The scientific case for primary forest protection

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Overview

1. What are primary forests?

2. How are they different from other types of forests?

3. What are the benefits of protecting primary forests?

4. Current status and prospects?

5. What kinds of policies can help protect them?
1. What are primary forests?

✓ Primary forests are forests that are largely the result of natural ecological and evolutionary processes

✓ They still contain their evolved, characteristic biodiversity and are dominated by ecologically mature canopy trees and understory plant species

✓ Viewed on a landscape-wide basis, they are largely intact and have not been substantially cleared or degraded by industrial land use: logging, mining, agriculture

✓ On a landscape-wide perspective, however, a primary forests will contain areas of young regenerating forest as the result of natural forests or traditional subsistence use

✓ Large areas (>50,000 ha) of primary forest called “Intact Forest Landscape” (IFL) are of strategic significant but smaller areas are also important especially in temperate forest biome

✓ Most of the world’s remaining primary forests are the customary homelands of indigenous communities. Therefore, primary forests are not necessarily free of people or human impacts
2. How are they different from other types of forests?

✓ Industrial forest/Secondary forest/Managed forest/Production forest

- Originally primary forests that have been logged to supply timber or woody fibre to national or international commercial commodity markets (i.e. industrial logging) or subject to other industrial land use activities such as mining.

- Natural ecological processes are disrupted, blocked or destroyed such that the forest ecosystem never regrows into its mature phase. Use is made of natural regeneration but management interventions lead to simplified vegetation structure and dominance of commercially important species.

- Industrial logging has been found to lead to forest degradation and deforestation especially in tropical biome.

Source: © WWF / Michel GUNther

Source: Laport et al. [http://luc.um.edu/lcluc/](http://luc.um.edu/lcluc/)
2. How are they different from other types of forests?

✓ **Plantations forests**

- A commercial crop of trees grown which are planted and harvested, typically every 5-20 years, for a specific commodity, e.g. palm oil, paper, manufactured wood product

- Grown on cleared land that was once primary forest or secondary forest

3. The benefits of protecting primary forests

- **Biodiversity**
  - Up to 57% of tropical forest species are dependent on old-growth forest habitat.
  
  - Following loss, species recovery can take centuries or millennia; primary forest contain large old trees and coarse woody debris which are vital habitat resources.
  
  - Forest biodiversity generally declining along a coarse gradient from primary forest to secondary forest, agroforestry, plantations, arable crops, and pasture.

A view of the Congo’s primary forests from Nyungwe National Park, Rwanda. Photo © Dr Liana Joseph.
3. The benefits of protecting primary forests

- Climate change mitigation

Globally, forests store ~300 billion tonnes of carbon with as much again in the other forest ecosystem pools (dead biomass and soil)

Loss of world’s primary forest by 2100 would release about 100 billion tonnes of carbon which would increase atmos[CO2] by ~50 - 100 ppm

atm[CO2] currently ~400 ppm and should not increase above ~450 ppm if we are to limit warming to less than 2 degrees; the agree safeguard

Primary forests store 30–70% more carbon than logged and degraded forests

Most living biomass carbon is in ecologically mature trees
3. The benefits of protecting primary forests

- Climate change adaptation
- Ecosystem services – water
- Culture & sustainable livelihoods
4. Current status and prospects

✓ ~35% of world’s pre-agriculture natural forest cover (61.5 million km²) is lost.

✓ Current word forest cover is 40.1 million km².

   ▪ 57% subject to industrial logging or designated for multiple uses including wood production.
   ▪ 7% is plantation.
   ▪ 36% (14.5 million km²) is primary forest.

✓ Of 13.1 million km² of Intact Forest L landscape (i.e., primary forest in contiguous blocks >500 km²):

   ▪ 50% occurs in snow/polar regions.
   ▪ 46% in equatorial areas.
   ▪ 3% in warm temperate climatic zones.

✓ Fragmentation is a major threat and one kind of forest degradation.

✓ There is 1.4 - 3.5 × million km² of primary forest in blocks <500 km² worldwide.

✓ Area of primary forest and IFO in Congo forests is poorly reported at national level.

✓ Only ~5% of pre-agriculture primary forest is in protected areas; ~22% of current primary forest in protected areas.
Both a developed and developing world problem

Mackey et al. 2014 Conservation Letters
5. Policy options

1. **Recognize primary forests as a matter of global concern within international negotiations**
   - UN Forum on Forests (UNFF), Convention on Biological Diversity (CBD), U.N. Framework Convention on Climate Change (UNFCCC), post-2015 development agenda and Sustainable Development Goals (SDGs)
   - UNFCCC definition of “forest”

2. **Incorporate primary forest values into environmental accounting**
   - National economic accounts recognize primary forest ecosystem services (e.g. water)
   - Payments for ecosystem services
   - Forest certification schemes

3. **Prioritize the principle of avoided loss**
   - UNFCCC REDD+: prioritize primary forest protection ahead of “ecological restoration” ahead of “SFM”
   - CBD: Aichi Targets including Target 11 Key Biodiversity Areas
5. Policy options

4. Universally accept the important role of Indigenous and Community Conserved Areas in primary forest protection

A member of the Kayapo tribe looks out over his forest in the Brazilian Amazon.

Photo © Cristina Mittermeier
References

