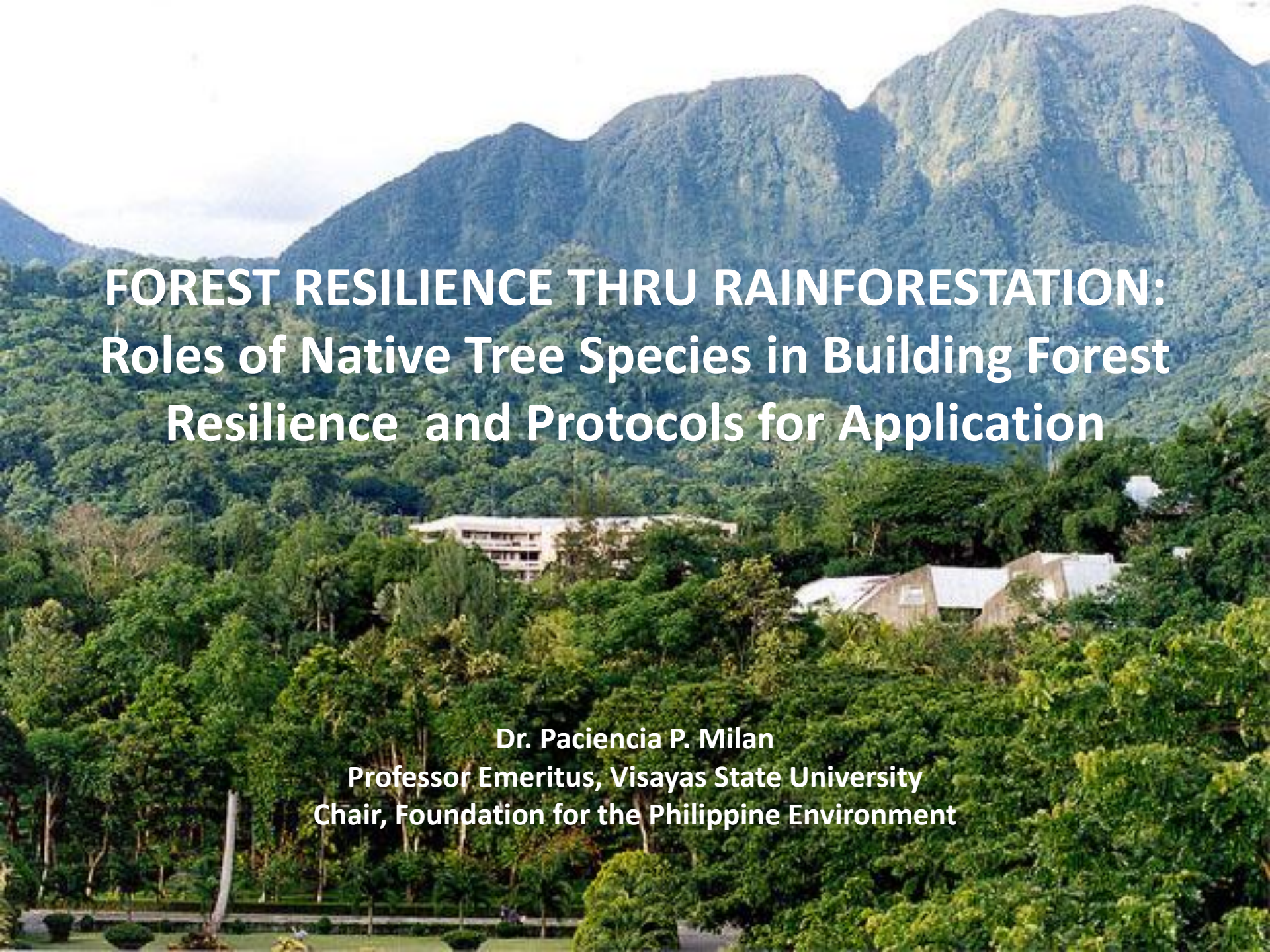

FOREST RESILIENCE THRU RAINFORESTATION: Roles of Native Tree Species in Building Forest Resilience and Protocols for Application

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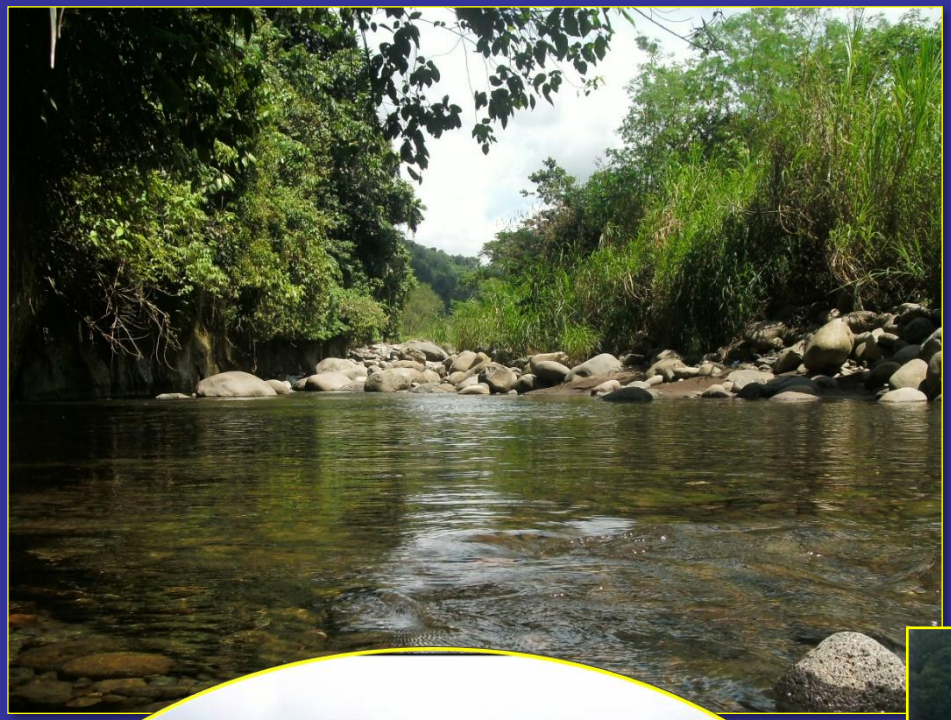
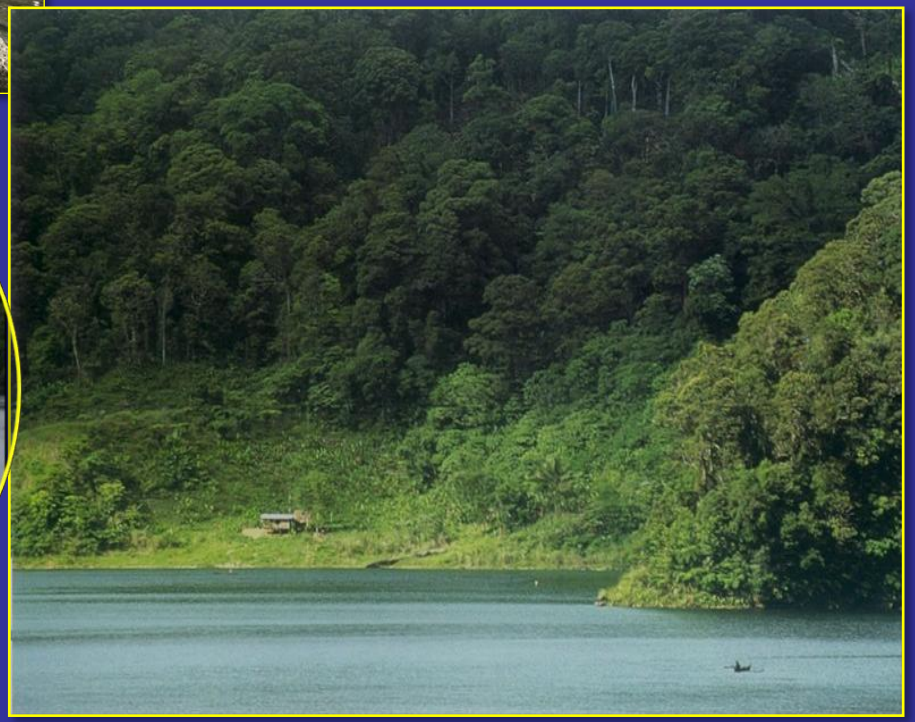
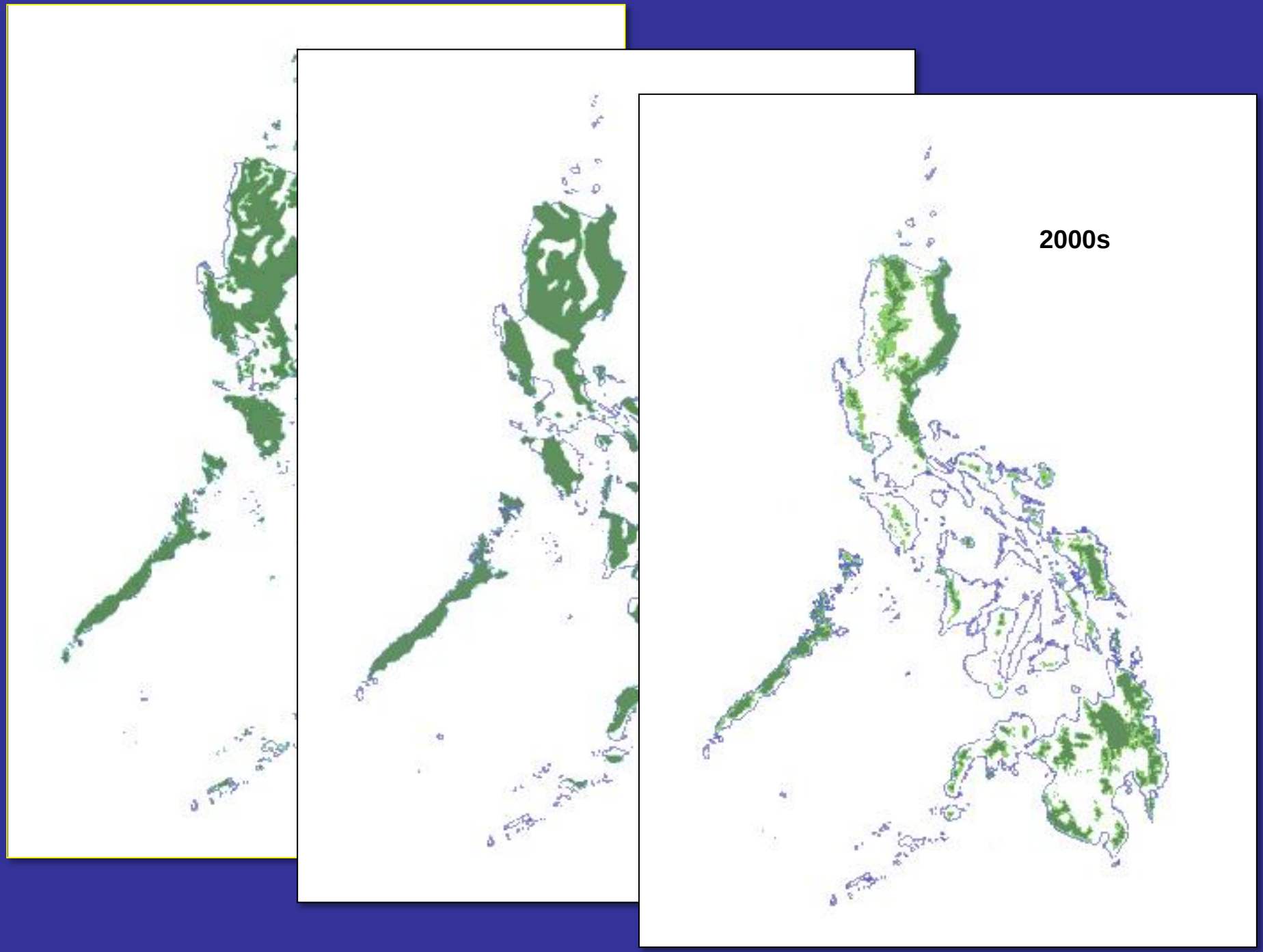


Ecosystem Services

- Provisioning Services
- Support Services
- Regulation Services
- Cultural Services
- Spiritual Services




2000s

Most reforestation efforts in the Philippines focus on the development of forestry and agro-forestry system using tree species which are introduced because they are selected for their fast growth and easy germination. The species composition of the original forest that once covered the land prior to logging are rarely taken into account .

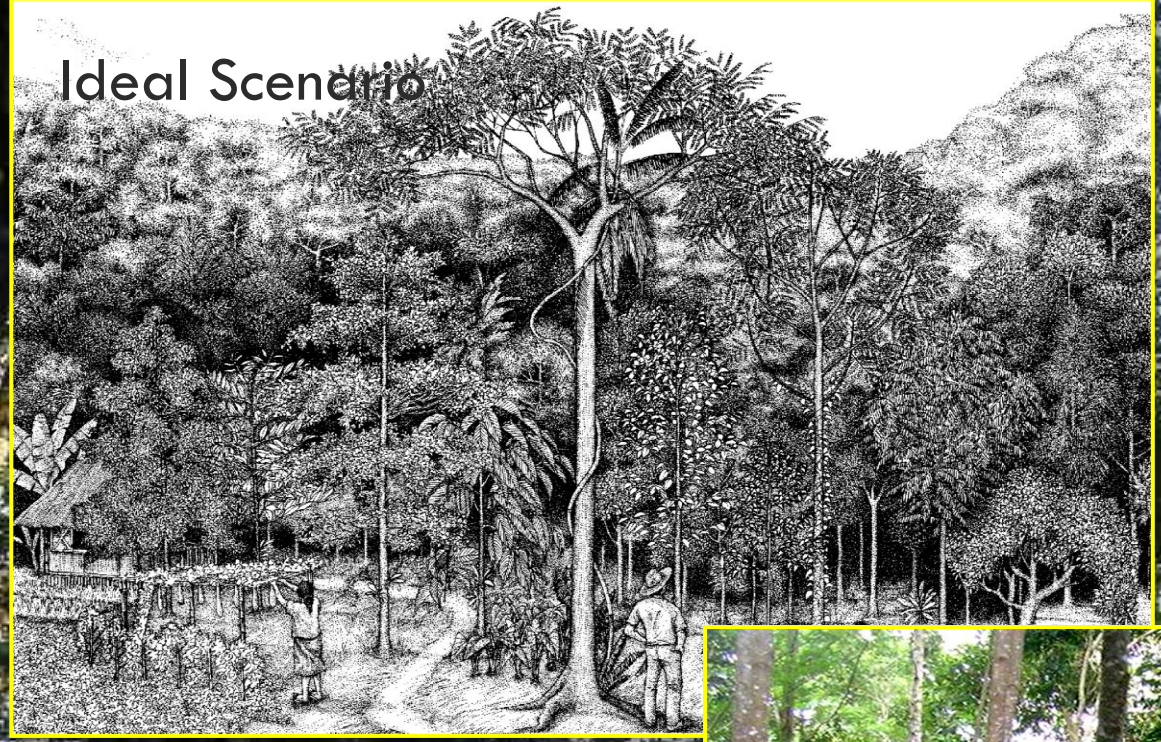
Milan and Margraf, 1996

Plantation Forests

Rainforestation is the use of native tree species

"Paradigm Shift in Forest Restoration"

Ideal Scenario



Rainforestation at 10 years old

Objectives:

Rainforestation

Replace the more destructive forms of slash-and-burn or *kaingin* practices

Protect forest biodiversity

Provide farmers with a stable and high income

Help maintain the water cycle

Form a buffer-zone around the primary forest

Impacts of Rainforestation

1. Improve soil chemical properties
2. Improve soil structure and water holding capacity
3. Improve soil organic matter and soil color
4. Improve nutrient status
5. Improve biological activity
6. Improve microclimate
7. Provides additional sustainable income to farmers

Forest Resilience

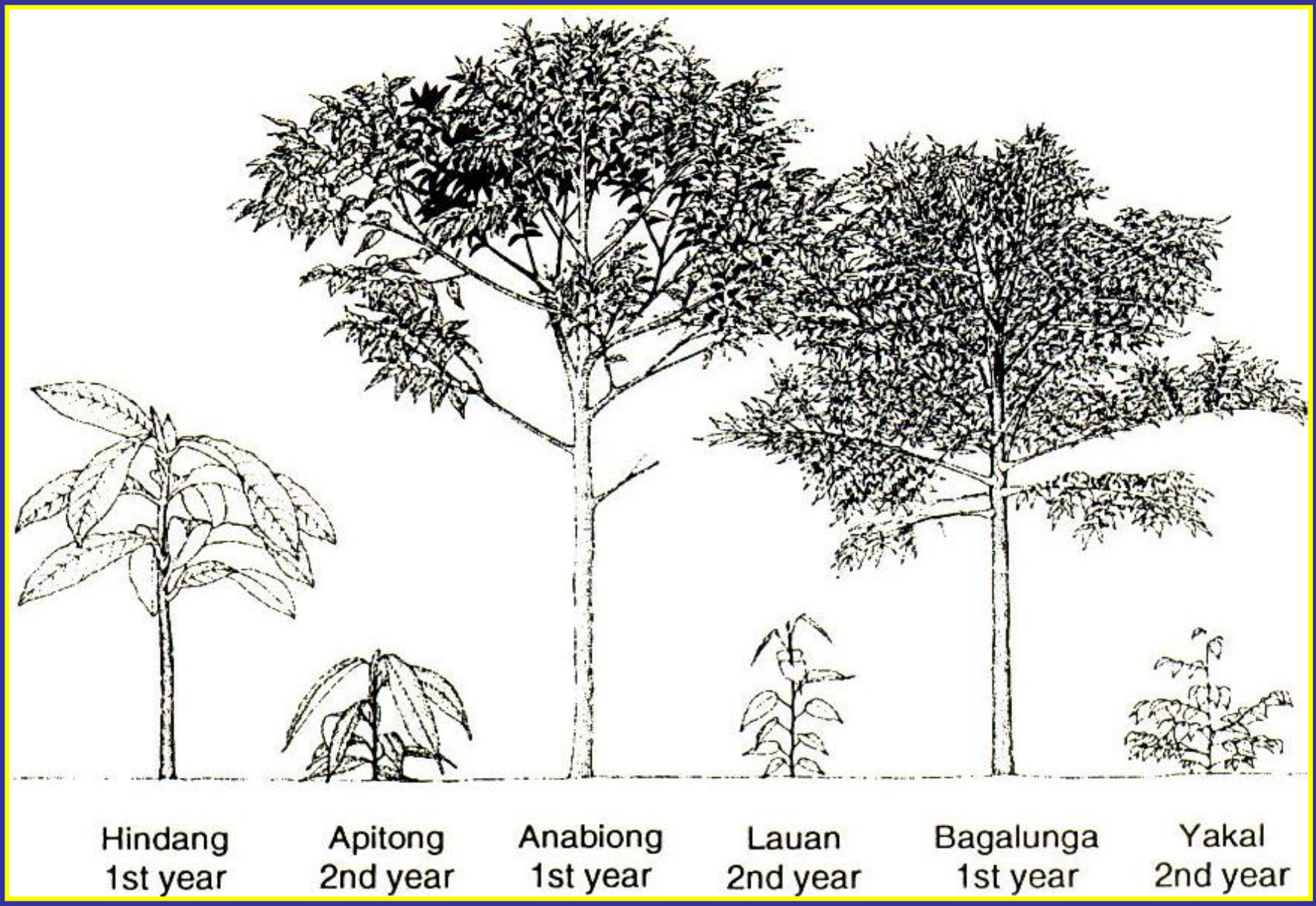
Ability of forest to withstand anthropogenic pressures and the capacity to bounce back and adapt to changing conditions

Available scientific evidence strongly support the conclusion that the capacity of forest to resist change or recover after the disturbance is dependent on biodiversity at all scales

After Typhoon Yolanda

Recovery stage (1 year after)

As biodiversity is a key factor underlying the resilience of forest ecosystems and trees to stress, the use of multiple species of native trees in NGP or in reforestation program must be promoted.


Hindang
1st year
Apitong
2nd year
Anabiong
1st year
Lauan
2nd year
Bagalunga
1st year
Yakal
2nd year

Sun demanding local forest tree species recommended for RF on degraded limestone hills (in decreasing order of productivity).

Local Name	Official Scientific Name
Kalumpit	*Terminalia microcarpa*
Anislag	*Securinega flexuosa*
Bagalunga	*Melia dubia*
Dao	*Dracontomelon dao*
Ipil	*Intsia bijuga*
Mntn. Agoho	*Casuarina nodiflora*
Kamagong	*Diospyros philippenensis*
Bahay	*Ormosia calavensis*
Molave	*Vitex parviflora*
Lingo-lingo	*Vitex turczaninowii*

Shade loving local forest tree species of Leyte recommended for RF for volcanic soils

Local Name	Official Scientific Name
Palosapis	*Anisoptera thurifera*
Apitong	*Dipterocarpus grandiflorus*
HairyApitong	*Dipterocarpus philippinensis*
Hagakhak	*Dipterocarpus warburgii*
Manggachapui	*Hopea acuminata*
Dalingdingan	*Hopea foxworthyi*
Gisok-gisok	*Hopea philippinensis*
Yakal-kaliot	*Hopea malibato*
Bagtikan	*Parashorea malaanonan*
White Lauan	*Shorea contorta*
Almon	*Shorea almon*
Guijo	*Shorea guiso*
Yakal-malibato	*Shorea malibato*
Red lauan	*Shorea negrosensis*
Tangile	*Shorea polysperma*
Mayapis	*Shorea palosapis*
Kamagong	*Diospyros philippensis*
Talakatak	*Castanopsis philippinensis*
Ulaian	*Lithocarpus pruinosa*
Dungon	*Heritiera sylvatica*
Kulatingan	*Pterospermum obliquum*
Balobo	*Diplodiscus paniculatus*

Native Trees vs. Exotic Trees

- The fast growing exotic trees have low wood quality; hence, high quality native trees still need to be harvested in their natural habitat.
- The exclusive use of exotic tree species in reforestation reduce forest biodiversity as pollinators and tree dependent wildlife will be lost.

Native Trees vs. Exotic Trees

- Mother trees become rare and seed material is even less available.
- Repeated clear cutting of fast growing exotics deplete soil nutrient fast, making the reforestation unproductive in the long run.

Native Trees vs. Exotic Trees

- Cultivation of monoculture exotic trees are prone to pests infestation on distorted landscape.

Conserving Biodiversity

Conserving and using biodiversity is important for forest resilience to changing environmental condition is influenced by the diversity of species of genetic variability and forest communities and ecosystems (Thompson et al. 2009).

In order to increase or maintain resilience in forest, the genetic diversity in forest and its structural complexity must be enhanced.

Livelihood Resilience

Forest and trees play important roles in livelihood resilience in the face of climate change:

- Safety nets in time of natural disaster
- As source of income diversification
- Source of employment or income generation

Protocol for Application

- Introduction of invasive species or non-native tree species must be controlled and reduced reliance on non-native tree species.
- Strive to increase the variety of native tree species used in restoration: plan the sourcing of propagation materials of desired species from different sources that match the environmental conditions of the restoration sites.
- Document the origin of planting material.

Protocol for Application

- Beyond field assessment or monitoring, establish a stronger link between restoration research and restoration practice.
- Knowledge on the factors that currently limit the use of native species, including lack of knowledge on propagation methods, and limits imposed by people's perception and mindset must be expanded.
- Policies, institutions and capacitation relevant to regulation and genetic considerations of ecosystem restoration using native trees must be put in place.

Forest resilience is inherent to intact or healthy forest ecosystem. Thus, forests provide best insurance against climate change and ensure that the needs of present and future generations are met.

Thank You!