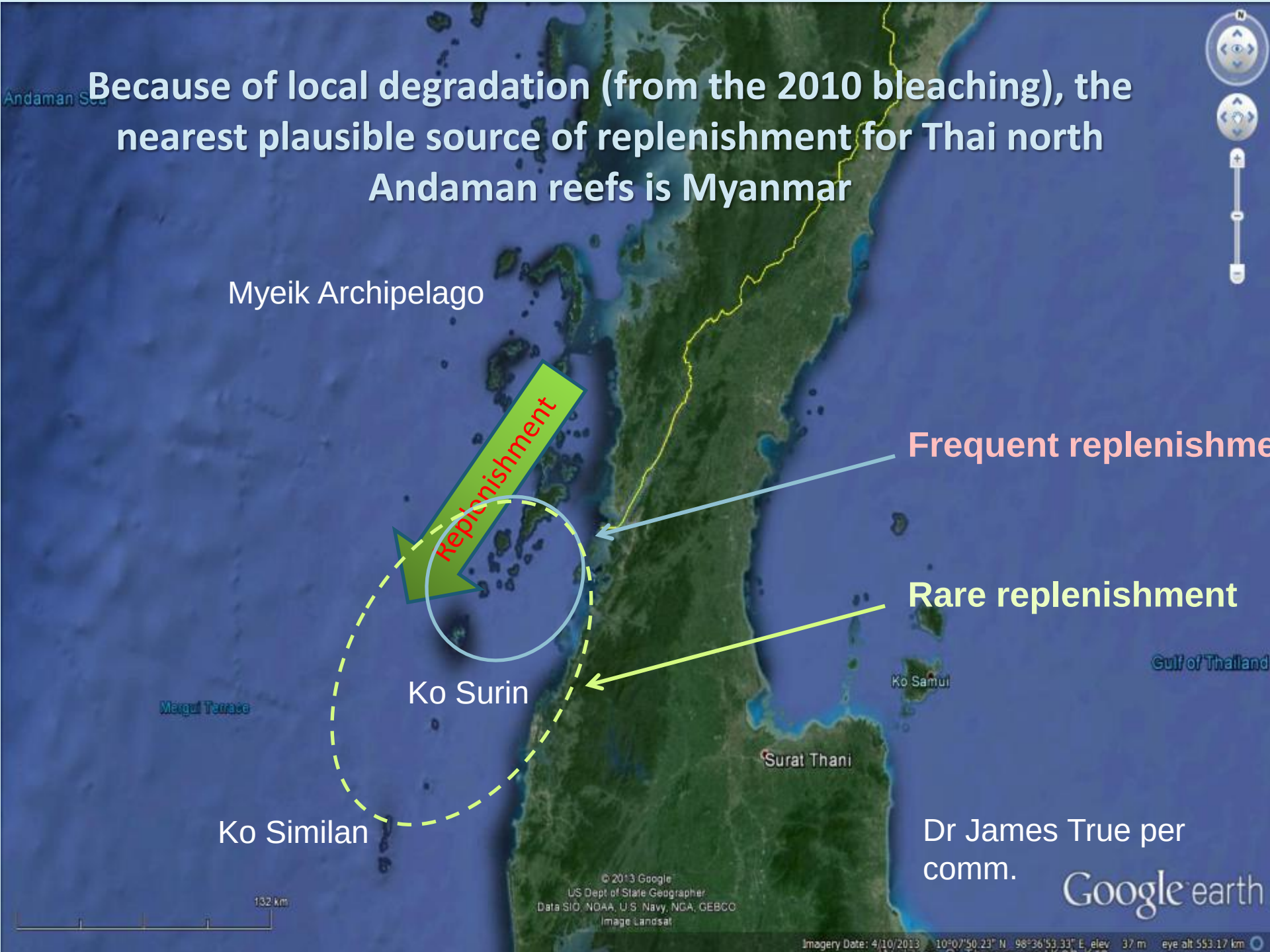




2013 Survey: 3 years after mass coral bleaching crisis in 2010



Similan has shown much slower in term of coral recovery


Because of local degradation (from the 2010 bleaching), the nearest plausible source of replenishment for Thai north Andaman reefs is Myanmar
Andaman Sea
Myeik Archipelago
Replenishment
Frequent replenishme
Rare replenishment
Ko Surin
Ko Similan
Mergui Terrace
Ko Samui
Gulf of Thailand
Surat Thani
Dr James True per comm.
© 2013 Google
US Dept of State Geographer
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat
132 km
Google earth
Imagery Date: 4/10/2013 10°0'7.50.23" N 98°36'53.33" E elev 37 m eye alt 553.17 km

Lessons learned from building ecosystem resilience and developing adaptation responses through MPA network

- Climate change brings unexpected, unprecedented threat, in this case mass coral bleaching
- Key information to help management are lacking e.g. resilience indicator, recruitment and oceanographic pattern, and resource monitoring protocol needs to be adjusted
- Communication about climate change is critical to gain support for management response e.g. site closure, protecting herbivoury fishes
- Climate change can bring together stakeholders to improve management of the parks
- Managing MPA in isolation is inadequate and there is an urgent need to consider connectivity and resilient factors
- MPAs need to be embedded in larger marine spatial planning and cross-country, trans-boundary cooperation

Thank You!

IUCN

BAY OF BENGAL LME

DEPARTMENT OF MARINE AND COASTAL RESOURCES

PHUKET MARINE BIOLOGICAL CENTER
DEPARTMENT OF FISHERIES

WILDLIFE CONSERVATION SOCIETY

University of Victoria
Geography

mparg