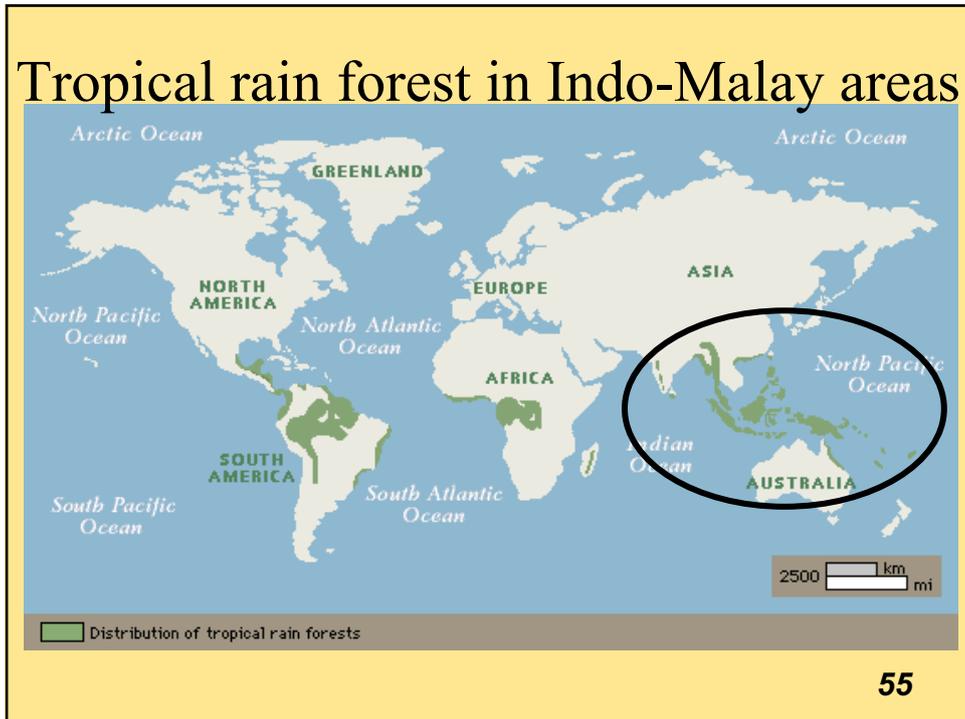




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54



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Tropical rain forest in Indo-Malay areas

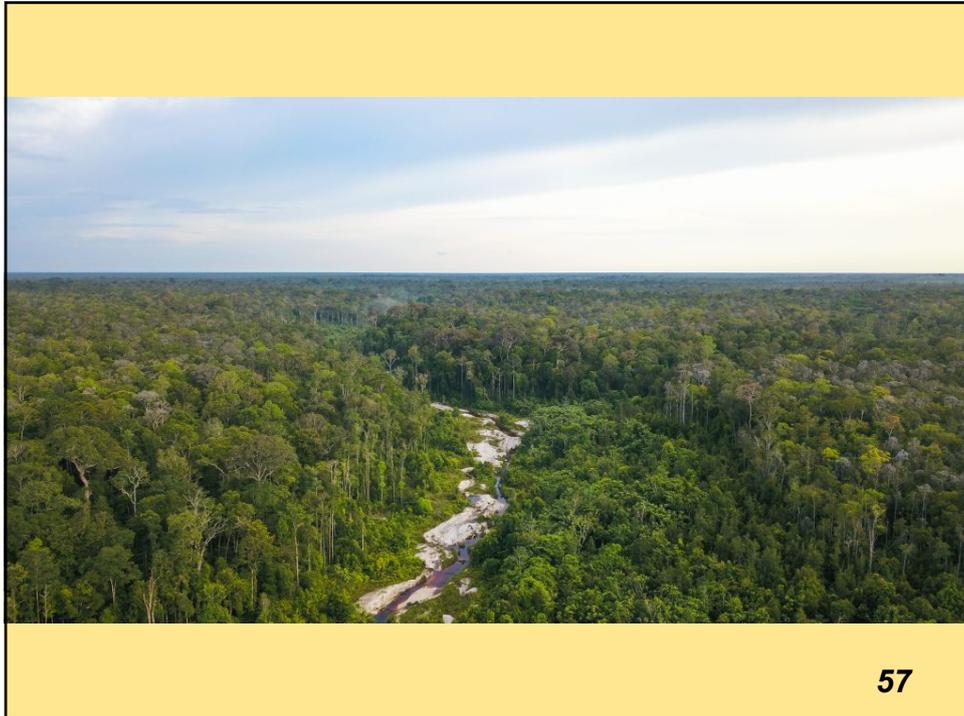
Dipterocarpaceae

Dipterocarpus costatus

Dipterocarpus alatus

56

56



57

57



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 active

58

58

Tropical rain forest in Africa:



59

59

Ebenaceae

Diospyros ebenum
(Ebony, ornamental
species in risk),



Diospyros

60

60

Meliaceae



Ptaeroxylon obliquum



Khaja senegalensis

61

61

Genus in tropical Africa:

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



Brachystegia woodland



Dialium laurinum

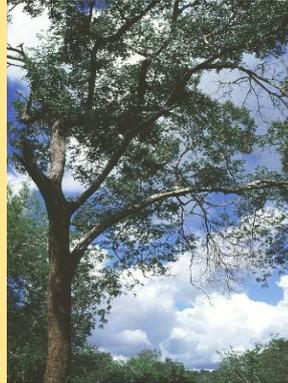


Brachystegia boehmii (teak)

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

63

precious wood

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



64

64

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

65

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



Diospyros ebum

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: Caesalpinaceae): 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

67

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deforestation

68

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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

69

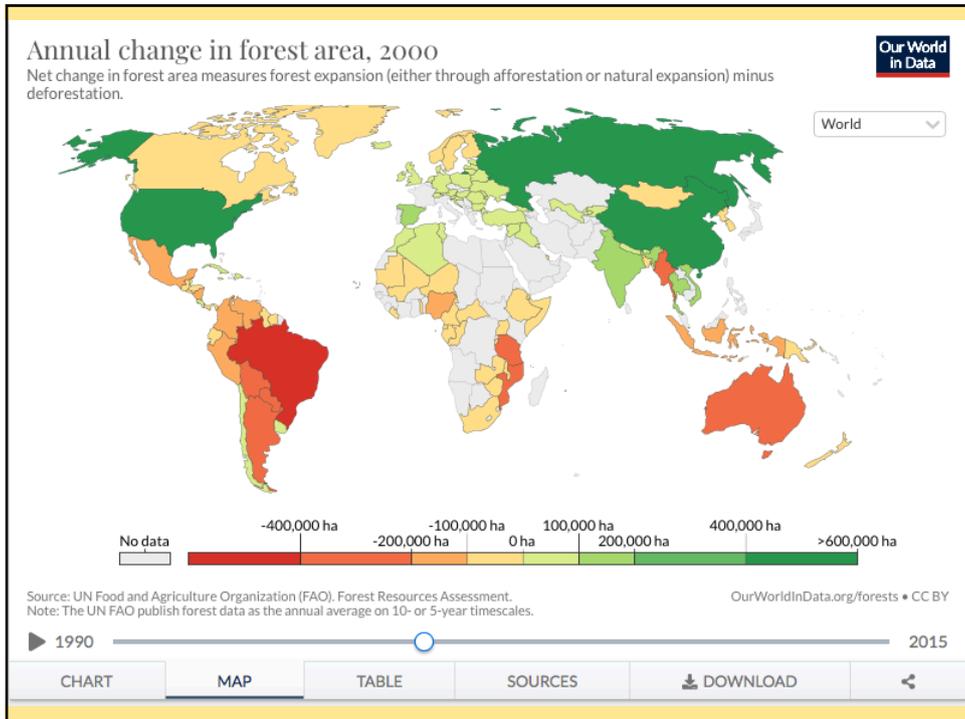
69

Deforestation

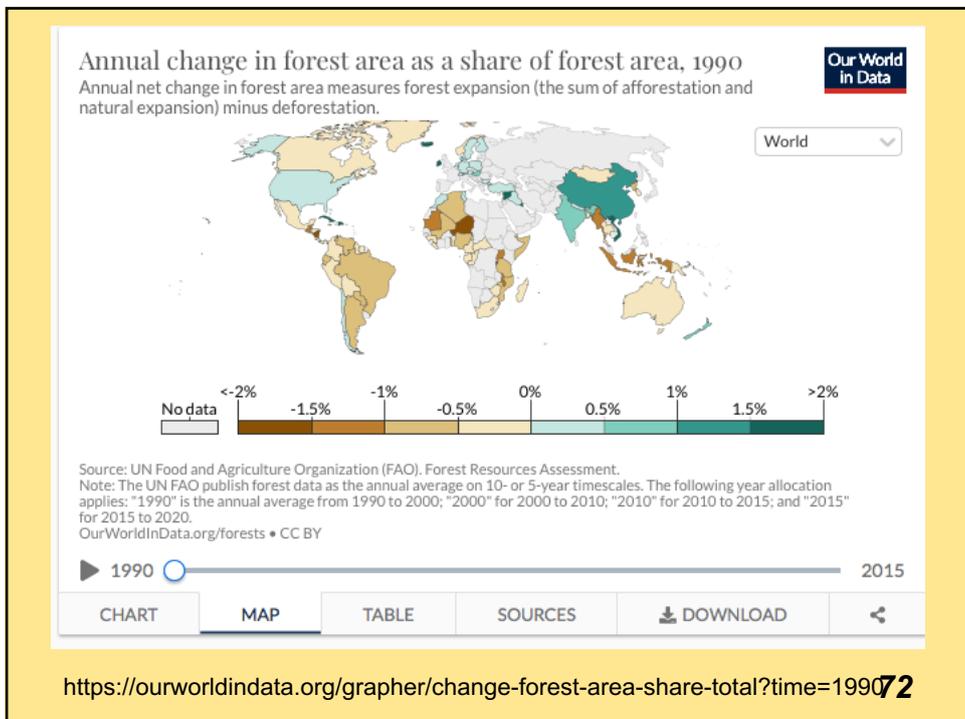
- Forests cover 31% of the land area on our planet
- They produce vital oxygen and provide homes for people and wildlife
- Many of the world's most threatened and endangered animals live in these forests
- 1.6 billion people rely on benefits forests offer, including food, fresh water, clothing, traditional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

70

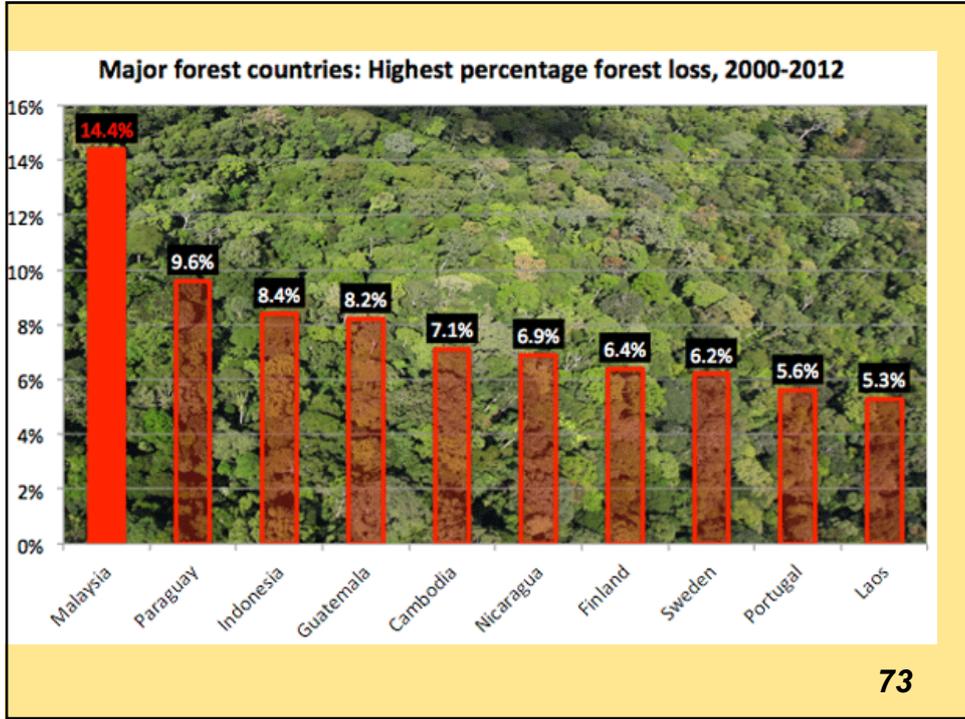
70



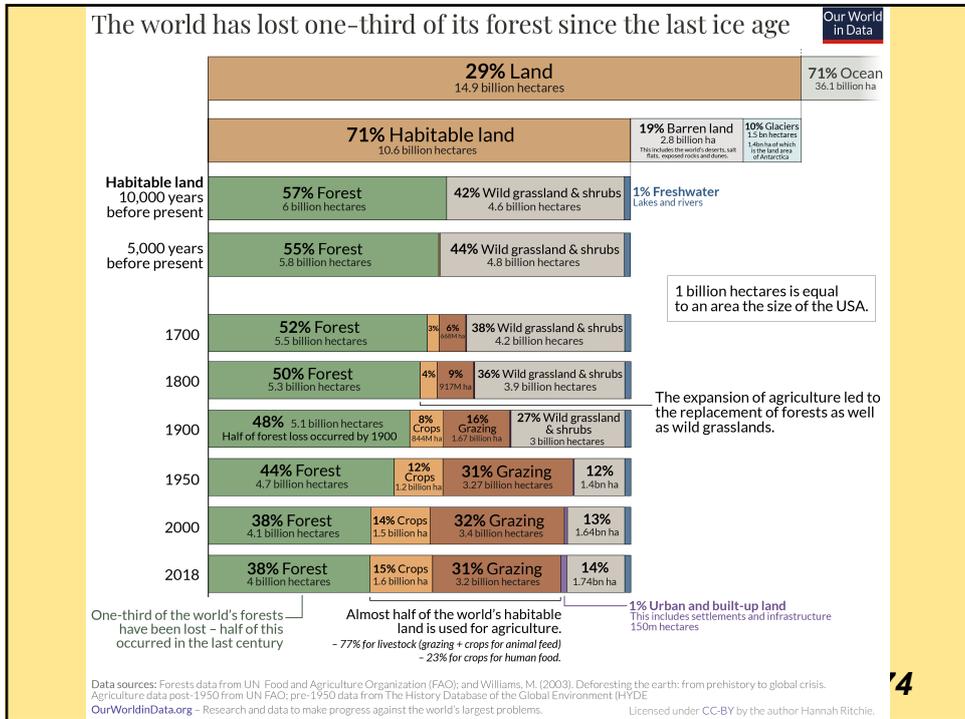
71



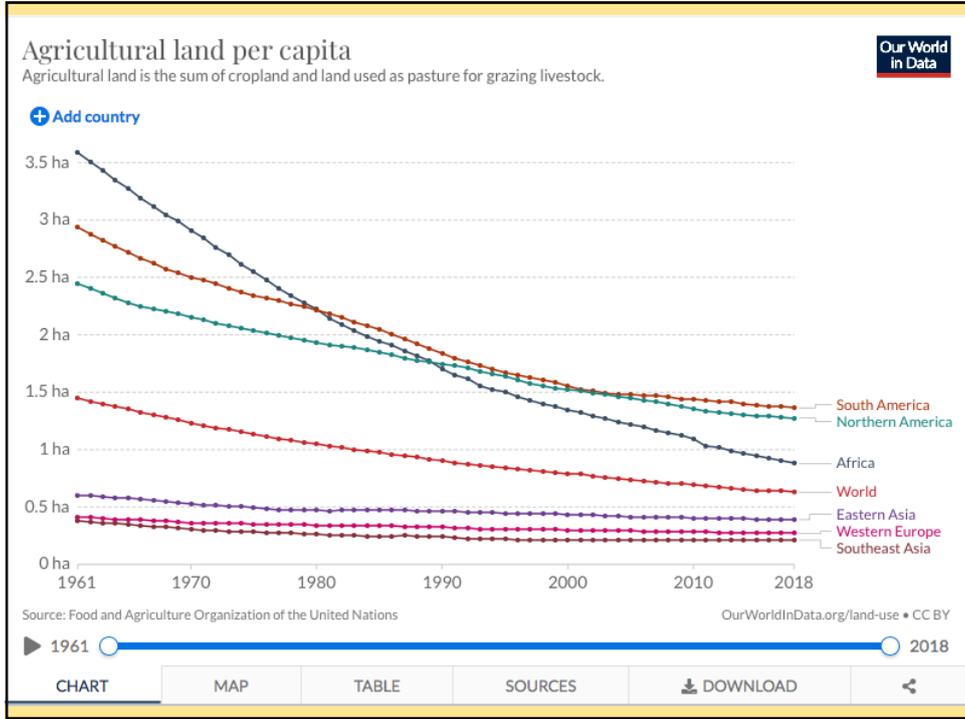
72



73



74



75



76

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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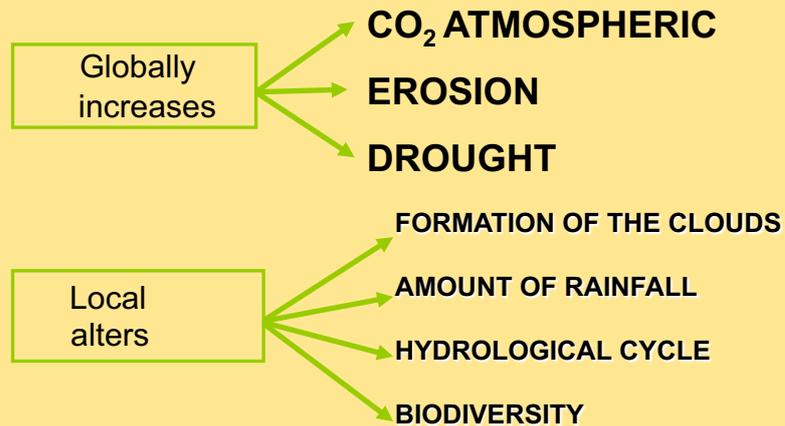


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CONSEQUENCES

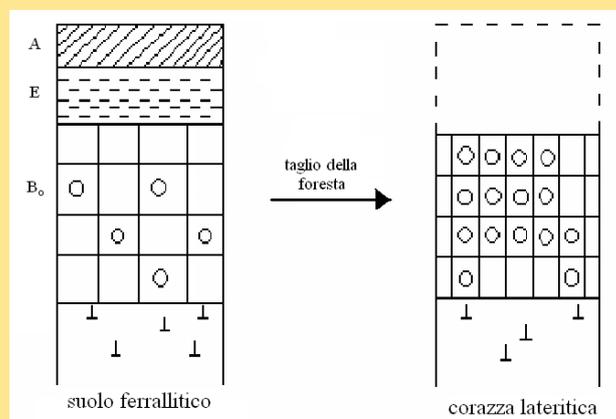
The destruction of rainforests profoundly alters the ecological balance of the biosphere:



79

79

- 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



80

80

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.



area	superficie	superficie delle foreste tropicali originale	superficie attuale	superficie disboscata % tot.	superficie % 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	5,7
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	1.990.000	255.000	87,2	15,8
Zaire	2.345.000	1.245.000	700.000	43,8	0,4
Africa Occ.	3.880.000	925.000	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

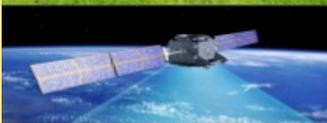
Tutti i dati in km² × 1000.
* Includi altri Paesi.

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.

82

82

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

Our World in Data

Identifying the drivers of forest loss

Deforestation

Complete removal of trees for the conversion of forest to another land use such as agriculture, mining, or towns and cities. It results in a permanent conversion of forest into an alternative land use. The trees are not expected to regrow.



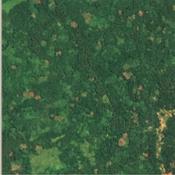
Commodity-driven deforestation
Conversion of forests to other land uses such as agriculture (including oil palm and cattle ranching), mining, or energy infrastructure.



Urbanization
Conversion of forests to towns, cities and urban infrastructure such as roads.

Forest Degradation

Thinning of the canopy – a reduction in the density of trees in the area – but without a change in land use. The changes to the forest are often temporary and it's expected that they will regrow.



Shifting agriculture
Small-scale clearance of forest for subsistence, slash-and-burn farming.



Forestry products
Logging and management of forests for products such as timber, paper and pulp.



Wildfires
Natural fires, or management through deliberate burning.

Adapted based on satellite images from Philip Curtis et al. (2018). Classifying drivers of global forest loss. Science. OurWorldinData.org - Research and data to make progress against the world's largest problems. Licensed under CC-BY by the author.

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
-

88

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

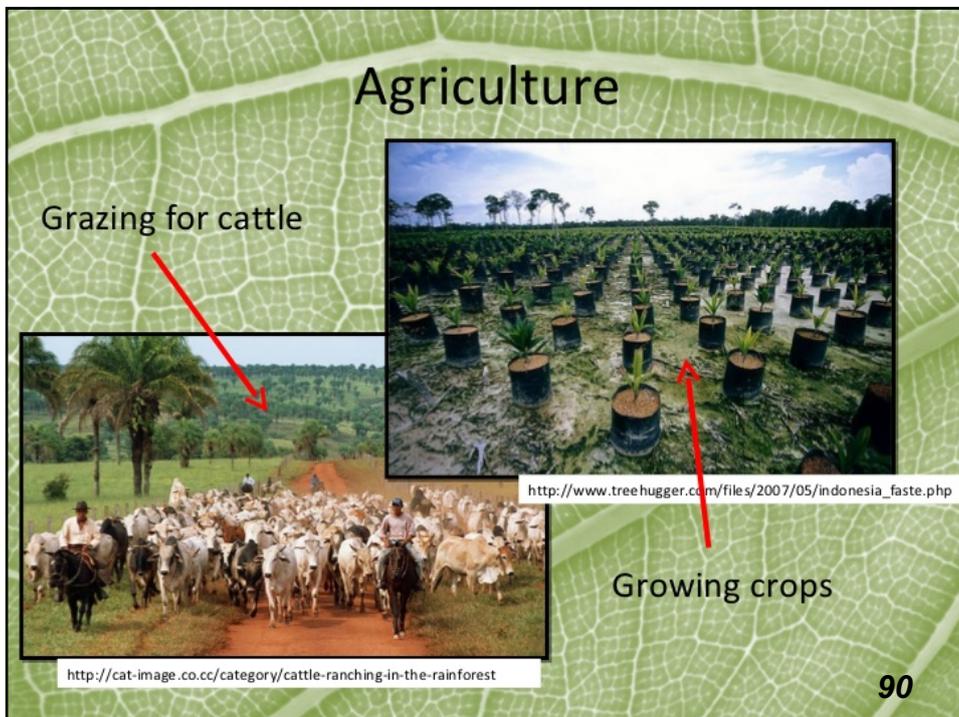


89

Agriculture

Grazing for cattle

Growing crops



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

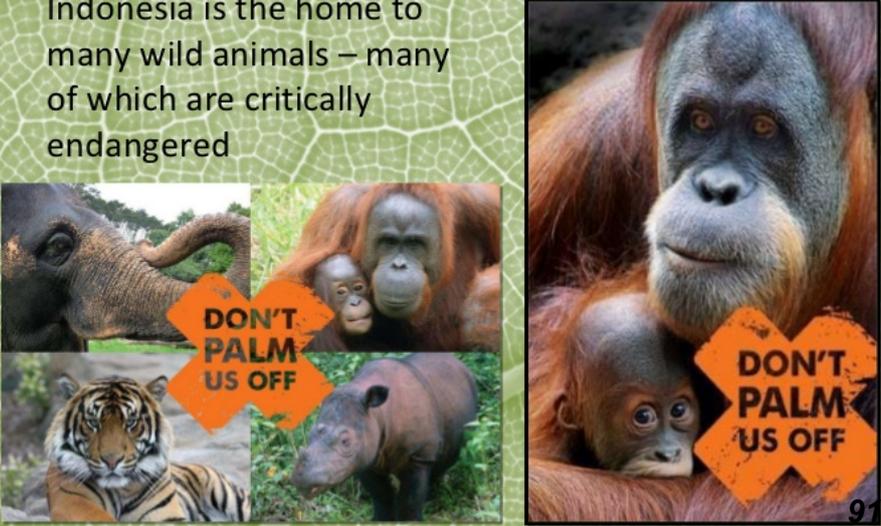
<http://cat-image.co.cc/category/cattle-ranching-in-the-rainforest>

90

90

Palm Oil = Extinction?

Indonesia is the home to many wild animals – many of which are critically endangered



91

91

Before – Borneo Rainforest



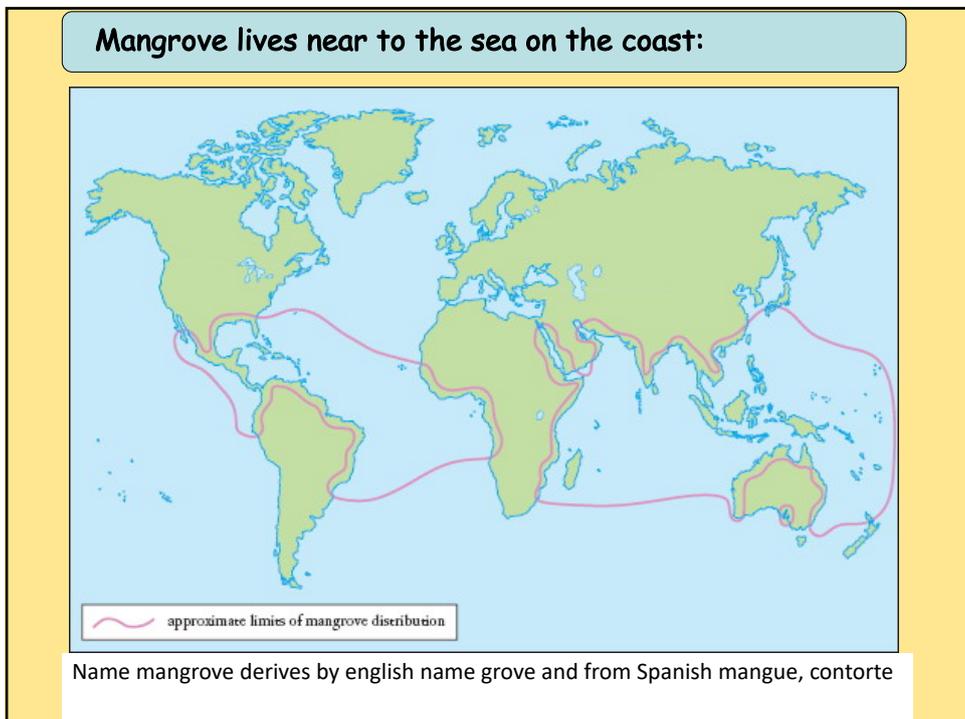
<http://replantingtherainforests.org>

92

92



93



94

- 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



96



97



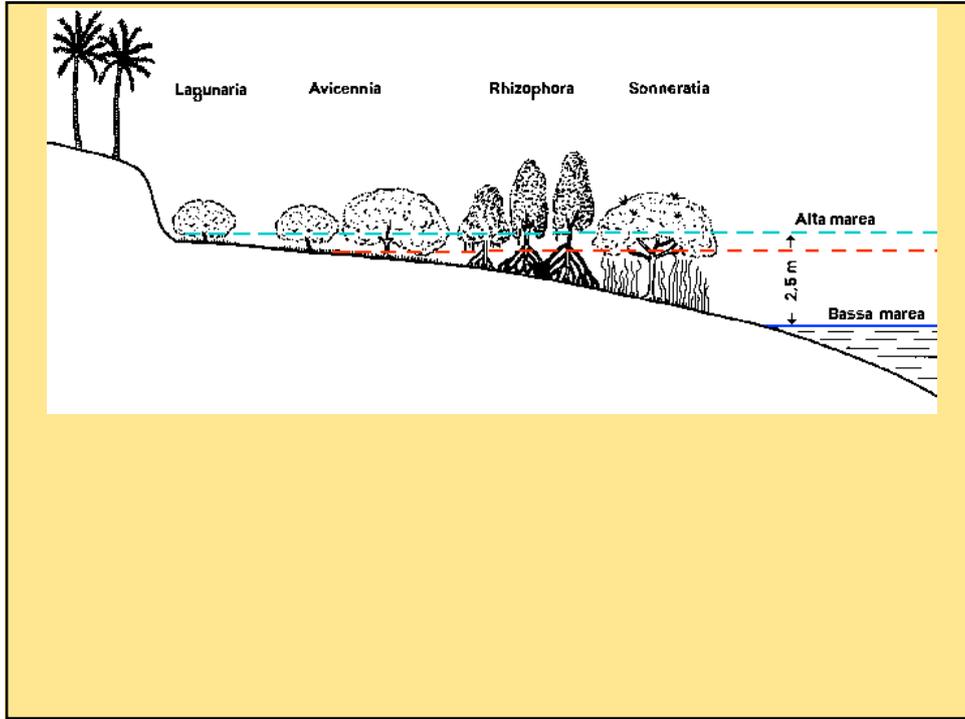
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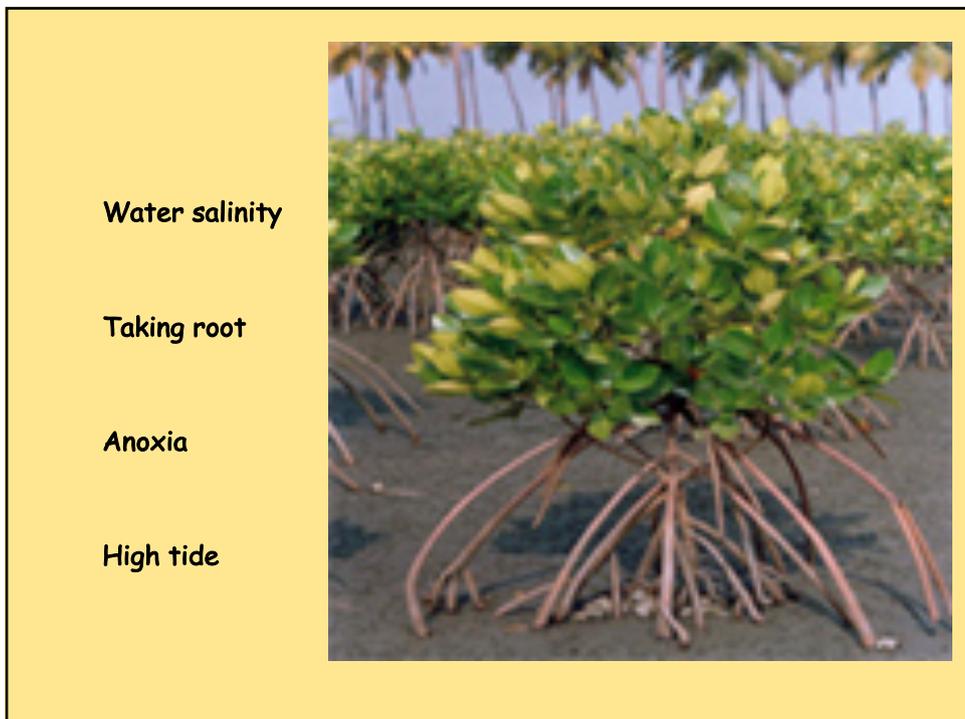
99

<p>family Avicenniaceae * <i>Avicennia</i> - 8 family Combretaceae * <i>Laguncularia</i> - 1 * <i>Lumnitzera</i> - 2 family Arecaceae * <i>Nypa</i> - 1 family Rhizophoraceae * <i>Bruguiera</i> - 6 * <i>Ceriops</i> - 2 * <i>Kandelia</i> - 1 * <i>Rhizophora</i> - 8 family Sonneratiaceae * <i>Sonneratia</i> - 5</p> <p>Secondary Components</p> <p>family Bombacaceae * <i>Camptostemon</i> - 2</p>	<p>family Euphorbiaceae * <i>Excoecaria</i> - 2 family Lythraceae * <i>Pemphis</i> - 1 family Meliaceae * <i>Xylocarpus</i> - 2 family Myrsinaceae * <i>Aegiceras</i> - 2 family Myrtaceae * <i>Osbornia</i> - 1 family Pellicieraceae * <i>Pelliciera</i> - 1 family Plumbaginaceae * <i>Aegialitis</i> - 2 family Pteridaceae * <i>Acrostichum</i> - 3 family Rubiaceae * <i>Scyphiphora</i> - 1 family Sterculiaceae * <i>Heritiera</i> - 3</p>
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100



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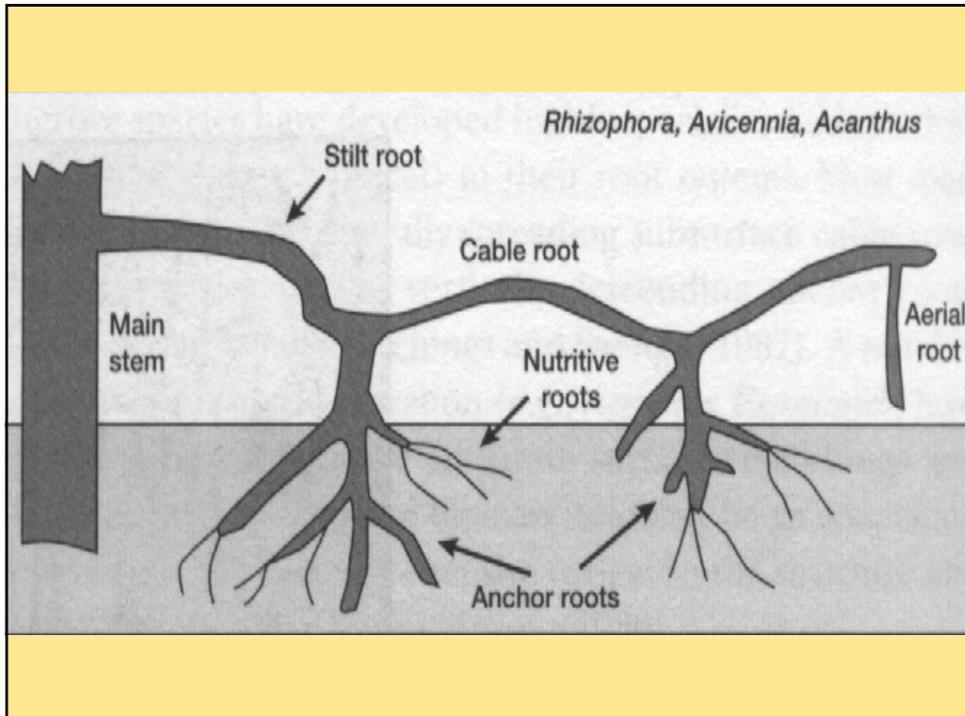


102

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



103



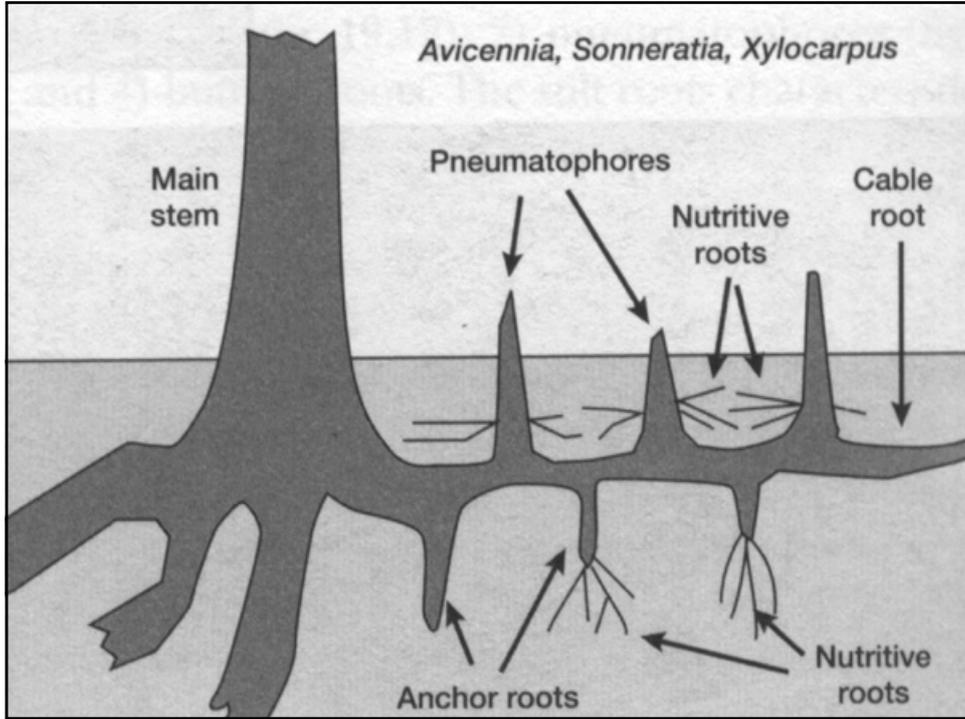
104



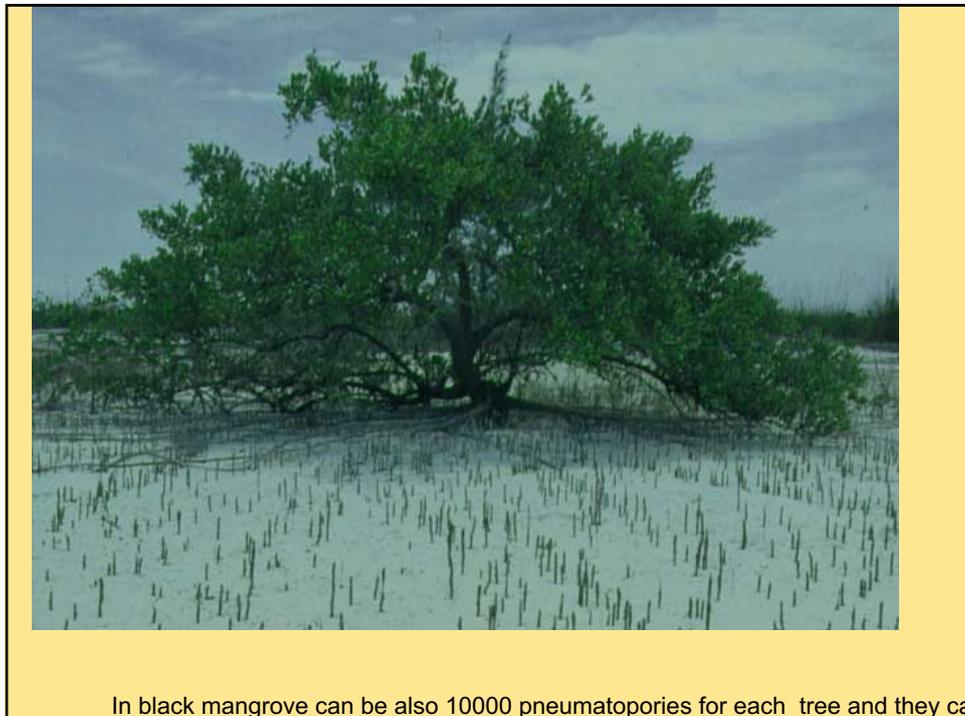
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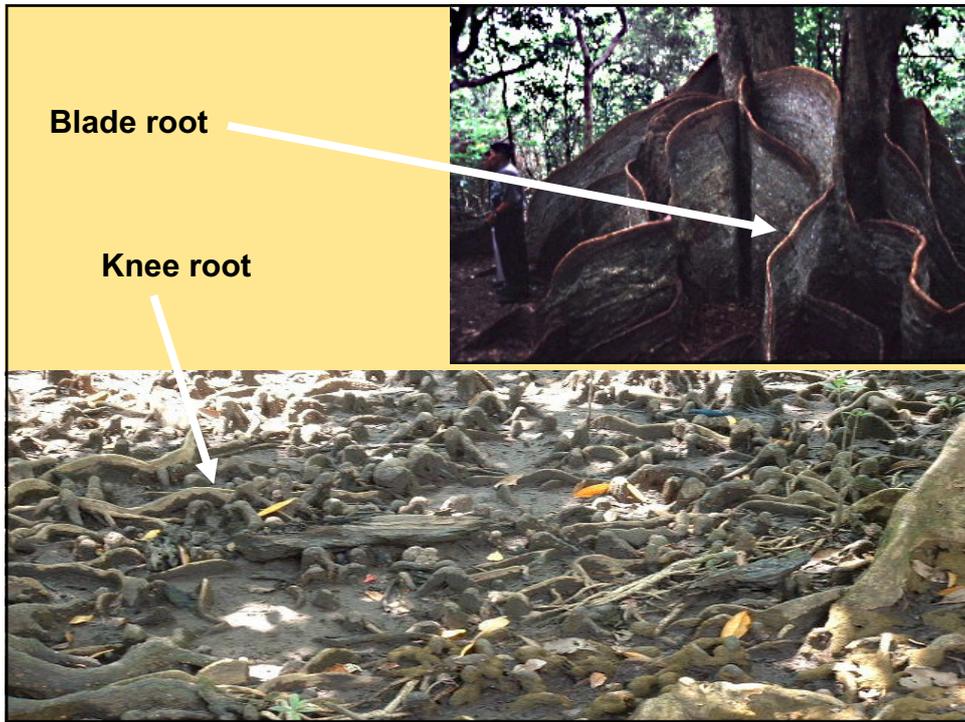


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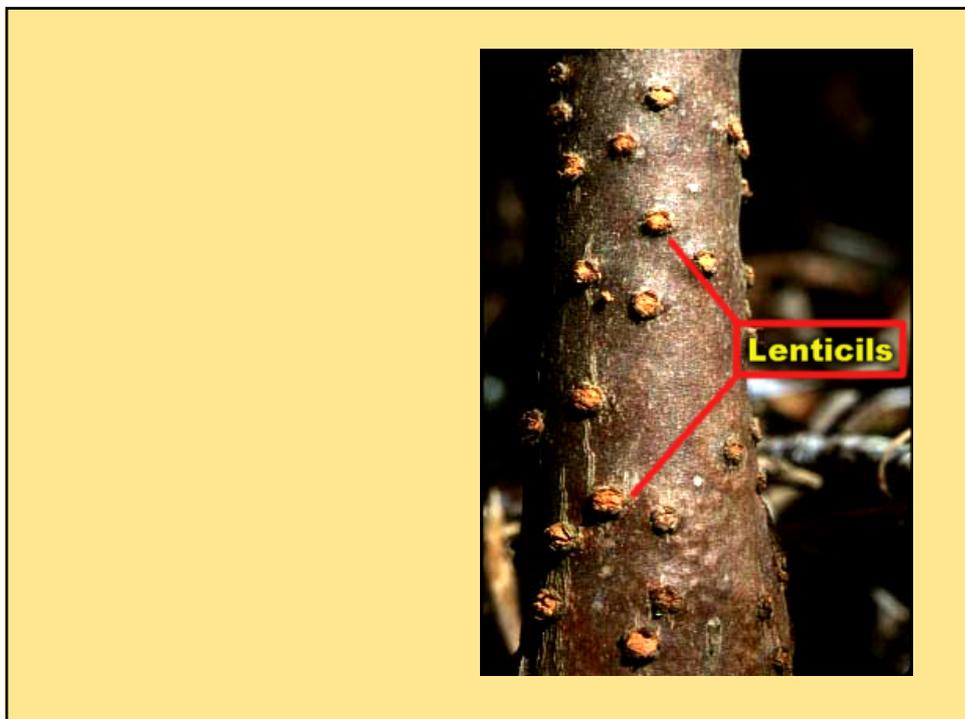


In black mangrove can be also 10000 pneumatopories for each tree and they ca

108



109



110

Adaptation to salinity

ultra filtration reducing of 90 percent of adsorbed ions

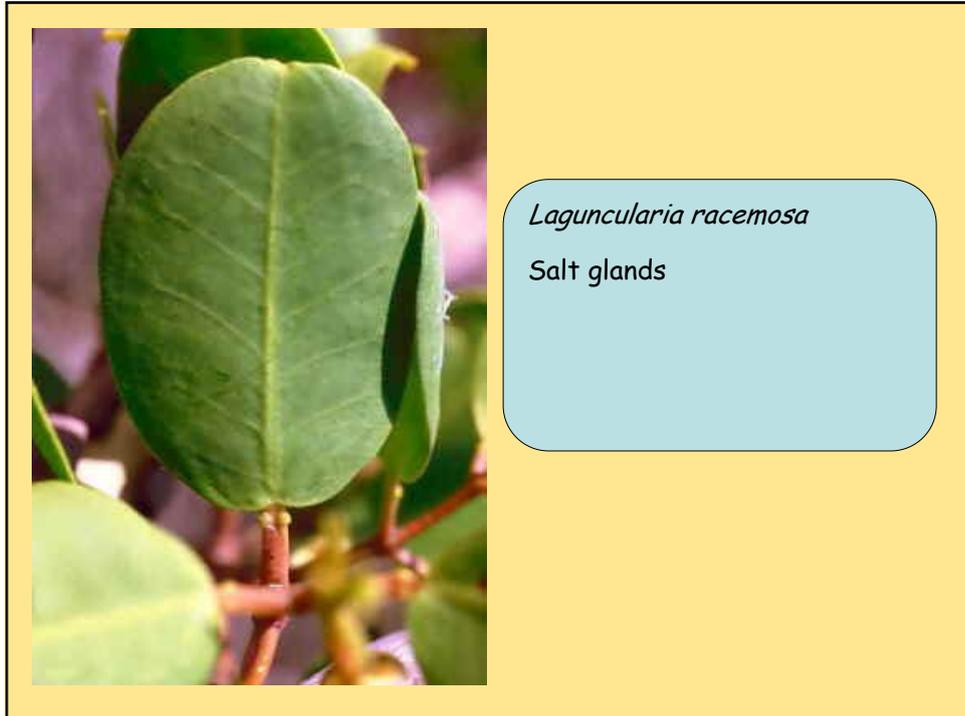
Salt Excluder

111

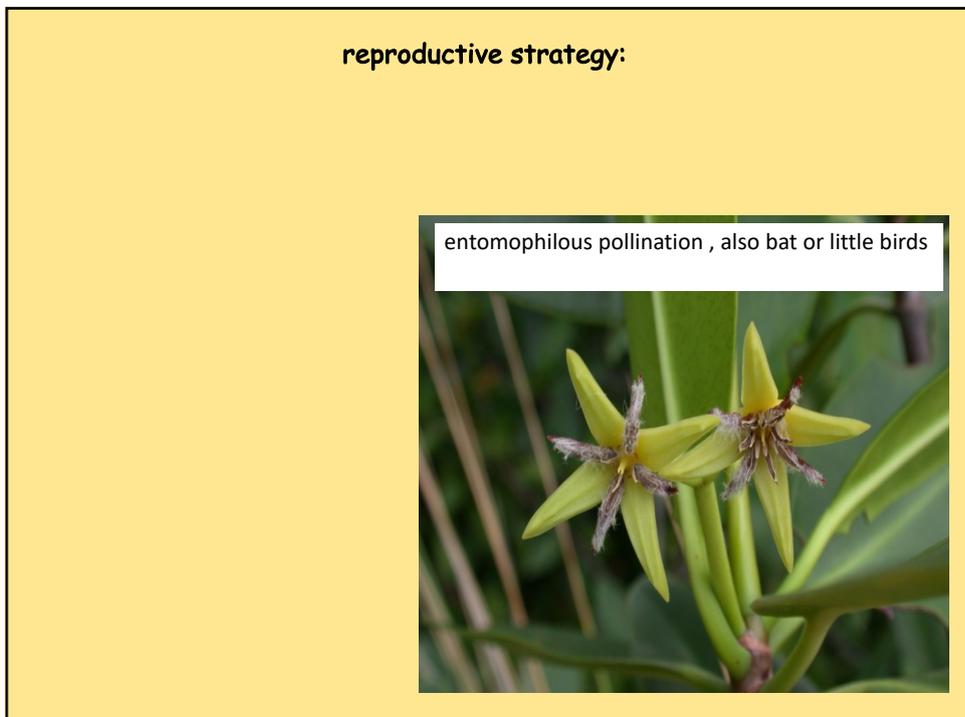
Non Salt Excluder



112



113



114



115

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



116



117



118



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.

119



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%