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Management options to mitigate environmental impact of aquaculture in the Philippines

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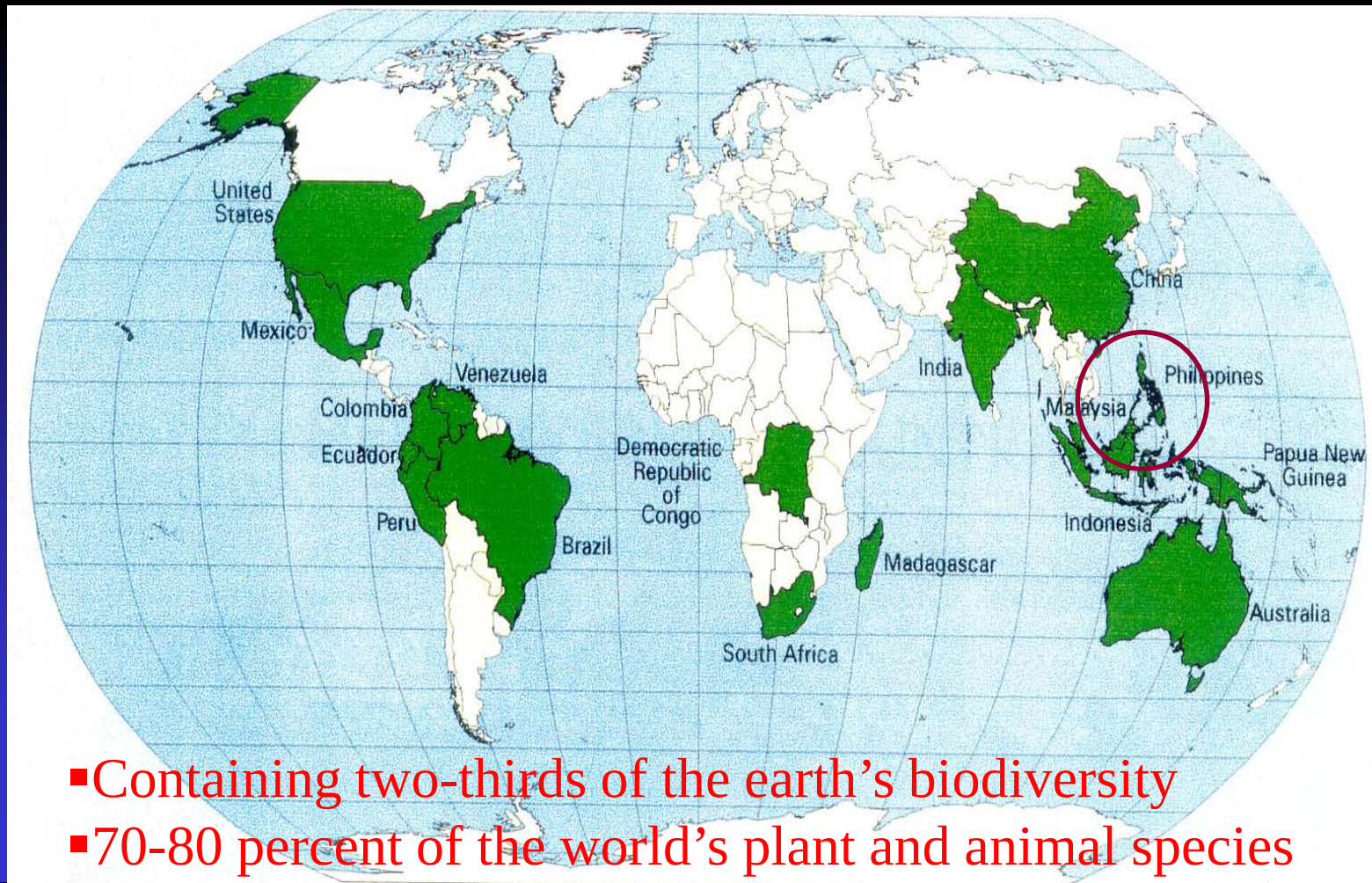
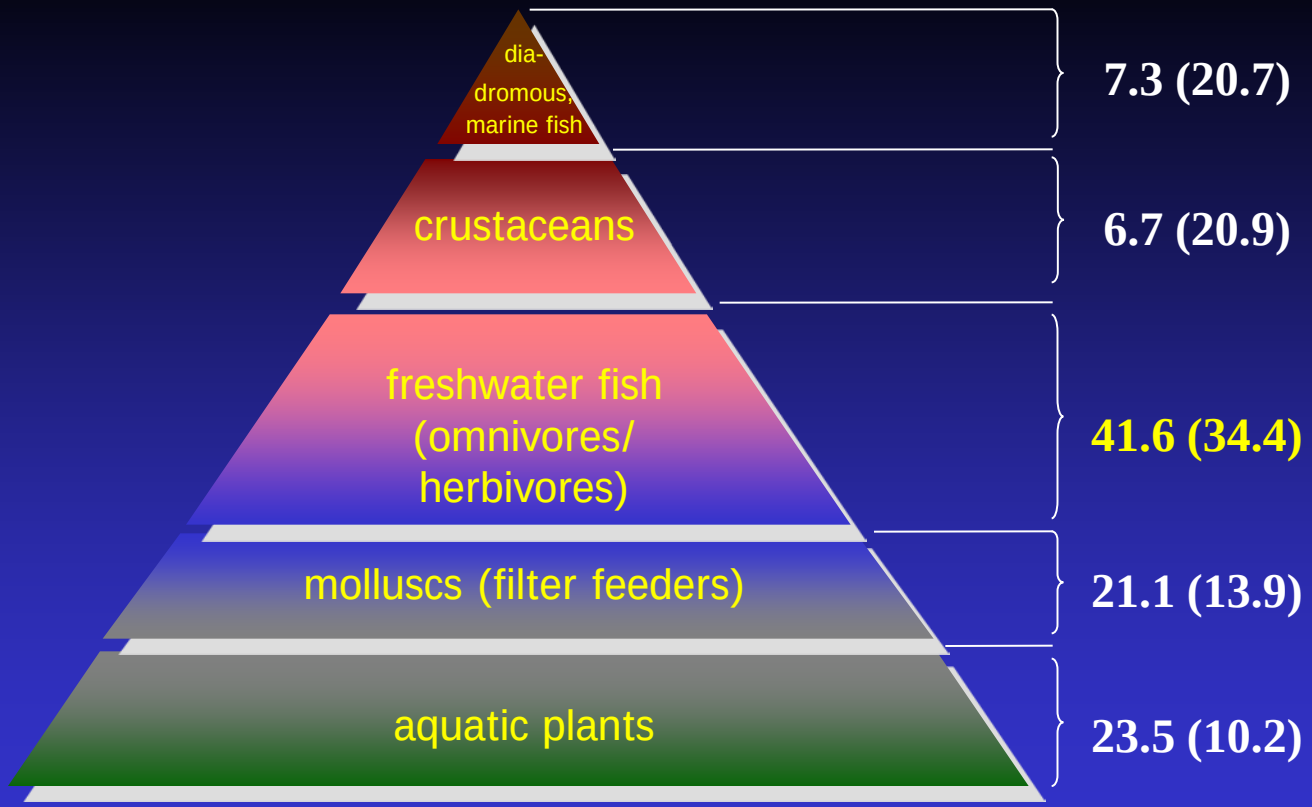
The Philippines: one of 18 megadiversity countries in the world (World Conservation Monitoring Center)

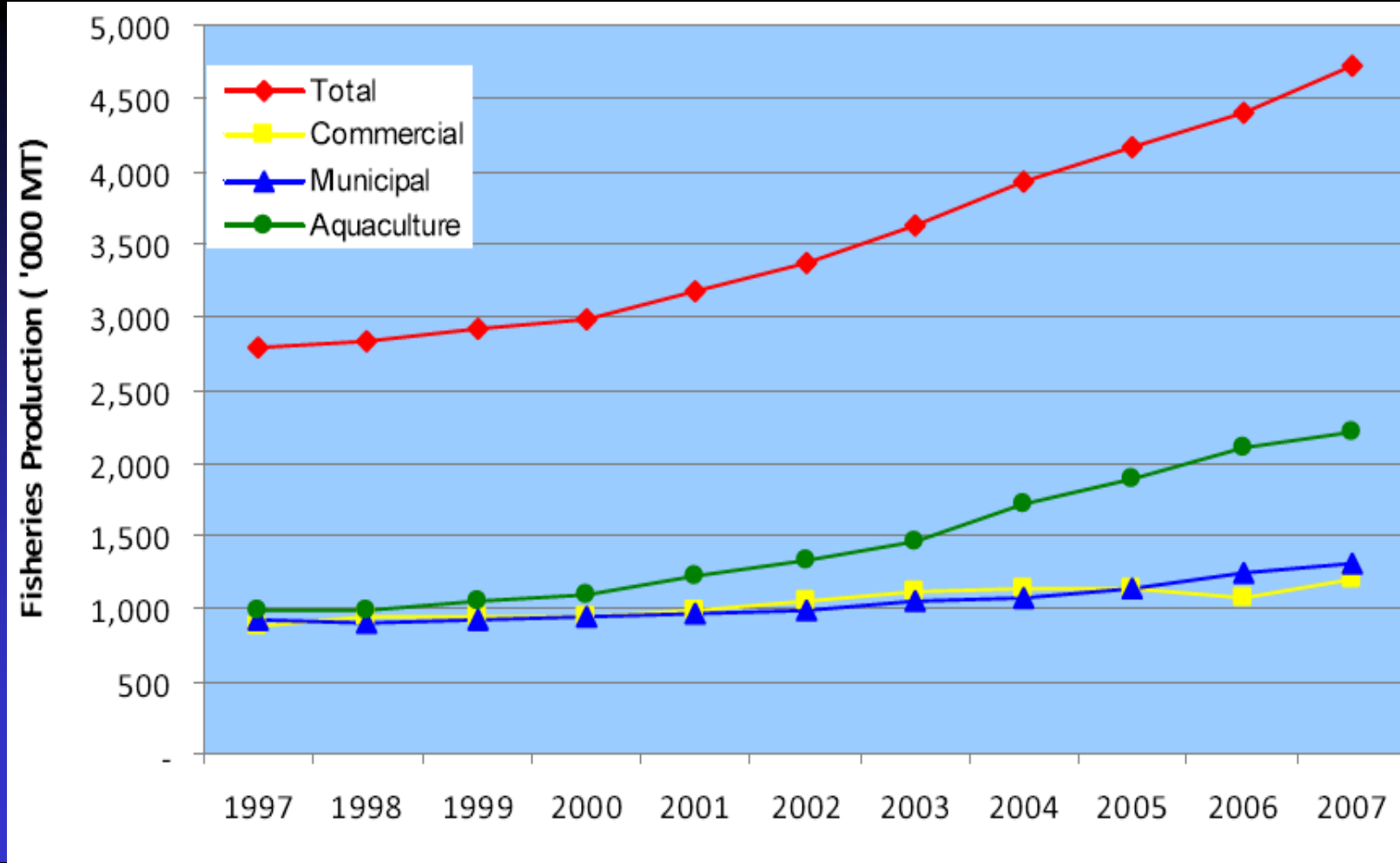


- Containing two-thirds of the earth's biodiversity
- 70-80 percent of the world's plant and animal species

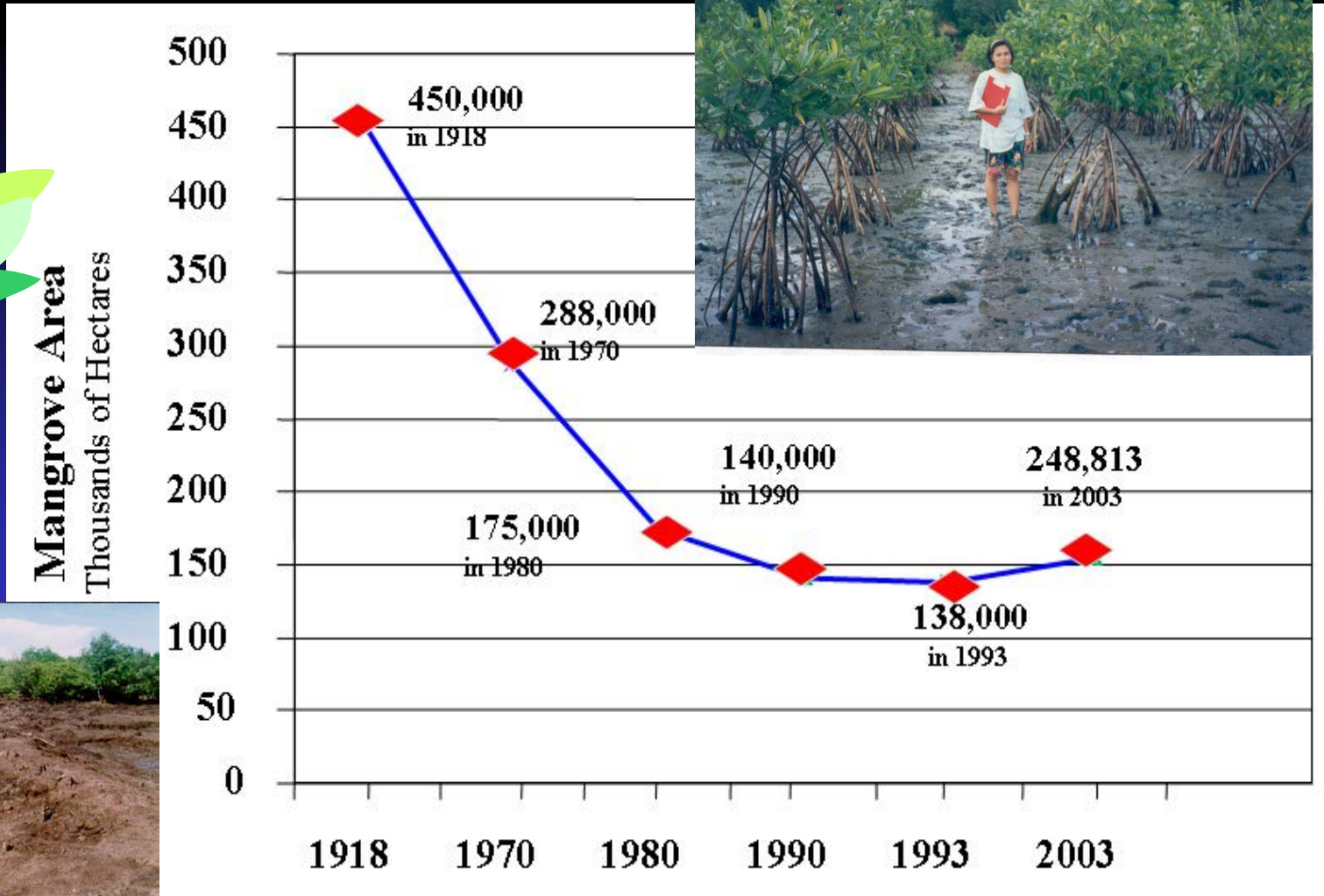
Aquaculture production in Southeast Asia (Source FAO Yearbook 2006)



Annual fisheries production trends from 1997 to 2007 (BFAR, 2008)



Forested mangrove areas has decreased greatly in the Philippines (NAMRIA, 2003)



Policies and legislations

National Integrated Protected Areas System Act of 1992 (Republic Act No. 7586).
An Act providing for the establishment and management, of National Integrated Protected Areas System

Agriculture and Fisheries Modernization Act (No. 8435).
An Act prescribing urgent related measures to modernize the agriculture and fisheries sectors

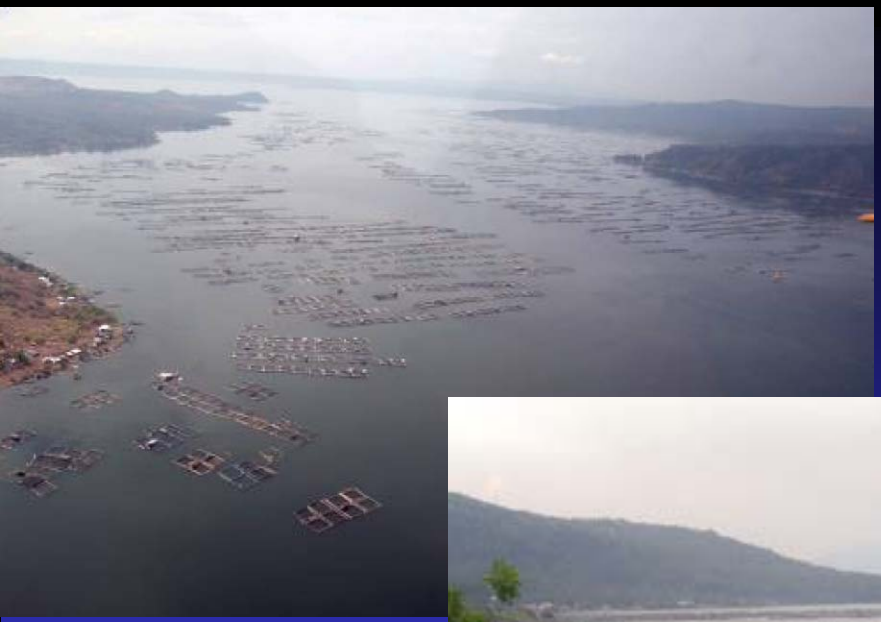
Philippine Fisheries Code of 1998 (Republic Act No. 8550).
An Act providing for the development, management, and conservation of fisheries and aquatic resources, integrating all laws pertinent thereto, and for other purposes

Environmental impacts of aquaculture (Primavera, 2009)

1) Habitat (mangroves) loss/modification (mangrove clearing; establishment of pens and cages above seagrass beds and coral reefs)
2) Introduction of exotic species and unintended entry of pathogens
3) Spread of pests and diseases
4) Salinization of soil and water
5) Dependence on fishmeal
6) Misuse of antibiotics and chemicals
7) Loss of bycatch of wild fry/broodstock
8) Pollution/eutrophication of receiving waters

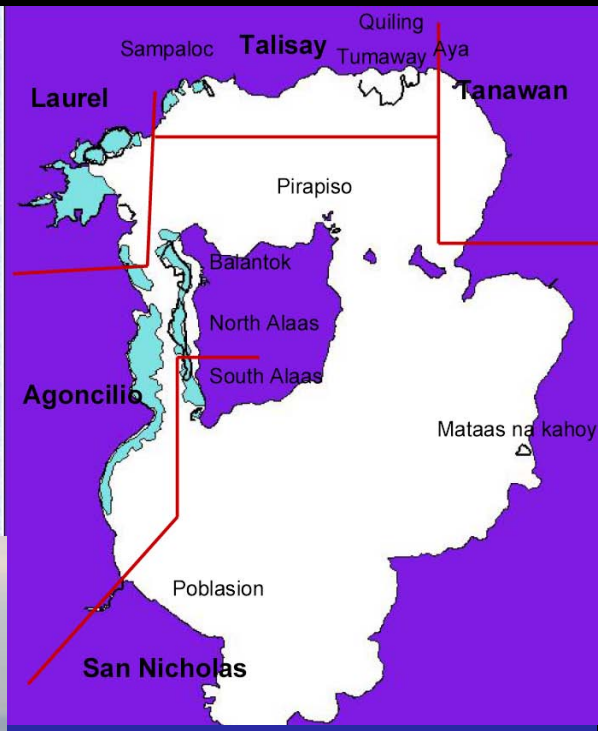
South China Sea
Philippine Sea
Dagupan
Bolinao
MANILA
Taal Lake

Indiscriminate installation and operation of fish cages in Taal Lake



Freshwater
Taal Lake

Berinayam
Leviste
Balakilong
Gulod
Buso buso
Banaga
Bili binwang
Manalao
Berinayam
Subic Ilaya



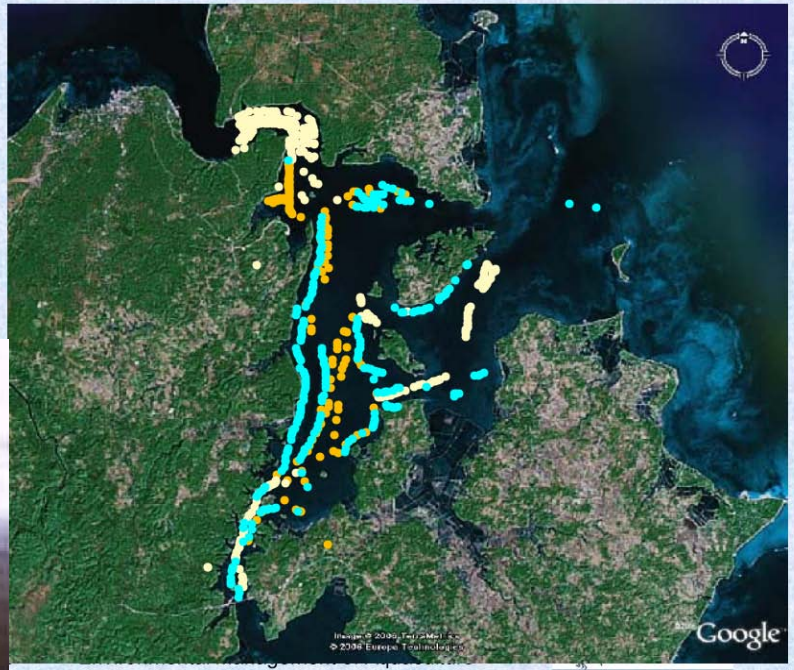
Inshore bays in Bolinao and Anda

Marine Bolinao

White – cages

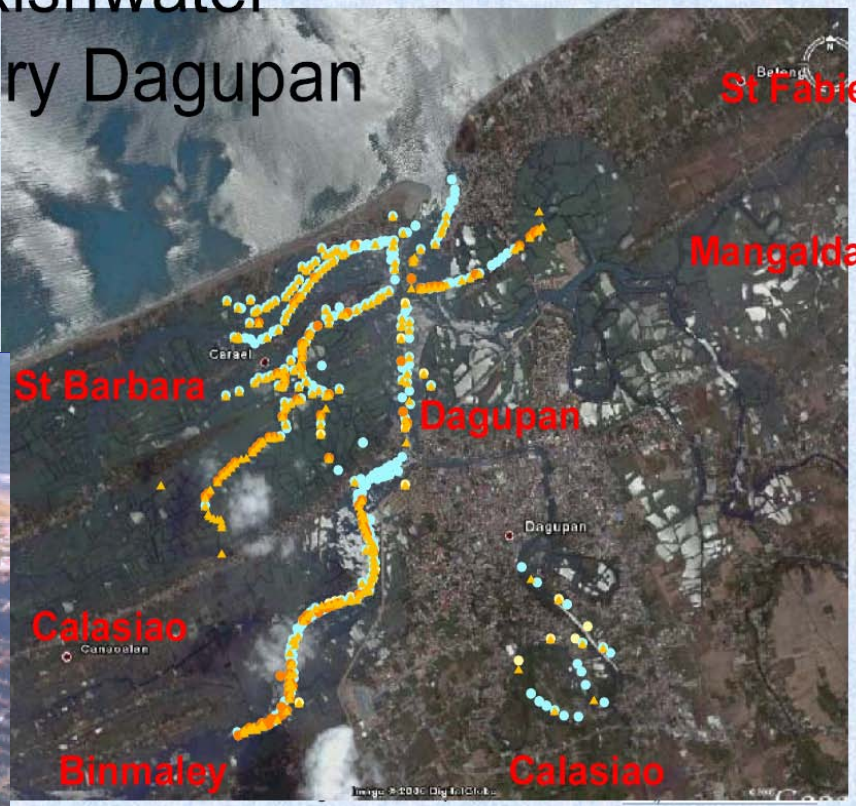
Blue – pens

Orange - mussels



Estuary and river systems in Dagupan

Brackishwater estuary Dagupan



Ecosystem based approach to aquaculture management

The ecosystem approach is a strategy for the integrated approach of management of land, water and living resources.

Objectives

conservation

Fair and equitable Sharing of benefits & use of nat. res.

Sustainable use

Goals

- Maintain a healthy and sustainability ecosystem
- Provide profitable and sustainable livelihoods
- Production within safe carrying capacity

Management model for Taal Lake

Management Model: Taal Lake as NIPAS Area

Research Development and Extension
Problem-based, Site-specific and Balanced Fish Production for Food Security;
And Conservation for Resource Sustainability

Integrated and Holistic

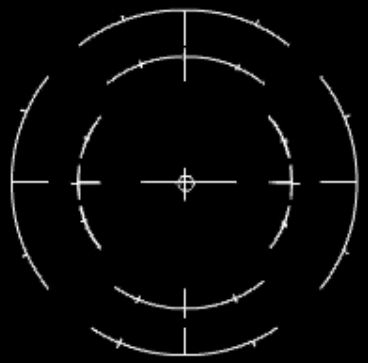
PAMB-led, DENR, LGU (FARMC), Private Sector, and other stakeholders

Multi-disciplinary and multisectoral

Taal Volcano Protected Landscape (TVPL) Management Plan

Components: water quality and health of the lake; Aquatic living natural resources, Terrestrial watershed components, Recreational and cultural resources, Disaster preparedness and management, Population, Socio-economics, Research program and knowledge center

Sustainable Management of Taal Lake



Considerations for ecosystem based approach to aquaculture management

Scientific Support

- Estimate carrying capacity of the ecosystem for aquaculture based on science
- Regular monitoring of impacts; etc

Mgt. Plan formulation

- Develop an integrated plan development that takes aquaculture into consideration
- Develop a frame work of planning and management at all levels of the community
- zoning of areas for fisheries and aquaculture, including protected areas

authorized fishing and aquaculture activities within carrying capacity

Thank You

Thank you