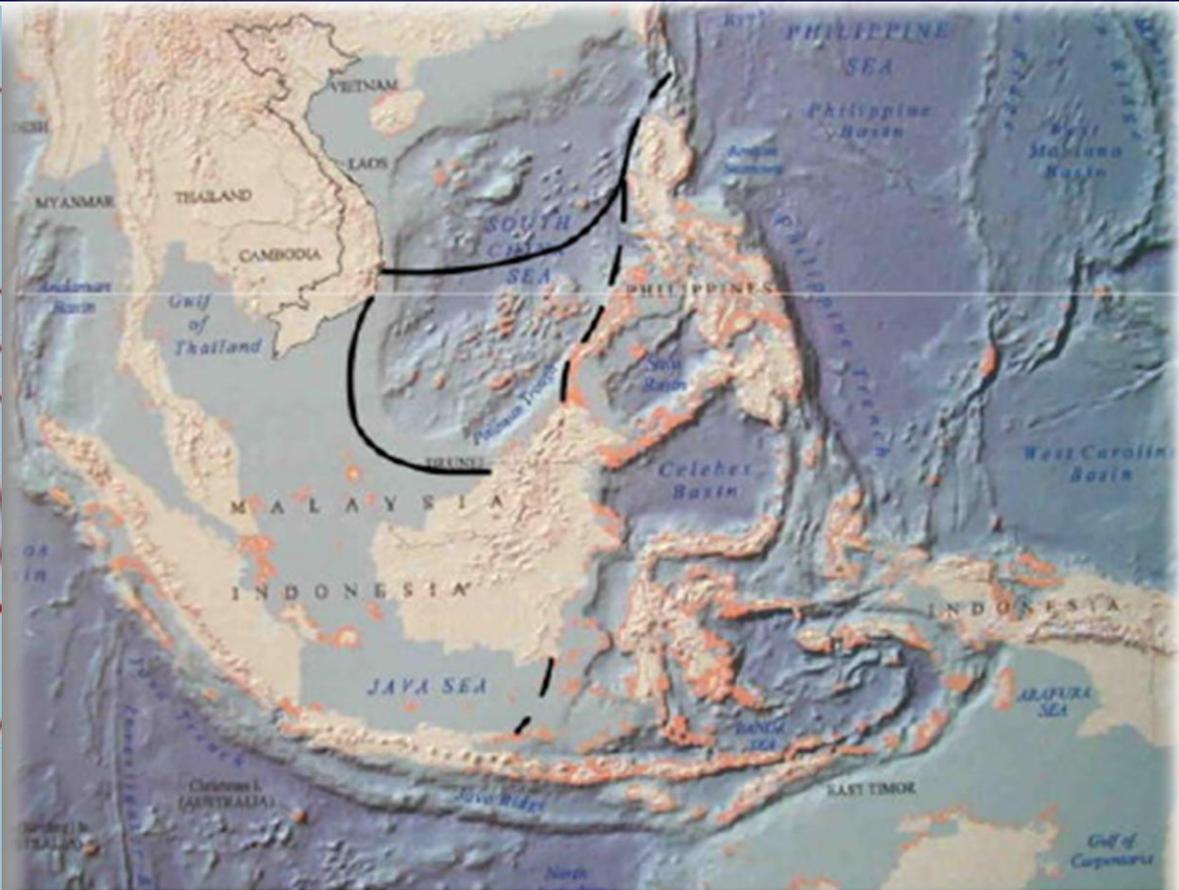
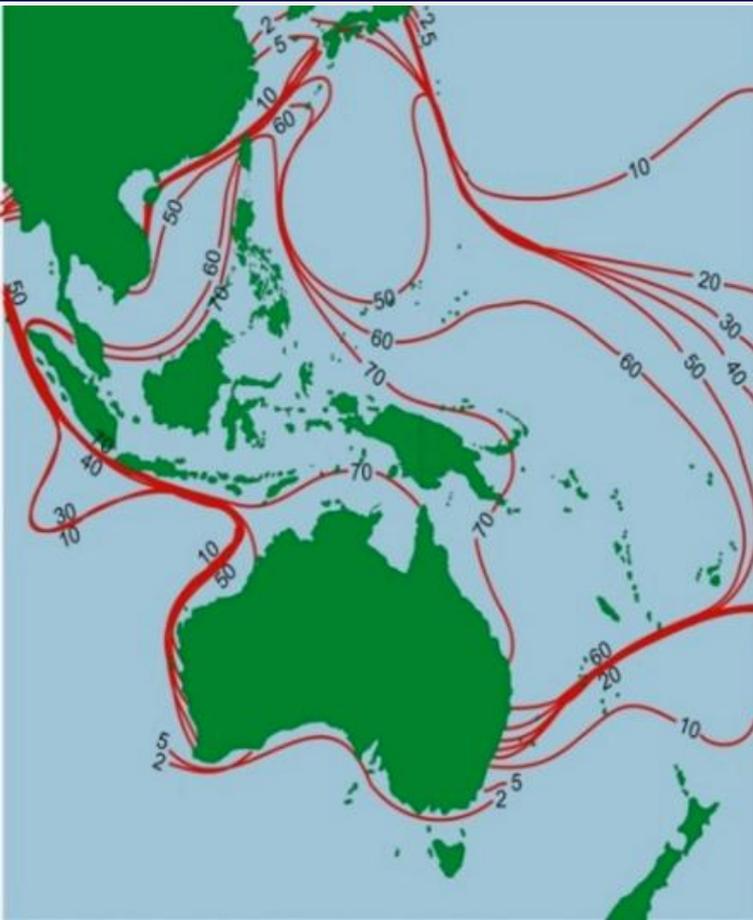


Sustainable Development Perspectives: an Asian Heritage Area (AHA) for Humanity

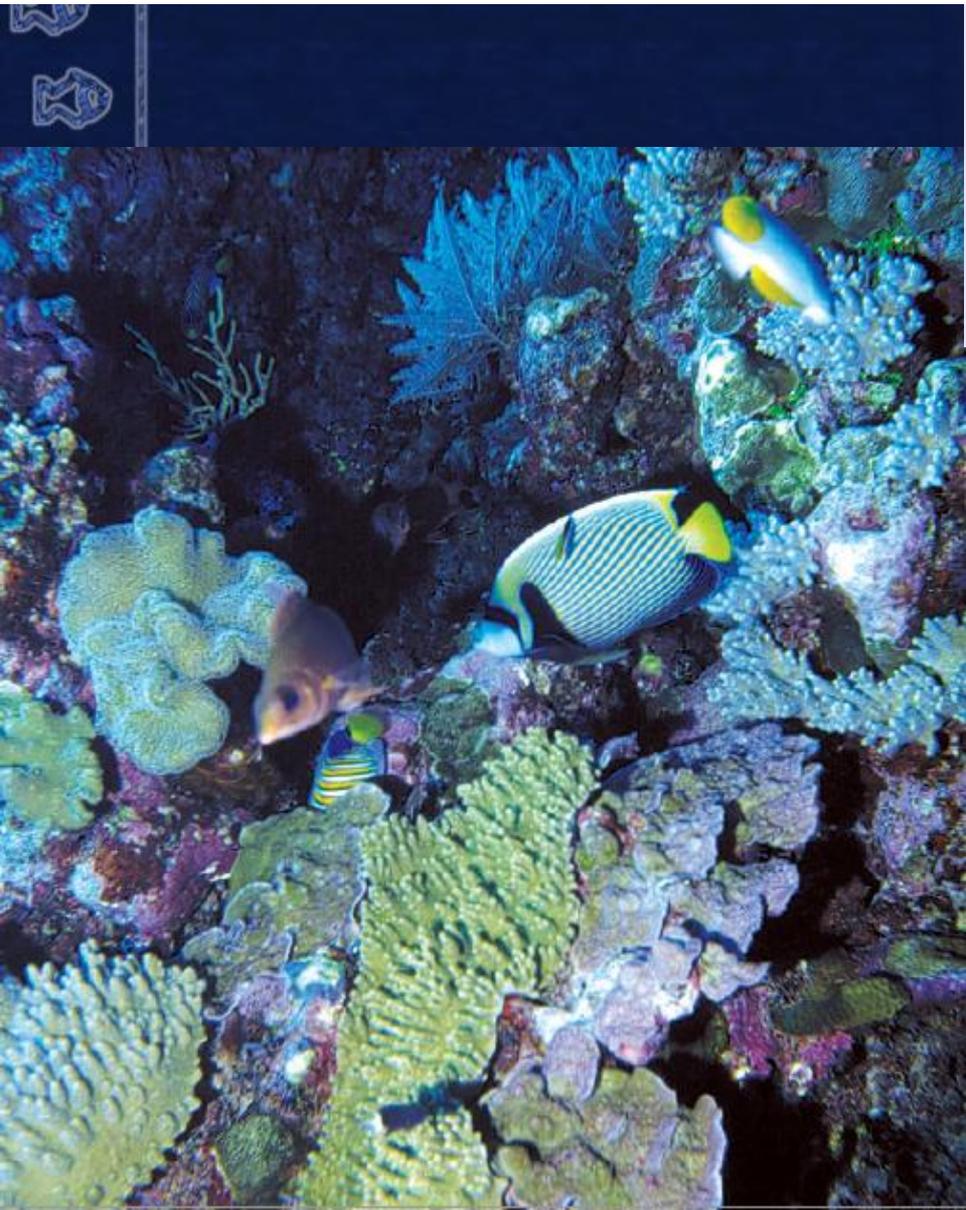
Porfirio M. Aliño, Marie Antonette Juinio-Meñez and Edgardo D. Gomez

The Marine Science Institute,
University of the Philippines, Diliman, Quezon City
PHILIPPINES



The adjusted western border of the Coral Triangle
(---- : Traditional, — : Adjusted)

Valuing our diversity: Adapting to Adversity



A Ray of Light: A New Species
of Coral – *Leptoseris kalayaanensis*
by Wilfredo Y. Licuanan



above: close-up of the central corallite
right: The first specimen of the new
species. The red disk is one
centimeter in diameter.



Leptoseris kalayaanensis in its natural habitat

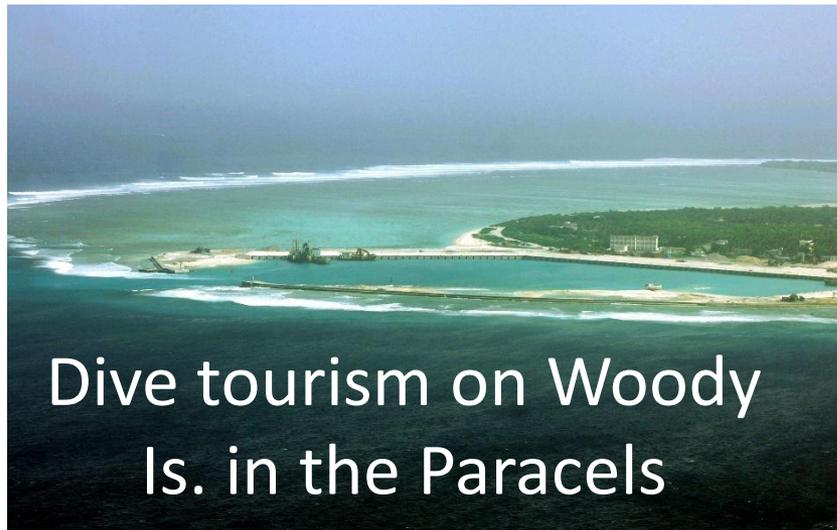
Genetic, Species and Functional Diversity



Vietnam promotes
tourism in Truong Sa



Taiwan & Tourism in Dongsha



Dive tourism on Woody
Is. in the Paracels



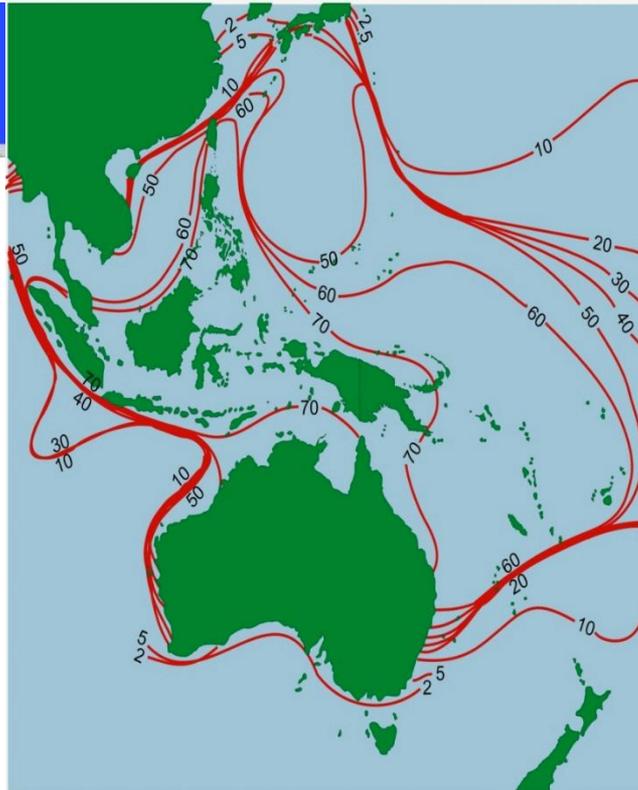
<http://www.avillionlayanglayang.com/index.html>

Malaysia's dive
tourism in Layang
Layang



Partnerships in
Environmental
Management
for the Seas
of East Asia

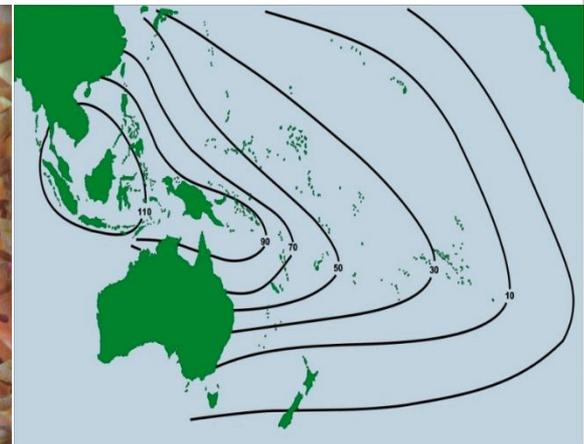
A Project of the Global
Environment Facility



Biodiversity

	Marine Fish Species Diversity	Hard Coral Species Diversity
South East Asia	2,500	400-500
Great Barrier Reef	1,500	395
Caribbean	500-600	100-200

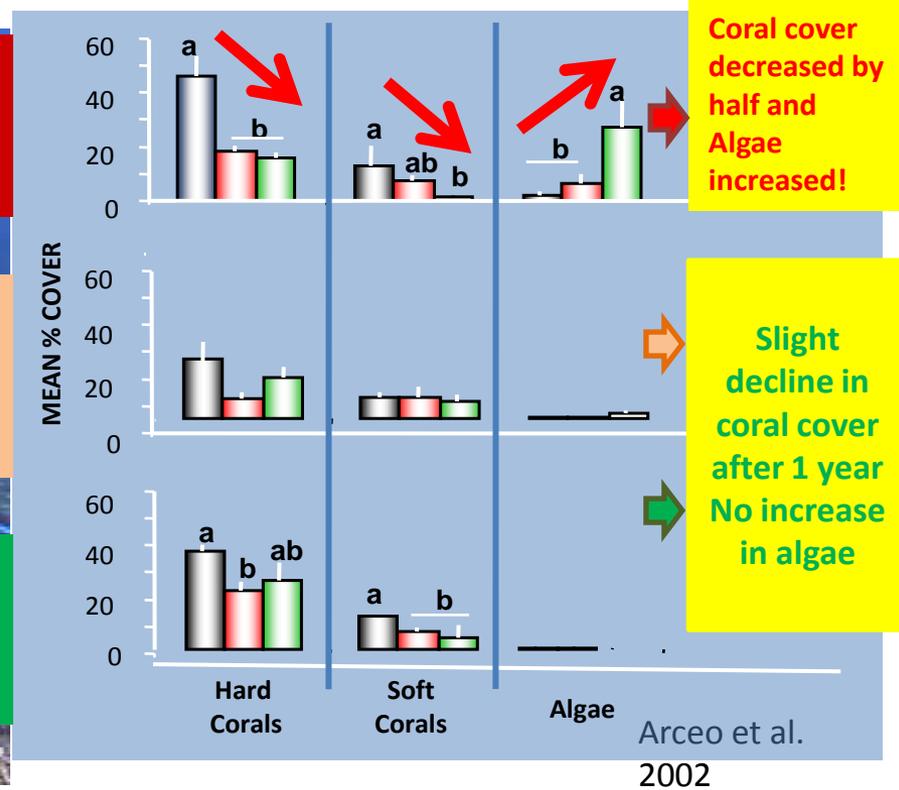
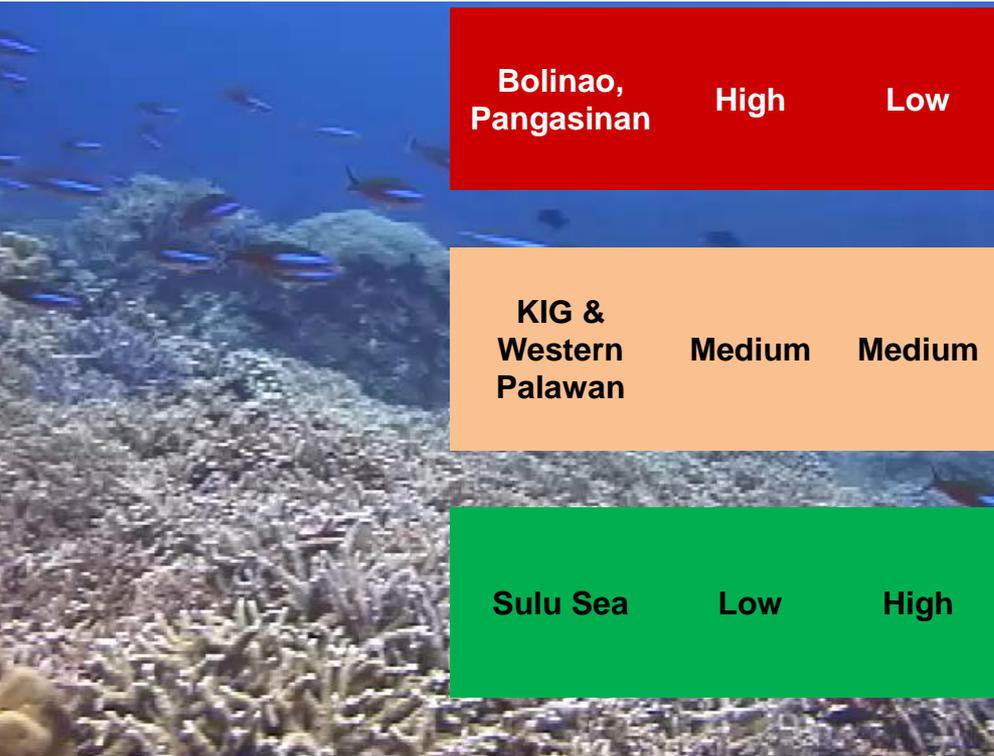
Sources: Chou 1997; Veron, 2001; and Williams, 2001.





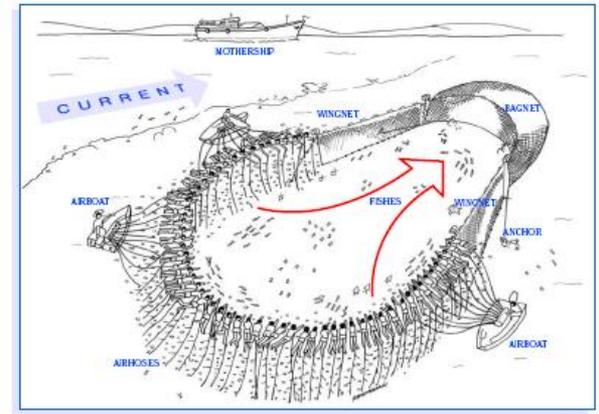
Fishing Pressure Diversity

Impacts of the 1998 mass coral bleaching



High biodiversity builds resilience to disturbances such as bleaching

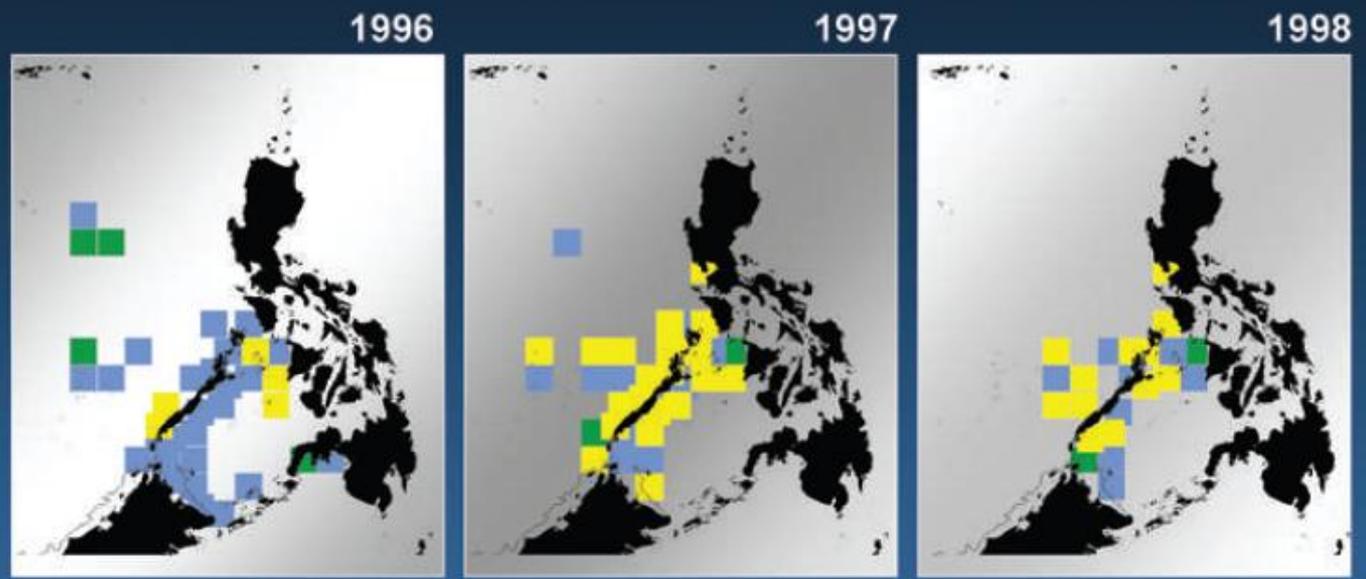
Diversity in Adversity



Schematic diagram of a pa-aling fishing operation¹²

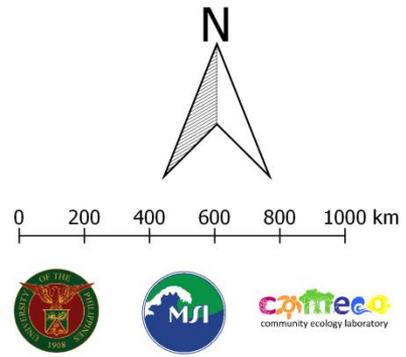


Trend in total catch per drive

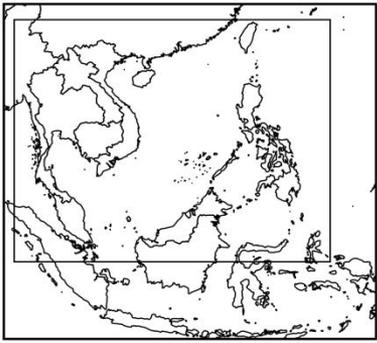


Mean catch per unit effort (CPUE) of pa-aling operations from 1996-98 represented in 1° grid squares. CPUE values for each reef found within a particular grid are averaged (metric tons per drive per year).

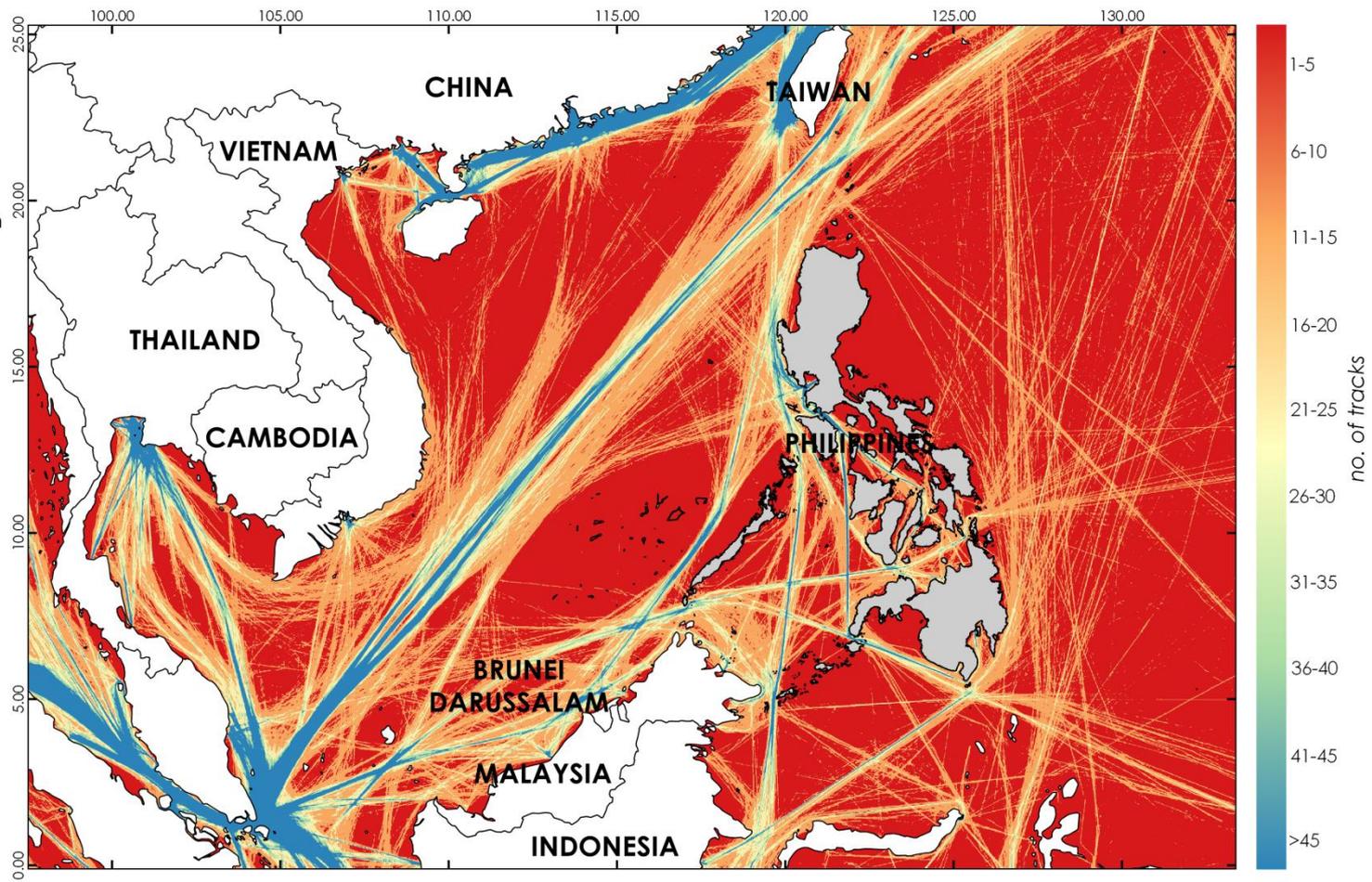
- 1.90 to 1.30 mtons/drive-yr
- 1.30 to 0.70
- 0.70 to 0.10



Oil tank ship routes in the West Philippine Sea



Coordinate Reference System: WGS 84
 Map prepared by: Gracious Von Yip



Coral Reef Ecosystem services value

\$ 350,000 /ha/yr

Global estimates of the value of ecosystems and their services in monetary units

(de Groot et al., 2012)

CORAL REEFS	Int.\$/ha/yr
Provisioning services	55,724
Food	677
Raw Materials	21,528
Genetic resources	33,048
Ornamental resources	472
Regulating services	171,478
Climate regulation	1,188
Disturbance moderation	16,991
Waste treatment	85
Erosion prevention	153,214
Habitat services	16,210
Genetic diversity	16,210
Cultural services	108,837
Aesthetic information	11,390
Recreation	96,302
Cognitive information	1,145
Total economic value	352,249

Designing our Asian Heritage Area MPA Network

Protect

- Defining our Goals & Objectives
- 10% of critical habitat (Aichi targets)
- Threat reduction

Representativeness

Replicated

Resilient

Critical Habitats

- Coral reef
- Seagrass
- Mangrove

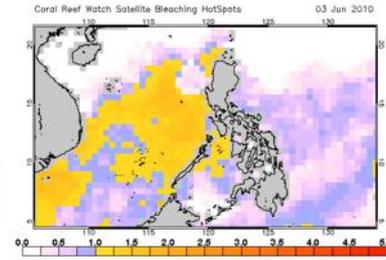
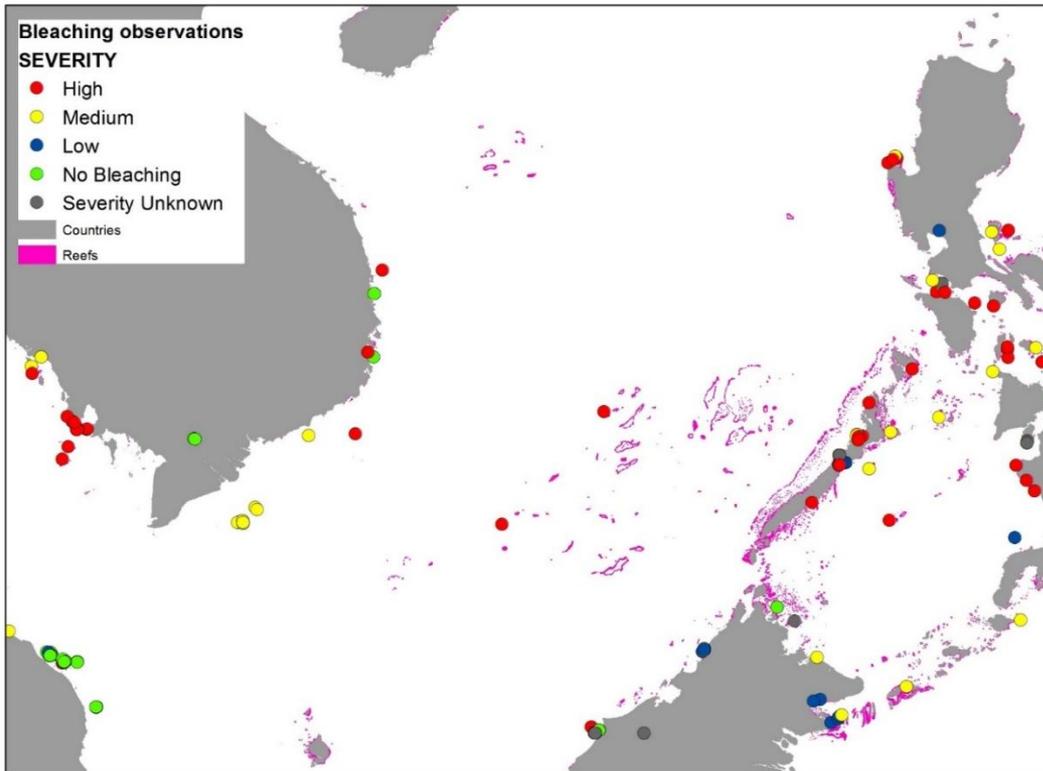
Functionality

- Spawning
- Nursery
- Feeding
- Recruitment

Connectivity

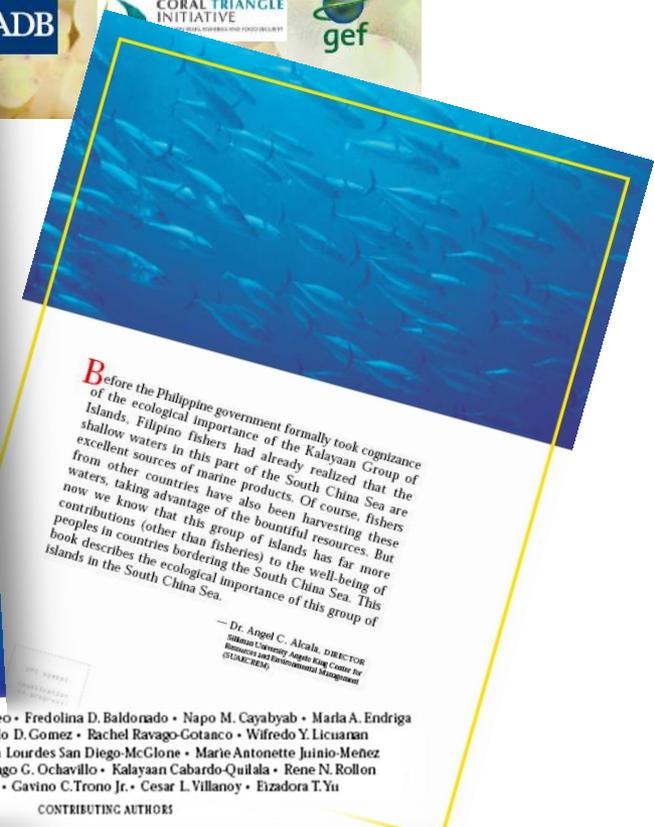
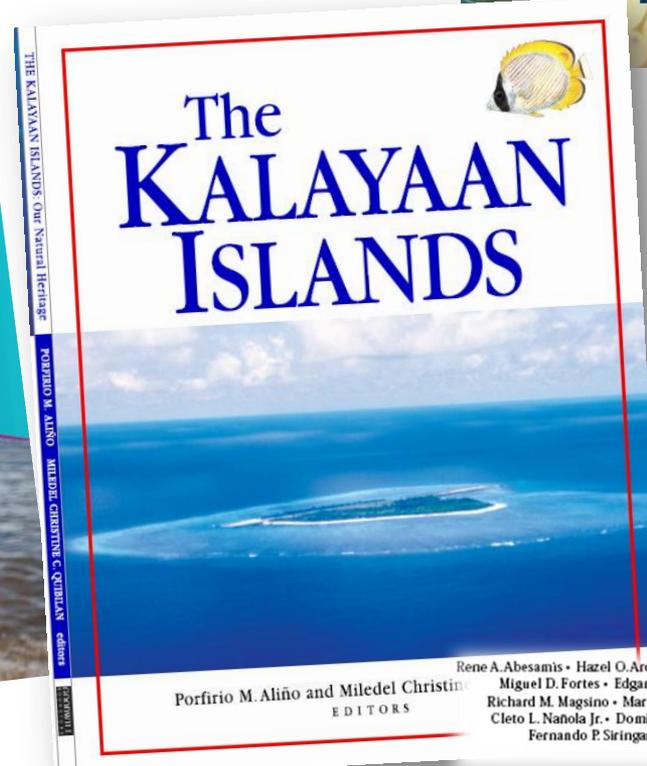
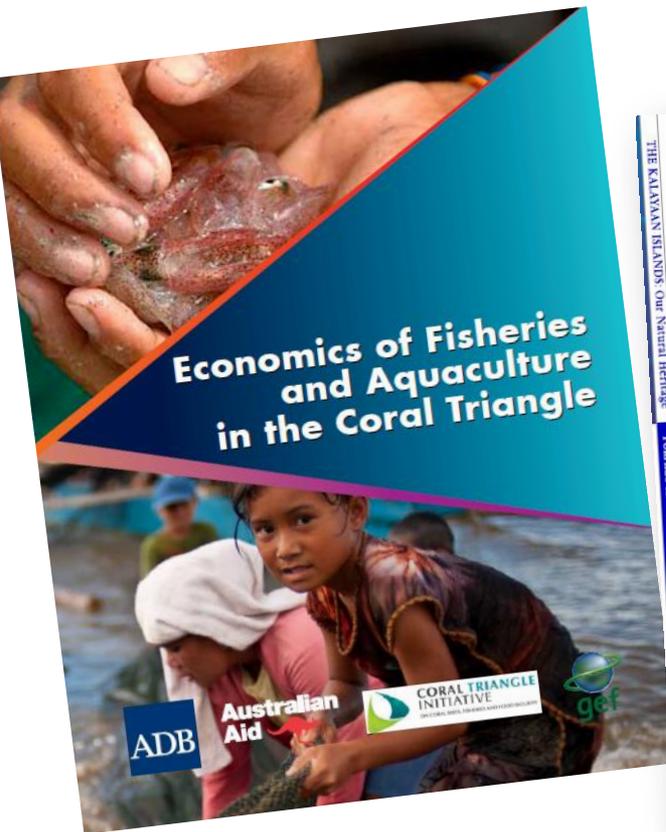
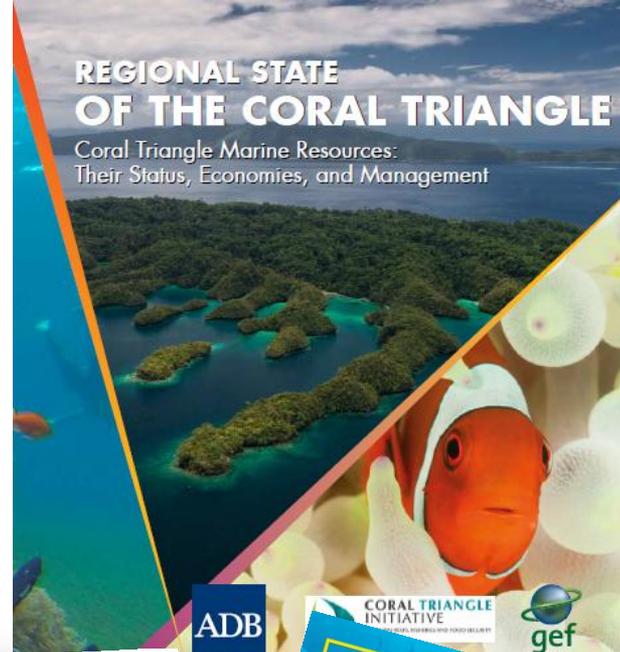
- Upstream, downstream
- Leeward entrainment

STEWARDS CAN : Science & Technology for Wise Adaptation, Resiliency Development System Climate Adaptation Network



- ## Partnership Opportunities Climate Adaptation Network (CAN)
- MPA networks help climate resiliency
 - State of the Coasts Reports (SoC) feedback & learning to be prepared
 - Responding with a climate sea change & prepared mind

Promoting
regular
monitoring &
reporting

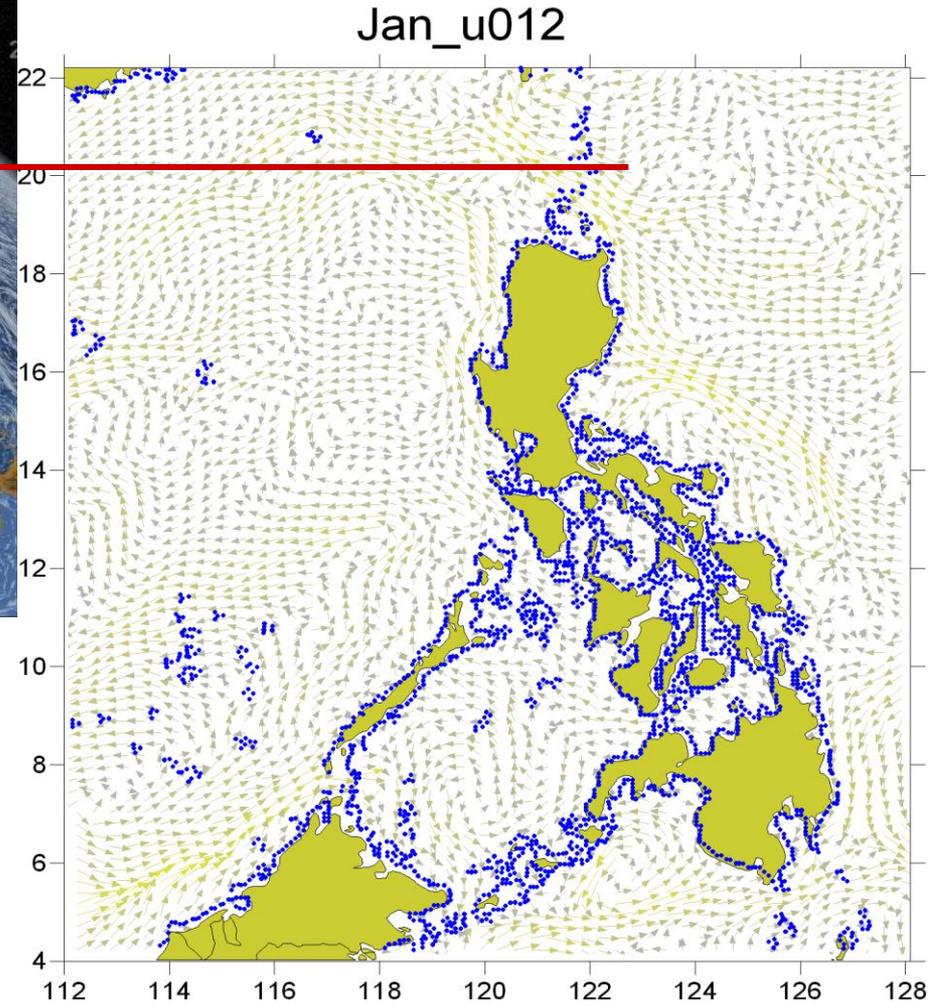




THE SEA—

byways not
barriers

Apr 2

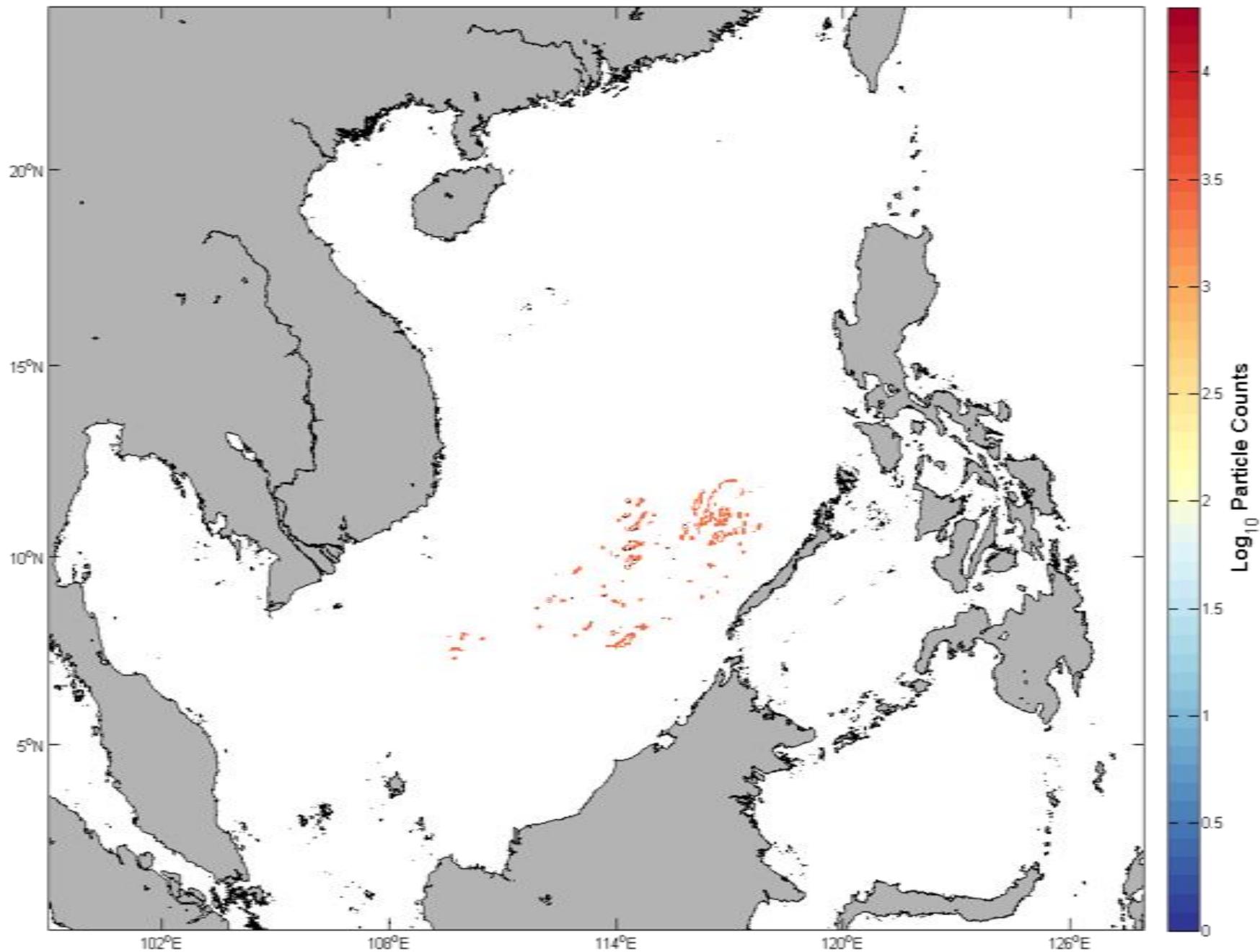


Jan_u012

Slide courtesy of Villanoy et al.

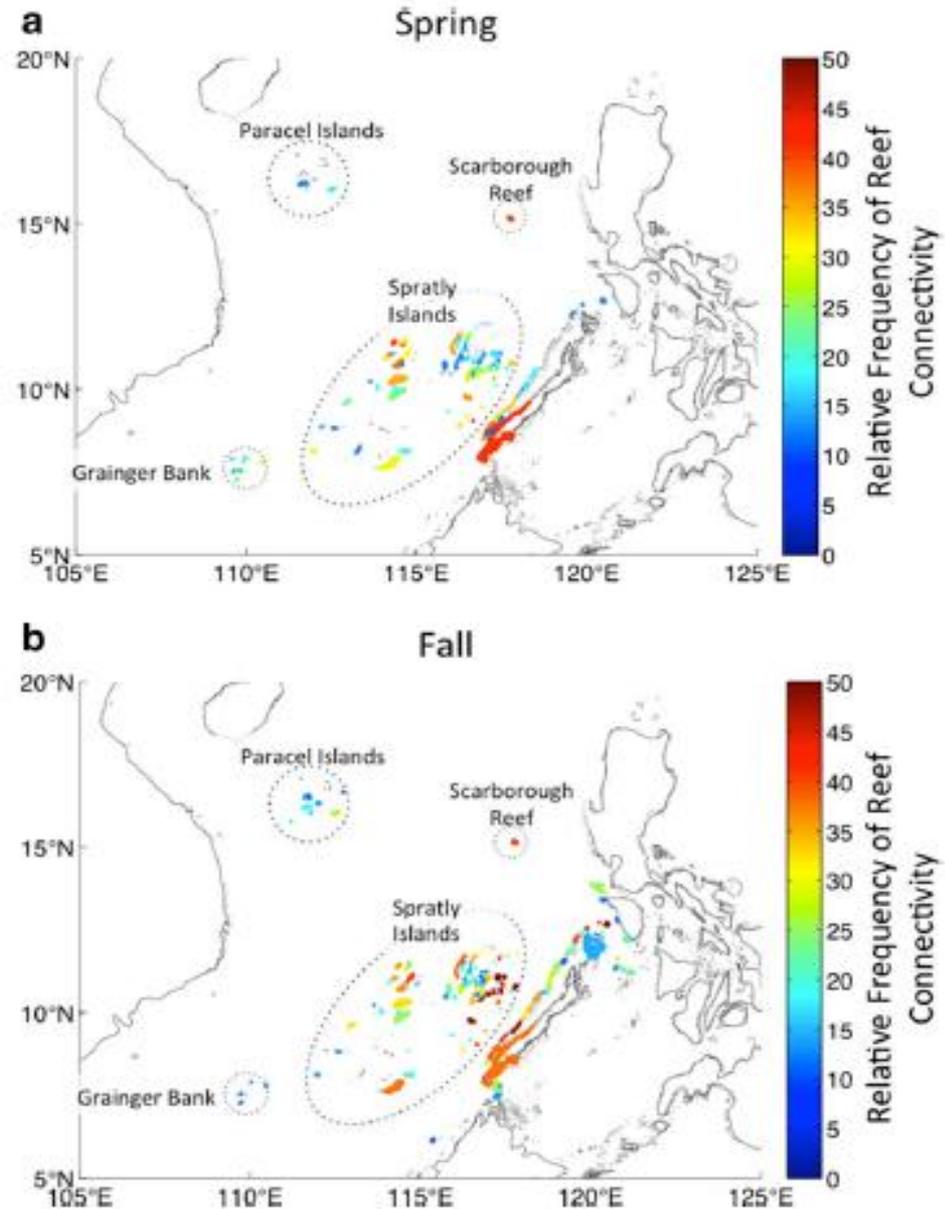
*"We are all islands
-- in a common sea."*
— Anne Morrow Lindbergh, Gift from the Sea

Day 0



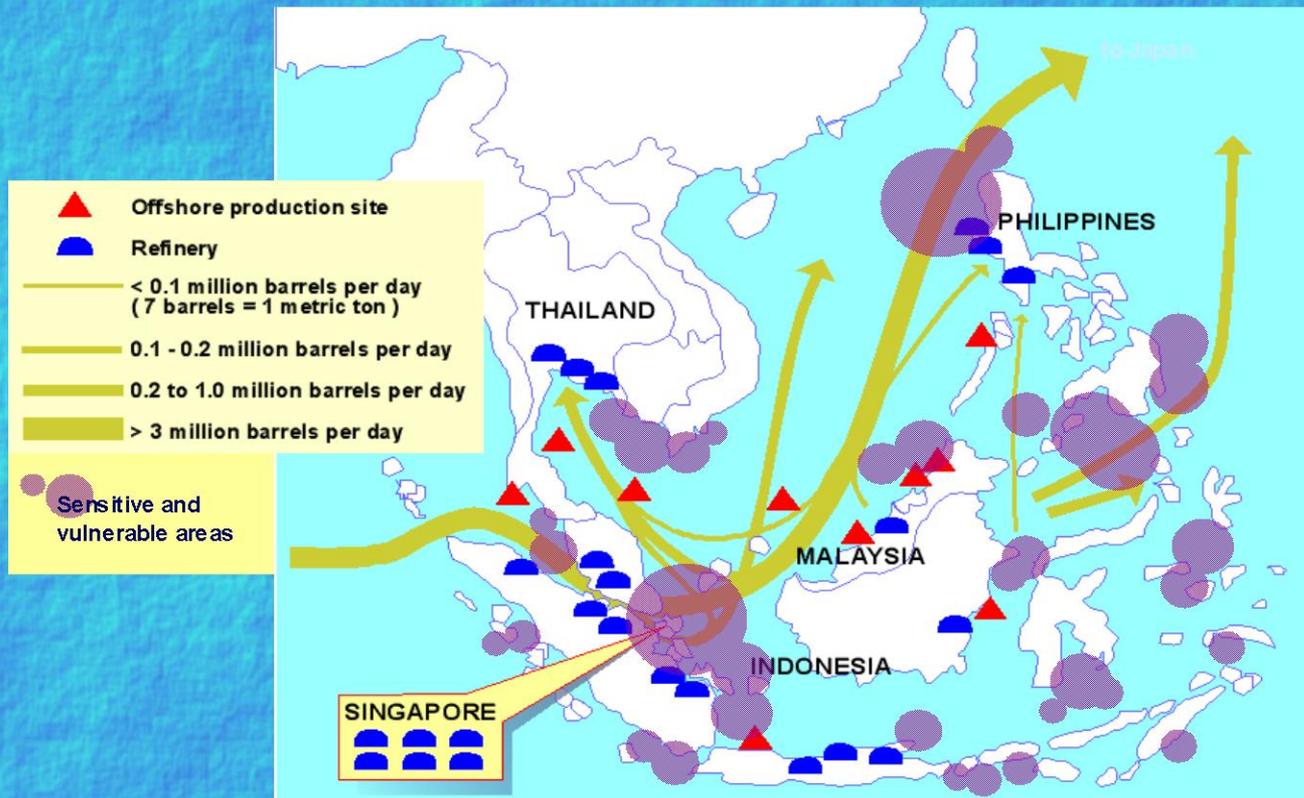
(Villanoy et al., *In prep*)

Population
genetic
relatedness
resemble
dispersal
directionalities



Diversity in Adversity

Transport of crude oil and distribution of resource areas sensitive and vulnerable to oil pollution



Tuna Trade in the CT

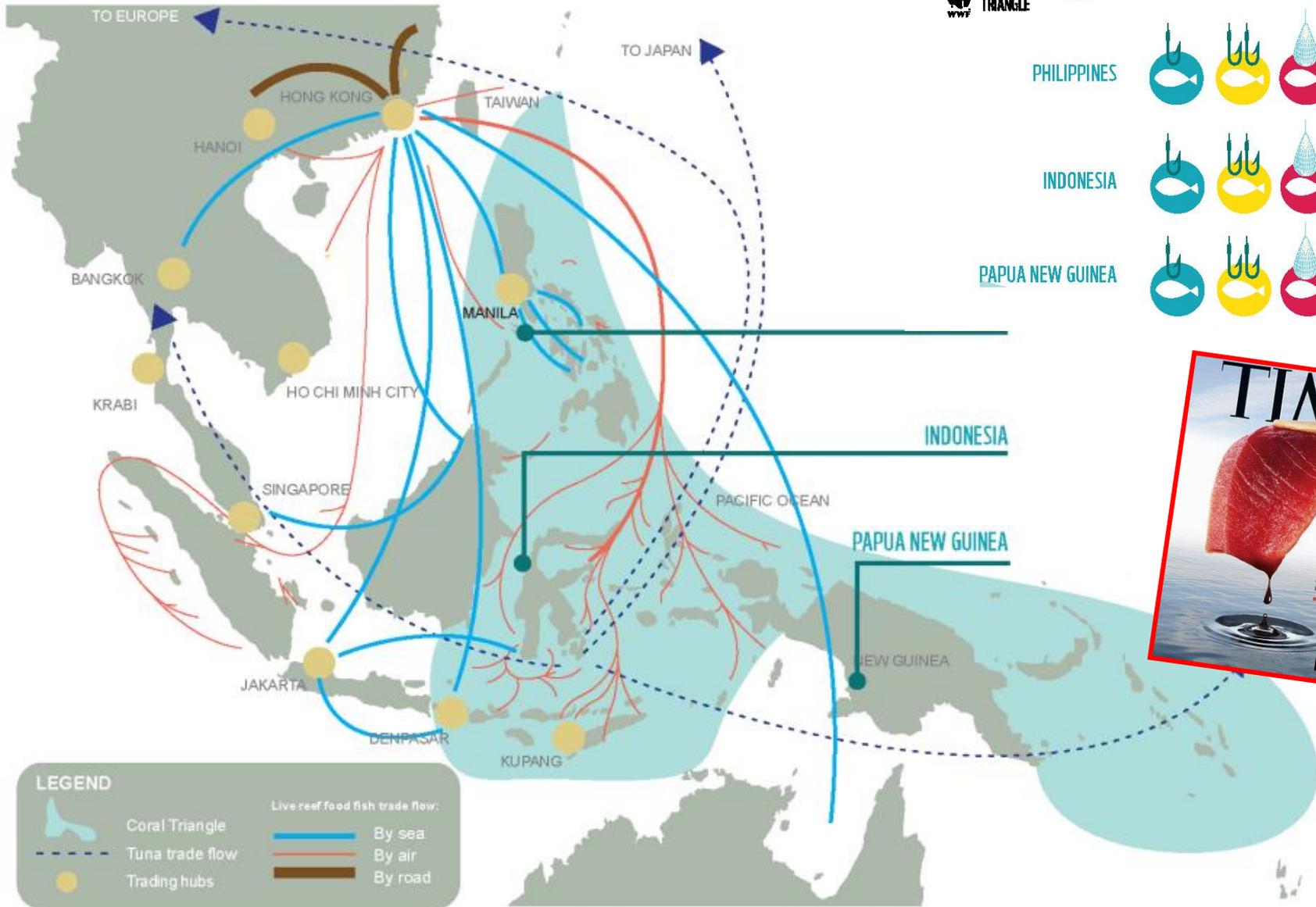
STATUS OF

John Hampton, 2007

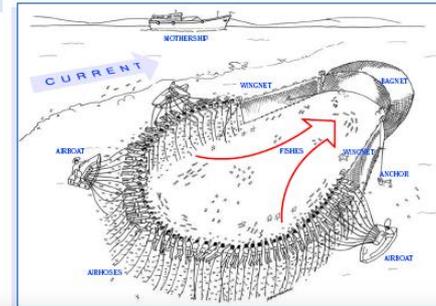


- SKIPJACK TUNA
- YELLOWFIN TUNA
- BIGEYE TUNA

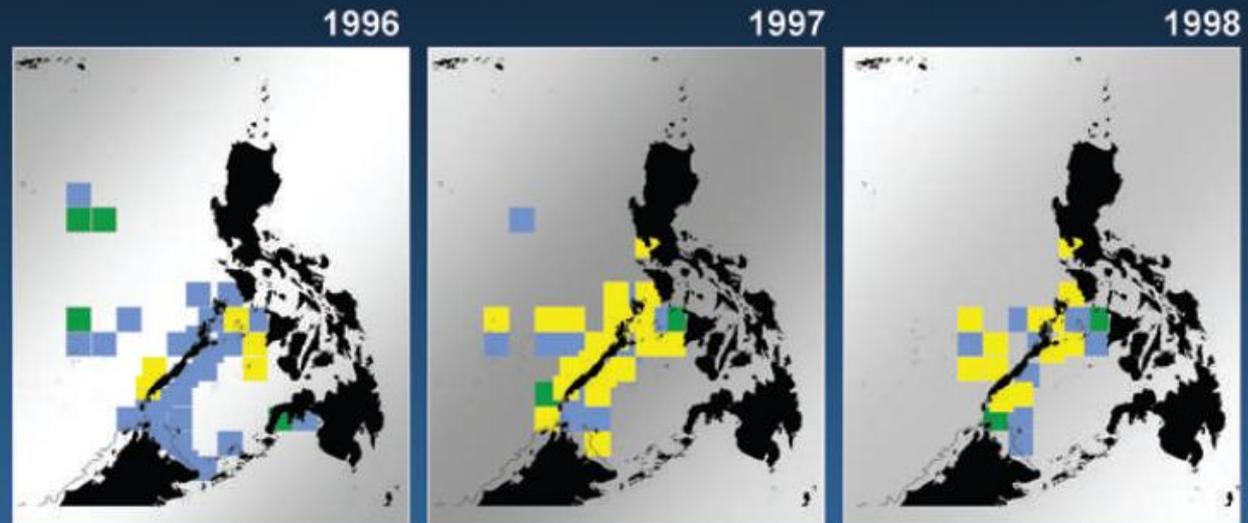
- Fully exploited
- Overfished
- Not overfished



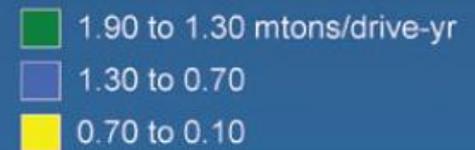
Biodiversity in Adversity



Trend in total catch per drive



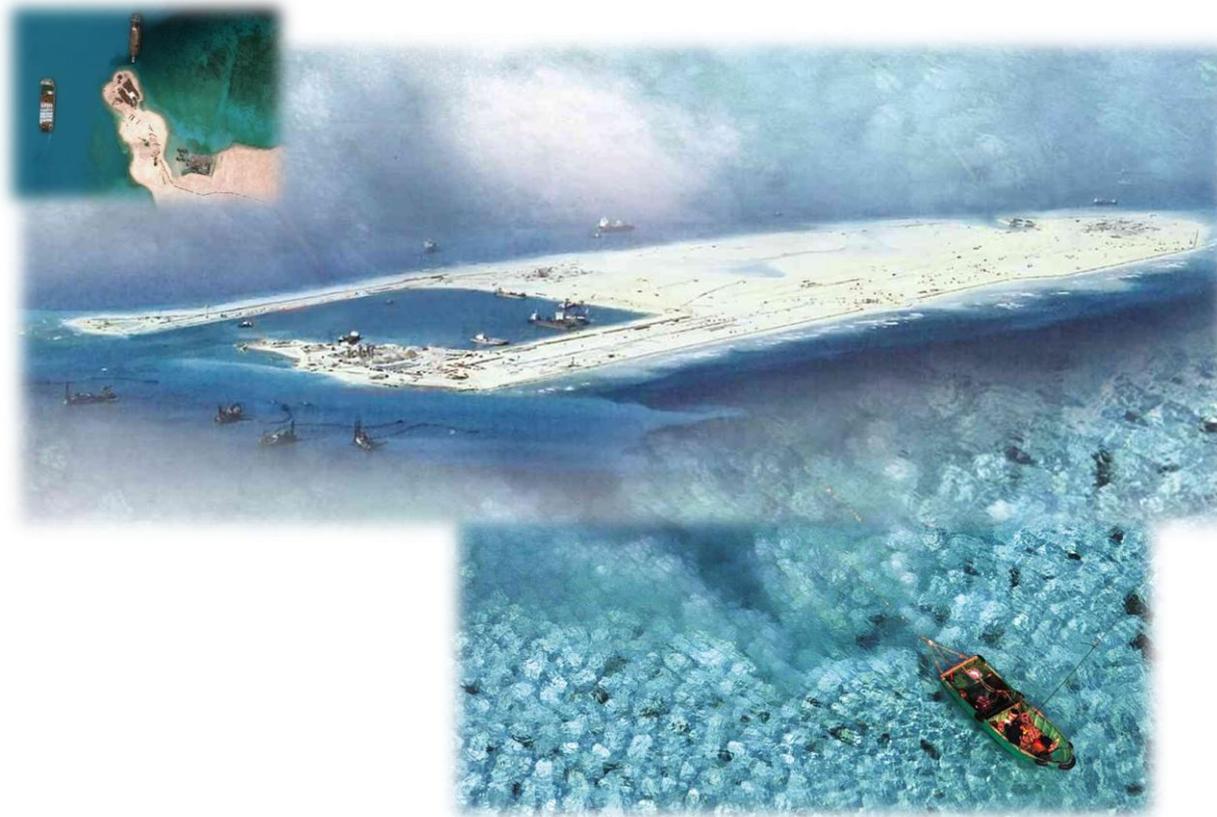
Mean catch per unit effort (CPUE) of pa-aling operations from 1996-98 represented in 1° grid squares. CPUE values for each reef found within a particular grid are averaged (metric tons per drive per year).



Destroyed reefs, vanishing giant clams

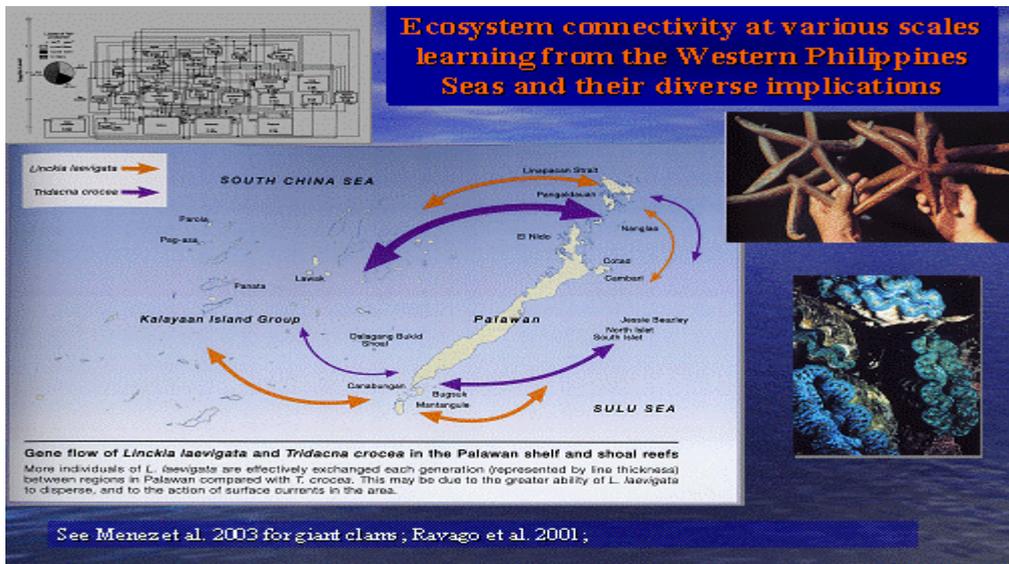
Ed Gomez
@inquirerdotnet

Philippine Daily Inquirer 12:41 AM | Sunday, May 3rd, 2015

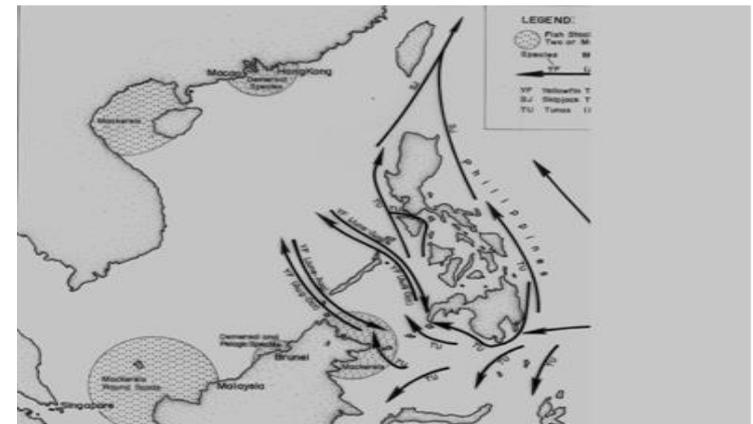


Why Form MPA Networks?

Existing connectivity among ecosystems at various scales: benefits from natural networks need to be sustained and



Inferred migratory route of some tuna species passing through the Philippines



Source: Morgan and Valencia 1983

Single MPAs may not be enough for protection at larger scales.

BRING HOPE:

Biodiversity Resources
Information Network Group:
Hub of People's Ecosystems

The Return of the Giant Clam to
the Spratlys ~1990s

(Restocking by The University of the
Philippines Marine Science Institute)



Giant clams are endangered species listed in CITES and should be protected.



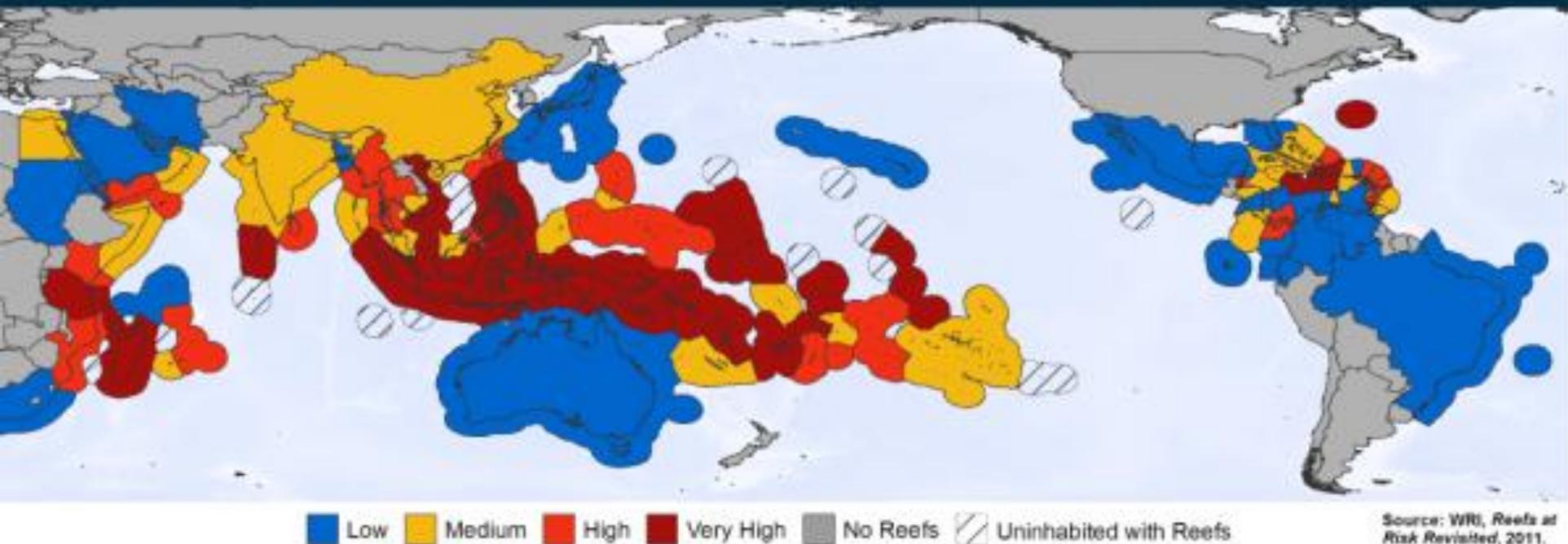
Endangered Species:

So What?

or
decade

And because we highly depend on our reefs, **we are very vulnerable.**

SOCIAL AND ECONOMIC VULNERABILITY OF COUNTRIES AND TERRITORIES TO REEF LOSS

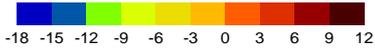
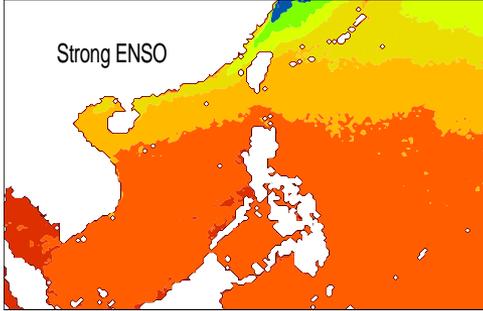
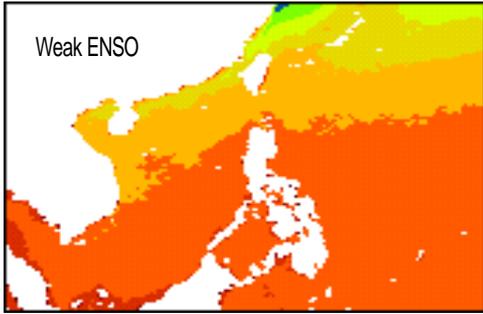
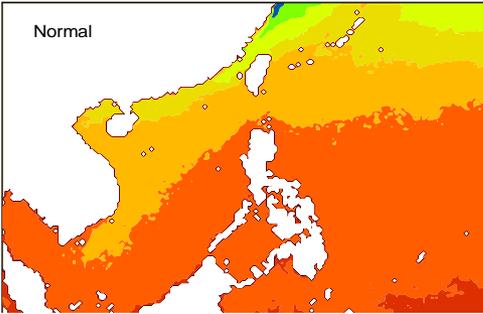


The **vulnerability** of our ecosystems is not only a possibility, **it is upon us NOW.**

It is in **everybody's best interest to guarantee that these reefs continue to provide** their valuable ecosystem services.

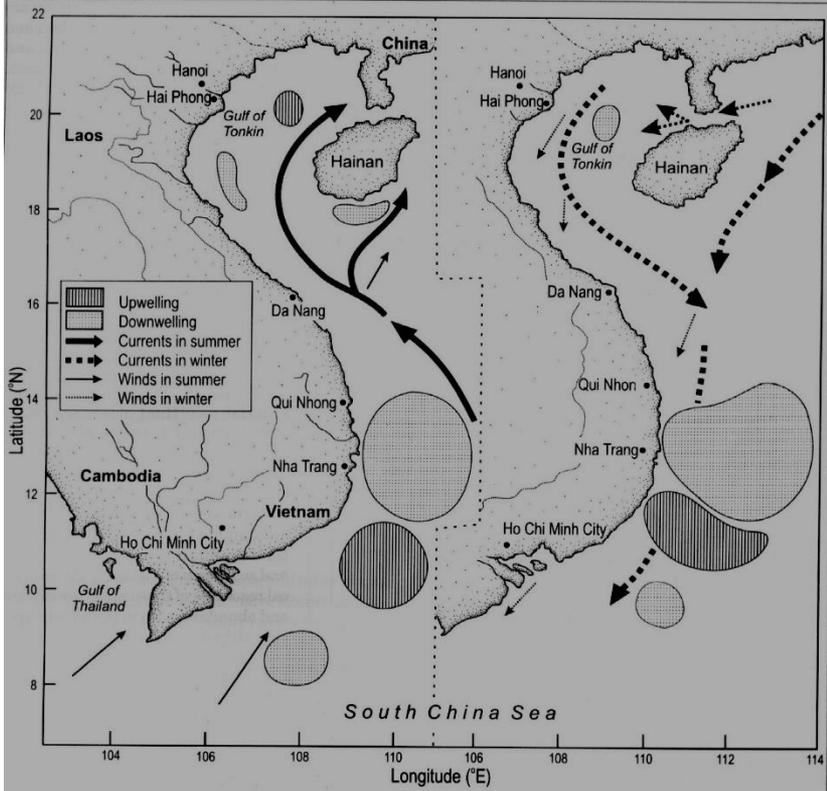


Sea Surface Currents, Upwelling and Downwelling Areas in Viet Nam



Salamante and Villanoy unpublished

Southwest monsoon



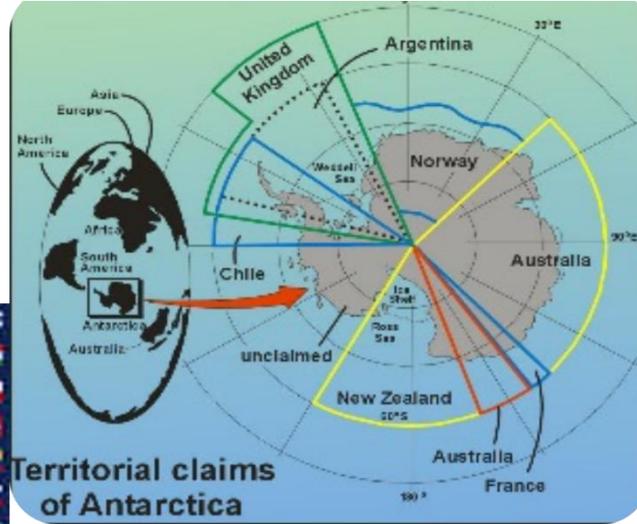
Source: Thuoc and Long 1997

Northeast monsoon

“Asian Heritage Area”

Fishing for Peace

- Sustaining the marine ecosystem services for the benefit of humanity
- a Network of MPA
Why not !! AHA!
“Asian Heritage Area”



Remote Sensing Information for Living Environments and Nationwide Tools (ReSiLiENT) for Sentinel Ecosystems of our Archipelagic Seas (SEAS)

PHILIPPINES AND VIETNAM COMPLETES FIRST JOINT SCIENTIFIC SURVEY OF SOUTH CHINA SEA

By: Edgardo D. Aro and Porfirio M. Aliño. Photos by Mariá Catalina Rañola



Figure 1. Scientist Cleto Rañola Jr. inspects unexploded bomb in the Scarborough Shoals. Joint scientific researches in the South China Sea (SCS) help defuse tensions in the area.



Figure 2. Filipino and Vietnamese scientists have a group underwater photo together (at Menzies Reef) for a breather from their hectic survey schedule.



Figure 3. Tame school of bluestriped seaperch (*Lutjanus kasmira*) at Menzies Reef indicates these fish unharassed by the presence of divers. The South China Sea is one of the highest biodiversity areas in the marine environment.



Figure 4. Joint Oceanographic Marine Science Research Expedition (JOMSRE) by the Philippines and Vietnam characterize the hydrography of the SCS with state of the art "Rossette Carousel" sampler on board the RPS Explorer.



Draft Strategic Action Plan for a Network of Marine Protected Areas in the West Philippine Seascape

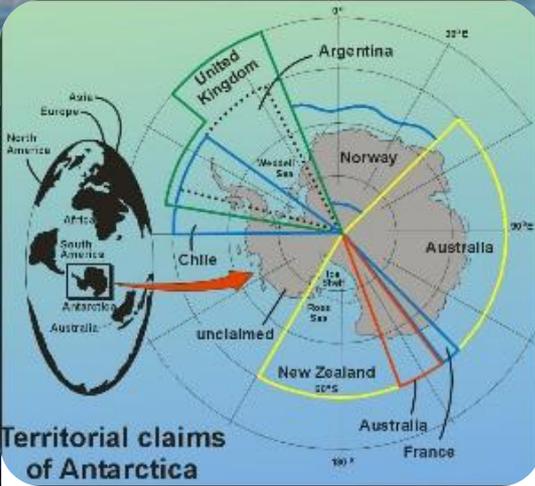
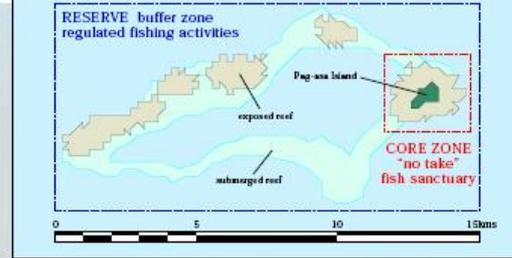
(2013-2025)



September 2013

This publication was prepared by Conservation International (CI) for the Philippines' National CI Coordination Committee with funding from the United States Agency for International Development's Coral Triangle Support Partnership (CTSP)

ASIANS MEET THROUGH THE MEAT (E.G. MPA EFFECTIVENESS ASSESSMENT TOOL)





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Environmental cooperation in the South China Sea: Factors, actors and mechanisms

Sulan Chen*

International Waters & Chemicals, Regional Focal Point-Asia, Europe & CIS, GEF Small Grants Programme, United Nations Development Programme, 220 East 42nd Street, Room 2112, New York, NY 10017, USA

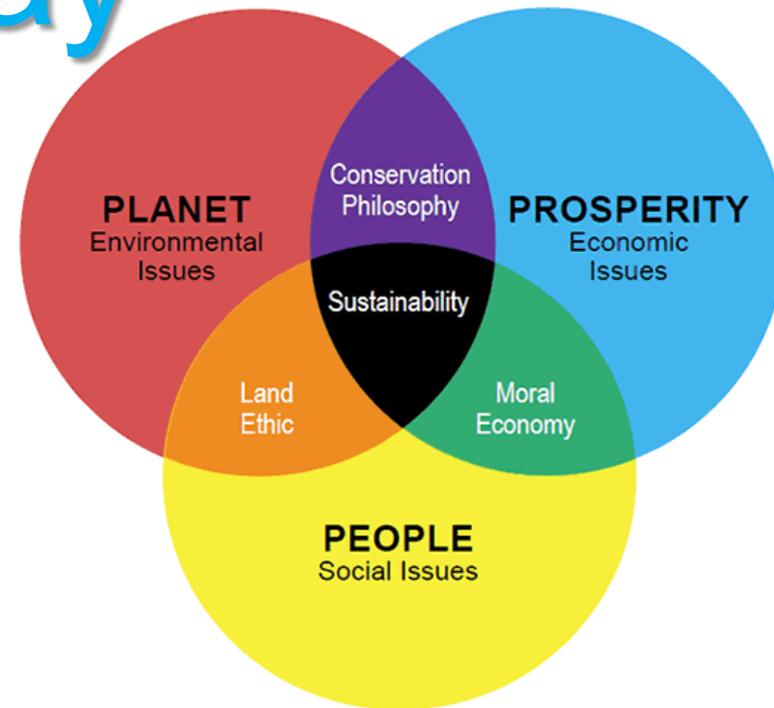
common marine environmental problems and promoting confidence building measures between ASEAN countries and China. On the other hand, by framing environmental protection as a neutral and apolitical issue, UNEP has been able to induce the neighbouring countries to the negotiating table. This has internationalized environmental protection in the South China Sea, making non-participation in these cooperative efforts potentially problematic because it could reduce the prominence of a country's territorial claims. In this sense, UNEP has been able to play an inductive role to foster cooperation. The paper

Transnational Asian MEET

[Monitoring & Evaluation

Enhancement Team] **is the way
forward.**

*We want to **sustain the multiple benefits** of the ecosystem services **under a fundamental set of parameters** (guiding principles for management) for use and protection of our common resource.*



STEWARDS

Science & Technology Enhancement for Wise Adaptation & Resiliency Development System

- Accelerate management effectiveness
- Connectivity complementarity continued
- Threat and disaster risk reduction
- Networks established and sustained
- Organizations strengthened and capacitated
- Win-win options for adaptive management



Thank You
TO ALL OUR PARTNERS



Rich biodiversity

Connectivity

Threats

Shared stocks

Maritime trade &
security

COOPERATION

- *Protection of Reef Ecosystems*
- *Scientific Research Collaboration*
- *Promotion of Science-based Knowledge*



• ...

Well-being of Future Generations



**Fish-BE with
you...**

photo by
WYLicuanan