

Partnership Hub Session 3.1: Biodiversity and Coastal Management

***“Healthy Coasts & Healthy ASEAN: Saving
the ASEAN seas through Effective
Collaboration”***

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East Asian Seas Congress 2018

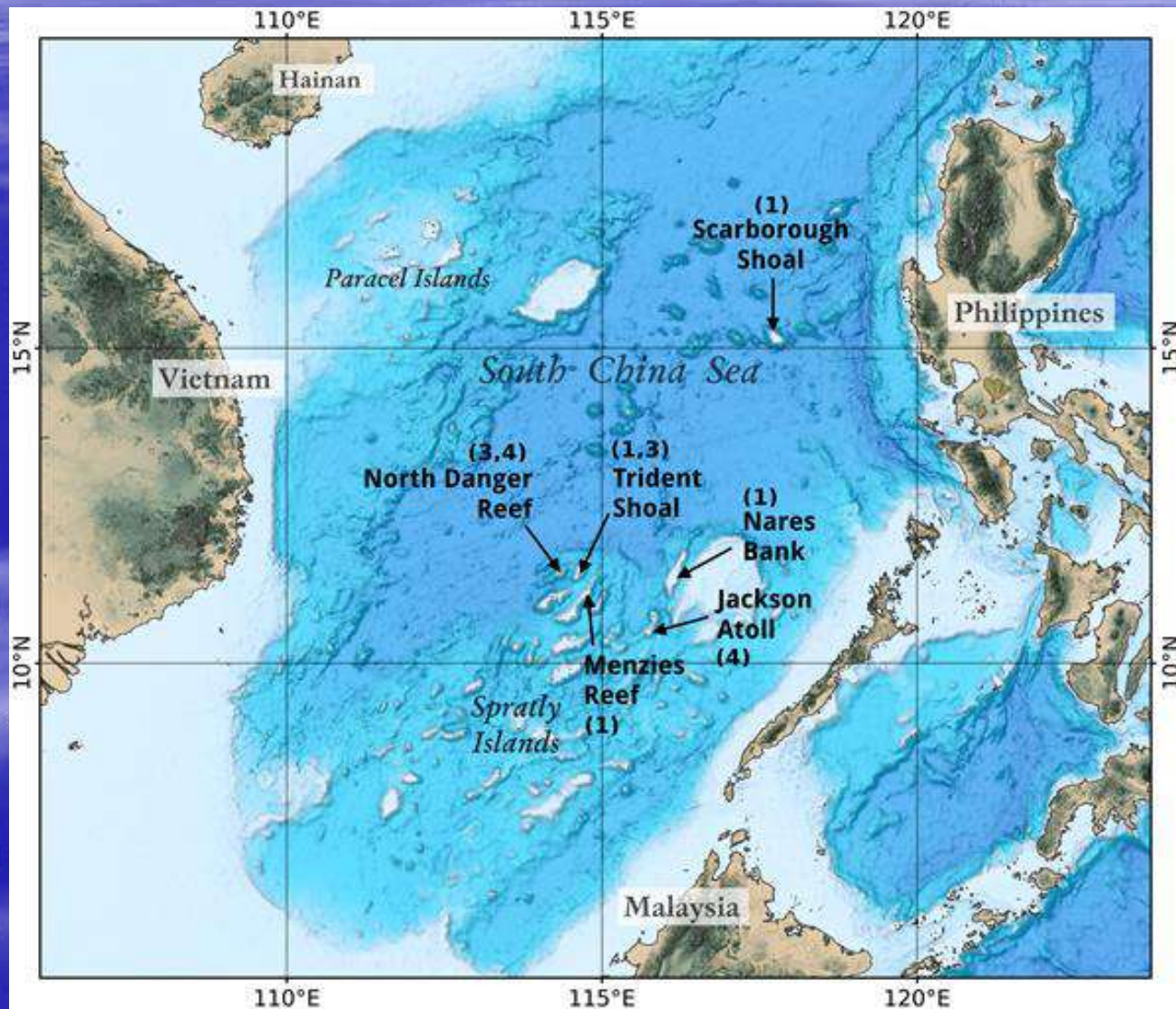
Iloilo Convention Center, Iloilo City

November 27, 2018

South China Sea Reef Systems and deep waters (4-5000 m) explored by JOMSRE-SCS 1996-2007



Reef Systems in the Spratly Archipelago explored by JOMSRE-SCS Expeditions in 1996-2007, including Scarborough Shoal (Number in parenthesis indicates Expedition No.)



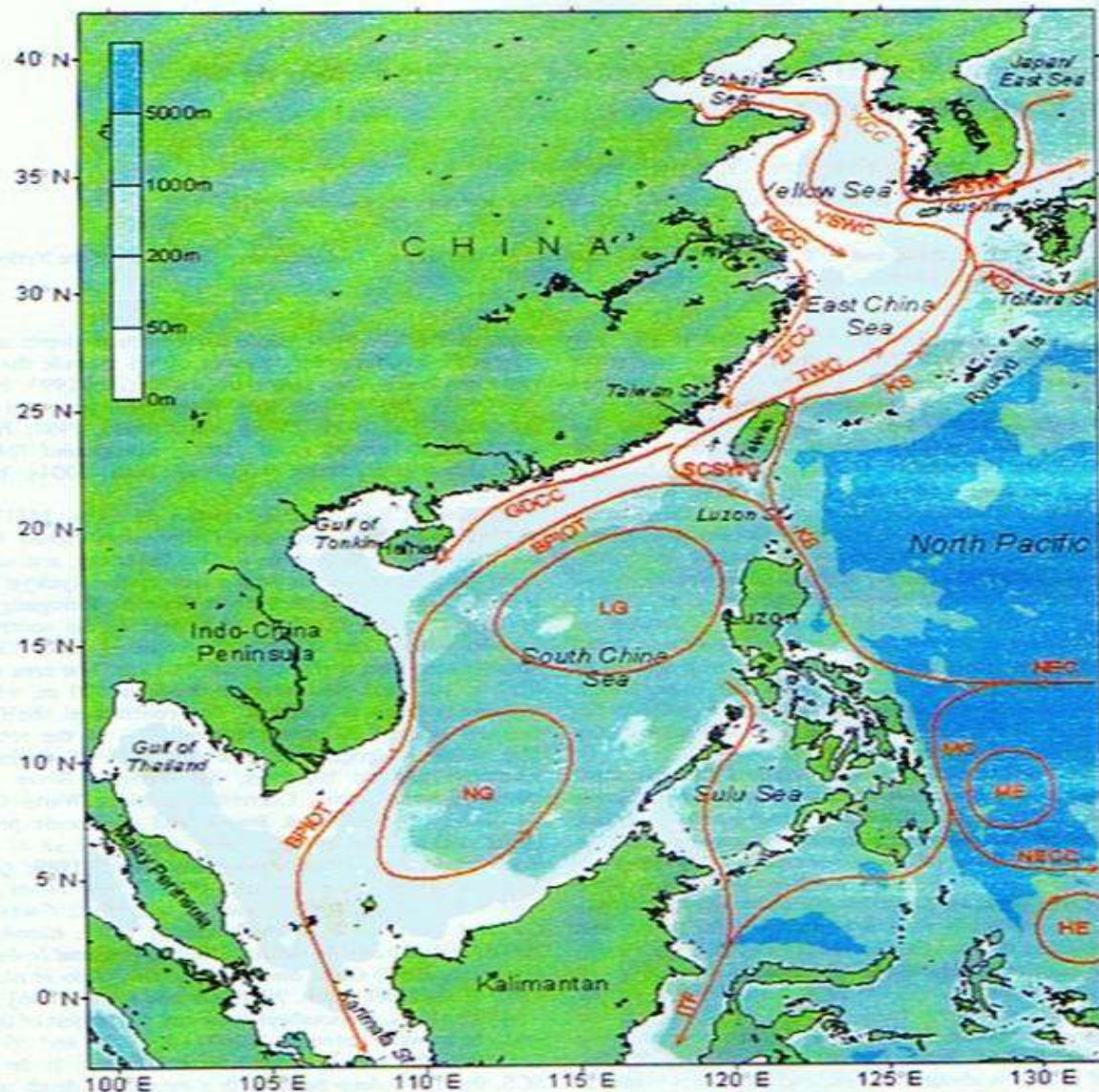


Figure 1. Topography and schematic representation of the major winter currents in the Yellow, East, and South China Seas. The current system diagram is a composite mainly based on *Su et al. [1990]* and *Fine et al. [1994]* for the western North Pacific, *Guan [1988]* for the Yellow and East China Seas, and *Fang et al. [1998, 2005]* for the South China Sea, with some modifications. The abbreviations stand for the following: BPIOT, Branch of the Pacific-to-Indian Ocean Throughflow; GDCC, Guangdong Coastal Current; HE, Halmahera Eddy; ITF, Indonesian Throughflow; KCC, Korea Coastal Current; KS, Kuroshio; LG, Luzon Gyre; MC, Mindanao Eddy; NEC, North Equatorial Current; NECC, North Equatorial Countercurrent; NG, Nansha Gyre; SCSWC, South China Sea Warm Current; TSWC, Tsushima Warm Current; TWC, Taiwan Warm Current; YSCC, Yellow Sea Coastal Current; YSWC, Yellow Sea Warm Current; ZFCC, Zhejiang-Fujian Coastal Current.

Circulation of water in the China Sea and the Pacific Ocean and other related seas during winter according to recent oceanographic research

Quanan Zheng, Guohong Fang and Y. Tony Song, 2006, *Journal of Geophysical Research*, Vol. III, C11S01, doi:10.1029/2005JC003261⁴

Reef Types Encountered

Exposed Surge Zones



Steep Slopes /Drop-Offs



Sheltered Lagoons

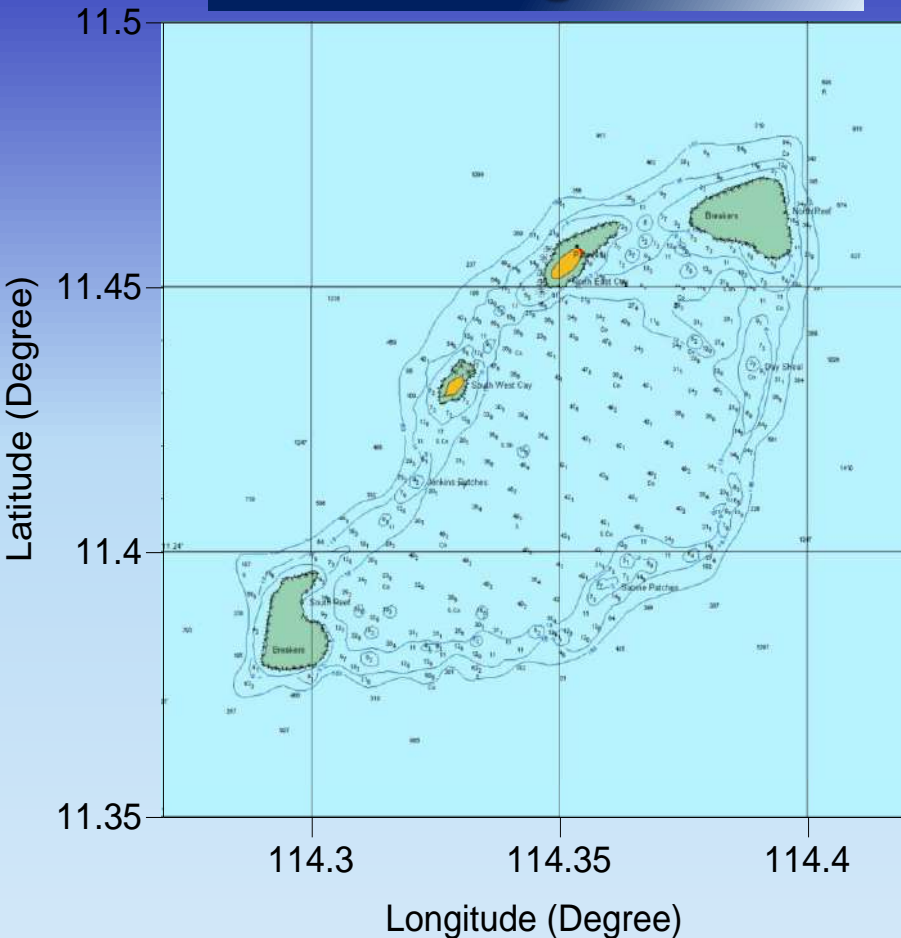


Semi-Exposed Reef Flats

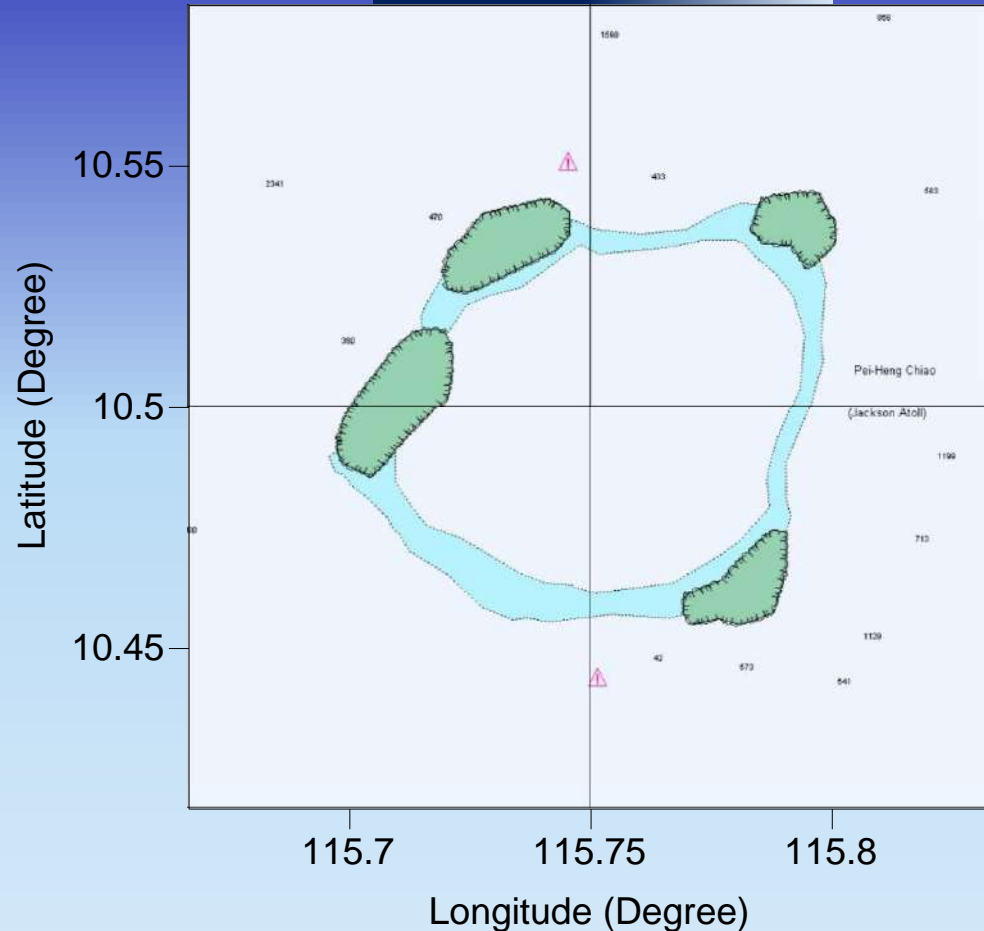


Atolls in the South China Sea

North Danger Reef



Jackson Atoll

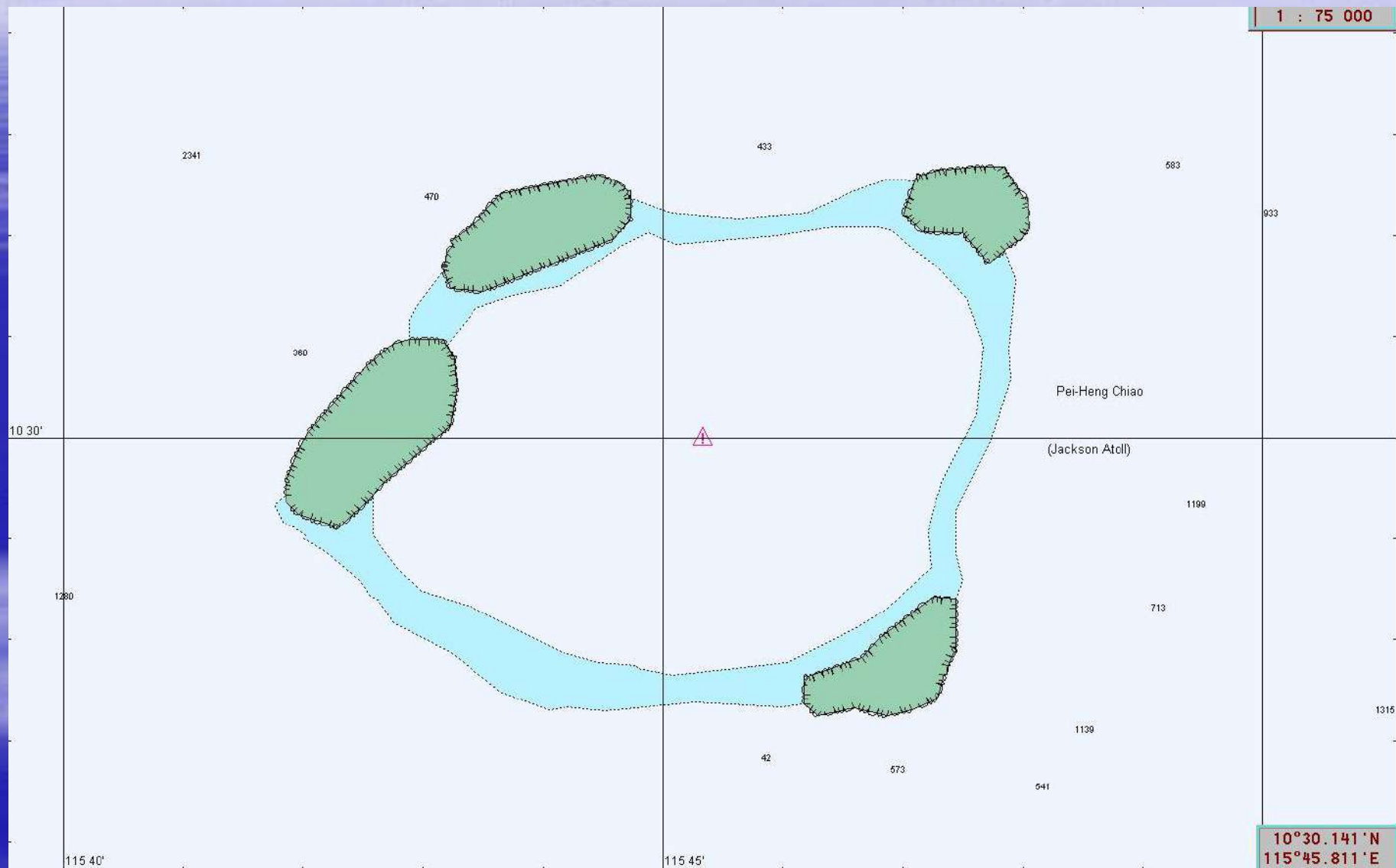


Atolls concentrate/retain nutrients, larvae, juveniles of fish but further study is needed

1.



Jackson/Quirino Atoll (JA)



6 February 2015



Existing structure

www.bbc.com

Fiery Cross Reef

23 March 2015

Dredging activity

Runway and apron installation

Construction activity

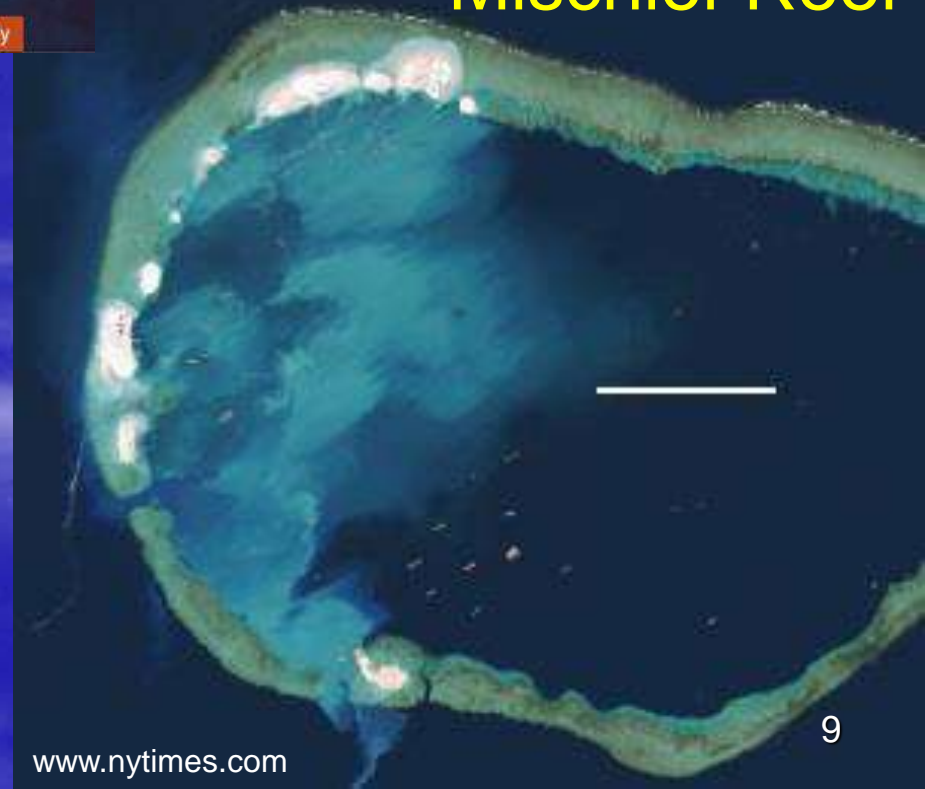
New terrain

Dredging activity

IHS JAMES

**Reclaimed Atolls
showing occurrence of
SILTATION**

Mischief Reef

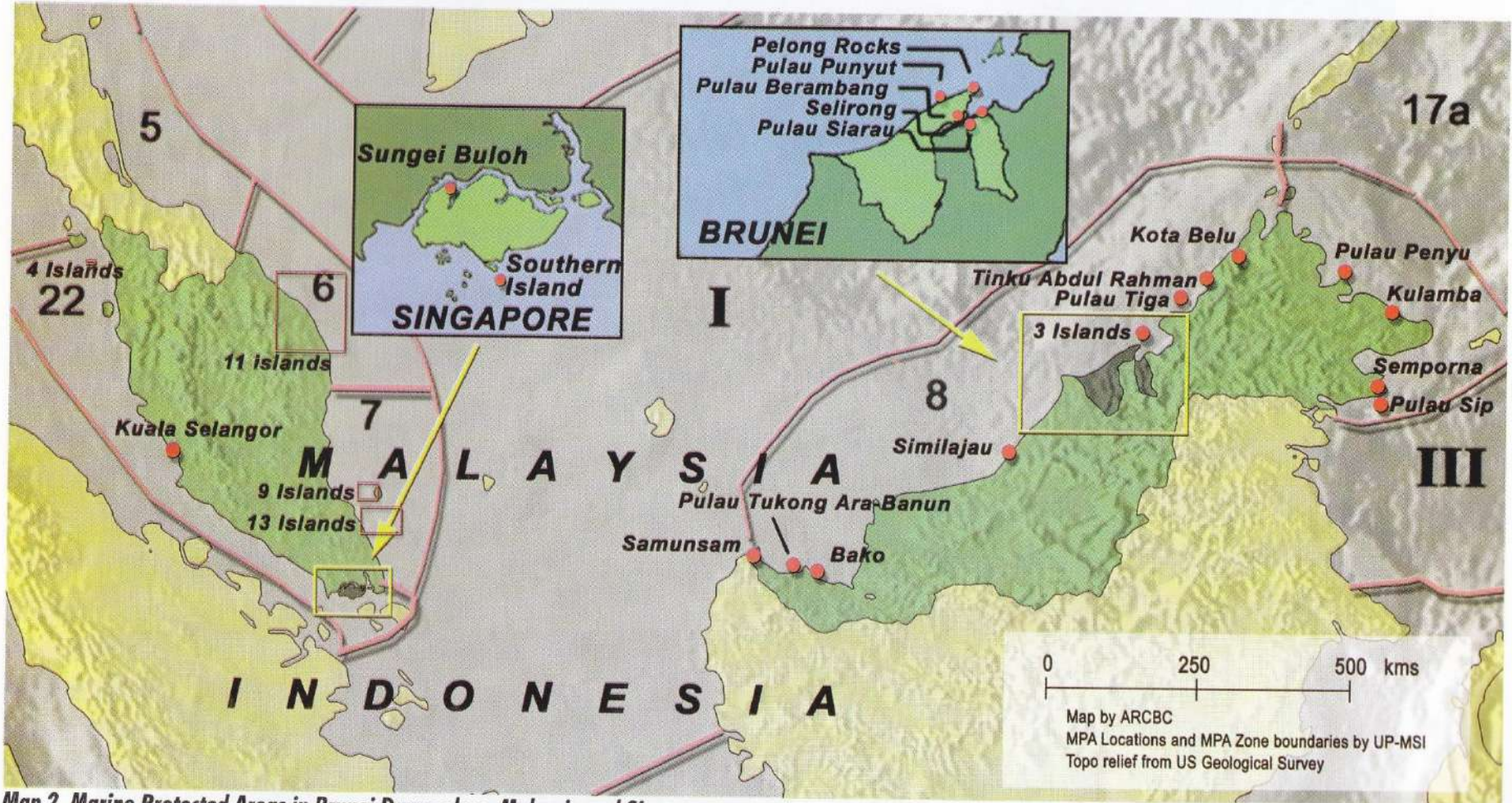


www.nytimes.com

Marine Protected Areas in Southeast Asia

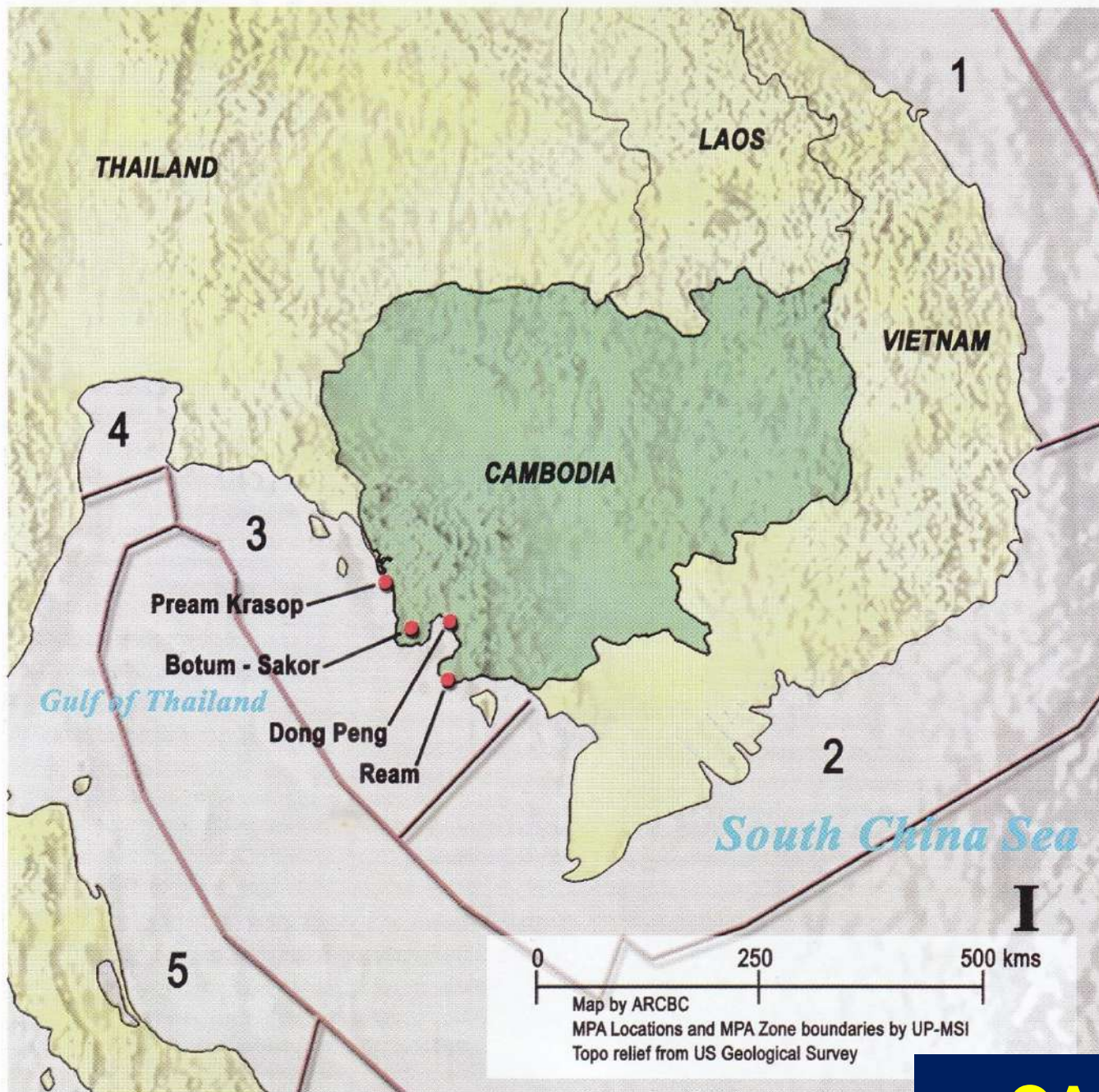
From: Cheung et al. (Compilers). 2002

UP-MSI, ABC,ARCBC,DENR,ASEAN. 2002. Marine Protected Areas in Southeast Asia. ASEAN Regional Center for Biodiversity Conservation, DENR, Los Banos, Laguna,Phils.142pp. 10 maps

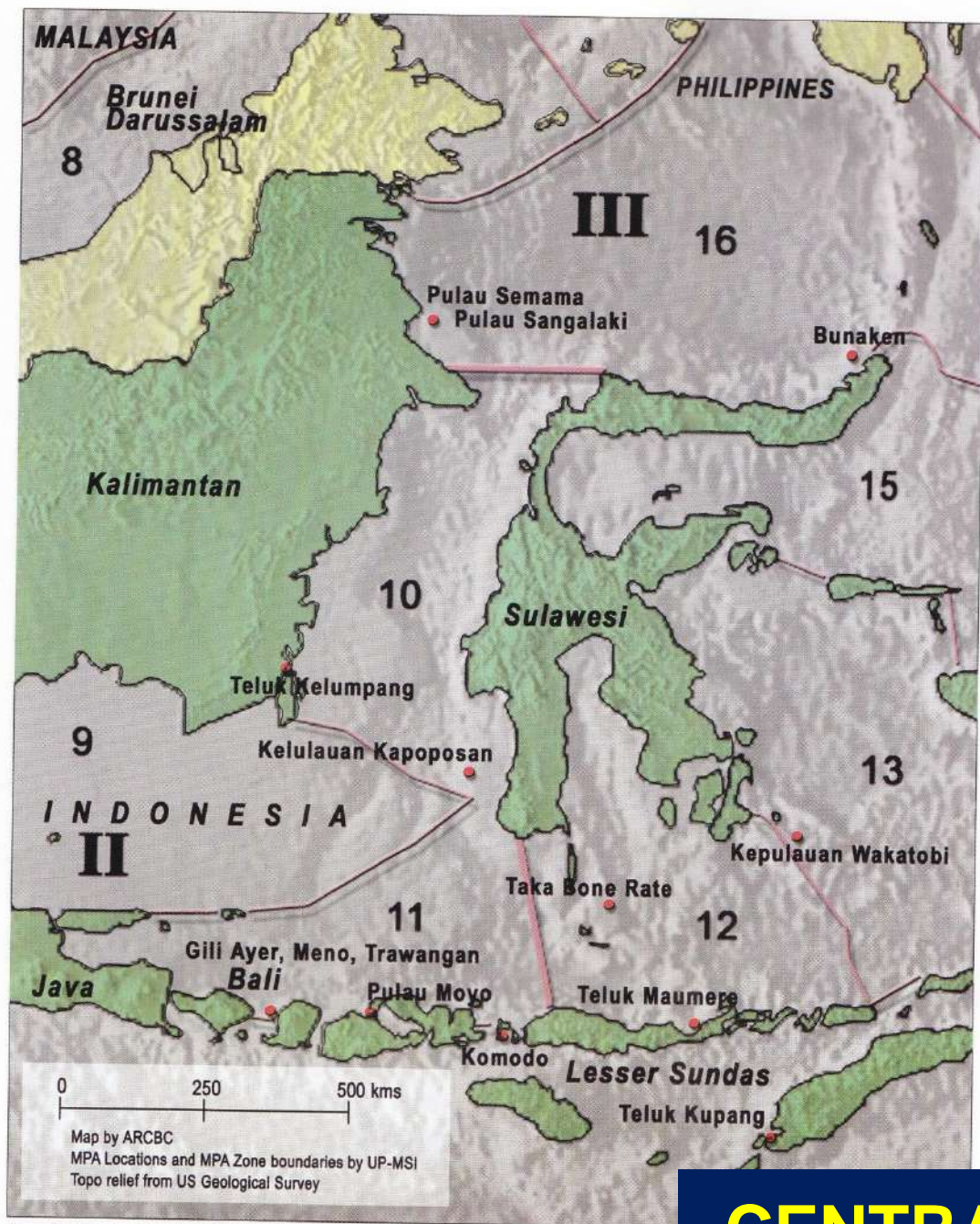


Map 2. Marine Protected Areas in Brunei Darussalam; Malaysia and Singapore

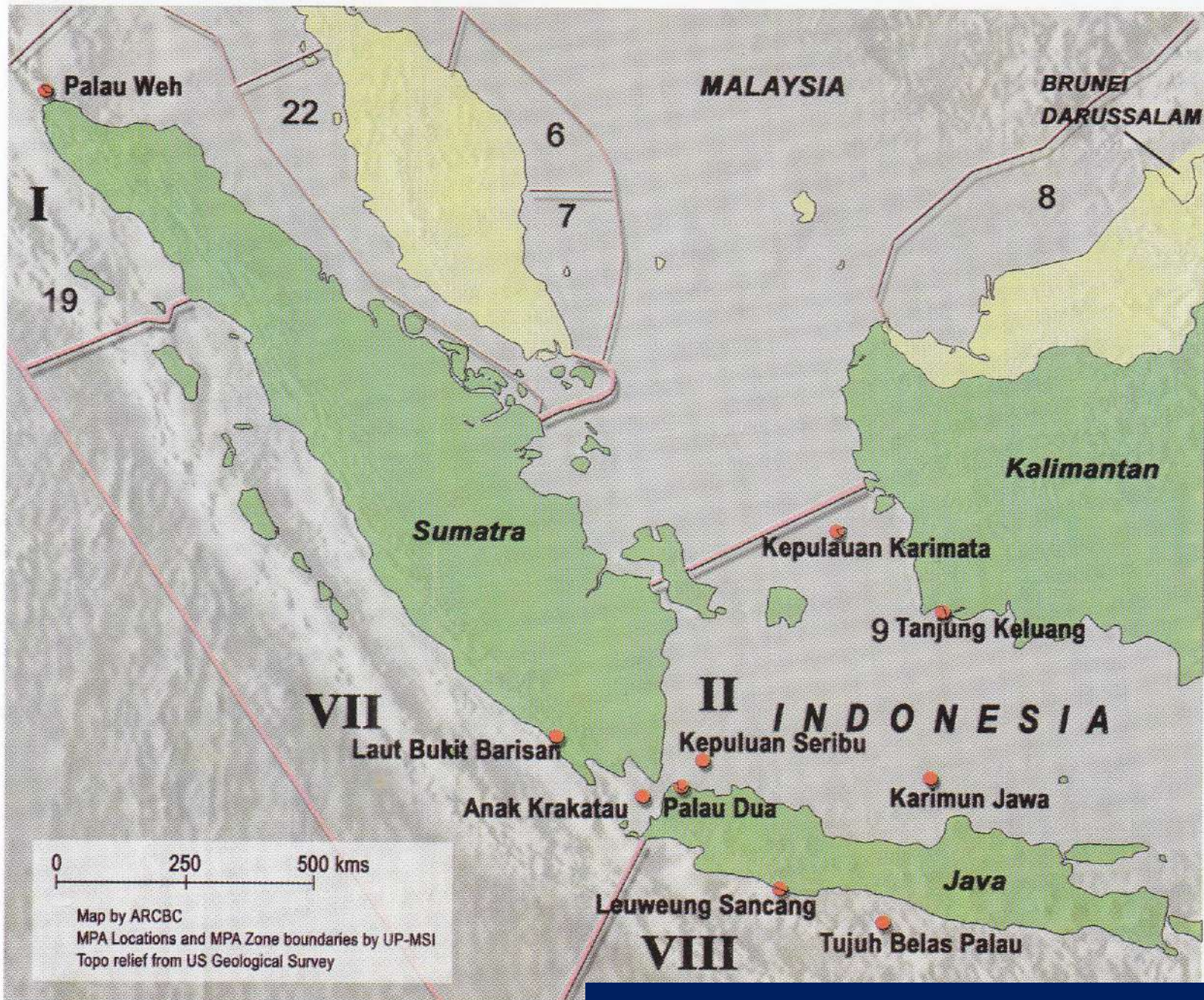
BRUNEI DARUSSALAM, MALAYSIA, SINGAPORE



Map 3. Marine Protected Areas in Cambodia.



Map 4. Marine Protected Areas in Central Indonesia



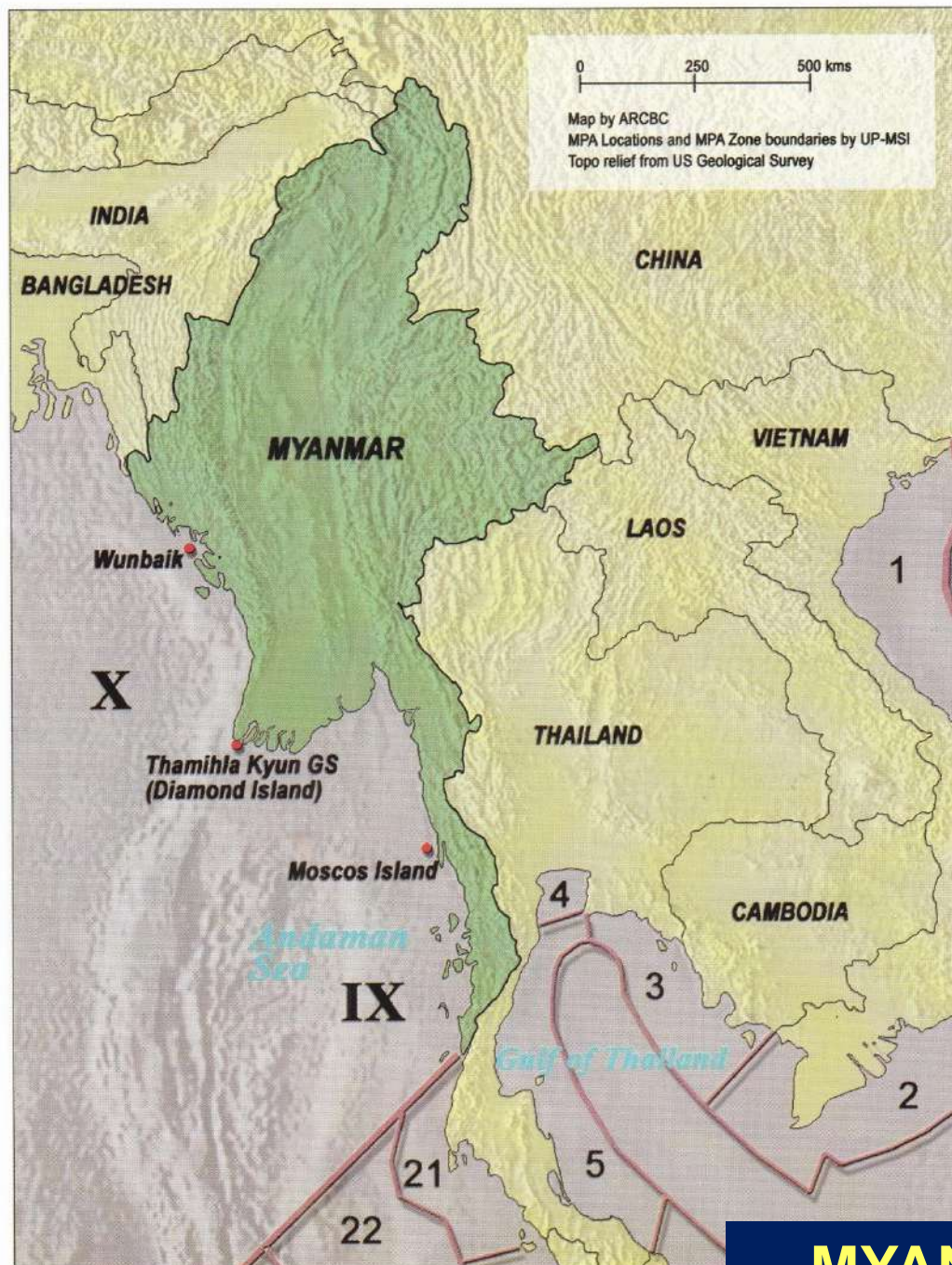
Map 5. Marine Protected Areas in Western Indonesia.

WESTERN INDONESIA

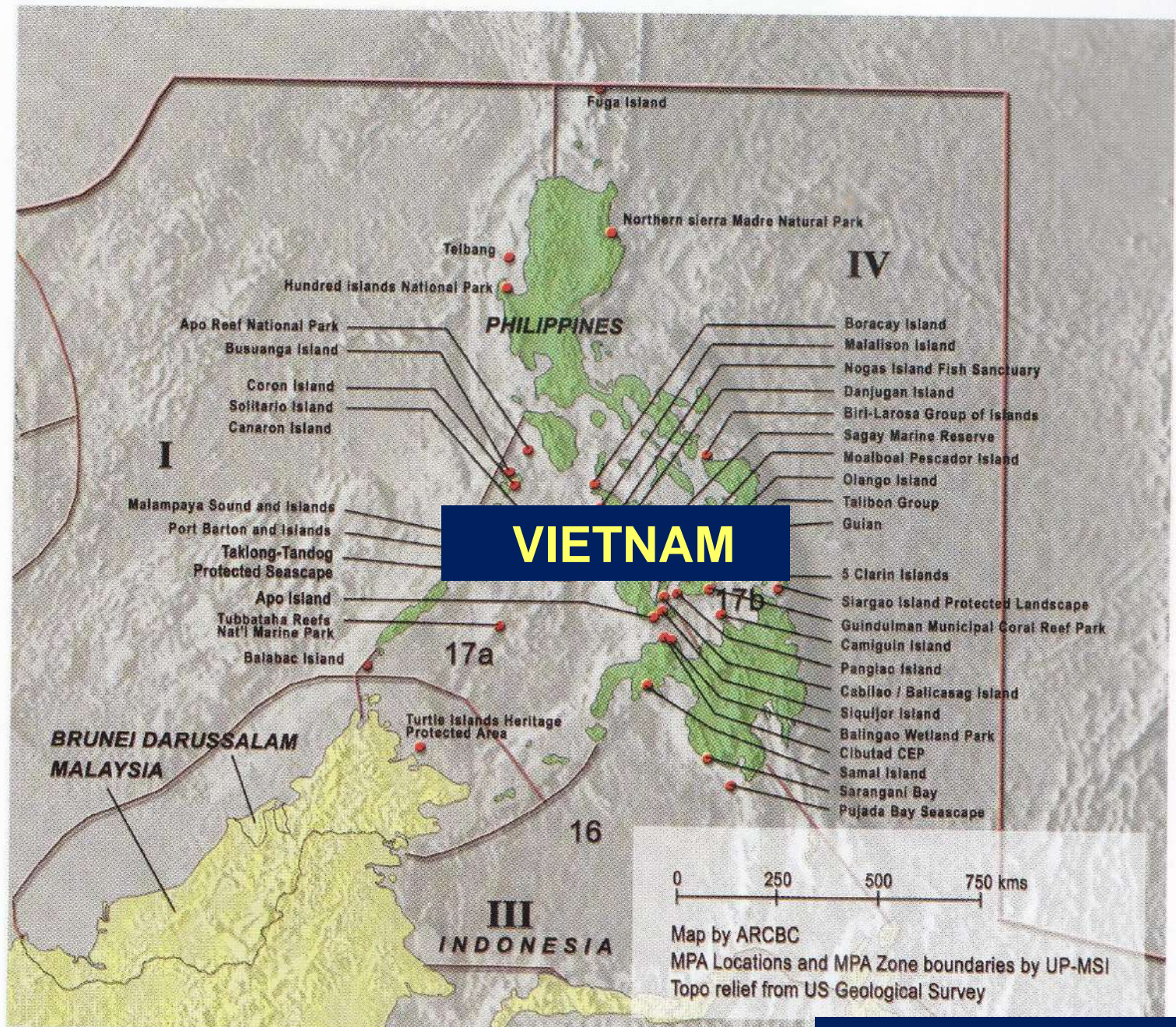


Map 6. Marine Protected Areas in Eastern Indonesia.

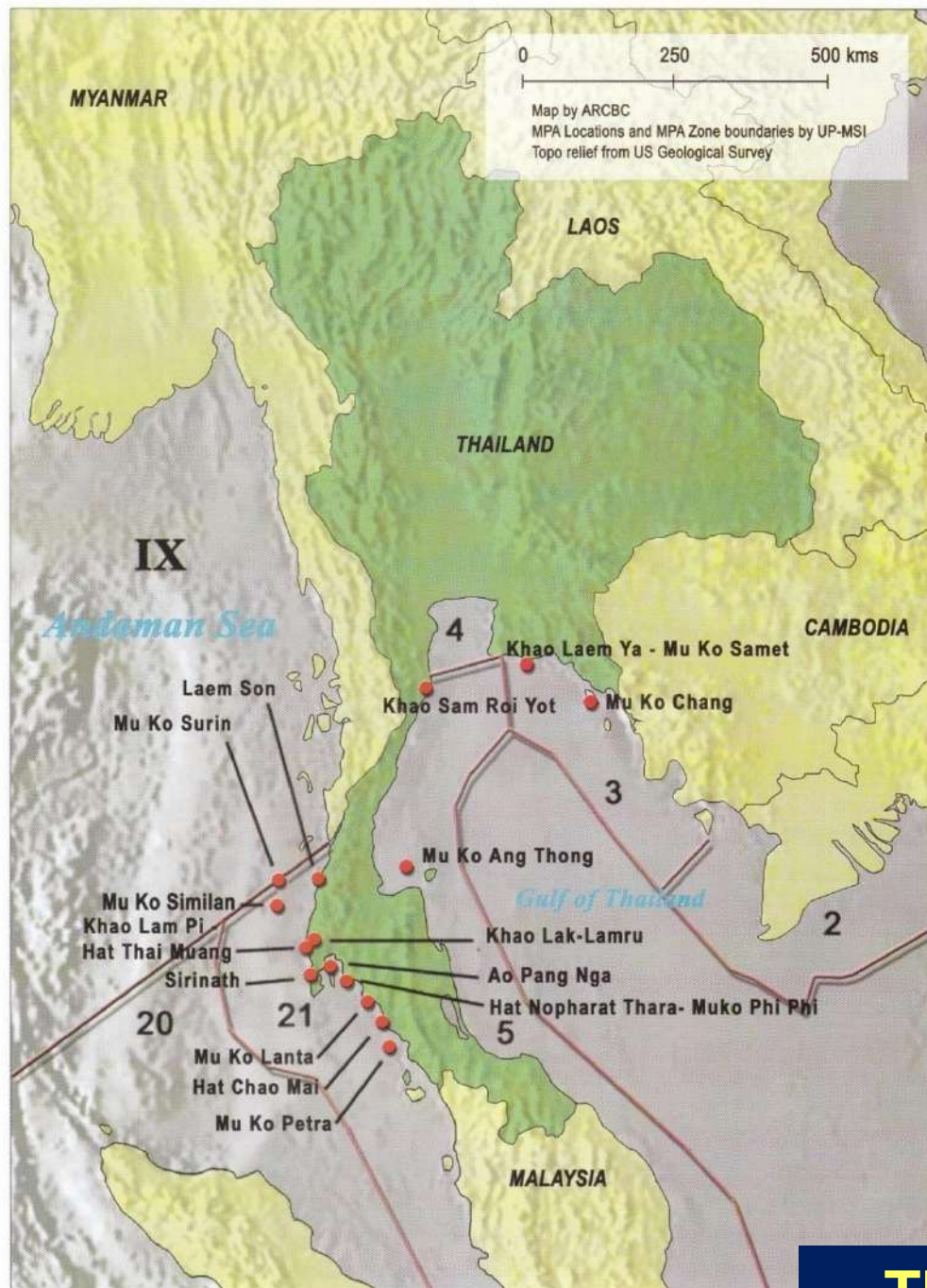
EASTERN INDONESIA



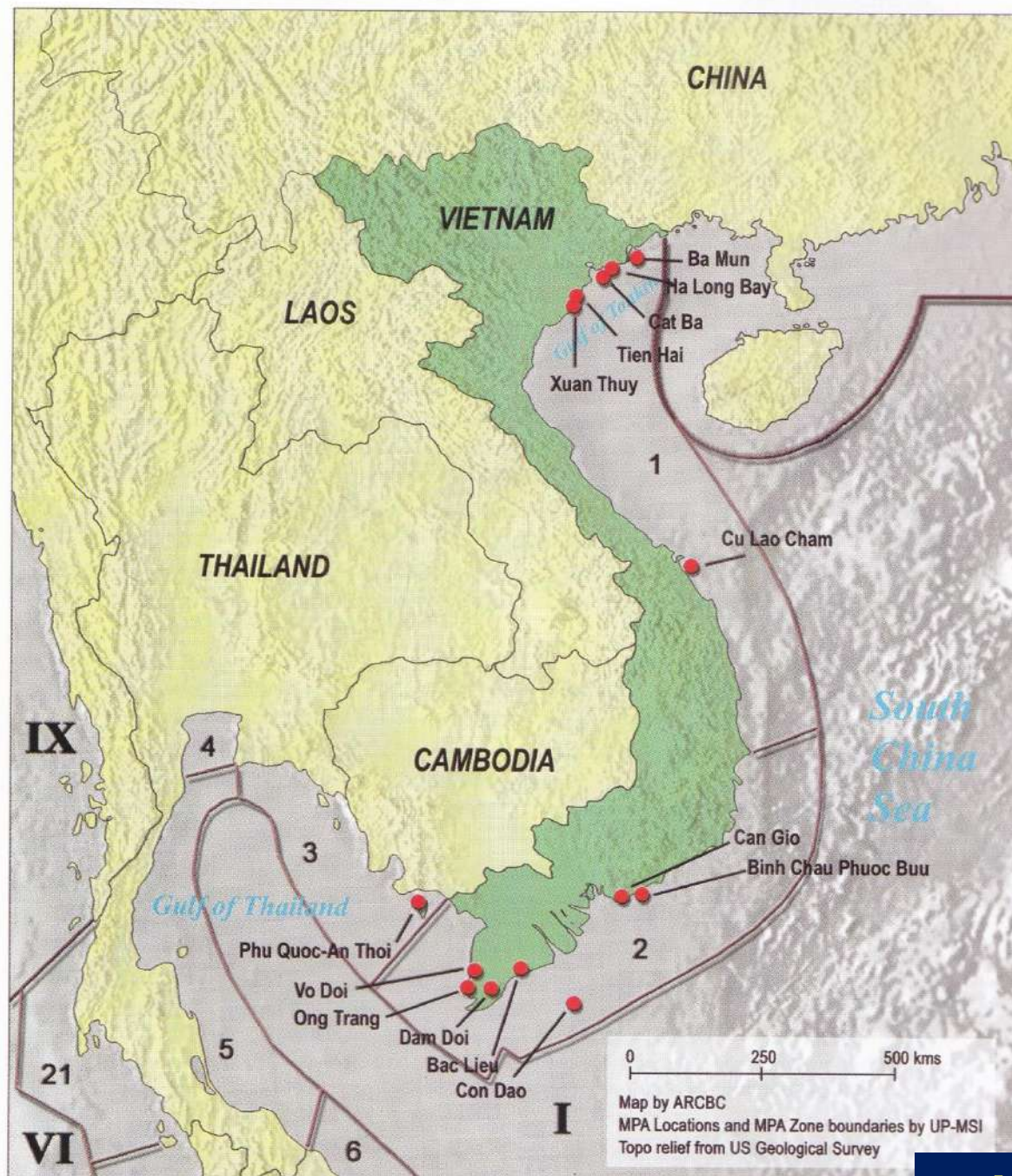
Map 7. Marine Protected Areas in Myanmar.



Map 8. Marine Protected Areas in the Philippines.



Map 9. Marine Protected Areas in Thailand.



Map 10. Marine Protected Areas in Vietnam.



The University of the Philippines
Marine Science Institute



(2014) PHILIPPINES

Increased target fish biomass in NTMRs resulted in **Stable Fish Catch** (Apo) in 20 y and **Increasing Catch** (Sumilon) in 10 yr due to **SPILLOVER EFFECT**.

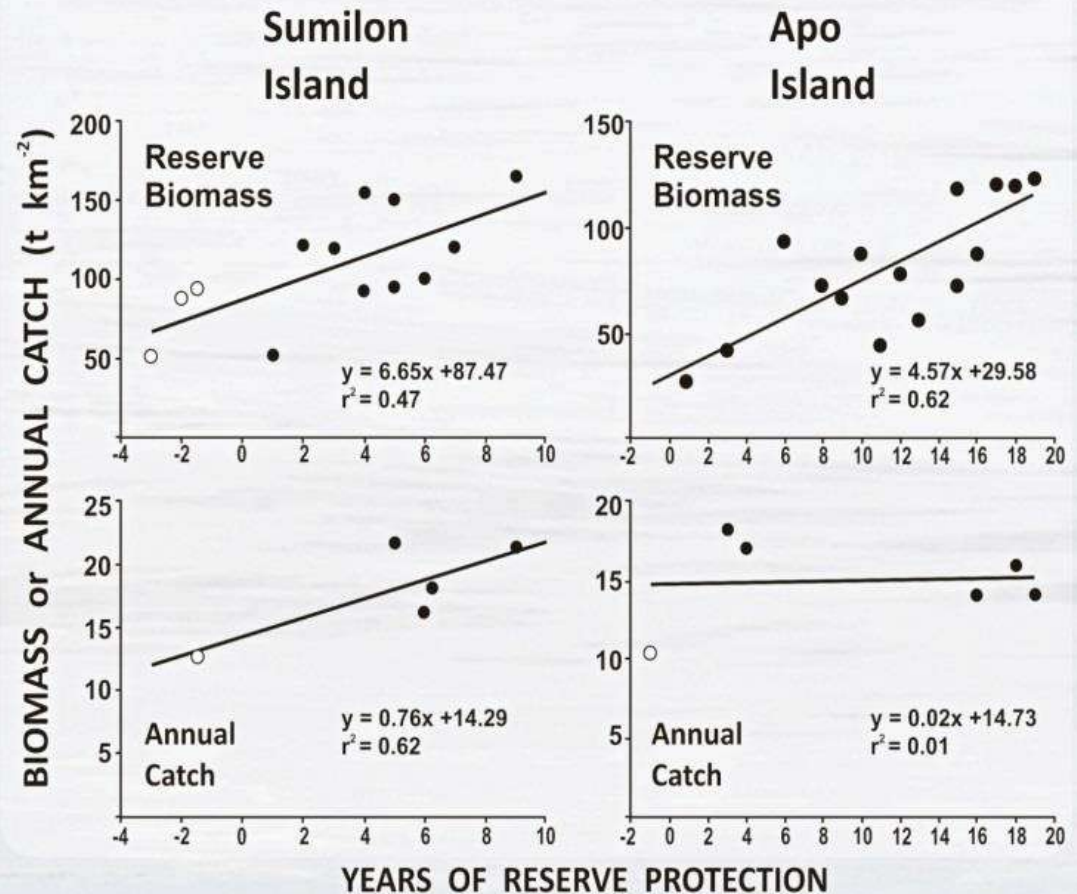


Figure 1. Annual biomass of targeted fish inside reserves and the fisheries catch of these fish outside reserve plotted against years of reserve protection at Sumilon and Apo islands. Redrawn from Alcala and Russ 2006

Genetic Parentage Analysis Experiments demonstrate **LARVAL** or **RECRUITMENT SPILLOVER** to many MRs & fished areas along coast of southern Negros

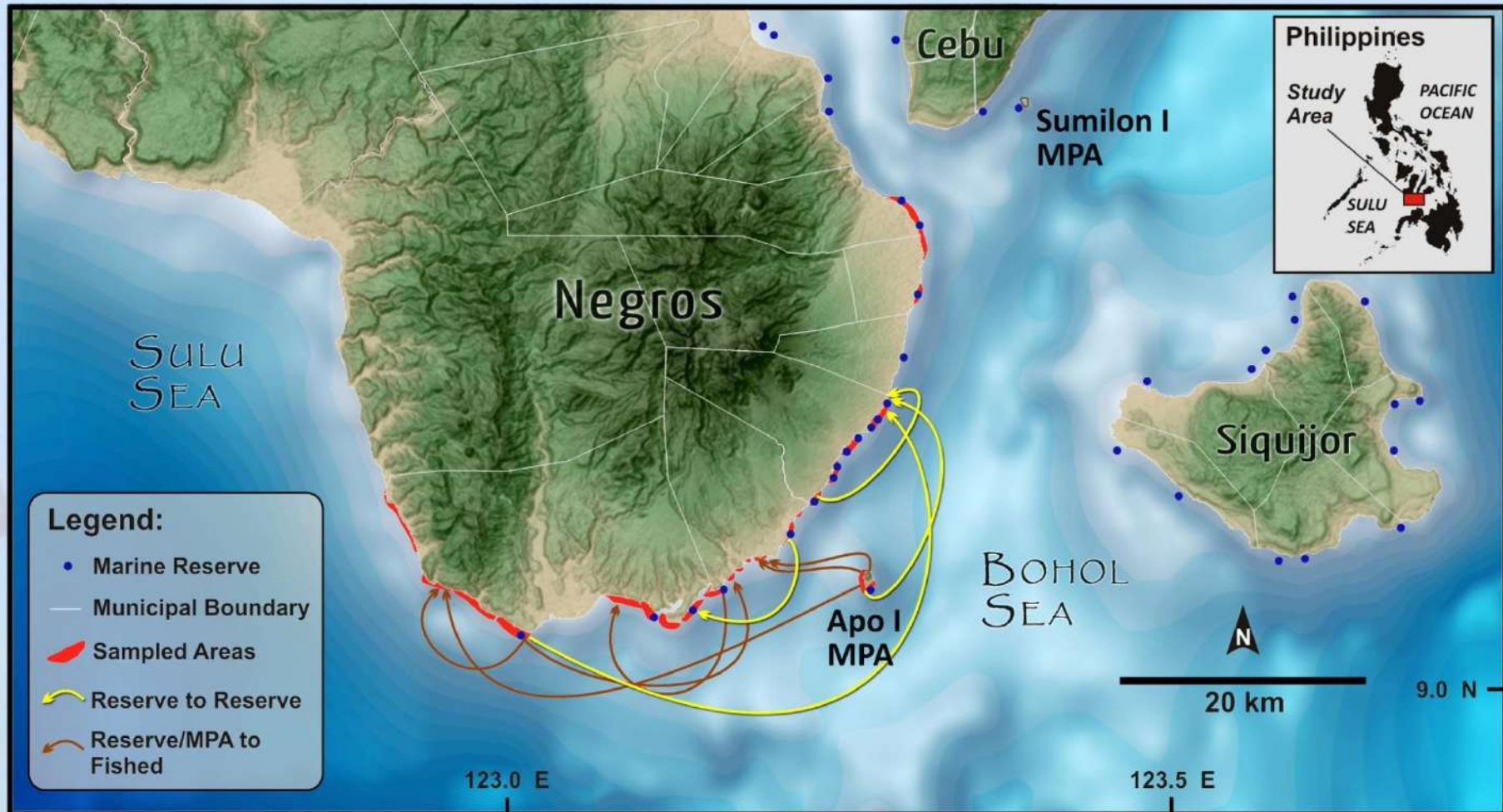


Figure 2. Results of genetic parentage analysis on 1 species of coral reef fish (*Chaetodon vagabundus*) indicating the trajectories of larval dispersal from reserves to fished areas and other reserves.

[Layout modified from RA Abesamis (unpublished) by JLP Maypa; Basemap rendered from CIAT-CSI SRTM 4.1 & GEBCO]