

Tropical Rainforest Ecology




Tropical Rainforest

- Structural properties:
 - Height of trees
 - Layered crowns
 - Presence of several climbers and epiphytes
- Physiognomic properties
 - Buttressed trees
 - Evergreen
 - Non-deciduous
 - Cauliflory
 - Broad-leaved trees




Tropical Rainforest

- Climate
 - High T°
 - Coldest month 18°C or over
 - Rainfall
 - Every month – wet
 - 100 mmr rainfall or more
- Topography
 - E.j., rivers, hills
- Soils



Distribution

- America (4×10^6 km²)
 - Amazonia + Orinoquia
 - Choco and Central America
 - Atlantic coast of Brazil
- Asia (2×10^6 km²)
 - Indo-malay Archipelago
 - Western Ghats (India)
- Africa
 - Congo Basin
 - Madagascar / Mascarenes islands
- Oceania
 - Papua New Guinea
 - Queensland (Australia)



Formations


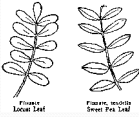
- Elevation
 - Lowland
 - Foothill
 - Montane
- Climate
 - Seasonal
 - Everwet (non-seasonal)
- Water cycle
 - Flooded
 - Non-flooded

Forest formations

- Non-flooded Lowland Tropical Evergreen forest
 - Terra Firme
- Flooded Lowland Tropical Evergreen forest
 - By black-waters: Igapo or Blackwater swamp forest
 - By white-waters: Varzea or Freshwater swamp forests
 - Seasonally: Gallery or heath forests (borders of rivers)
- ++ Savanna & Dry forest
- ++ Seasonal: Monsoon or Seasonal Evergreen

Tropical, foothill, and montane


- Canopy height
 - 45 m - 30 m - 18 m
 - Emergent trees - Usually absent
- Pinnate leaves
 - Frequent - Rare
- Buttresses
 - Frequent & large - uncommon & small - absent
- Cauliflory
 - Frequent - Rare - Absent
- Big woody climbers
 - Abundant - none



Growth cycle

- Trees mortality
- GAP formation
- Seedling - building phase
- Mature phase
- Degeneration phase
- Continuous cycle - forest not uniform but patchy
- Pioneer and Climax spp.
- Phases are continuous (space & time)


- Natural, wind, earthquakes, cyclones, human action



Floristics

- High species richness
- 2/3 flowering plants in the tropics
- Some families are restricted: Myristicaceae (nutmegs), Annonaceae (soursop), Musaceae (bananas)
- Diverse families: Leguminosae, Euphorbiaceae, Lauraceae, Moraceae, Rubiaceae, Sapotaceae
- Asia: Dipterocarpaceae
- Brazil: Lecythidaceae (Brazilian nut)

- Conifers almost absent



Species richness

- Costa Rica, 233 spp. vascular plants, 100 m2 plot
- Ecuador, 355 spp, 0.1 ha, total 1030 spp. in 80 ha
- (British isles = 1380 spp.)

- America - richest
- Africa - poorest
