

Environmental Principles

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Outline

1. Sharing: Environmental problems and challenges in your area/Philippines
2. Seven Environmental Principles
3. Whole School Approach:
 - Miriam College
 - Your schools



Environmental education

Education

- ▶ *about* the environment
- ▶ *in* the environment
- ▶ *for* the environment



Tbilisi Declaration (1977)

The *goals* of environmental education are:

- ▶ to foster clear awareness of, and concern about, economic, social, political, and ecological interdependence in urban and rural areas;
- ▶ to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment;
- ▶ to create new patterns of behavior of individuals, groups, and society as a whole towards the environment.

Environmental education *objectives*:



UN Decade of Education for Sustainable Development (2005-2014)

The founding value of ESD is respect: respect for others, respect in the present and for future generations, respect for the planet and what it provides to us (resources, fauna and flora). ESD wants to challenge us all to adopt new behaviours and practices to secure our future.

DESD promotes:

- ▶ Interdisciplinary and holistic learning
 - ▶ Values-based learning
 - ▶ Critical thinking rather than memorizing
 - ▶ Multi-method approaches
 - ▶ Participatory decision-making
 - ▶ Locally relevant information
- 

Environmental Laws

- ▶ Ecological Solid Waste Management Act
 - ▶ Clean Air Act
 - ▶ Clean Water Act
 - ▶ Convention on Biological Diversity
 - ▶ National Integrated Protected Area Systems Act
 - ▶ Climate Change Act
 - ▶ DRRM Act
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NSTP

National Service Training Program

- ▶ **Section 4. *Environmental Education and Activities as Part of National Service Training Program.*** – The CHED and the TESDA shall include environmental education and awareness programs and activities in the National Service Training Program under Republic Act No. 9163, as part of the Civic Welfare Training Service component required for all baccalaureate degree courses and vocational courses with a curriculum of at least two (2) years.
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Environmental Awareness Month

- ▶ **Section 5. *Declaration of Environmental Awareness Month.*** – Pursuant to the policy set forth in this Act, the month of November of every year shall be known as the "Environmental Awareness Month" throughout the Philippines.
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RA 9512

- ▶ **Section 6. *Interagency and Multi-sectoral Effort.*** – The DepEd, CHED, TESDA, DENR, DOST and other relevant agencies, in consultation with experts on the environment and the academe, shall lead in the implementation of public education and awareness programs on environmental protection and conservation through collaborative interagency and multi-sectoral effort at all levels.
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RA 9512

- ▶ The DENR shall have the primary responsibility of periodically **informing all agencies concerned on current environmental updates**, including identifying priority environmental education issues for national action and providing strategic advice on the environmental education activities.
 - ▶ The DepEd, CHED, TESDA, DENR, DOST, DSWD and barangay units shall ensure that **the information is disseminated to the subject students**.
 - ▶ The **DOST** is mandated to create programs that will ensure that students receive **science-based quality information** on environmental issues to encourage the development of environment-friendly solutions, devices, equipment and facilities
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RA 9512

- ▶ **Section 7. *Capacity-Building.*** – The DepEd, CHED and TESDA, in coordination with the DENR and other relevant agencies, shall undertake capacity-building programs nationwide such as trainings, seminars, workshops on environmental education, development and production of environmental education materials, and teacher-education courses and related livelihood programs.
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President Aquino's 16-Point Agenda

Environment

- ▶15. From allowing environmental blight to spoil our cities, where both the rich and the poor bear with congestion and urban decay to planning alternative, inclusive urban developments where people of varying income levels are integrated in productive, healthy and safe communities
 - ▶16. From a government obsessed with exploiting the country for immediate gains to the detriment of its environment to a government that will encourage sustainable use of resources to benefit the present and future generations
- 

Multiple solutions, conflicting points of view

- ▶ Pro GMO -----Anti GMO
- ▶ Pro-Mining -----Anti Mining
- ▶ Baloons -----No baloons



7 Environmental Principles

1. Nature knows best.
2. All forms of life are important.
3. Everything is connected to everything else.
4. Everything changes.
5. Everything goes somewhere.
6. Ours is a finite earth.
7. Nature is beautiful and we are stewards of God's creation.



Principle # 1

Nature knows best.

Ang kalikasan ang mas nakakaalam.



There exists in nature mechanisms that tend to maintain a steady state despite shifting in the components of the system.

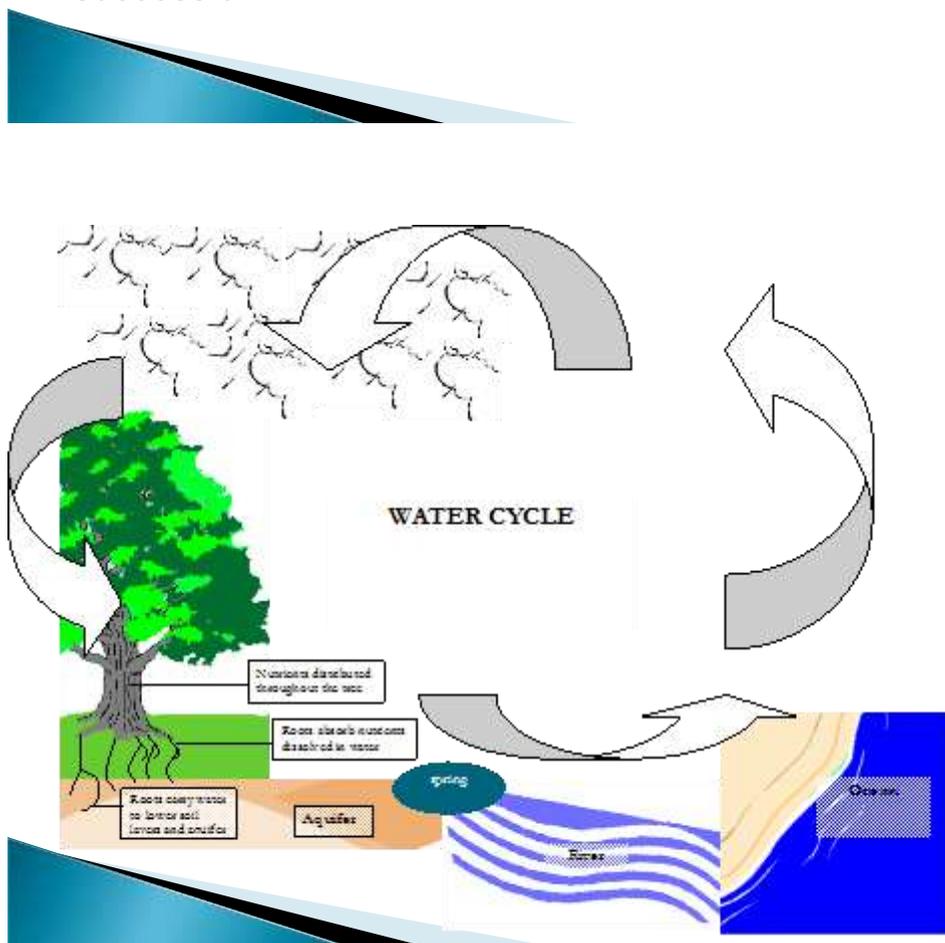
Principle of HOMEOSTASIS

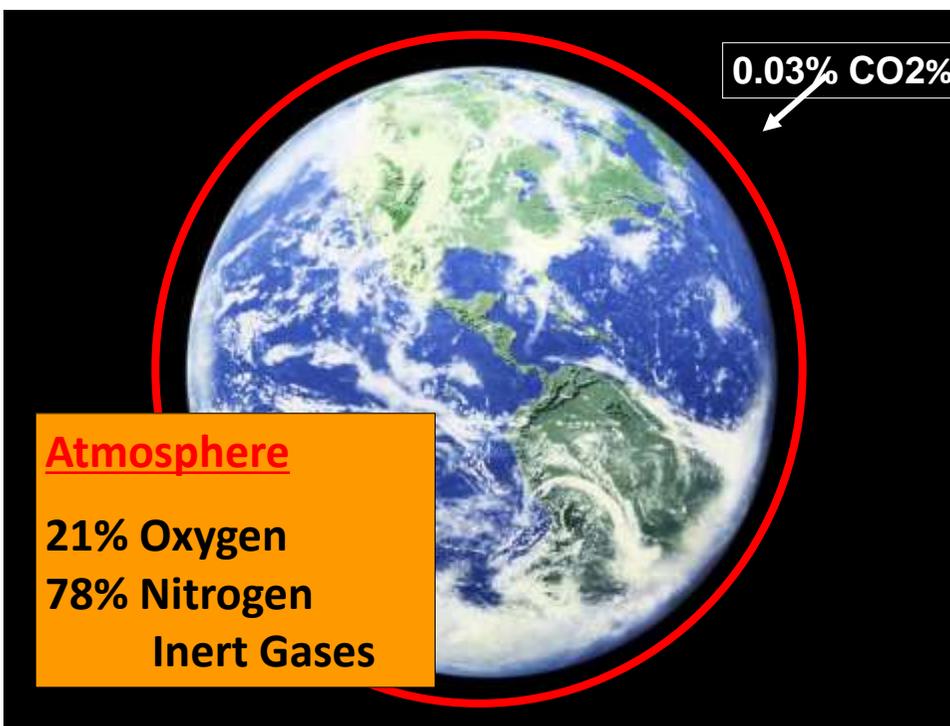
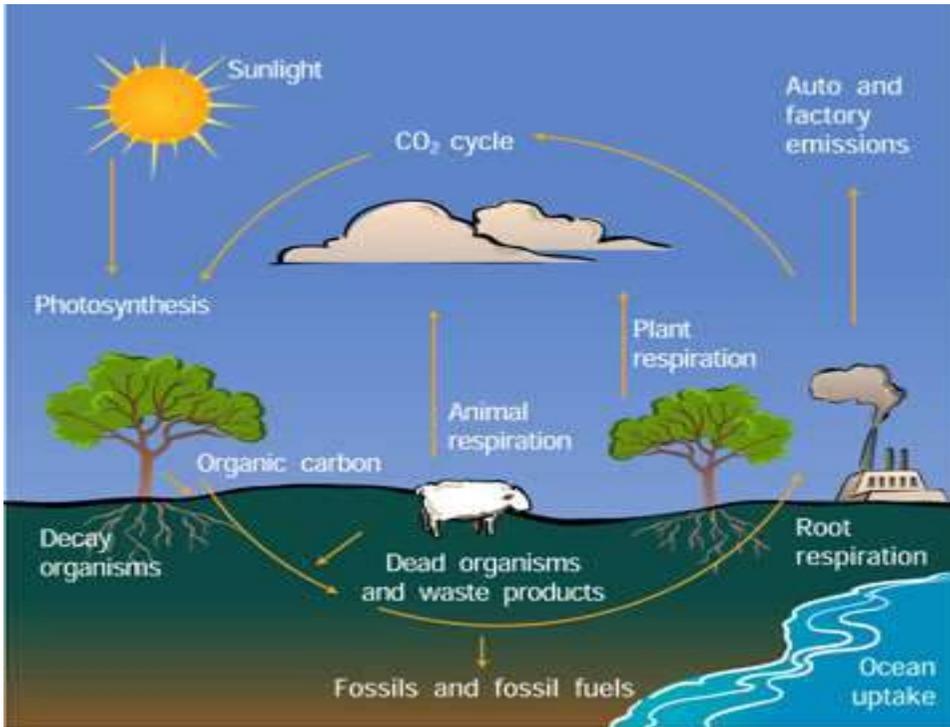
“check and balance”



HOMEOSTASIS

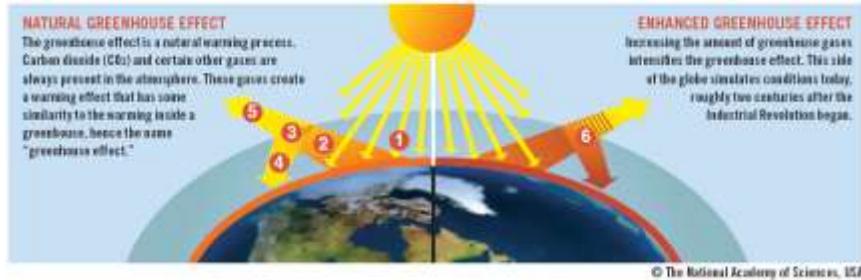
- nutrient cycling
- energy flow
- carbon cycling
- population control
- climax community
- restoration of a damaged ecosystem/ecological succession





The Earth in peril!

Enhanced Greenhouse Effect



Any disruption of the natural processes/cycles would have detrimental effects on the environment.



ECOLOGICAL BACKLASH

Typhoons naturally happen, Typhoon is a natural phenomenon – it is earth acting up, it is part of the natural circulation of the earth. Haiyan was beyond a normal typhoon.



IPCC AR 5

- ▶ Ocean warming dominates the increase in energy stored in the climate system, accounting for more than 90% of the energy accumulated between 1971 and 2010 (*high confidence*). *It is virtually certain that the upper ocean (0–700 m) warmed from 1971 to 2010*



Climate change and warm ocean waters

“Haiyan/Yolanda passed over the usual very warm waters that allow the formation of typhoons, but, also, over water that was warm at depth so as the top of the sea is churned up by the growing storm, there would be extra heat to feed the storm.”

Greg Laden, blog posted Nov 11, 2013



Floods

(Work with nature, not against it!)

Ecological principle: Water seeks its own level

▶ Floods:

Option 1: Get out of the harm's way!
Permanently – (No build zones, new townships)

Temporarily – evacuation zones

Option 2: Infrastructure that adapts to floods:
House on stilts, boat house, stronger foundations

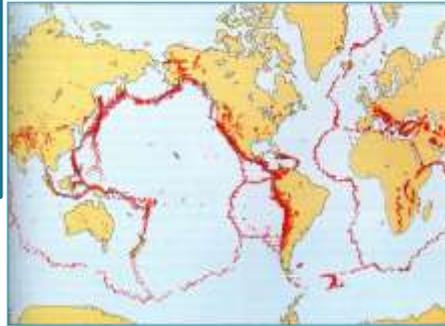


IPCC # 5..the cooling immediately following large volcanic eruptions.

Is there a link between volcanic eruptions and climate change?

Philippines is in the ring of fire!

Global Earthquake Distribution



Towards food sustainability: Which path?

1. **Genetically modified organism (GMO) or genetically engineered organism (GEO)** is an organism whose genetic material has been altered using genetic engineering techniques. With recombinant DNA technology, DNA molecules from different sources are combined *in vitro* into one molecule to create a new gene.

Example: Bt Corn, Bt Talong, Golden Rice

2. **Organic agriculture**
-composting

Genetic modification and engineering:

- ▶ Constrict farmer seed and variety privileges.
- ▶ Confer private ownership of otherwise commonly held life forms.
- ▶ Create unanticipated environmental effects.
- ▶ Threaten human health.
- ▶ Suppress the development and integrity of less intensive, more sustainable farming systems.
- ▶ Damage local farming economies

(Environmental Commons, 2008)



Foods containing genetically engineered components

- ▶ Nestle Cerelac
- ▶ Ensure
- ▶ Kwello's Chocos Chez
- ▶ Bonus Protina Hotdogs
- ▶ Purefoods Beefies Hotdogs
- ▶ CDO Corned Beef
- ▶ Argentina Beef Loaf



FORCED CHOICE

- ▶ Fresh bananas
- ▶ water
- ▶ tricycle
- ▶ disposable plate
- ▶ baby formula
- ▶ Perla soap
- ▶ plastic bag
- ▶ boiled bananas
- ▶ softdrinks
- ▶ walking
- ▶ Chinaware
- ▶ breast milk
- ▶ Tide
- ▶ bayong

GMO free cafeteria



Rally against GMOs



Nature has its own products and processes.

We must stay close to the natural
products and processes to avoid ecological
backlash

✓ Environmental Studies Institute:

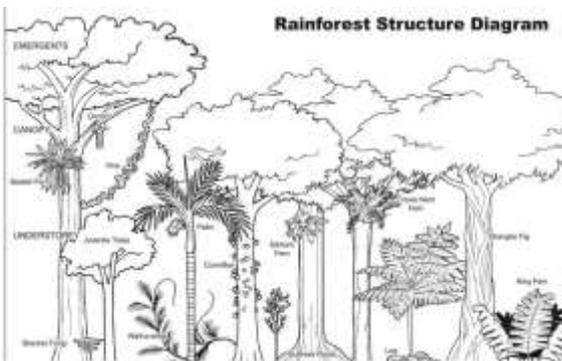
Atrium garden, big windows,
recycled wood, natural light



Northern Sierra Madre Natural Park



The rainforest and greening program



Multi-layered roadside vegetation

Marabut caves



Caves save lives!

Mayor Percival Ortillo Jr. said every one of Marabut's 15,946 homes was destroyed in the typhoon, and more than 2,000 people were injured, but only 20 people are confirmed dead and eight others are missing. He said the death toll was relatively low because most people managed to take refuge in concrete buildings — the only structures standing amid a sea of wooden debris — **and five caves set high in hills.**

Nov 15, 2013 GMA Network



We cannot command Nature except by obeying her.
~Francis Bacon

Principle # 2

All forms of life are important.

Lahat ng uri ng buhay ay mahalaga.



A place under the sun...

Each organism has a role to play:

Nature's decomposer
Nature's pest control



BIOLOGICAL DIVERSITY

- **genetic diversity**
- **species diversity**
- **community diversity**

Celebrating the richness of life on Earth!



Approaches in the Determination of the Value of Biological Resources

1. Consumptive-use valuation

• *resources that are consumed directly without passing through market*

2. Productive-use valuation

• *products that are commercially harvested and marketed*

3. Non-consumptive-use valuation

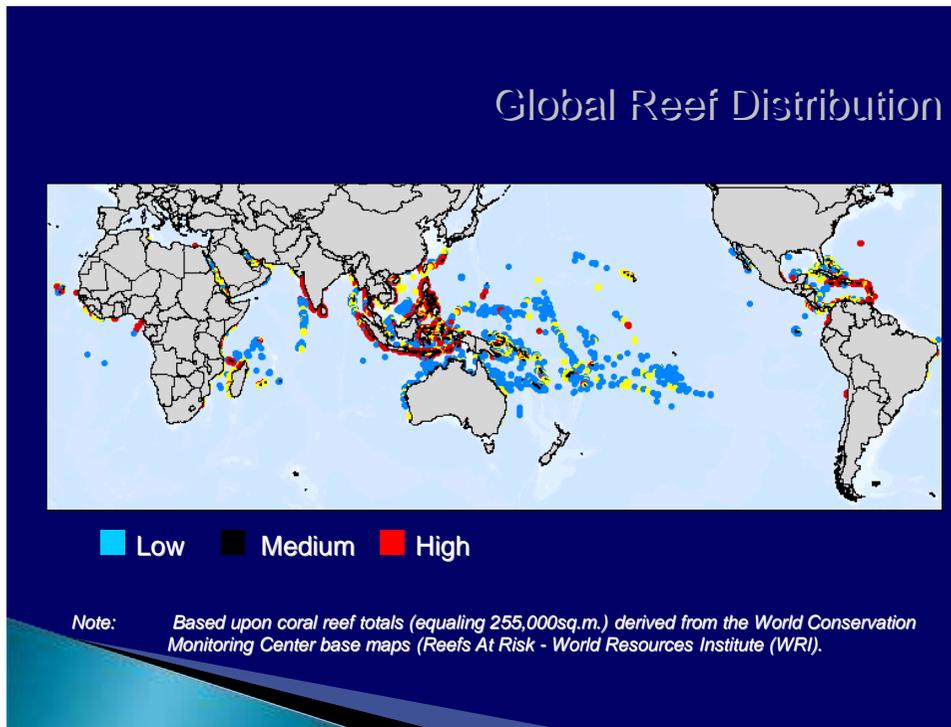
• *indirect uses of ecosystem functions e.g., watershed protection, photosynthesis, climate regulation, soil production*

About 70% of the world's species are located in the humid tropics, mostly in the rainforests that cover about 7% of the earth's surface.



H O T S P O T S

EARTH'S BIOLOGICAL RICHEST AND MOST ENDANGERED
TERRESTRIAL ECOREGIONS



International Union for the Conservation of Nature Categories and Criteria

Critically Endangered (CR)- when a taxon is Critically Endangered facing an extremely high risk of extinction in the wild in the immediate future.

Endangered (EN) – when a taxon is not Critically Endangered but is facing a high risk of extinction in the wild in the near future.

Vulnerable (VU) – when a taxon is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium-term future.

2000 IUCN Red List of Threatened Animals

- ▶ **Critically Endangered:**
 - **Ilin Island Cloud Rat** (*Crateromys paulus*). (**Endemic** to the Philippines.)
 - **Mt. Isarog Striped Rat** (*Chrotomys gonzalesi*). (**Endemic** to the Philippines.)
 - **Northern Luzon Shrew Rat** (*Crunomys fallax*). (**Endemic** to the Philippines.)
 - **Philippines Tube-nosed Fruit Bat** (*Nyctimeme rabori*). (**Endemic** to the Philippines.)
 - **Negros Shrew** (*Crocidura negrina*). (**Endemic** to the Philippines.)
 - ***Tamaraw** (*Bubalus mindorensis*). (**Endemic** to the Philippines.) (Rated **Endangered** in the [1996 Red List](#).)
 - **Visayan Warty Pig** (*Sus cebifrons*). (**Endemic** to the Philippines.)



Alien and Invasive Species

- ▶ Golden Kohol
- ▶ Janitor Fish
- ▶ Squirrel



National Integrated Protected Systems Act

- ▶ National parks
- ▶ Protected areas
- ▶ Sanctuaries
- ▶ Marine protected areas

Samar Island Natural Park (SINP)

SINP was established by presidential proclamation in 2003 as the largest terrestrial PA in the Philippines. contains one of the country's largest unfragmented tracts of lowland rainforest.

Samar island is of high significance for its global biodiversity:

38 species of mammals (50% endemic)

215 species of birds (55% endemic)

51 species of reptiles (69% endemic),

26 species of amphibians (52% endemic)

over 1,000 species of plants (53% endemic)

Sustainable Livelihood: Ecotourism,
Sustainable agriculture, Fisheries



Sohoton Cave and Natural Bridge

Caves and very rugged limestone cliffs: Panhulugan Cave I, II Sohoton

Biodiveristy: rich forest vegetation, and various forms of endemic, rare and endangered animals

Rivers: Sohoton, Bugasay, and Basey

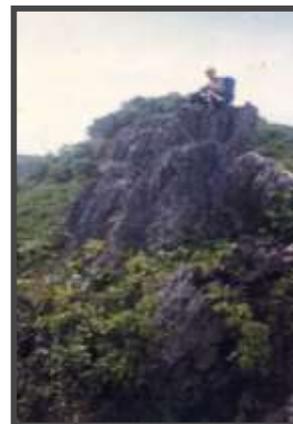
Ecotourism activities: boating trekking, spelunking, birdwatching



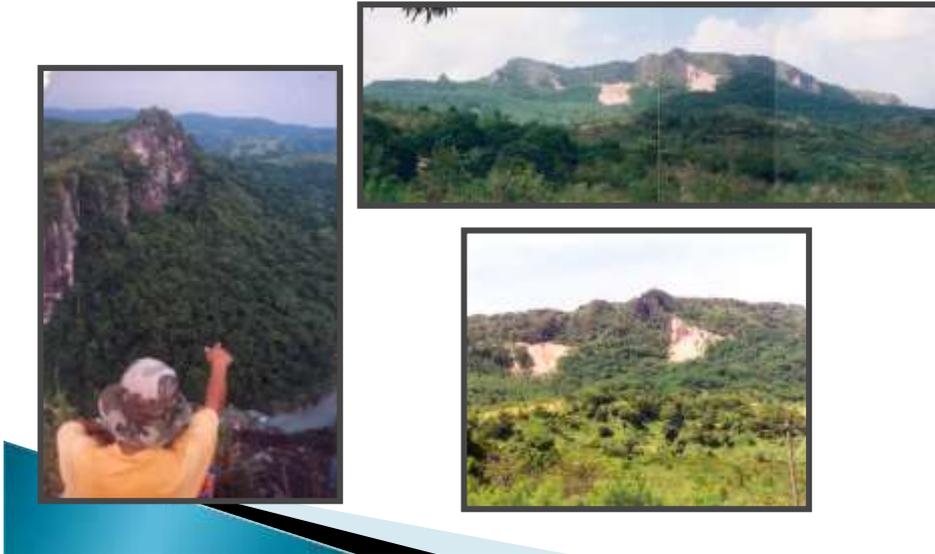
Biak-na-Bato National Park Conservation Project

Strategies:

- capacity-building of stakeholders
- ecohistorical tourism
- sustainable agriculture

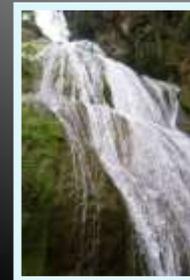


- **REFORESTATION in DRT, Biak na Bato and Tanay, Rizal**



SOUTHERN SIERRA MADRE WILDLIFE CENTER (SSMWC)

is a 25-year project of Miriam College to reforest and develop 180 has. of land in Brgy. Laiban, Tanay, Rizal. Southern Sierra Madre Wildlife Center



Addressing food and water sustainability: Working with local communities

- ▶ Rainforestation training
- ▶ Coffee production
- ▶ Fruit trees
- ▶ Vermiculture
- ▶ Backyard nurseries and gardens



National Biodiversity Strategy and Action Plan

- ▶ Expanding and improving knowledge on the characteristics, uses and values of biodiversity
- ▶ Enhancing and integrating existing and planned biodiversity conservation efforts and emphasize in in-situ activities
- ▶ Formulating an integrated policy and legislative framework for the conservation, sustainable use and equitable sharing of the benefits of biological diversity

- ▶ Strengthening capacities for integrating and institutionalizing biodiversity conservation and management
- ▶ Mobilizing and integrated information, education and communication system for biodiversity conservation
- ▶ Advocating stronger International Cooperation on biodiversity conservation and management



Birds of the Philippines

- ▶ **557 species of birds**
 - 572 based on latest data
 - 300 residents & 150 migratory
- ▶ **4th in the world in bird endemism**
 - 160 endemic species



Indigenous trees in the Philippines

| | |
|----------|-----------|
| Agoho | Dungon |
| Guijo | Is-is |
| Alagau | Kalumpang |
| Anonang | Kupang |
| Apitong | Lauan |
| Bagtikan | Siar |
| Banaba | Narra |
| Bangkal | Talisay |
| Batino | Tibig |
| Bignay | Yakal |
| Botong | Palosapis |



Green and biodiverse city

Brisbane City Council is working towards the **healthy diversity of native plants and wildlife** through **partnership** with the community, local business, state government and local councils from the South East Queensland region.

Brisbane will provide space for a **wealth of native plants and animals in the city** through preserving the critical amount of natural habitat on public and private land and by reconnecting ecological corridors for wildlife movement.



Vertical gardening



Mangroves save lives!

Let's reforest based on local species:
Asses the species composition
and use them to reforest.

Let mangroves regenerate
naturally after a typhoon.



Intercropping with coconuts



Backyard gardening



Biodiversity → subsistence economy
Towards food sustainability

Bahay Kubo Song

Bahay kubo, kahit munti
Ang halaman doon, ay
sari-sari
Sinkamas at talong,
sigarilyas at
mani
Sitaw, bataw, patani.

Kundol, patola, upo't
kalabasa
At saka mayroon pang
labanos,
mustasa, Sibuyas,
kamatis,
bawang at luya

Sa paligid-ligid ay puno
ng linga.

Response to Typhoon Ondoy (2009)



**Animals and pets
are beings too!**

Philippine Animal Society saves Einstein,
Donna's dog.



Principle # 3

Everything is related to everything else.

Ang lahat ng bagay ay magkaugnay.

Excerpts from the letter of Chief Seattle in 1845 sent
to the President of the United States

Every part of this earth is sacred
 every shining pine needle,
 every sandy shore,
 every clearing and humming insect is
 holy

The rocky crest, the juices of the meadow, the beast
 and all the people, all belong to the same
 family

Teach the children that the earth befalls the children
 of the earth.



Excerpts from the letter of Chief Seattle in 1845 sent
to the President of the United States

The wind gave our children the spirit of life.

 This we know, the earth does not belong to us;
 we belong to the earth. This we know, all things are
 connected. Our God is the same God, whose
 compassion is equal to all.

 For we did not weave the web of life;
 We are merely a strand of life;
 Whatever we do to the web,
 we do to ourselves.



Ecosystem

- ▶ Any unit that includes all of the organisms in a given area interacting with the physical environment within the system
- ▶ Components: climate, organic compounds, inorganic compounds, producers, consumers, decomposers



Ecosystems

- ▶ Terrestrial
Natural: forests



grassland



Aquatic

- ▶ **Marine:**
 - Enclosed seas
 - Coral reefs
 - Seagrass
 - Mangrove



- **Freshwater Ecosystem**
 - Lakes
 - Rivers

Estuaries

Man-made ecosystems

- ▶ Bio-industrial ecosystems
- ▶ Tree crop ecosystems
- ▶ Industrial
- ▶ Human settlements
- ▶ Fish ponds
- ▶ Farms
- ▶ Cities/municipalities