Conservation Education

-Summary of all researches by CUs under Environmental Education

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INTRODUCTION

- Conservation involves people and renewable resources, the former use the latter appropriately such that streams of environmental services are sustained inter-generationally.
- Only if human population is limited within carrying capacity while renewable resources remains healthy in spite of use can one say there is meaningful conservation.

Renewable resources

- All natural ecosystems
  - Terrestrial
    - Mangrove forest, beach forest, dipterocarp forest, limestone or molave forest, pine forest, oak-montane forest, mossy forest, ultramafic forest, swamp forest and savanna/brushlands.
  - Aquatic
    - Stream, river, lake, estuary, lagoon, seagrass bed, coral reef and pelagic open sea.

Natural ecosystem

- Land or aquatic renewable resources where member living things are products of both evolution and coevolution, hence possess unique biodiversity.
- Biodiversity is the attribute of an area in terms of its native species, habitats and gene pools.

Tragedy of commons

- People goaded only to feed selves and family convert natural forests into farms, but since there are too many of them, therefore the collective impact of forest conversion leads to deforestation.
- Similar concept is the tyranny of the many which leads to anarchy or chaos.

Exploitation of resources

- Big-businesses are involved in large scale logging and mining, the motive of which to realize profits even if the intervention destroys the environment.
- Here, loggers and miners commit environmental destruction with malicious intent as opposed to the honest mistake of the commons.
- Both malicious intent and honest mistake diametrically deviate from what conservation would like to achieve.
- Conservation realizes harmonic coexistence between man and nature, while exploitation leads to ecological anarchy and chaos.

What is education?

- Education conjures learning and the target of education is the learner(s)
- It involves the presence of a set of information that is to be transferred to the learner through appropriate delivery systems which thereafter affects a change in behaviour to the learner.
- One who not only internalizes information through abstract reasoning and analysis but also applies them for the better end is a manifestation of learning

What is conservation education?

- Elements included in the set of information for dissemination are:
  - Natural ecosystems as common good for all stakeholders
  - Status of natural ecosystems and extension of basic environmental sciences to people
  - Environmental services that natural ecosystems provide to society
  - Coexistence with the country's biodiversity
  - Sustainable development and political ecology

OBJECTIVE

- To summarize researches submitted by CUs on the subtopic Conservation Education under Environmental Education

Natural ecosystems as common good

- Oriental way is to conserve natural ecosystems out of their intrinsic value and to regard them with reverence, awe and respect.
- On the other hand, the anthropocentric perspective justifies and rationalize the conservation of natural resources because of the environmental services they provide to people and society.

Associated researches

- UP BAGUIO and UP MINDANAO
  - How the poor access resources
  - Community-based water system
  - Environment values in public schools
- UP CEBU
  - Ecological consumerism in the city
  - Minimization of pollution to waterways
- UP MANILA
  - Procedure/Technology to detect parasitosis in city environment

Status of natural ecosystems and extension of basic environmental science to people

- Human population growth
- Population density, poverty and migration pattern
- Satellite imageries capturing
  - Urbanization
  - Agriculture
  - Forest cover and biodiversity
- Status of watersheds, floods/landslides
- Instrumental records of climate
- Past climate
- Social environment (poverty, education, health,etc.)
- People's attitudes, awareness and perceptions under a "no action" versus "with action" scenarios

Related research from

- UP OPEN UNIVERSITY
  - Experiences in teaching biodiversity conservation in distance education
  - Selling A Fish Story: How Fishbone can Promote Effective Learning of Online Courses in Coastal Resources Management
- UP EDUC
  - Integrating Sustainable Development in Teaching Science and Social Studies (EDUC).

Effective conservation education leads to Ecol. Gov.

- Backed by empirical data from local sites
- Paves to an enabling environment
- Informed-decisions address local issues
- People empowerment and political will
- Motivates participatory land and coastal use zoning
- Map showing boundaries dividing land for man and land for nature – material basis for people's ecological covenant/contract
- LGU environmental law w population mgt
- Monitoring environmental compliance
- Feedback for environmental fine-tune

Related researches
UP Diliman

- "Strengthening Climate Change in Planning Education,"
- "Proposal for a Results-Based Monitoring and Evaluation Framework , Performance and Success of Education for Sustainable Development,"
- "Theory of Change from Learning to Practice Results-Oriented Link Between Environmentally Responsible Practices, 2011."
- A seminar-workshop on education for sustainable development was done at UP Diliman.

Related activity/action research

- UP Diliman "PEMSEA" Project
  - Training Manual on Coastal Land and Sea Use Zoning Program for Environmental Management of the Seas of East Asia (PEMSEA), Dec. 2010

Environmental services

- Tangible benefits
  - Food and Water
  - Shelter
  - Fiber/Clothing
  - Medicine
- Intangible benefits
  - Aesthetic values
  - Recreation
  - Ecological tourism

Related research

- UP VISAYAS
  - Coastal resources management and ecological tourism
- UP DILIMAN
  - Foraging to Farming Transitions at the Niah Caves, Sarawak
  - Forest carbon storage, assessment of hydrologic carrying capacity of island watersheds and productivity of marine coral reef ecosystems

Coexistence with biodiversity

- Knowledge of biogeography unravels man's proper coexistence with various levels of biodiversity – i.e. alpha (local), beta (landscape), gamma (regional) diversities
- Biogeographic zones
- Origin of species
- Endemic biota, habitats, gene pools

Related research biodiversity UP Diliman CS-NIGS

- Eocene-Oligocene emergence of the Philippine archipelago from ocean depths-mangrove/beach forests
  - Linking active margin-tectonics and overriding plate dynamics, a look at the geochemical nature of the Central Philippines
  - Early Cretaceous seawater PGE and Os isotope profiles and their environmental implications comparison between Pacific and Tethyan Domain

Continuation of related research biodiversity

- Calcareous nannofossil biostratigraphy of selected sedimentary formations in the internal Philippine seas
- Calcareous nannoplankton in Sulu
- Structural interpretations of 3D seismic data using the Kingdom Site Package
- Petrography of Bulacan
- Tracing the eastern Philippine Arc revolution from marine and terrestrial volcanic rocks and ash records

Birth of Philippine Arc

- Tectonic raft from Australia
  - Accounts southern hemisphere conifers – Araucariaceae, Podocarpaceae
  - Accounts myrtoids – *Eucalyptus*, *Tristania*, *Xanthosthemon*, etc.
- Tectonic raft from Continental Southeast Asia
  - Accounts northern hemisphere conifers – two *Pinus* (Pine) and one *Taxus* (Yew)
  - Dipterocarpaceae, *Tectona*, *Bubalus* and old endemic rodent fauna (e.g. *Phleomys*, *Crateromys*, *Apomys*, *Bullimus*, etc).
  - Possible explanation of Philippine *Stegodon* and *Rhinoceros* fossils.

Related research - South China Sea origins and rafting

- Geological context and natural prolongation part of submission on the extension of the continental shelf of the Reed Bank and Kalayaan Island
- Structural and Tectonic Synthesis of the South China Sea and Outlying Area
- Establishing the History of the Philippine Island Arc System - clues from the rocks of the Zambales-Pangasinan Region
- *Pinus merkusii* and *P. kesiya* together in Zambales Range they are also together in Indochina. *P. kesiya* only in Cordillera, only in Mindoro and Palawan. *P. merkusii*

Sustainable development and political ecology

- 100 years of conservation education program
- But, P (natural ecosystems) rapidly declined during the last 50 years, while Q (man-made ecosystems) inversely increased.
- A down-to-earth political ecology intervention has to come in that will couple P and Q intergenerationally in time and space.

UPLB publications relevant to Conservation Education (titles)

- **The position of humans in nature and the quest for reconciling Man and Nature (2011)**
- **Bioinvasion: concepts, criteria and rating system for determining the invasiveness of alien plant species. (2011)**
- **Plant bioinvasions in the northeastern slope of Mount Makiling, Luzon, Philippines (1998-2009). (2011)**
- **Tropical street trees and climate uncertainty in Southeast Asia. (2011)**
- **Optimizing landscape value for man and nature: a case study of land-suitability mapping to conserve biodiversity in Lawaan, Eastern Samar, Philippines (2009)**

UPLB Publications continue

- **Principal component analysis in detecting site quality, habitats and bioinvasiveness (2008)**
- **Environmental zoning for biodiversity conservation in Lawaan, Eastern Samar, Philippines. (2008)**
- **Biogeography and tropical terrestrial ecosystem health. (2008)**
- **Organic matter turn-over of *Rhizophora* species litterfall at Moro Gulf, Western Mindanao, Philippines. (2008)**
- **Contamination of plant communities by alien plants in lowland Mount Makiling, Laguna, Philippines (2007)**

UPLB Research

- **Collaborative studies on tropical Asian dendrochronology – addressing climatology and forest ecology** (2007-2010) Asia-Pacific Network; UPLB as principal investigator, collaborating investigators from Sri Lanka, India, Thailand, Malaysia and Columbia University, U.S.A.

THANK YOU