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Tropical rain forest in Indo-Malay areas

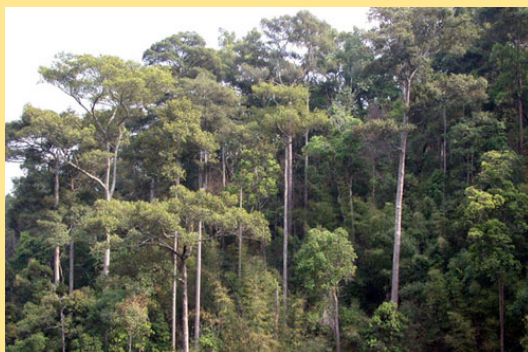


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Tropical rain forest in Indo-Malay areas

Dipterocarpaceae



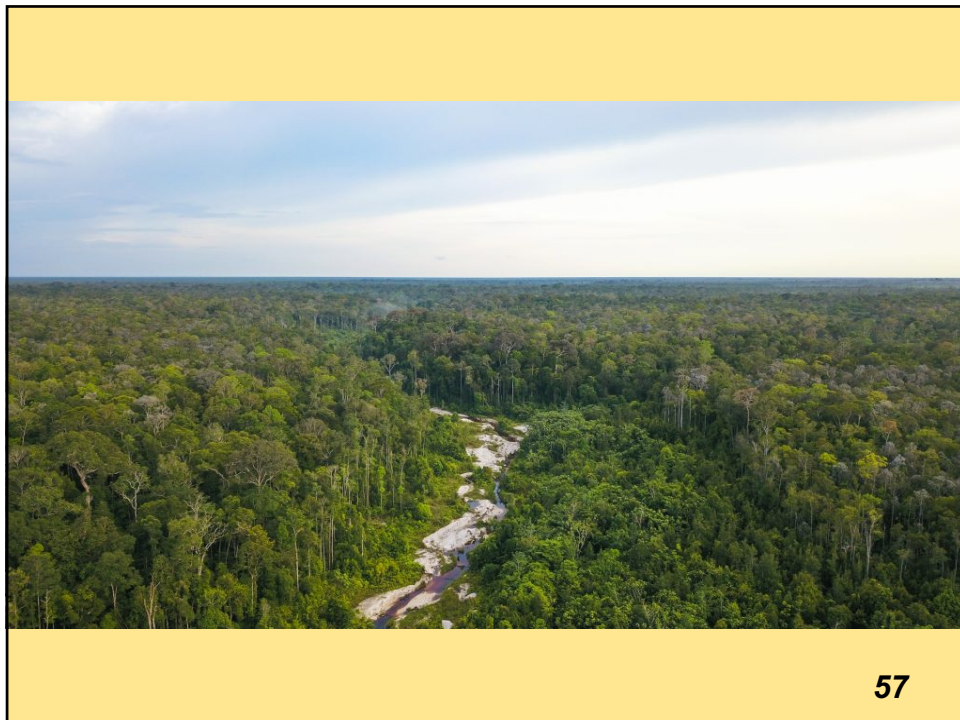
Dipterocarpus costatus



Dipterocarpus alatus

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Tectona grandis

Native to the forests of Burma and Thailand, is one of the most valuable tropical timber used for furniture and nautical



Gonystilus bancanus

Dominates the swampy forests of Malaysia and Indonesia.

Heavy solid wood easily workable, used for window frames, do-it-yourself, furniture ..

Despite belonging to the IUCN Red List and is subject to trade restrictions traffic is still alive

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Tropical rain forest in Africa:



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Ebenaceae

Diospyros ebenum
(Ebony, ornamental
species in risk),



Diospyros

60

60

Meliaceae



Ptaeroxylon obliquum



Khaja senegalensis

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Genus in tropical Africa:

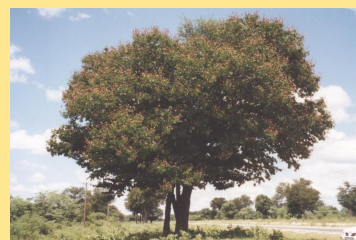
- *Brachystegia spp*: 30 species in tropical Africa
- *Dialium spp*: 35 species of tropical Africa and Madagascar



Brachystegia woodland



Dialium laurinum

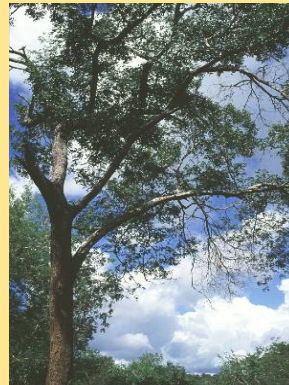


Brachystegia boehmii (teak)

62

62

- ***Guibourtia spp***: 16 species only in tropical Africa
- ***Julbernardia spp***: 8 species all originates in tropical africa
- ***Peltophorum spp***: about 15 species
- ***Tamarindus indica***: only one specie in Africa and Asia
- ***Tylosema spp***: 4 species all africans
- ***Cesalpinia spp***



Julbernardia globiflora



Cesalpinia gilliesii

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precious wood

- In Congo and Ex-Zaire producing tropical wood is the second export item



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Due to high biodiversity, there is a mahogany tree per
hectares,

But all the timber is cut to take that only tree



Disappearance of whole groups of animals and damage to
vegetation on the edge

Desertification: more than 45% of Africa is subject to this
process

Deterioration of living conditions in the local population

65

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- The most exploited species are:
 1. **Diospyros spp.**: ebony black
 2. **Aucoumea klaineana**: Okumè
 3. **Guibourtia spp.**: Coil, is among the species considered threatened by the IUCN, the native peoples make medicinal use



Diospyros ebenum

66

66

4. ***Terminalia ivorensis***: Framir
5. ***Khaya spp***: African Mahogany, huge trees that grow in the rain forests of Central Africa or Western
6. ***Millettia laurentii***: Weng
7. ***Microberlinia brazzavillensis*** (Family: Caesalpiniaceae): Zebrano for color striped, grows in forests in which each species is very distributed, is classified by the IUCN as endangered species



***Terminalia
ivorensis***



***Khaya
anthotheca***

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deforestation

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- 1. Deforestation
- 2. Current Situation of Rainforests
- 3. Causes of Deforestation
- 4. Short & Long Term Effects of Deforestation
- 5. Short & Long Term Solutions
- 6. Conclusion

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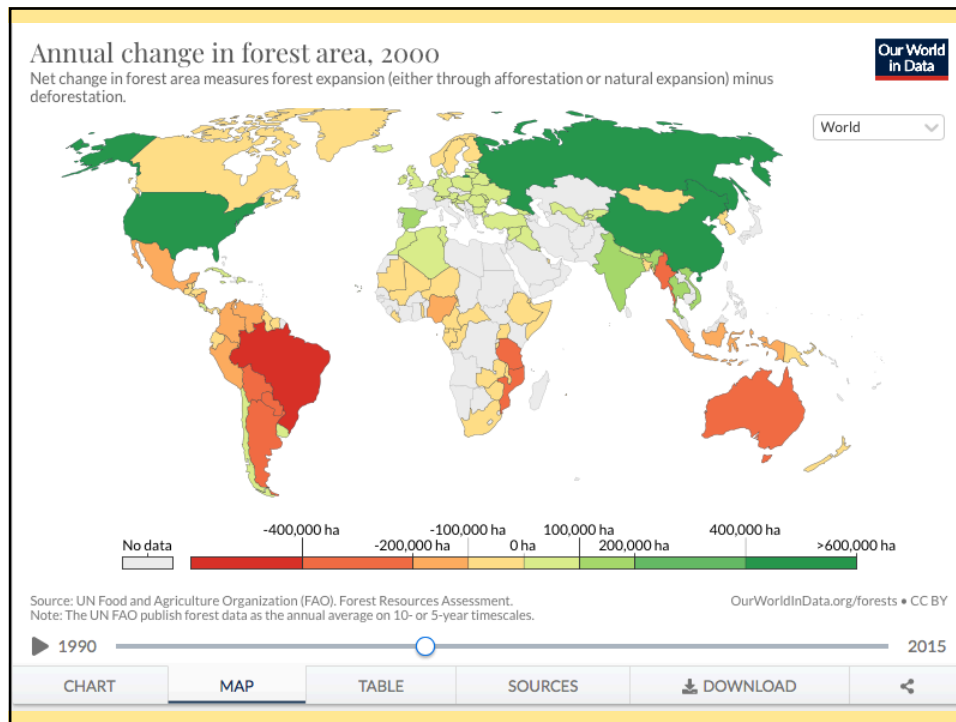
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Deforestation

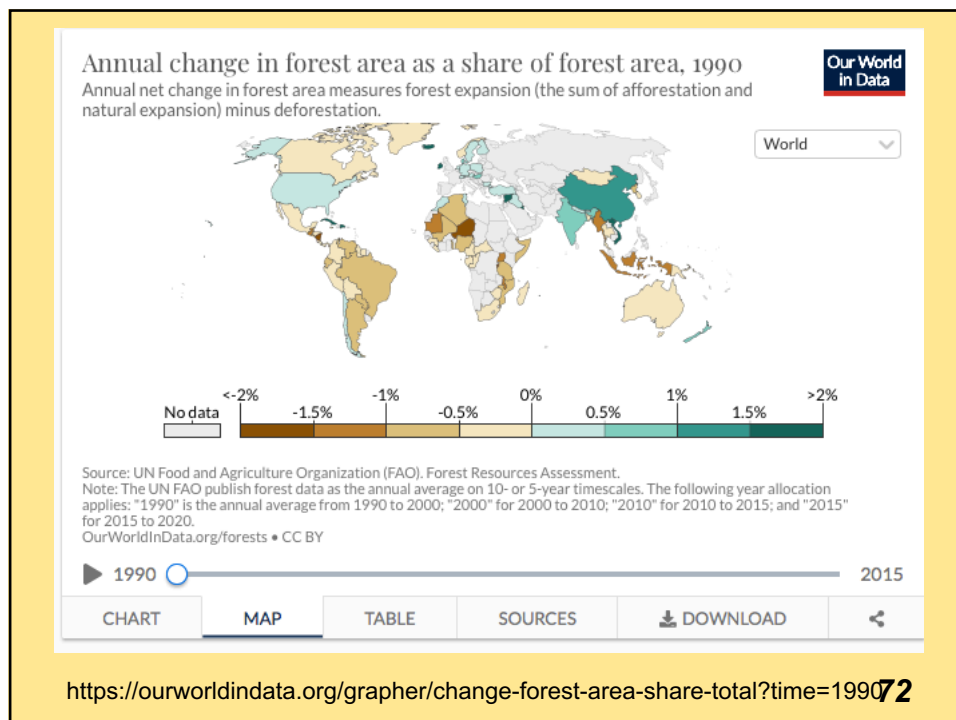
- Forests cover 31% of the land area on our planet
- They produce vital oxygen and provide homes for people and wildlife
- Many of the world's most threatened and endangered animals live in these forests
- 1.6 billion people rely on benefits forests offer, including food, fresh water, clothing, traditional medicine and shelter

70

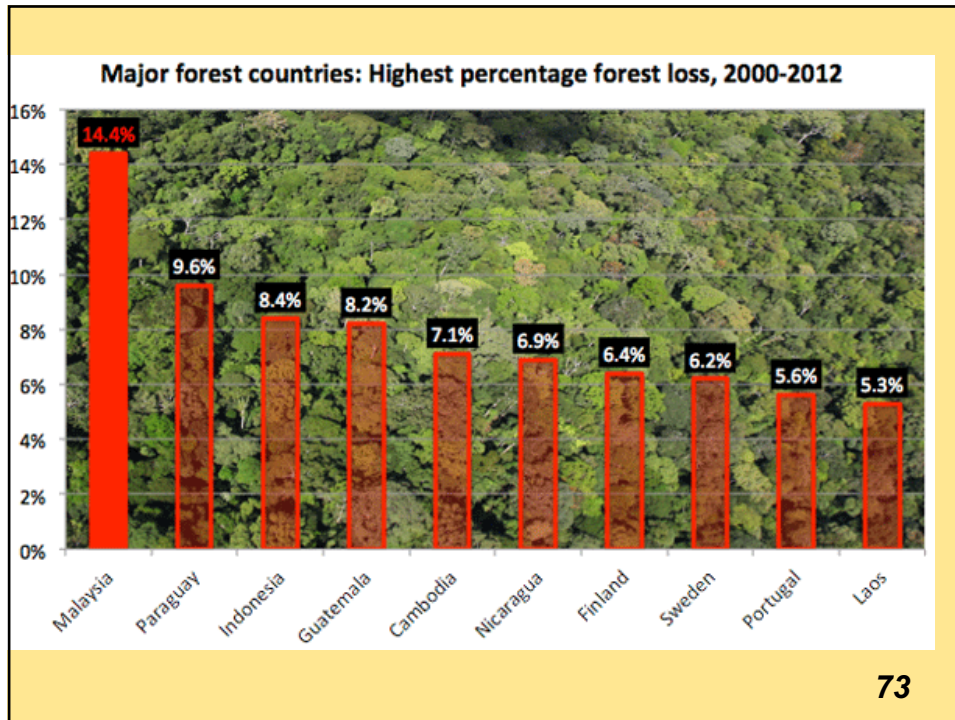
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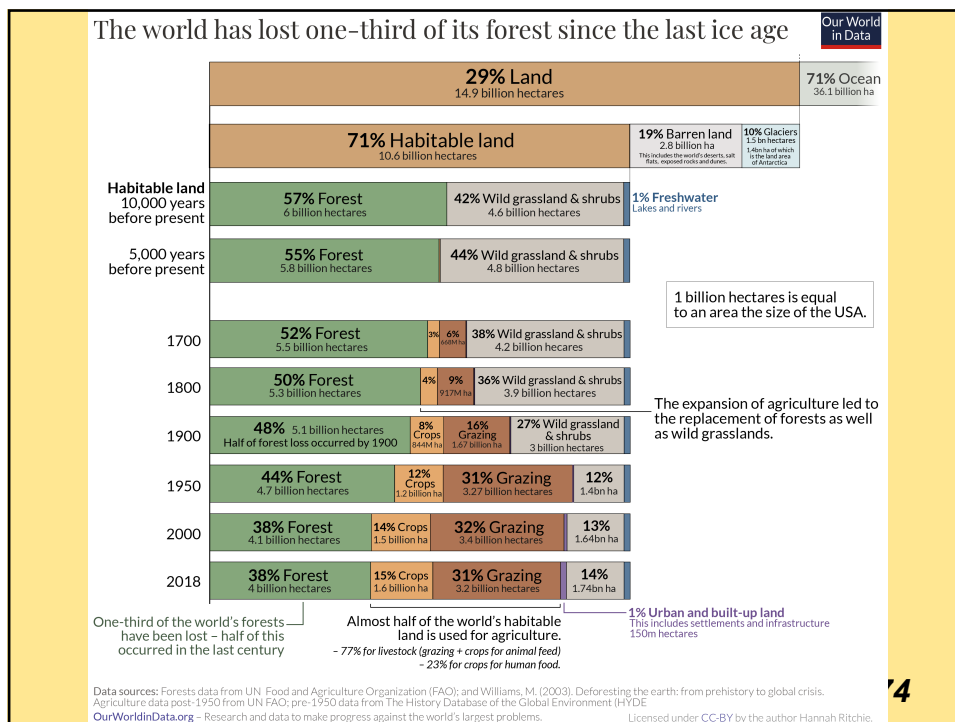
71



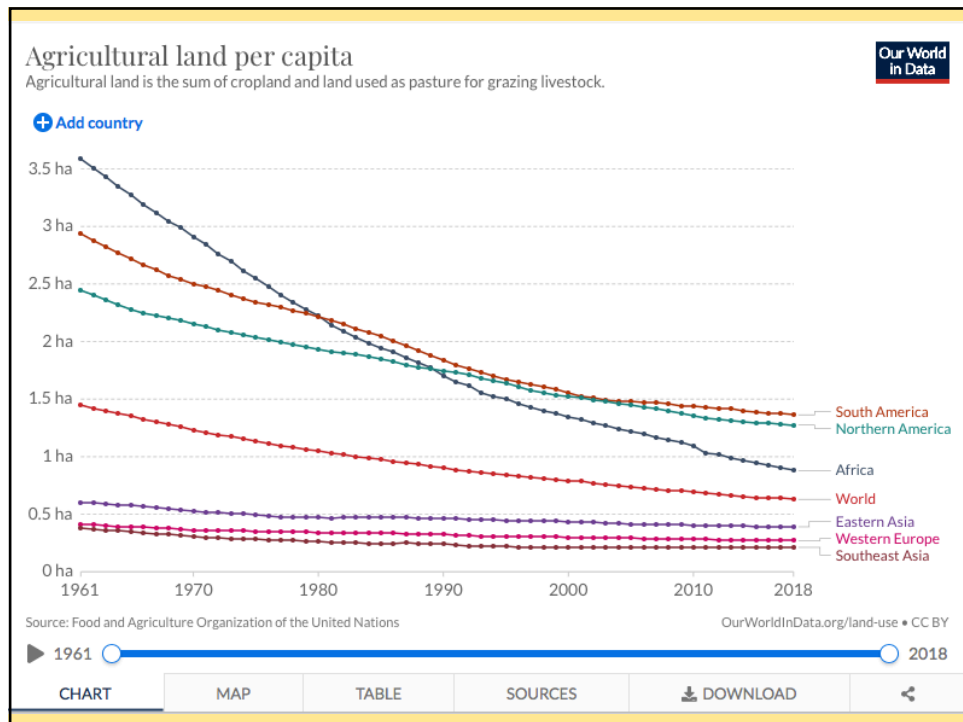
72



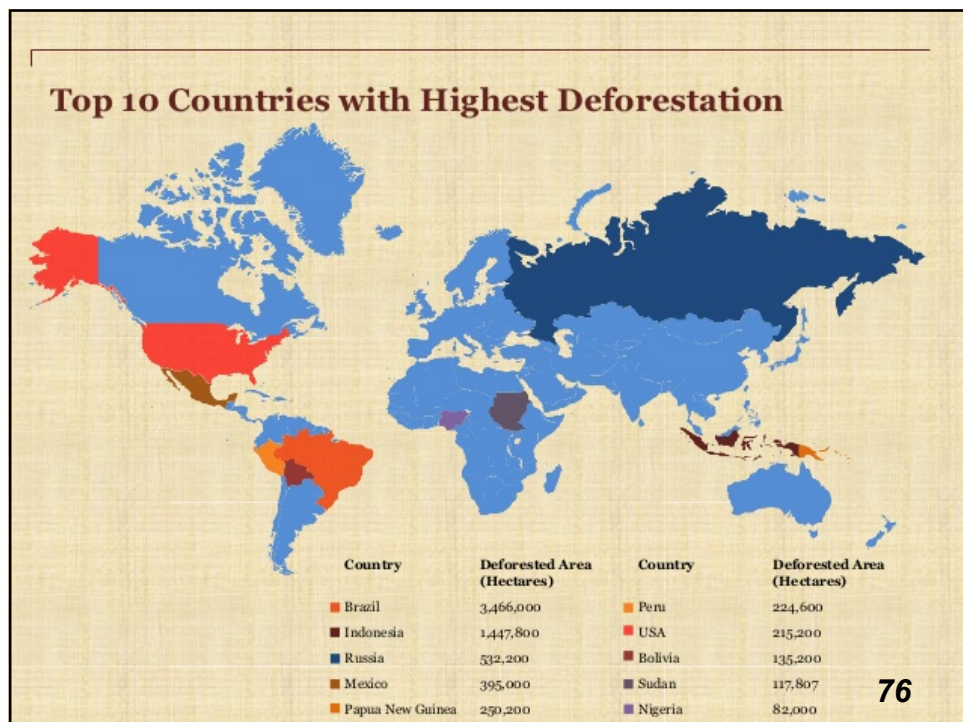
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The tropical rainforests:
Resources for small communities ...

The cultural wealth of this forest is amazing :
in New Guinea alone there are more than 800
languages, a third of all the world's languages.
Many of these cultures are forest dependent :
their future and the future of the forest are
intimately linked.

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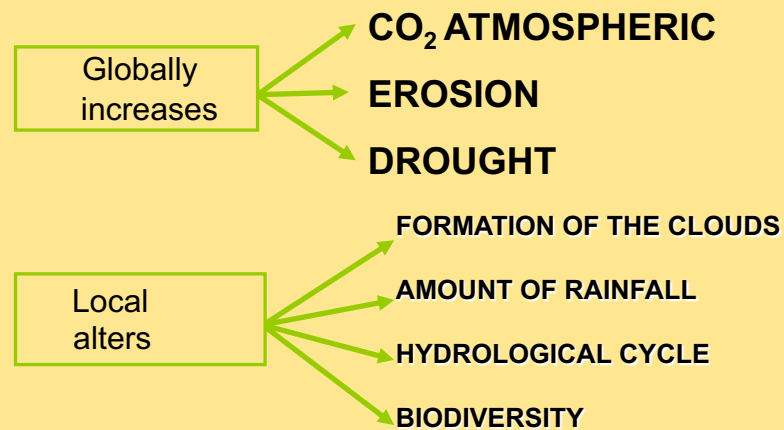


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CONSEQUENCES

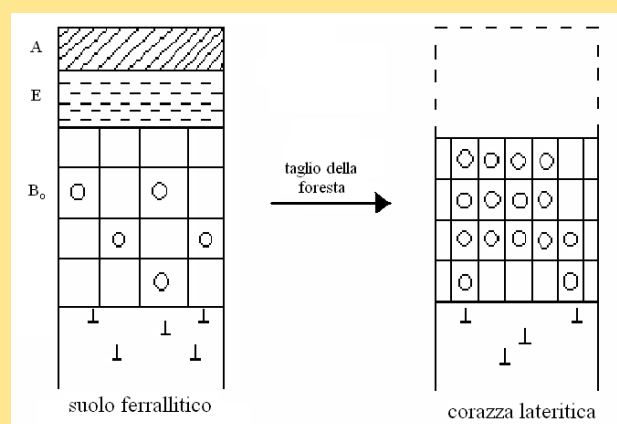
The destruction of rainforests profoundly alters the ecological balance of the biosphere:



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- Ferralitic Soils undergo decapitation of horizons A and E
- Horizon B0 emerges, for dehydration, a layer hard (lateritic armor) appears
- The forest can not recover and is replaced by savanna



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Deforestation

Normal condition forest

Forest after selective logging

Total logging in Malaysia

81

Fig. 18.4. Trasformazione della foresta tropicale pluviale a Dipterocarpacee del Sud-Est Asiatico in seguito a differenti tipi di sfruttamento – In alto: condizione naturale. In mezzo: taglio selettivo (SIS) usato nelle Filippine. In basso: taglio generalizzato e diserbo selettivo (MUS) applicato in Malaysia (da Bruenig E.F., in Golley F.B., 1983).

81

Tropical rain forest: intensive deforestation

Indonesia and New Guinea have already lost 60-72% of their forests and meanwhile the production of wood, between 1996 and 1998, grew by 25% compared to the previous decade.

In these regions, illegal logging and corruption remain widespread practices in the timber industry: it is estimated that in Indonesia almost 90% of the raw wood products for local sawmills is extracted illegally, while in Papua New Guinea, the government does not respect the Forest Act.

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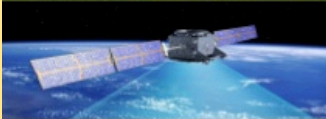

Tab. 18.5. Distribuzione delle foreste tropicali pluviali (da Myers, modificata).

area	superficie	superficie delle foreste tropicali originale	attuale	superficie disboscata % tot. per anno
Brasile	8.512.000	2.860.000	1.890.000	37,1 2,3
America Centr.	523.000	500.000	55.000	89,0 3,7
Colombia	1.139.000	700.000	180.000	74,3 2,3
Venezuela	912.000	420.000	300.000	28,6 0,4
India	3.287.000	1.600.000	70.000	95,6 2,4
Indonesia	1.919.000	1.220.000	530.000	56,6 1,4
SE-Asia	2.589.000	1.980.000	253.000	87,3 13,8
Zaire	2.345.000	1.245.000	700.000	43,8 0,4
Africa Occ.	3.880.000	922.000	296.000	67,9 4,2
Madagascar	591.000	62.000	10.000	83,9 8,3
totali*	(mondo)	14.000.000	8.000.000	42,9 1,8

Tutti i dati in km² × 1000.
* Includi altri Paesi.

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Amazon forest

Events	Year	Description
	1960s	Colonists began establishing farms within the forest via slash-and-burn method
	1970s	Construction began on the Trans-Amazonian Highway, paving roads and making it easier to transport timber
	1990 – 2000s	Total Area forest lost in the Amazon rose by 160,000 sq km to 587,000 sq km, of which 70% used for livestock pasture
	2005	Use of satellite data has helped the government slash deforestation by 80% by allowing police to pinpoint illegal activity in the forest
	2013	Satellite data reported a 28% increase in deforestation to 5,843 sq km compared to the previous year

83

83

Timber extraction

- Precious wood used for cabinet work
- Timber for construction
- To extract the pulp
- The **selective** cutting of logs – cutting only species economically interesting.
- Or total- cutting all the trees



84

84

Roads

- The cut and commercial transportation of logs makes use of heavy machinery such as bulldozers, graders and scrapers that remove logs cut and build roads. The heavy machinery damage the forest just as chainsaws harm the trees.

For exemple:

- Transamazonica
- Br-163 “rodovia da soja” 1770Km



85

85

Causes of Deforestation

1. Clearing land to build housing

- Countries resort to deforestation to cope with the increasing demand for housing brought about by the growing population

2. Felling trees for wood

- Logging, or simply cutting down trees for timbre is one of the main causes of deforestation

3. Agriculture

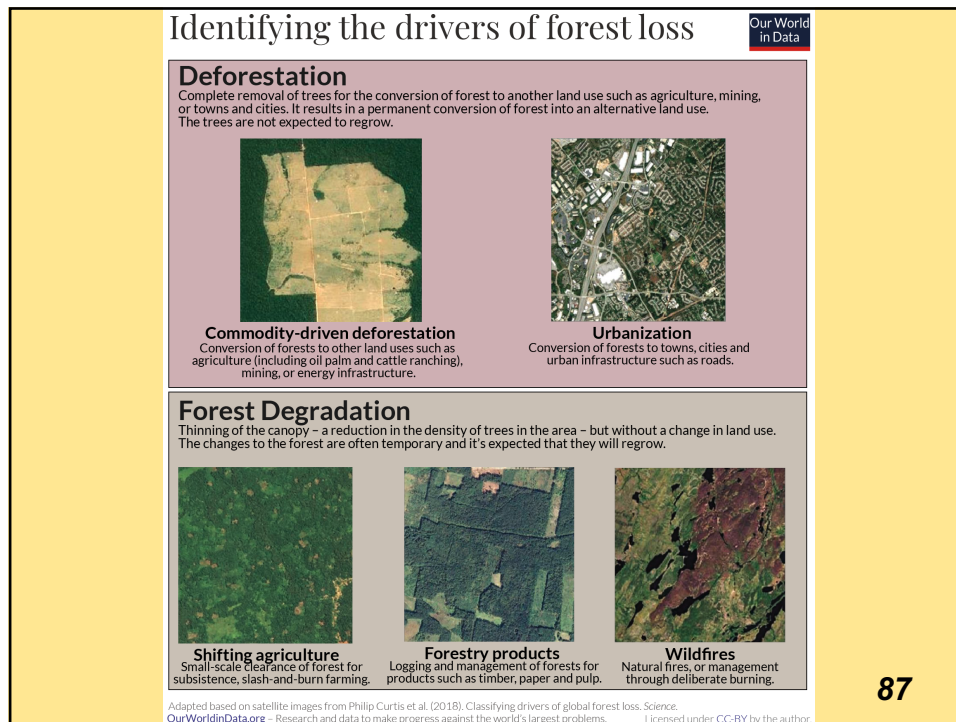
- To provide land for food crops such as palm oil and for rearing cattle, undisturbed rainforest areas end up being removed

4. Other land uses

- Land for mining and industrial projects
- Building dams

86

86



87

87

Disposable chopsticks

- Timber, bamboo, ivory, bone, metal, plastic
- In China 80.000.000.000 per year
- 2.600.000 m³ per year of timber (birch, poplar, bamboo), but also in ivory, bone,
- 60.000 employees for production
- 25.000.000 mature trees per year
- In few decades Chinese forests will disappear
-

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88

Plantations & Biofuels

- Biofuels are produced from renewable resources such as: plants and organic waste and can be used as an alternative to fossil fuels
- Palm oil plantations are posed as a major threat
- Destroying habitats of orangutans and other wildlife
- Orangutans spend about 80-90% of their time in the trees
- Demand for biofuels is on the rise



89

Agriculture

Grazing for cattle

<http://cat-image.co.cc/category/cattle-ranching-in-the-rainforest>

http://www.treehugger.com/files/2007/05/indonesia_faste.php

Growing crops

90

90



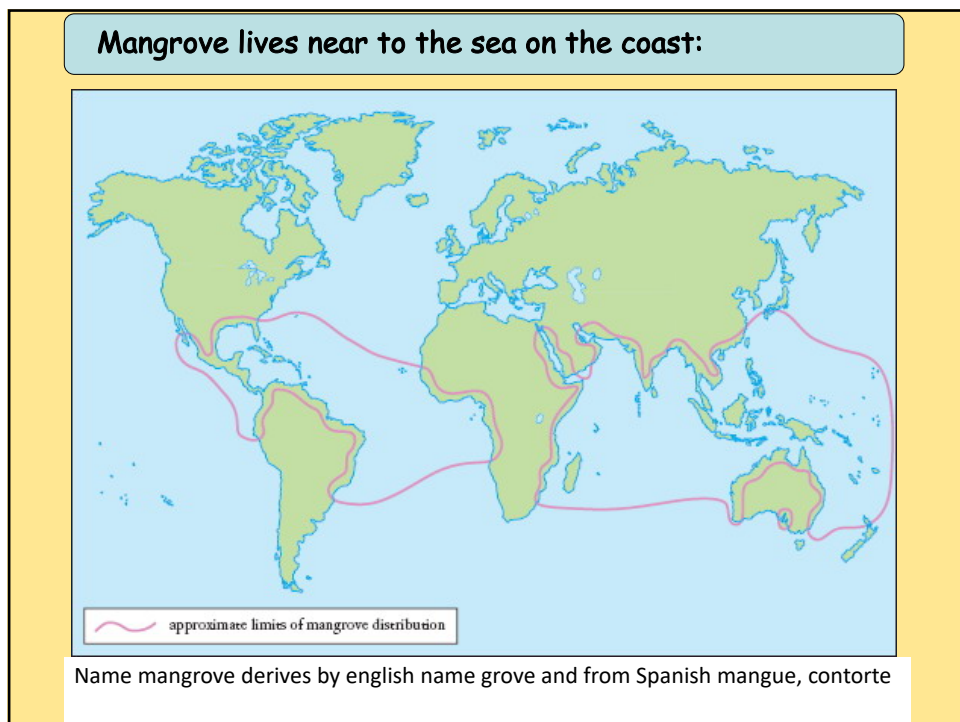
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- Rhizophoraceae red mangrove
- Avicenniaceae black mangrove
- Combretaceae white mangrove
- Sonneratiaceae

Vegetation type	PPN (g/m ² /year)	Phytomass (g/m ²)
Taiga meridionale	850	33000
Faggete	1300	37000
Foreste pluviali tropicali	3250	50000
Mangrovie	930	12730
Oceano aperto	125	3
Terreno agricolo	650	1000

Primary production net

95

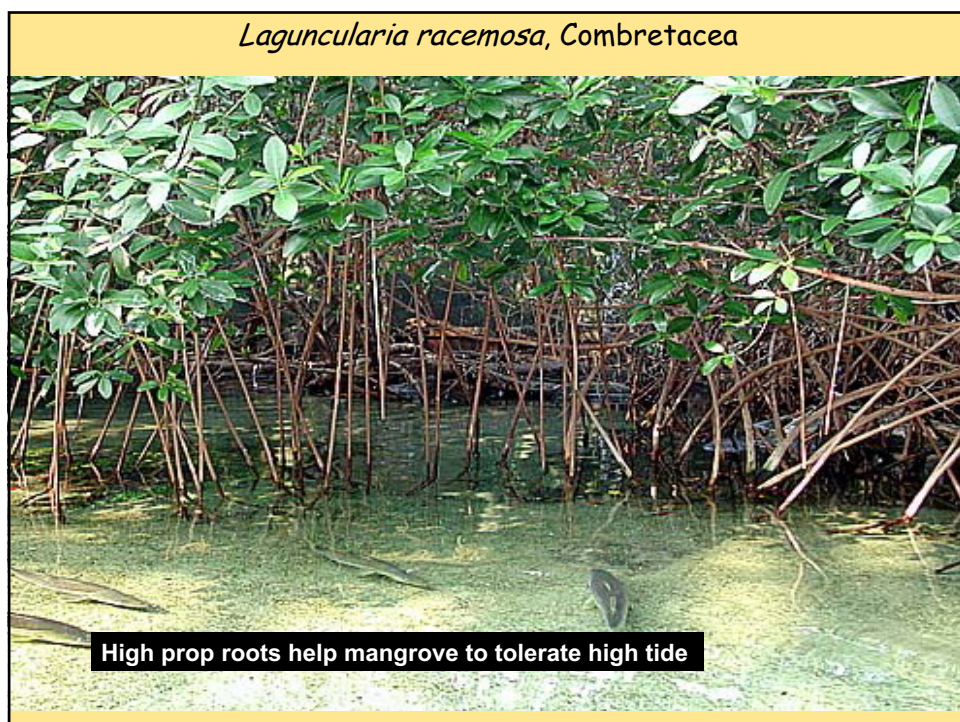
Rhizophora mangle, Rhizophoraceae



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Sonneratia alba, Sonneratiaceae



99

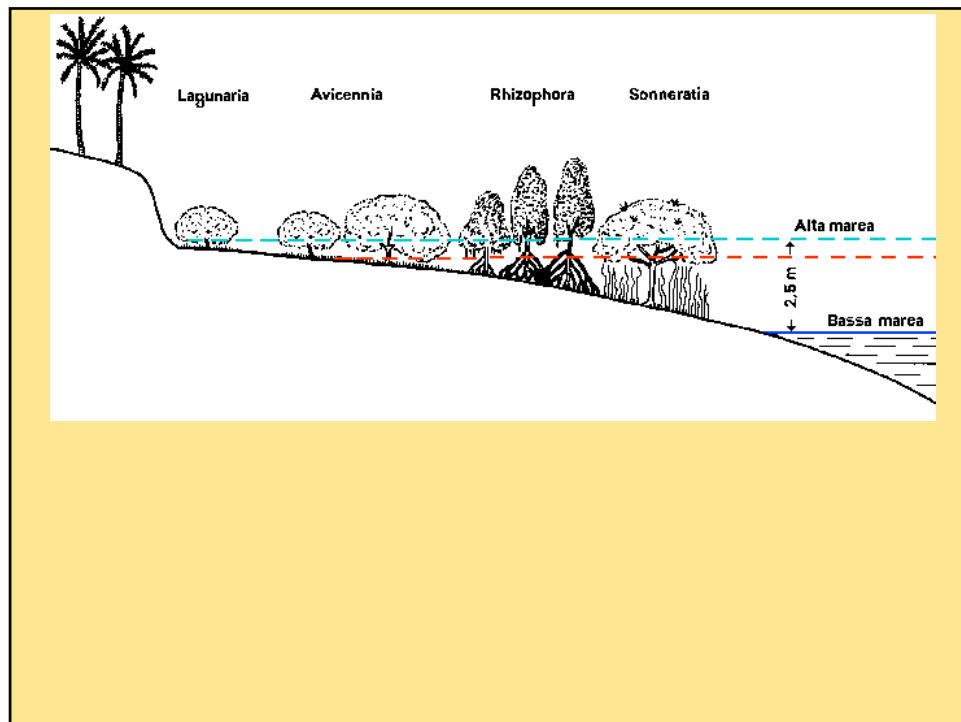
family Avicenniaceae
* *Avicennia* - 8
family Combretaceae
* *Laguncularia* - 1
* *Lumnitzera* - 2
family Arecaceae
* *Nypa* - 1
family Rhizophoraceae
* *Bruguiera* - 6
* *Ceriops* - 2
* *Kandelia* - 1
* *Rhizophora* - 8
family Sonneratiaceae
* *Sonneratia* - 5

Secondary Components

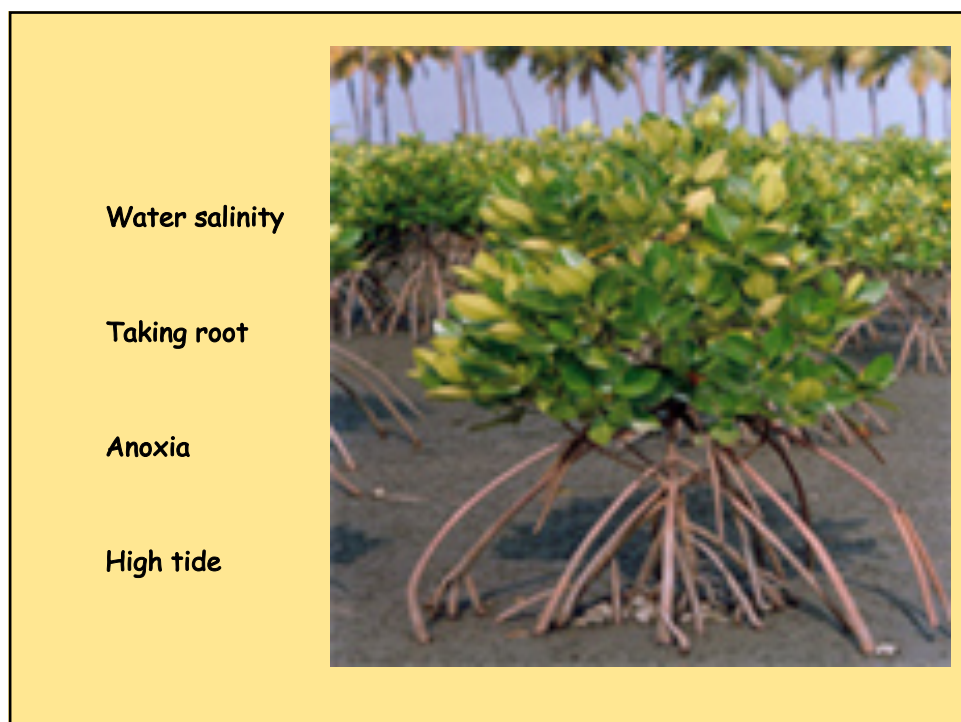
family Bombacaceae
* *Camptostemon* - 2

family Euphorbiaceae
* *Excoecaria* - 2
family Lythraceae
* *Pemphis* - 1
family Meliaceae
* *Xylocarpus* - 2
family Myrsinaceae
* *Aegiceras* - 2
family Myrtaceae
* *Osbornia* - 1
family Pellicieraceae
* *Pelliciera* - 1
family Plumbaginaceae
* *Aegialitis* - 2
family Pteridaceae
* *Acrostichum* - 3
family Rubiaceae
* *Scyphiphora* - 1
family Sterculiaceae
* *Heritiera* - 3

100



101

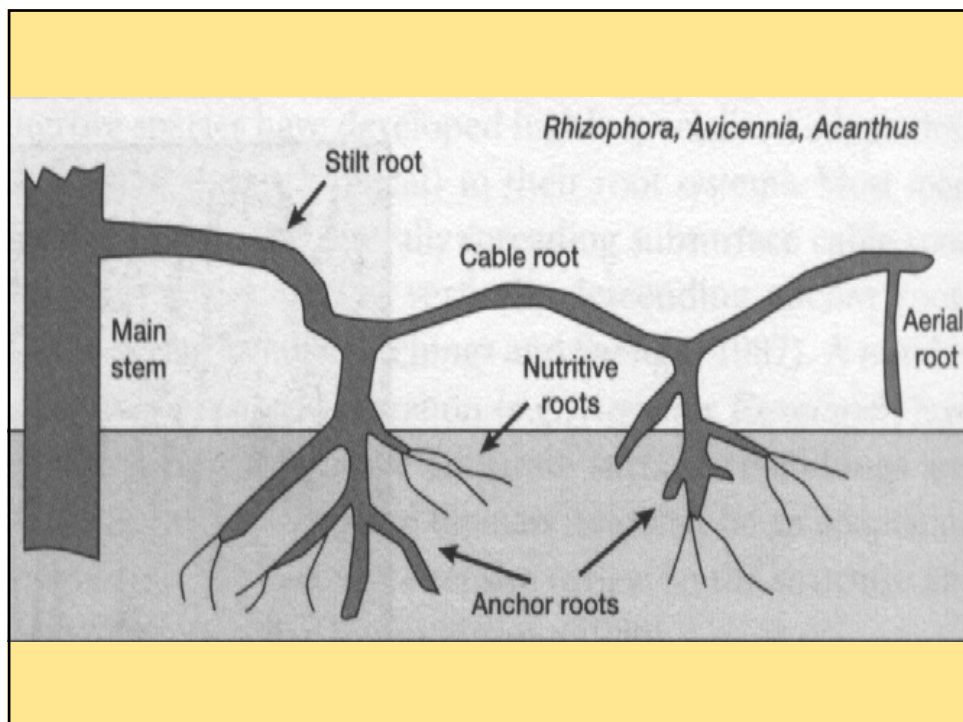


102

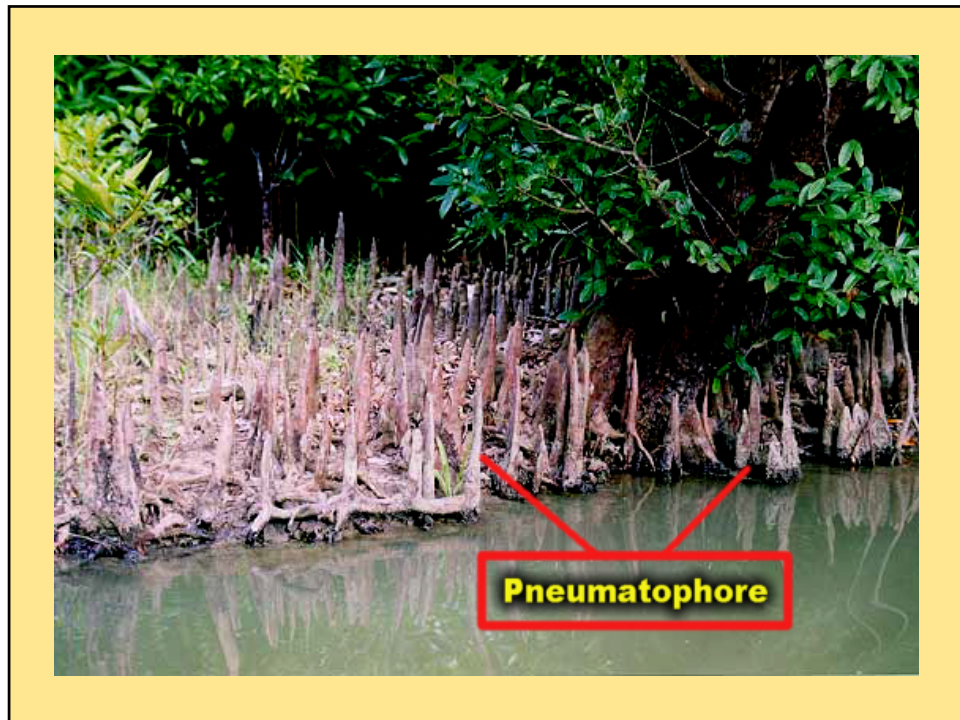
Red mangroves have prop roots to resist to anoxia during immersion
Prop roots originate from trunk and branch



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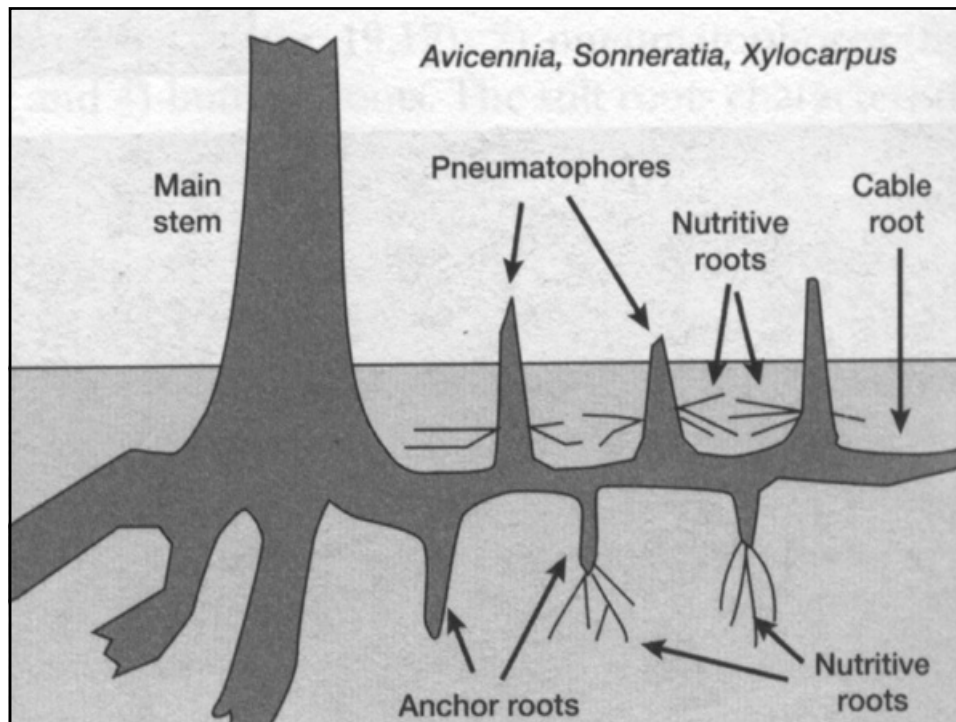
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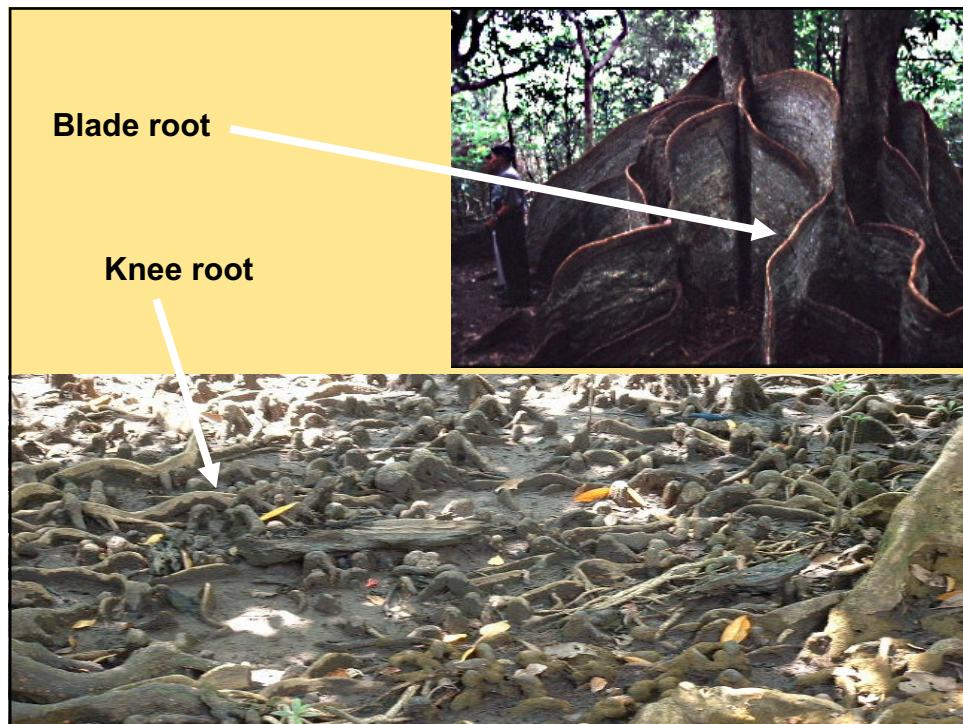


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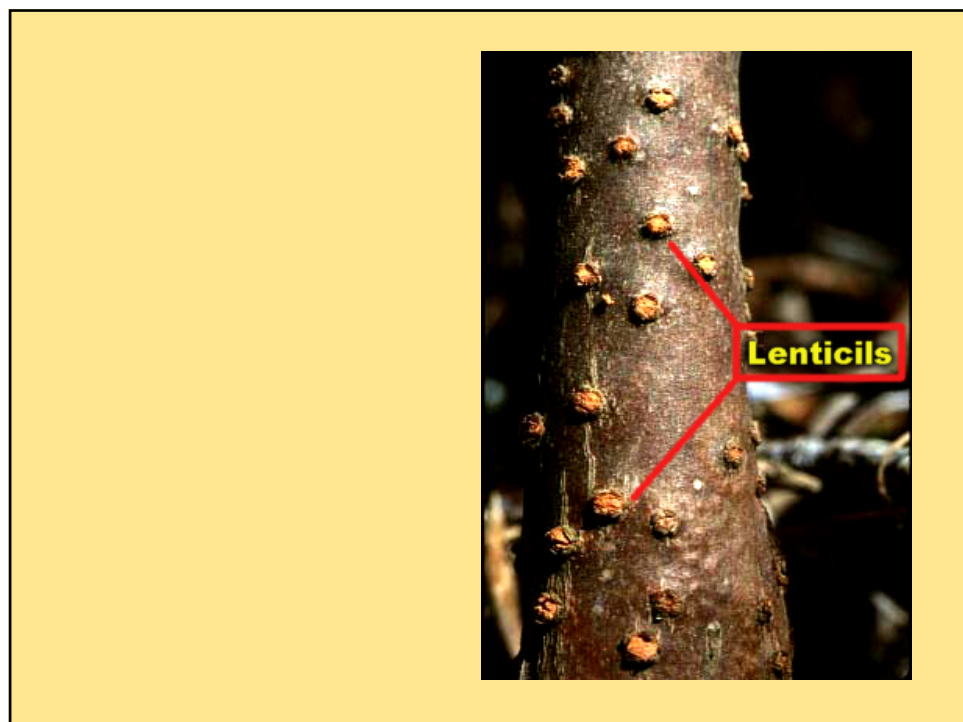


In black mangrove can be also 10000 pneumatophores for each tree and they ca

108



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Adaptation to salinity

ultra filtration reducing of 90 percent of adsorbed ions

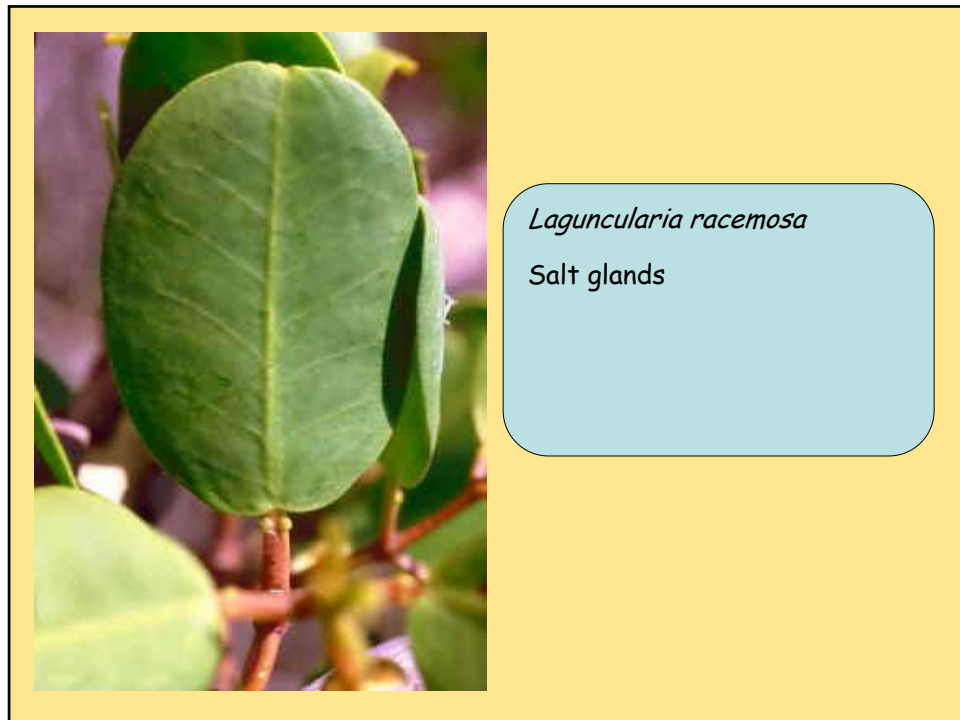
Salt Excluder

111

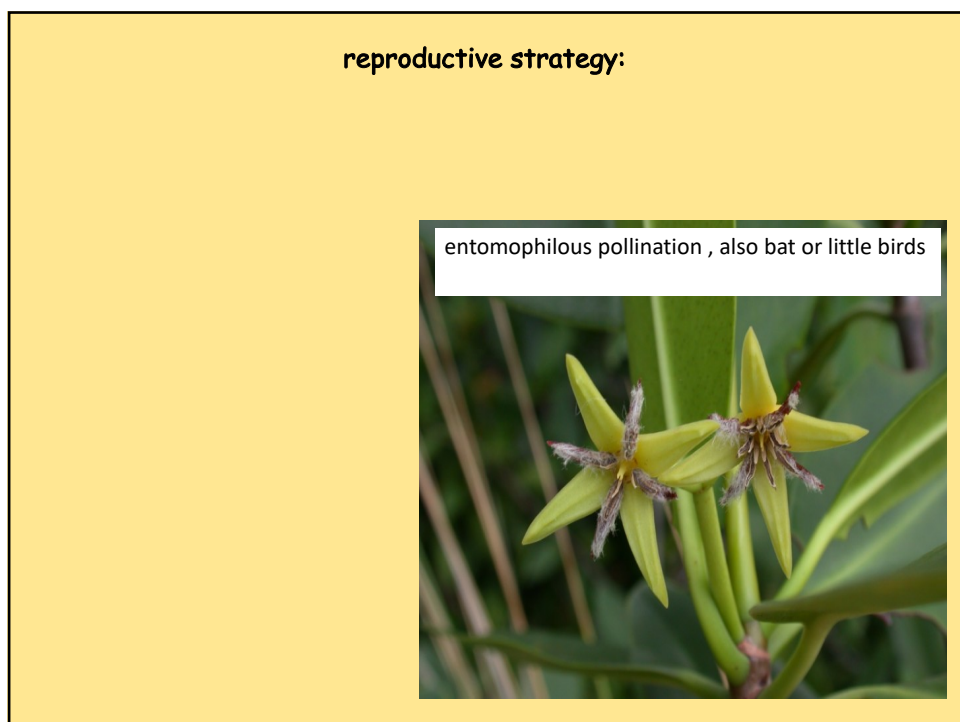
Non Salt Excluder



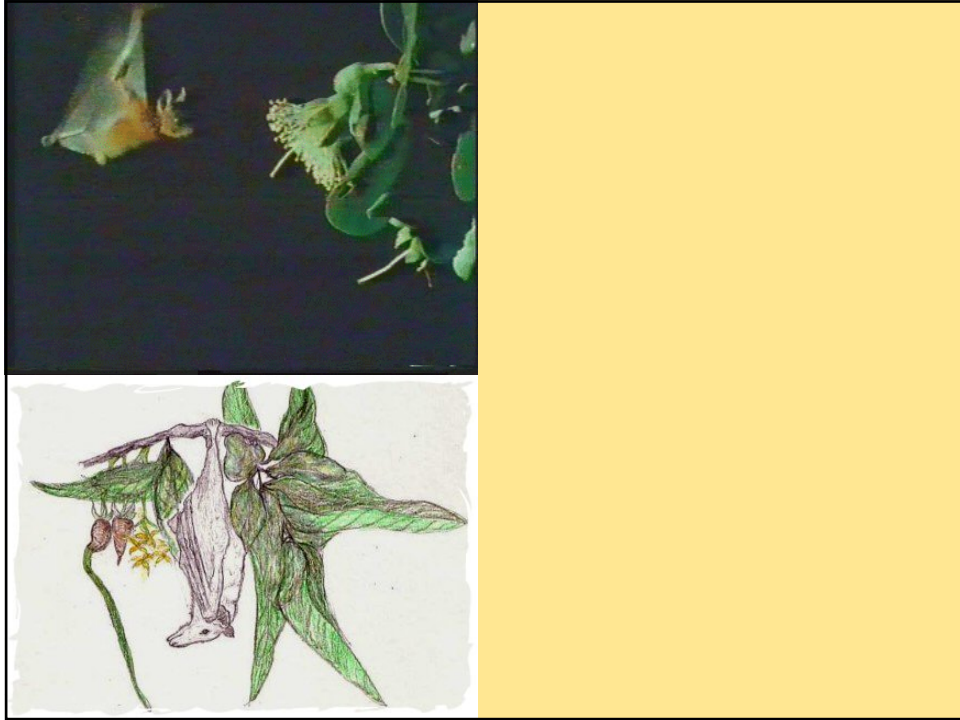
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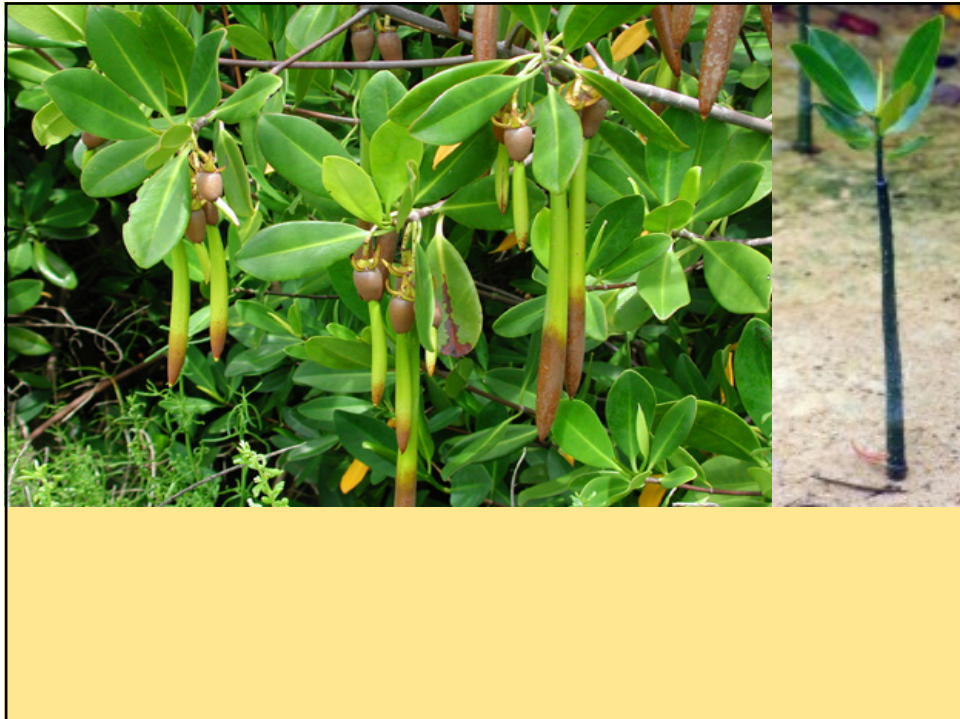


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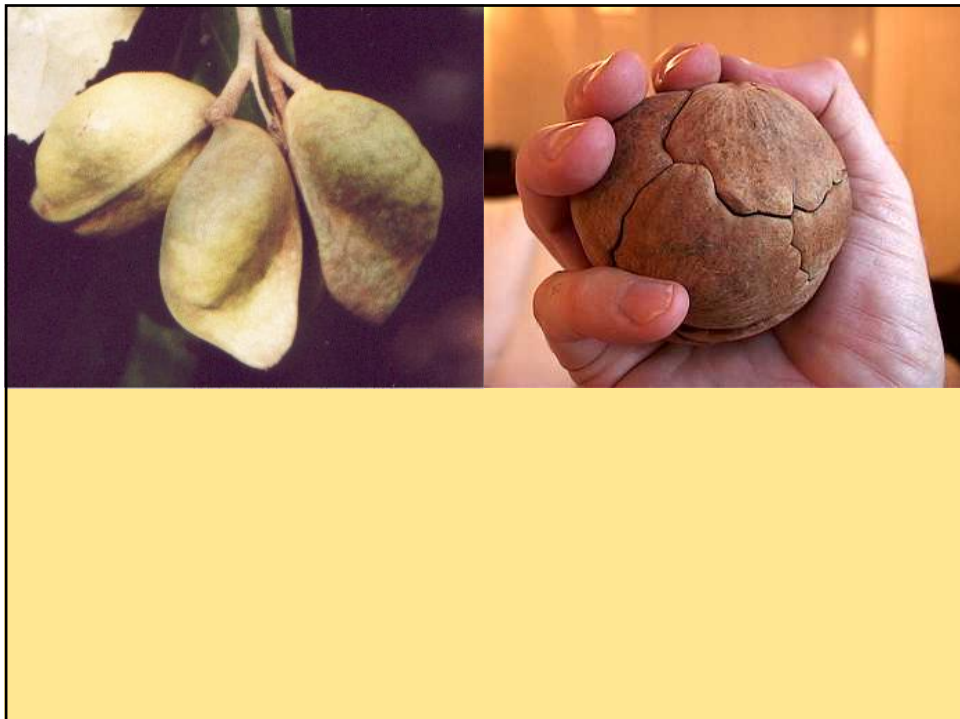
Viviparity is very frequent. Seed germination begins on branches to avoid toxicity effects of salinity on embryo



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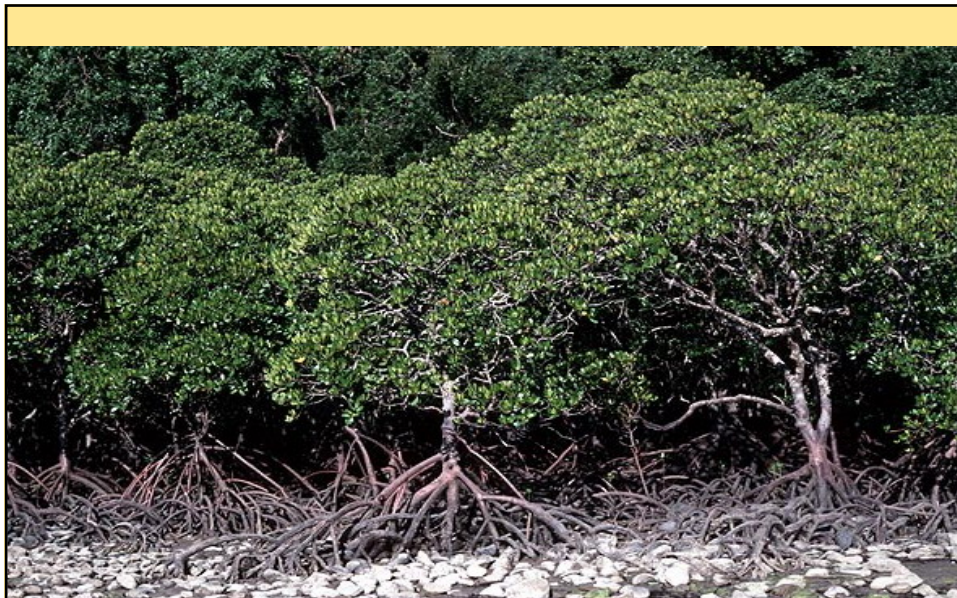


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1. Mumby P.J. et al. (2004) Mangroves enhance the biomass of coral reef fish communities in the Caribbean. In: Nature, 427 (2004): 533-536.

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Mangrove have a important role against soli erosion

120



Mangrove and tsunami

121



The principal risk for this environment is the intensive aquaculture to product shrimp
secondary risk is determined by touristic settlement

122

Reduction of mangrove area in world

Country	Period	Former area (ha)	Current area (ha)	Lost area (%)
Cuba	1969 - 1989	476.000	448.000	6%
Bangladesh	1963 - 1990	685.000	587.000	14%
Thailand	1961 - 1993	300.000	219.200	27%
Vietnam	1969 - 1990	425.000	286.400	33%
USA	1958 - 1983	260.000	175.000	33%
Indonesia	1969 - 1986	4.220.000	2.176.000	48%
Philippines	1968 - 1995	448.000	140.000	69%
Puerto Rico	1930 - 1985	26.300	3.000	89%
Kerala (India)	1911 - 1989	70.000	250	96%