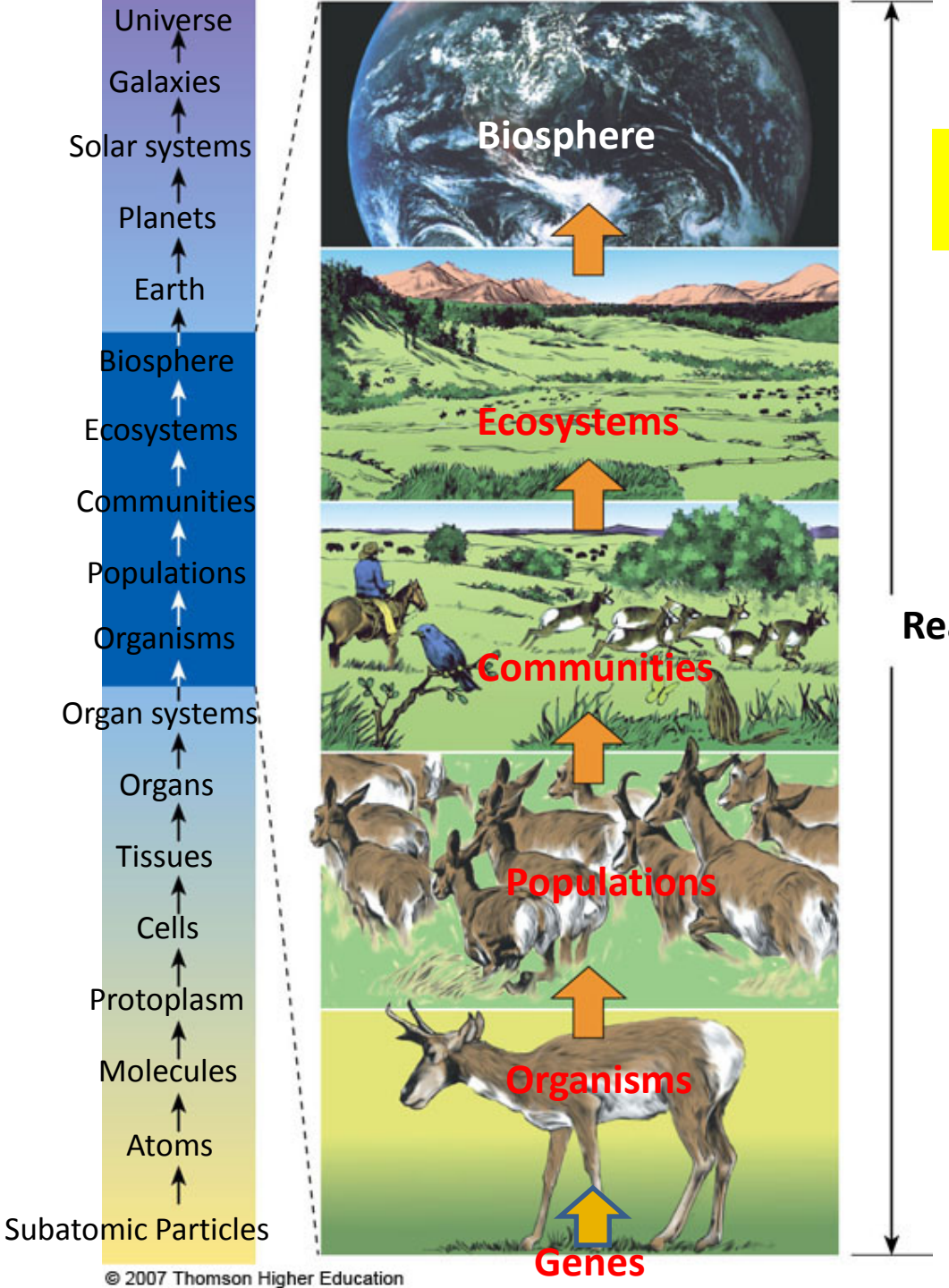
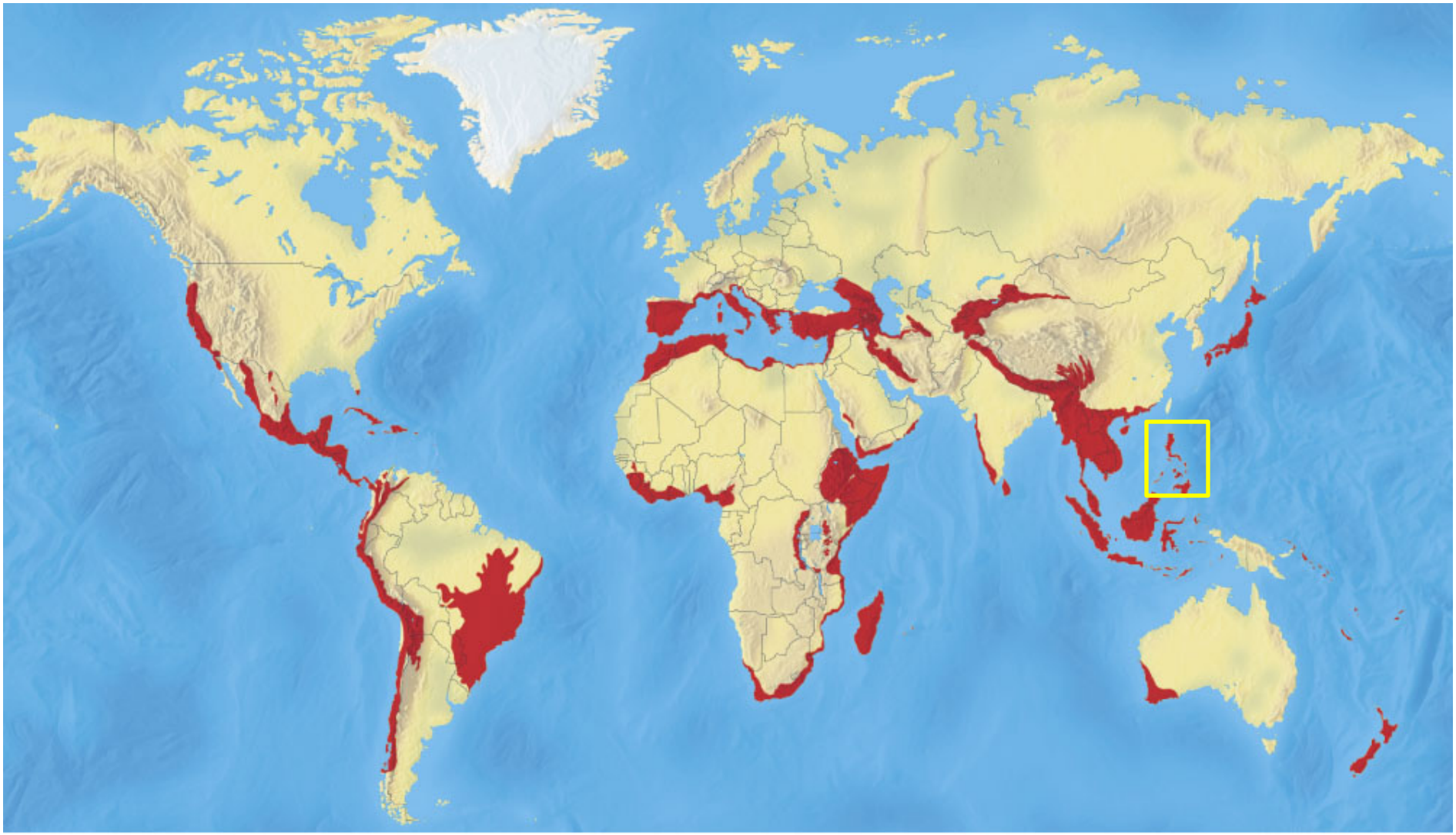
Environmental Science Research Agenda

Biosphere: Biodiversity, Climate and the Environment



BIOSPHERE IS OUR NATURAL CAPITAL

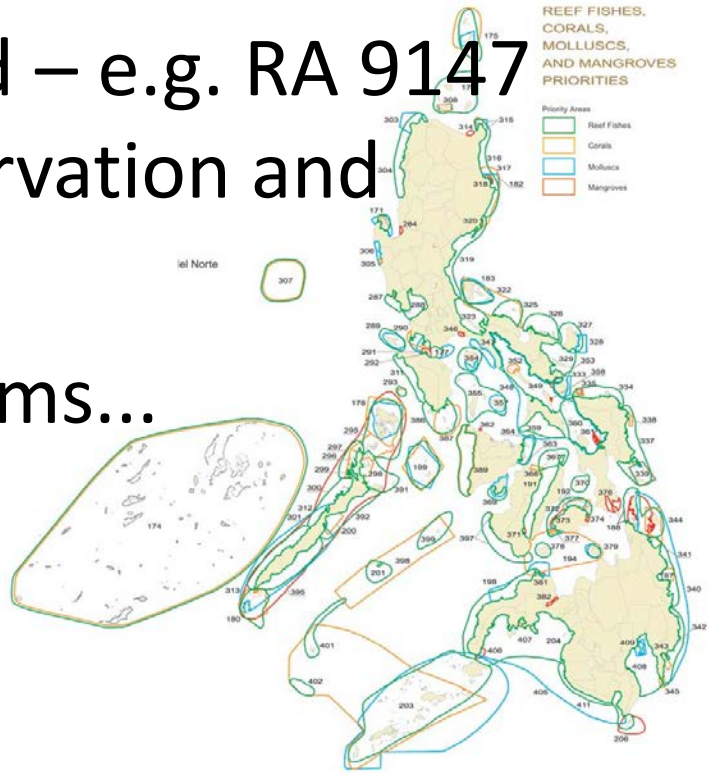
Realms of ecology & biology



- PHL is both a megadiversity and a biodiversity hotspot country
  (attributed to its unique geological history, i.e. archipelago of 7,100 islands and tropical climate resulting to extremely high species richness and multiple centers of endemism)

Important initiatives in the last 20 yrs

- Conservation priority areas identified (Ong et al. 2002)
- Establishment of large transboundary MPA – the Coral Triangle
- Relevant Laws institutionalized – e.g. RA 9147 (The Philippine Wildlife Conservation and Protection Act of 2001)
- Extensive reforestation programs...



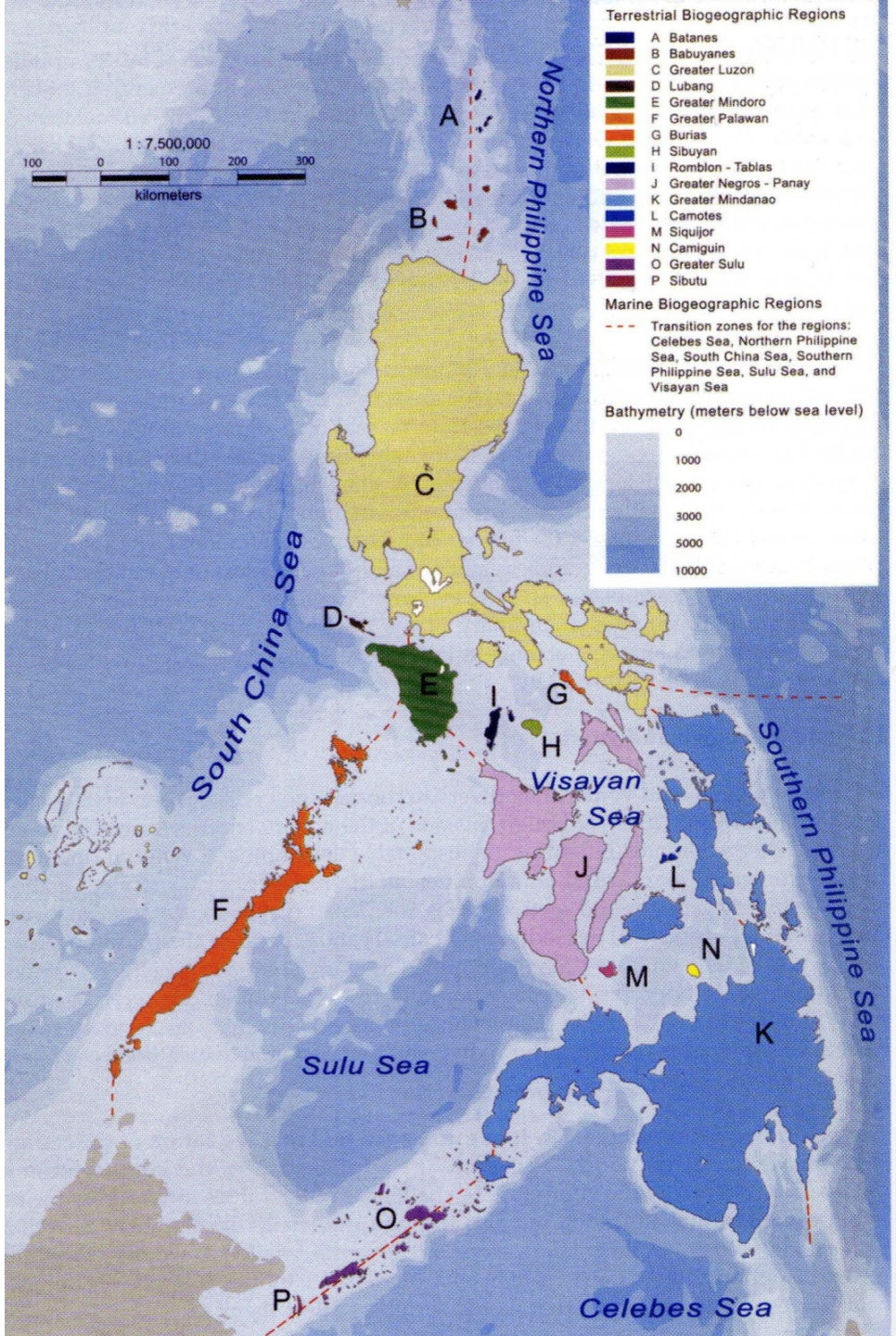
However, DESPITE ALL OF THESE....

We still **struggle** between meeting **development needs** and **conservation goals**...

Samples of what we already know

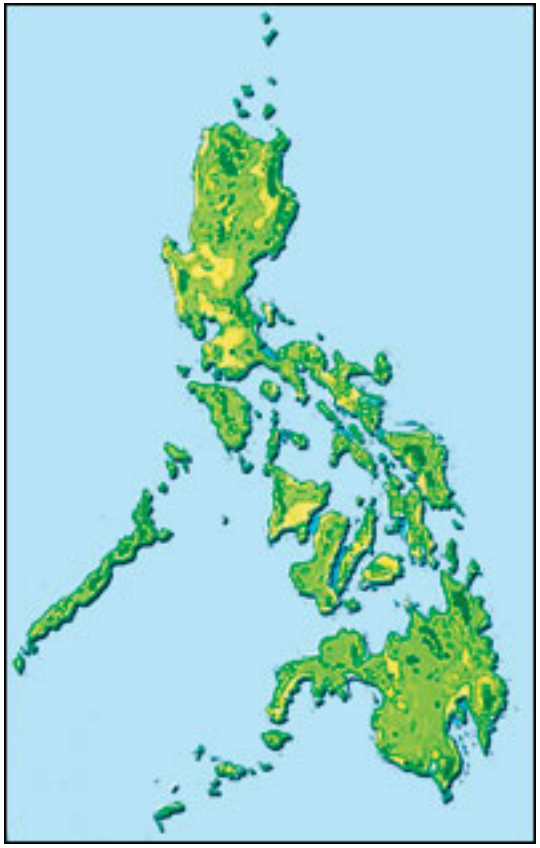
Terrestrial and Marine Biogeographic Regions

Adapted from "Philippine Biodiversity Conservation Priorities: A Second Iteration of the National Biodiversity Strategy and Action Plan" by Ong, Afuang and Rosell-Ambal (eds) (2002).



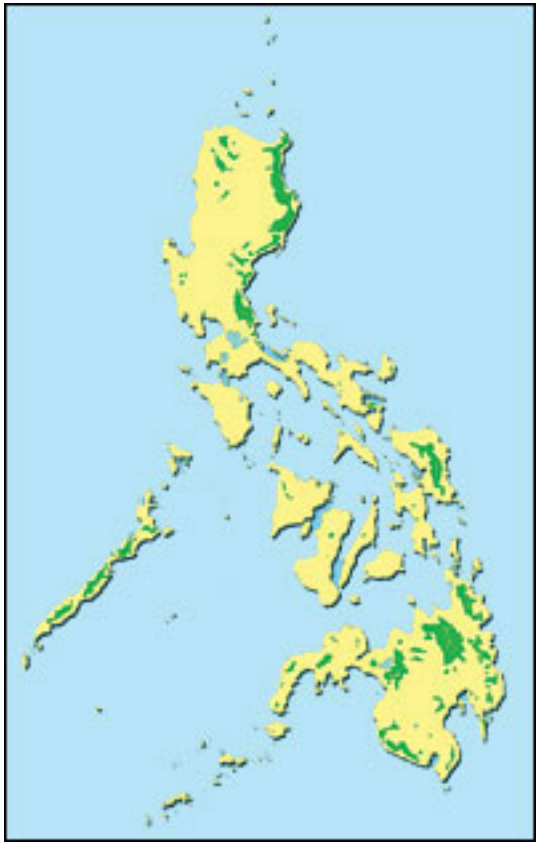
Forest Cover: Philippines

1900 (70%)



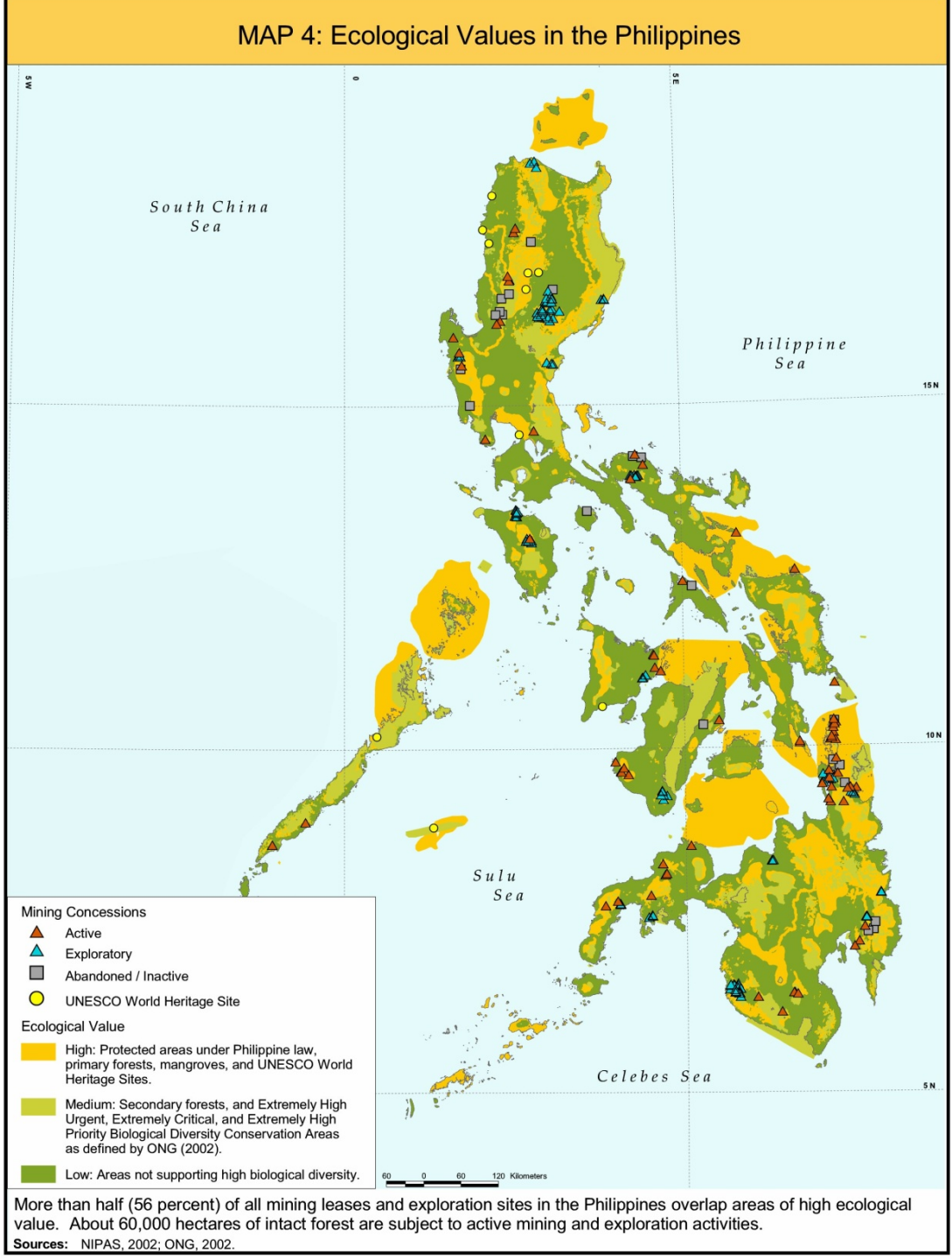
1988 (23%)

2010 (6%)

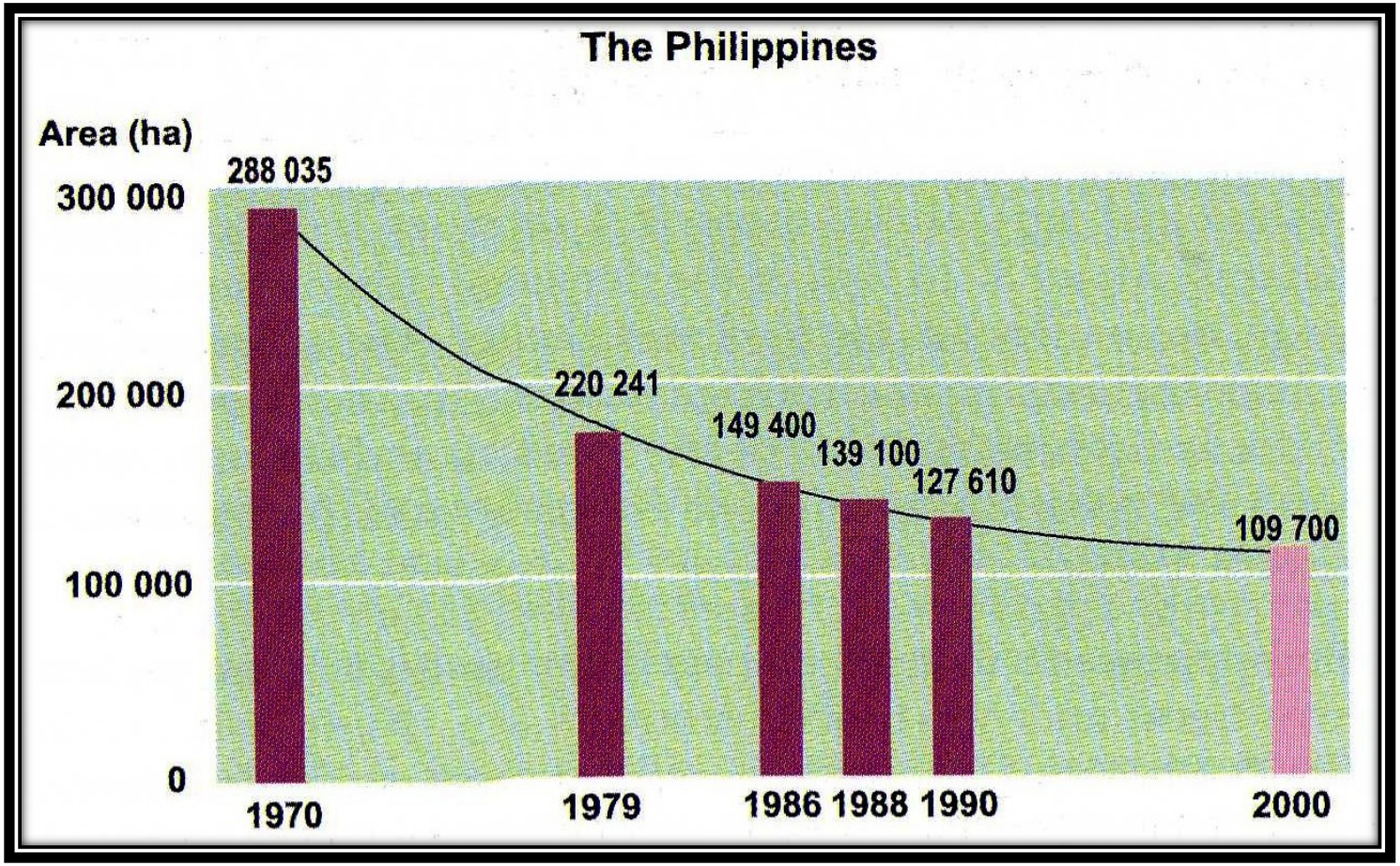


Source: Haribon

Philippines:
Ecologically Valuable Areas and Mining (after Ong et al. 2002, NIPAS 2002)



Declining mangrove area (in ha) in the Philippines, from 1970 to 2000



Adapted from “Philippine Biodiversity: Principles and practice” (Catibog-Sinha and Heaney, 2006)

Major Problem: Biodiversity loss

MAJOR ISSUES

- How to protect the remaining biodiversity?

  HABITAT LOSS → Fragmentation → Extinction → Genetic loss

  – Forests (terrestrial) ⇨ reforestation vs afforestation; exotics vs endemics; aqua-silviculture (mangroves)

  – Coastal & riverine areas (aquatic)(⇧ inhabitants & invasive spp)

- Mining in critical areas
- Reckless land conversion (CLUP?); logging → flooding
- Mentoring and capacity building (taxonomists, ecologists)
- Paucity of research data re PHL biodiversity

Priorities for Biosphere Research

- Provide evidence via research showing effectiveness or ineffectiveness of conservation/protection & management measures
- Establish database on Genes-to-Ecosystems for monitoring (e.g. endangered, threatened, and vulnerable)
- Index of irreplaceability (not just Indices of Diversity, for ‘Go’ or ‘No-Go’ Zones)

Priorities for Biosphere Research

- Evaluation research regarding land cover and use conversion and biodiversity loss
- Acquire high resolution images to develop better forest classification maps (species-community assemblage type?)
- Generate updated, integrated and comprehensive (GIS) layers overlaying bio-geographic zones, priority conservation areas, and climate change vulnerability maps