

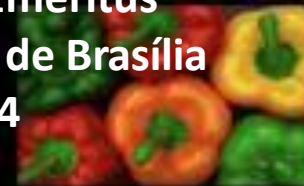


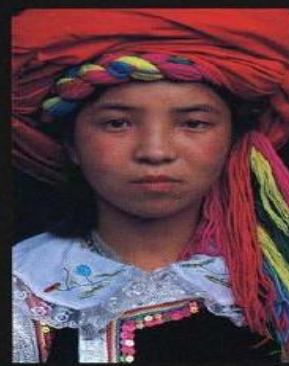
BIODIVERSITY COURSE

Summary



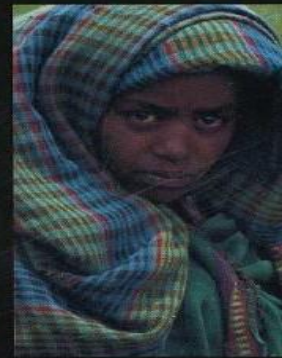
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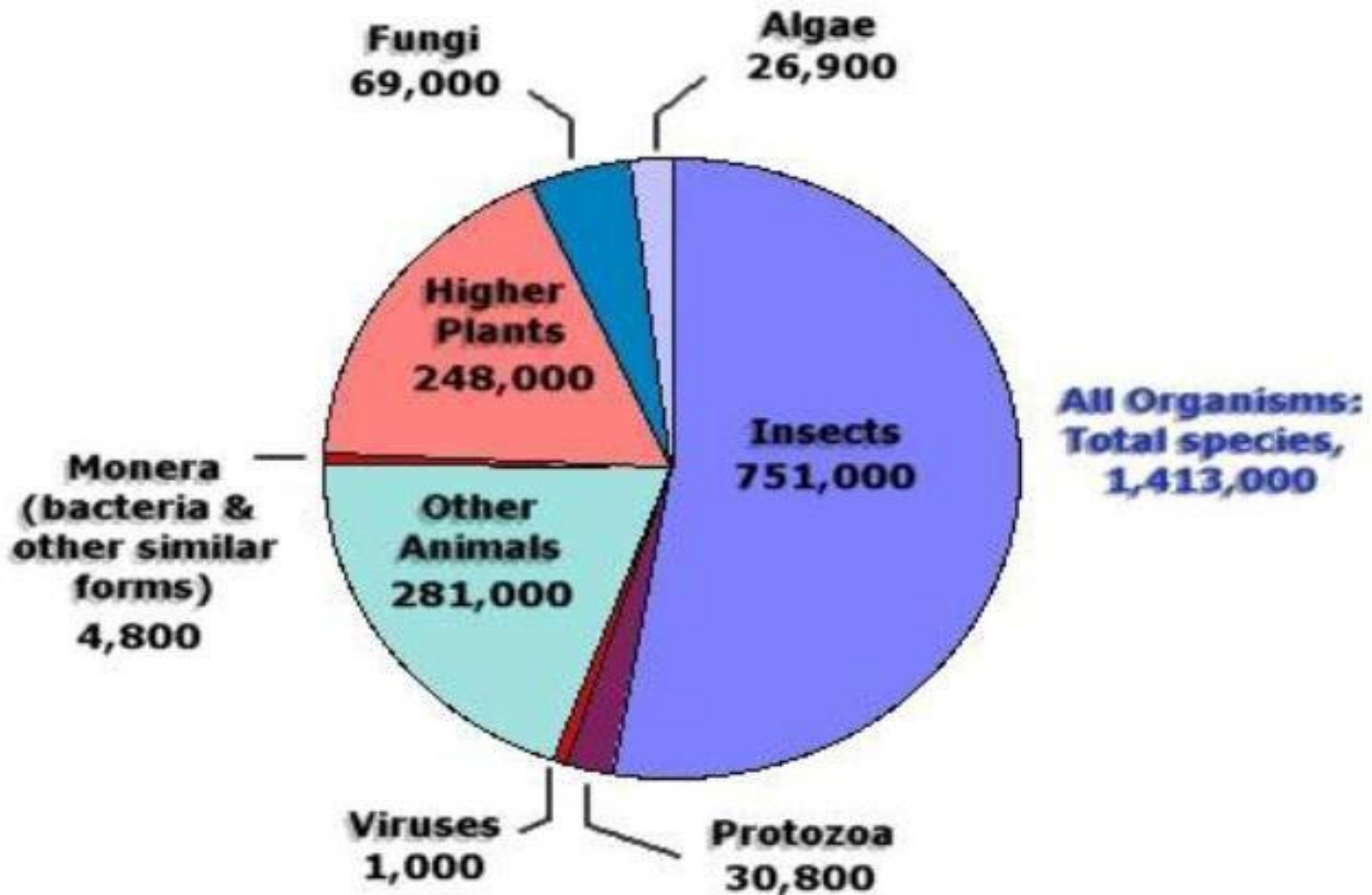
BIODIVERSITY

Principles of geographic distribution



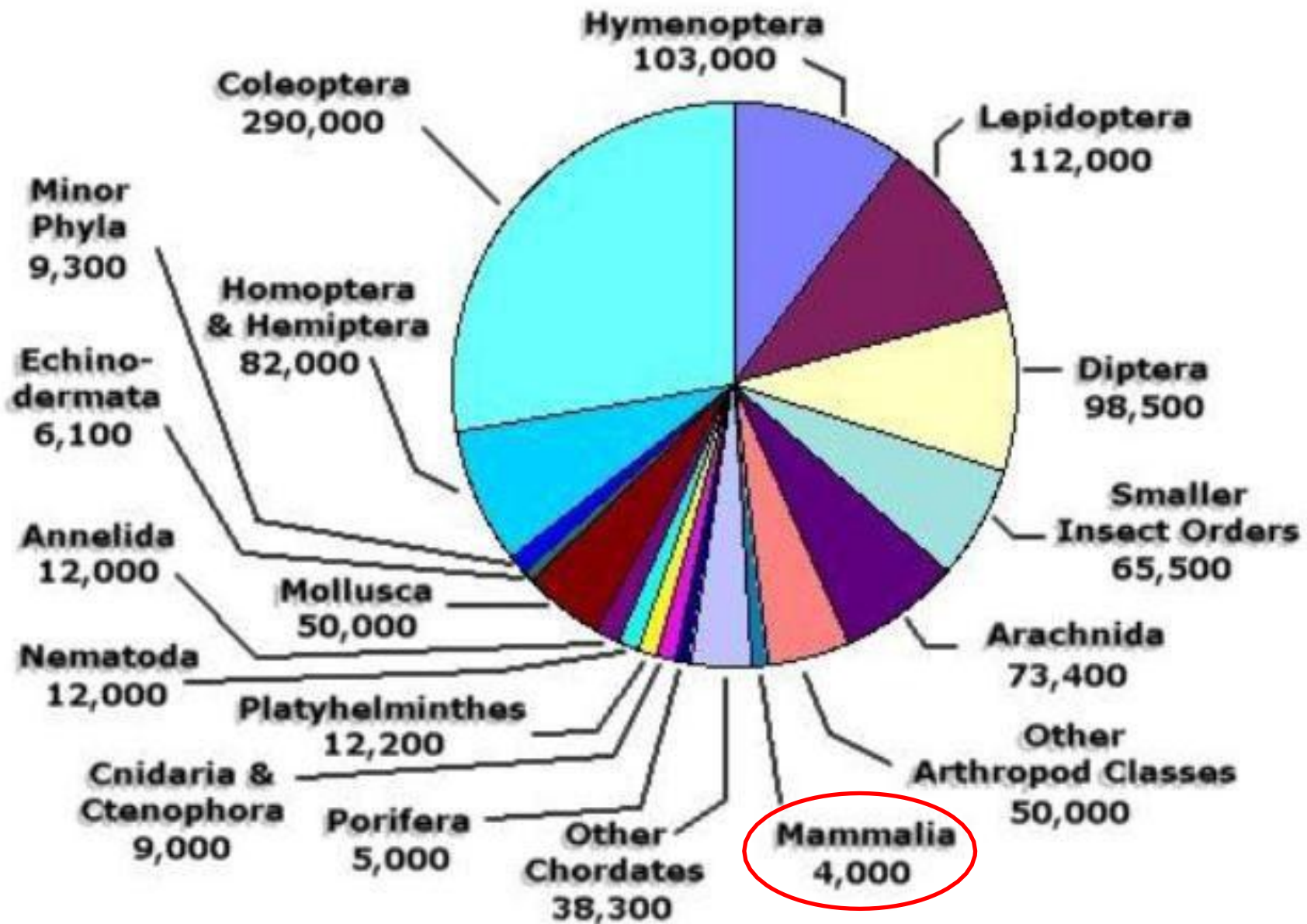
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Number of Living Species of All Organisms Currently Known



Number of Living Animal Species Currently Known

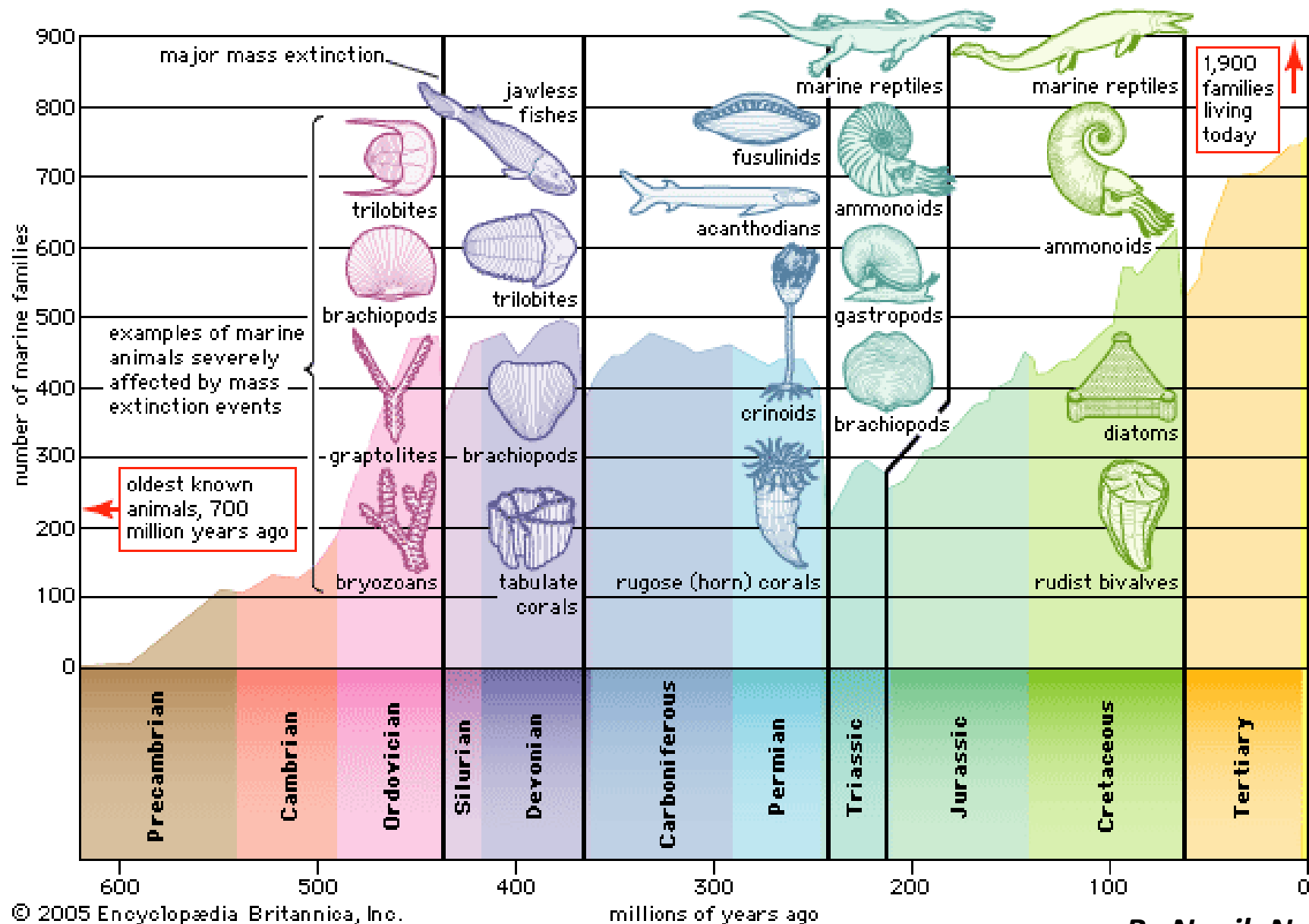
Animals: Total Species, 1,032,000

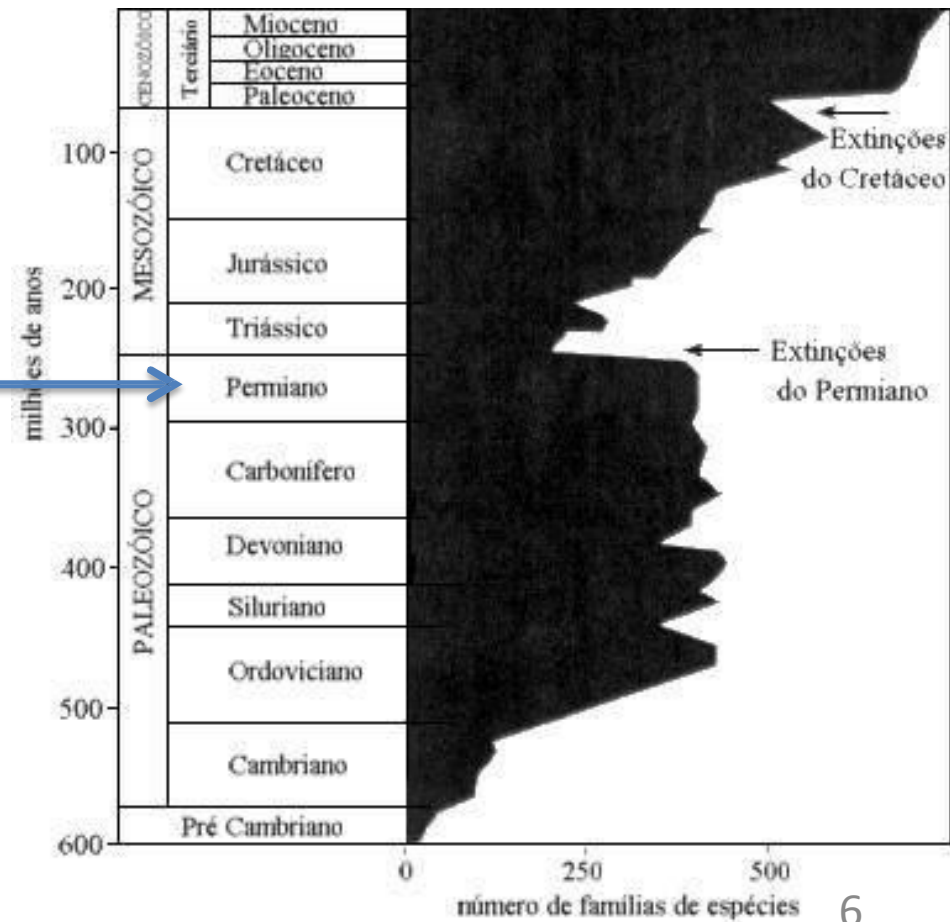
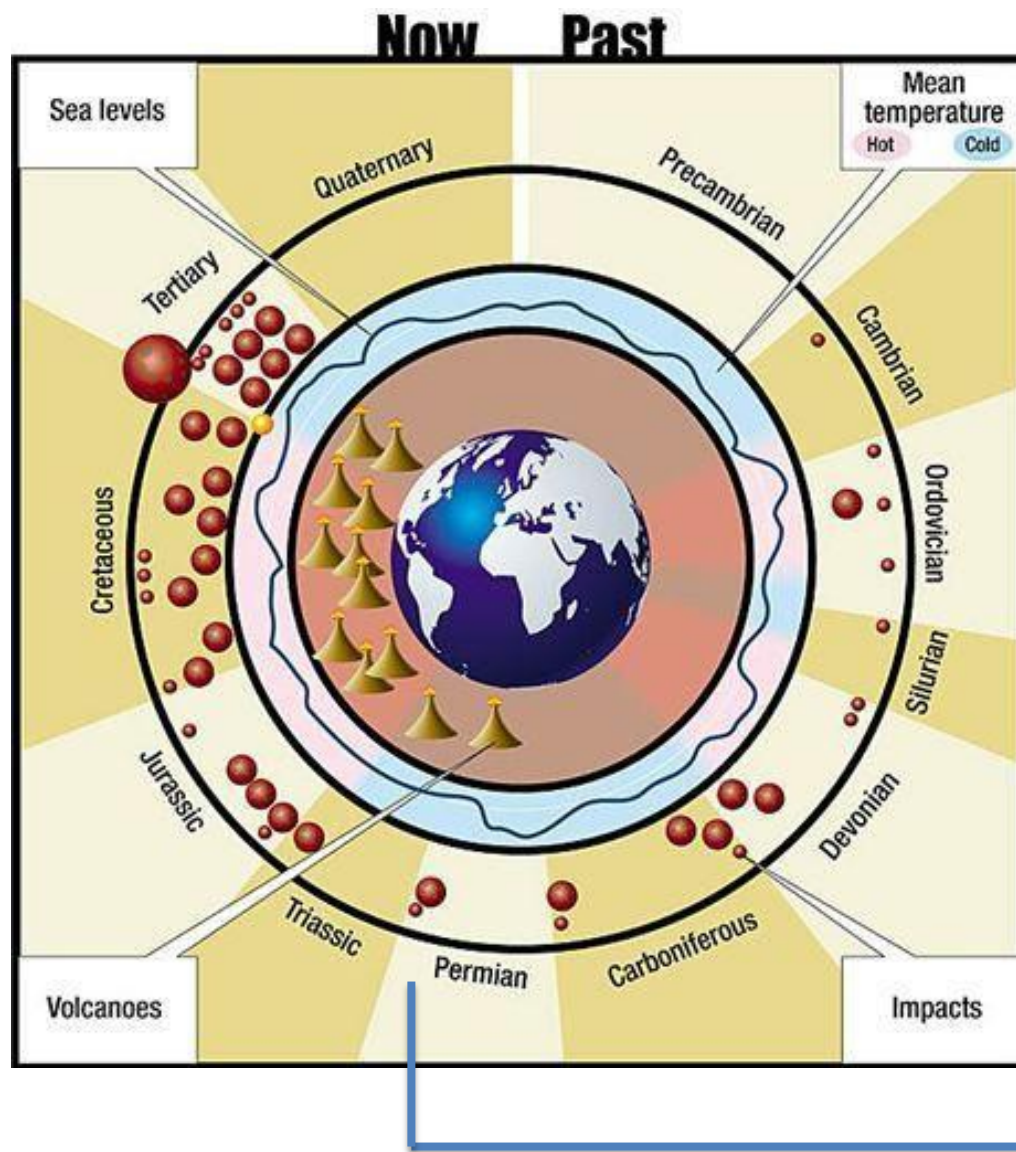


By Nagib Nassar

Biodiversity over geologic time

Diversity of marine animal families over geologic time

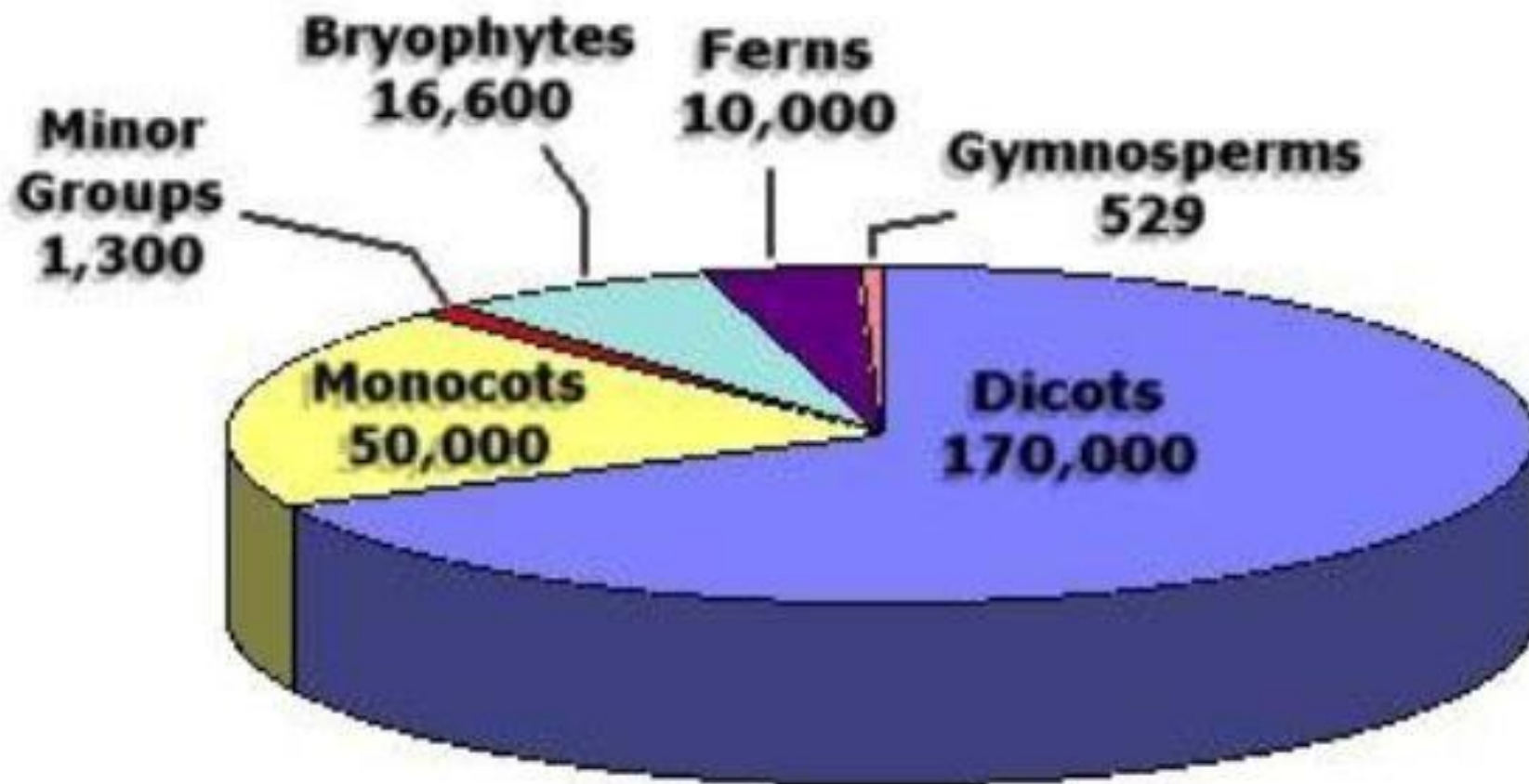




PLANT BIODIVERSITY



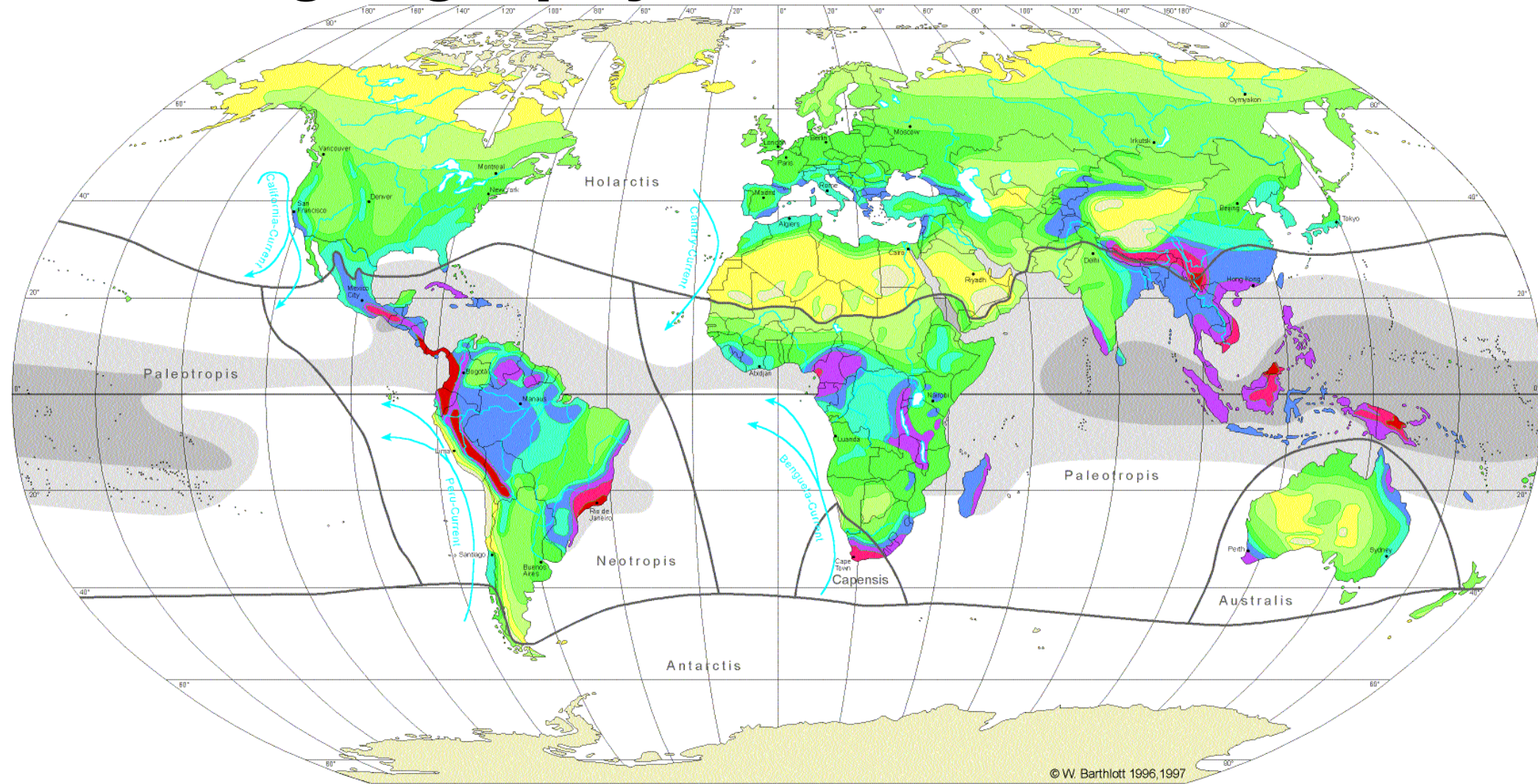
Number of Living Species of Higher Plants Currently Known



Higher Plants: Total Species, 248,000

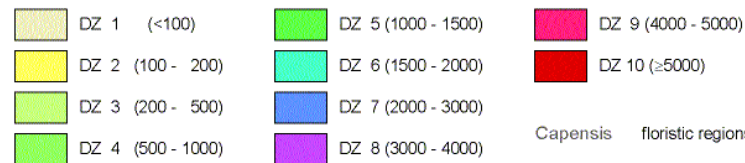
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Biogeography of Vascular Plants



Robinson Projection
Standard Parallels 38°N und 38°S
Scale 1: 130 000 000

Diversity Zones (DZ): Number of species per 10.000km²

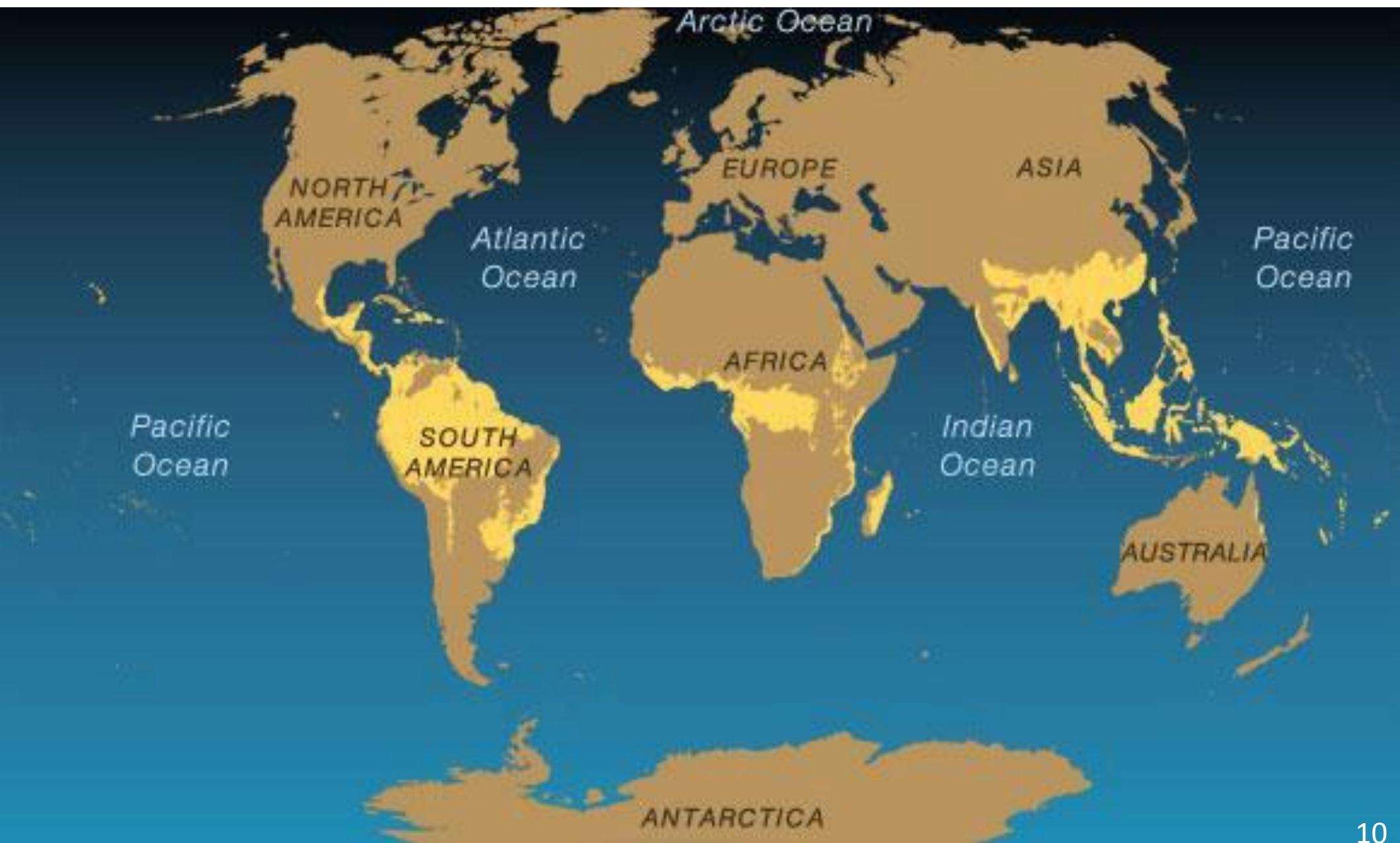


sea surface temperature



cold currents

W. Barthlott, N. Biedinger, G. Braun
F. Feig, G. Kier, W. Lauer & J. Mutke 1997
modified after
W. Barthlott, W. Lauer & A. Placke 1996
Department of Botany and Geography
University of Bonn
German Aerospace Research Establishment, Cologne
Cartography: M. Gref
Department of Geography
University of Bonn

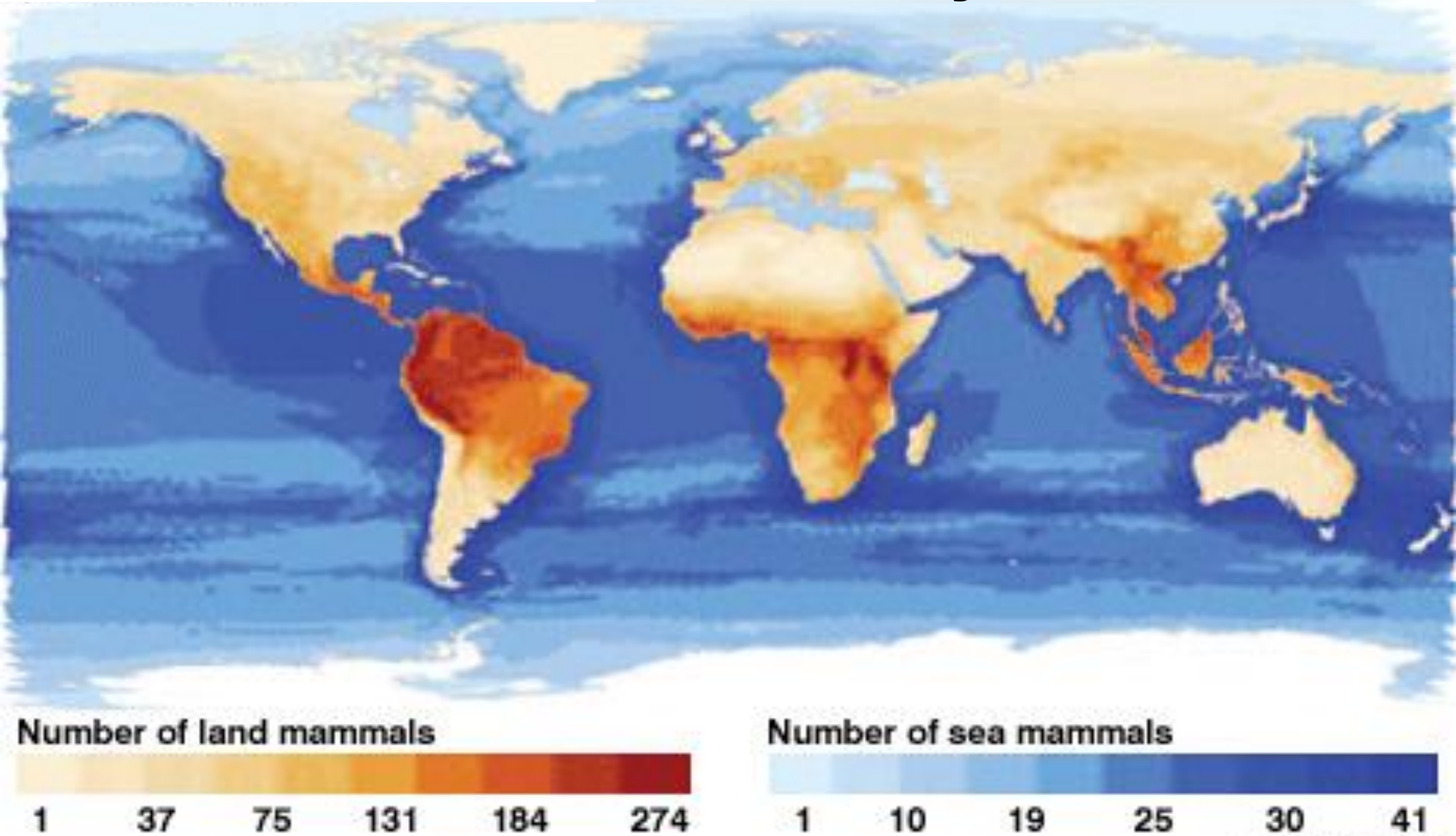


ANIMAL BIODIVERSITY



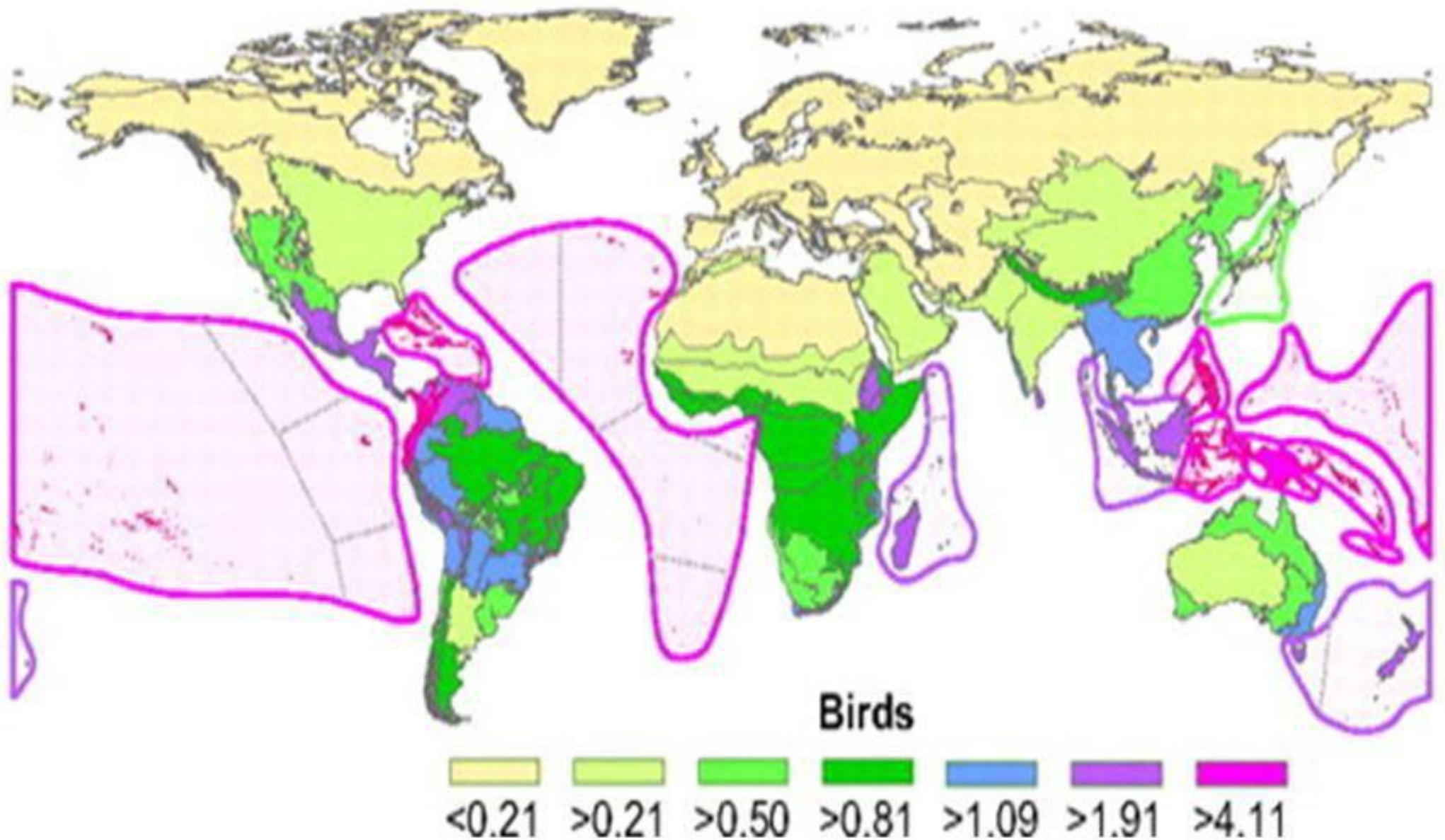
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Mammals Biodiversity

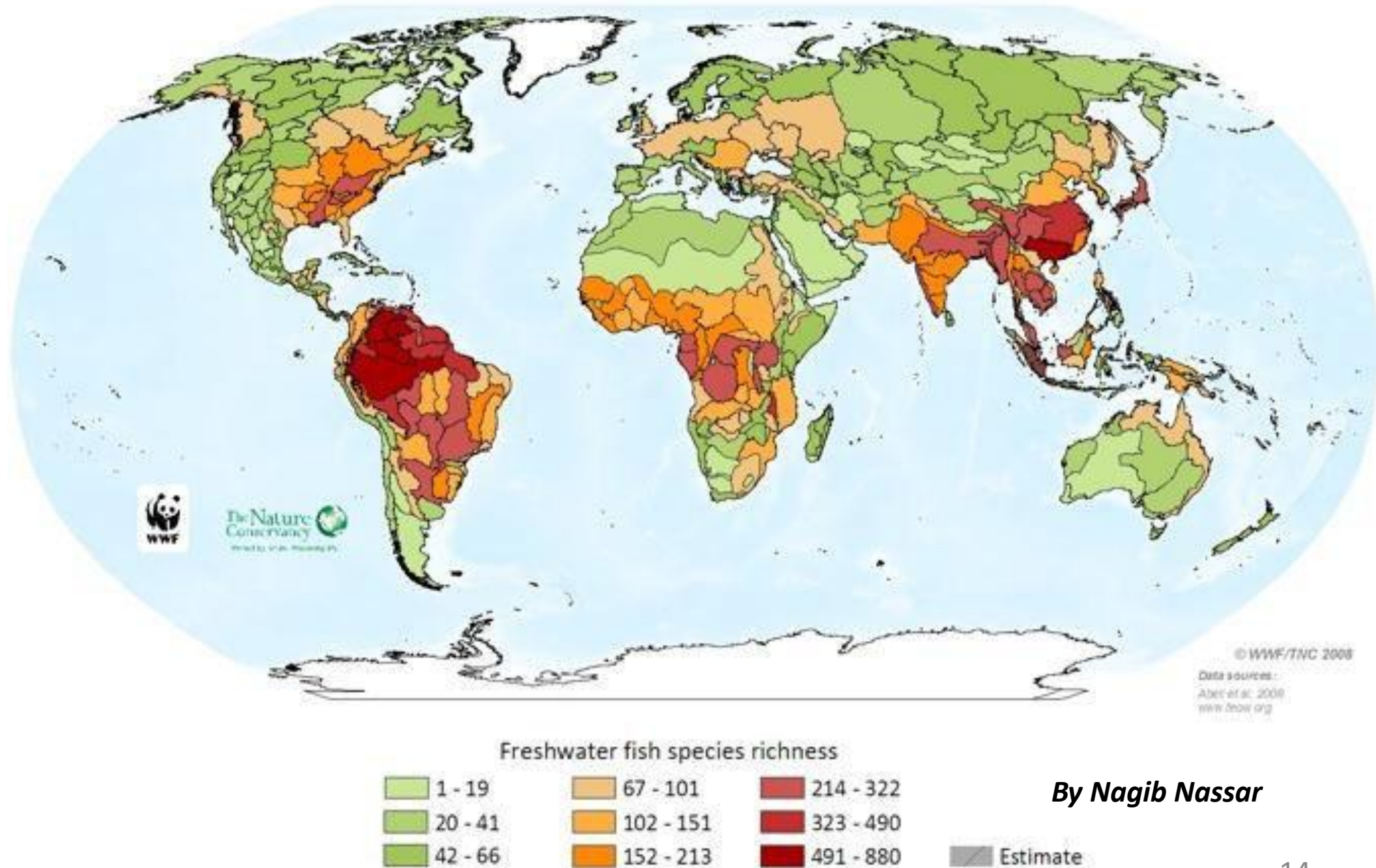


SOURCE: IUCN

Worldwide Distribution of Birds



Worldwide Distribution of Fish



Worldwide Distribution of Corals

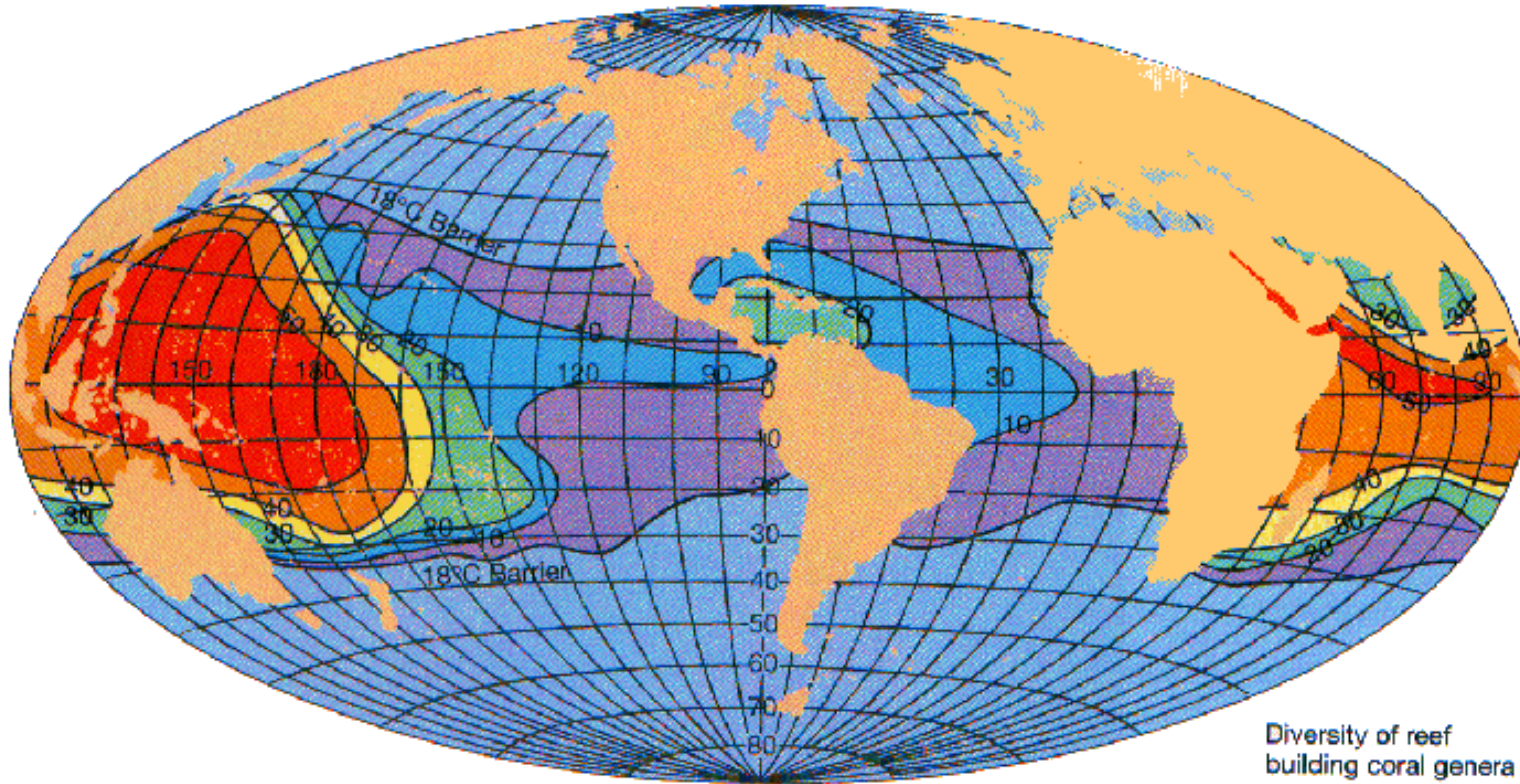


FIGURE 15-19

Coral Reef Distribution and Diversity. Coral reef development is restricted to the low-latitude area between the two 18°C (64°F) temperature lines shown on the map. Minimum water temperatures of 18°C in surface waters of the Northern and Southern hemispheres occur in February and August, respectively. In each ocean basin, the coral reef belt is wider and the diversity of coral genera is greater on the western side of the ocean basins. (After Stehli and Wells, 1971.)

Diversity of reef
building coral genera



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Great Barrier Reef (Australia)

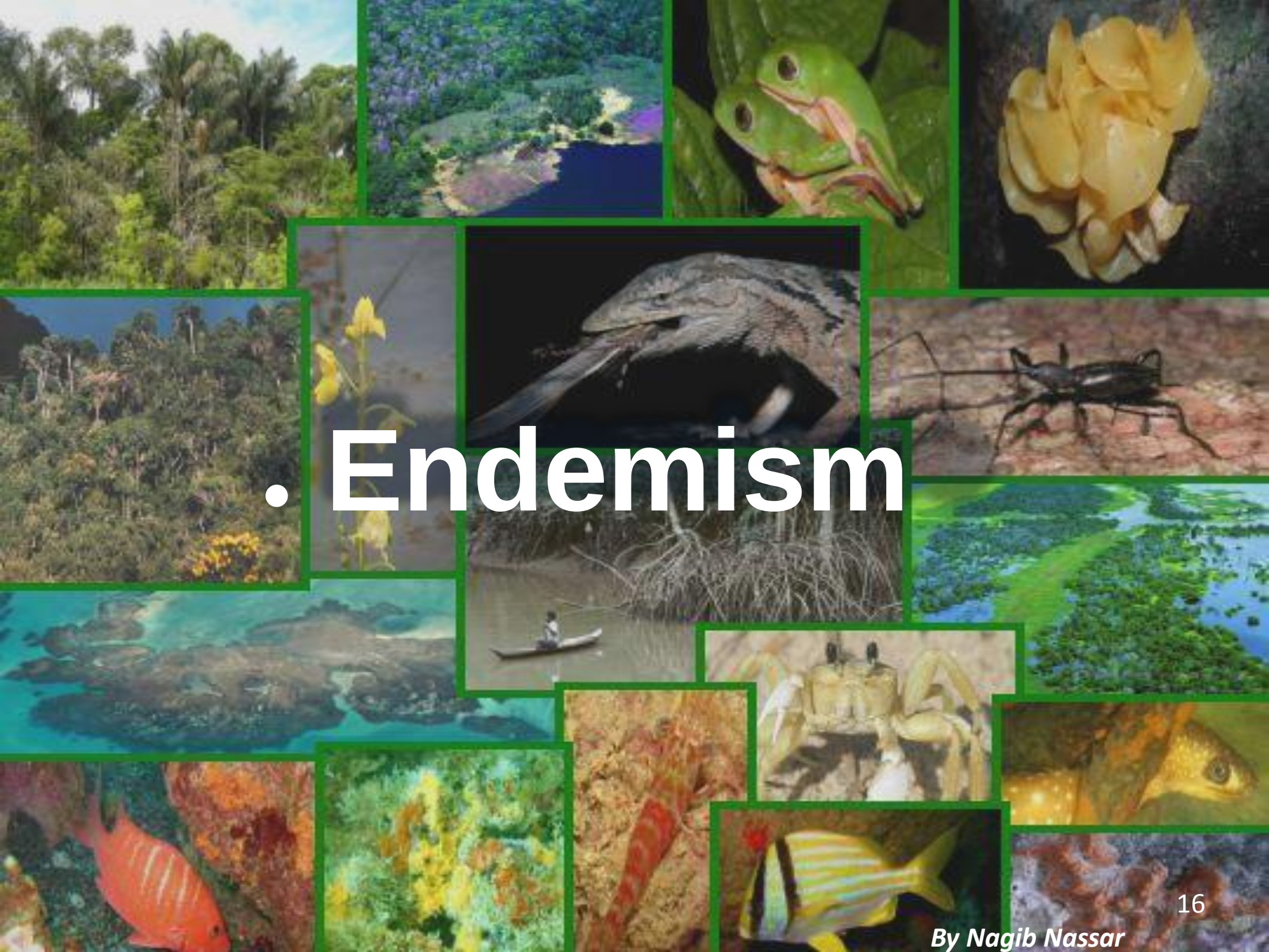


Reef Barrier of Belize



Coral reef in the
Red Sea (Egypt)

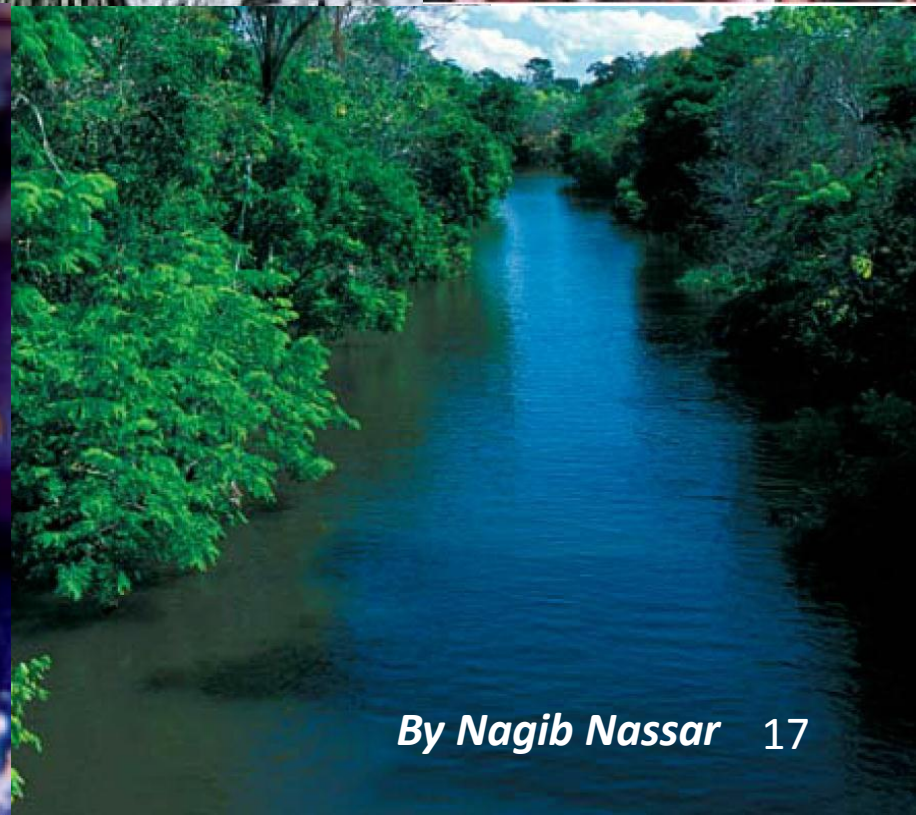
• Endemism



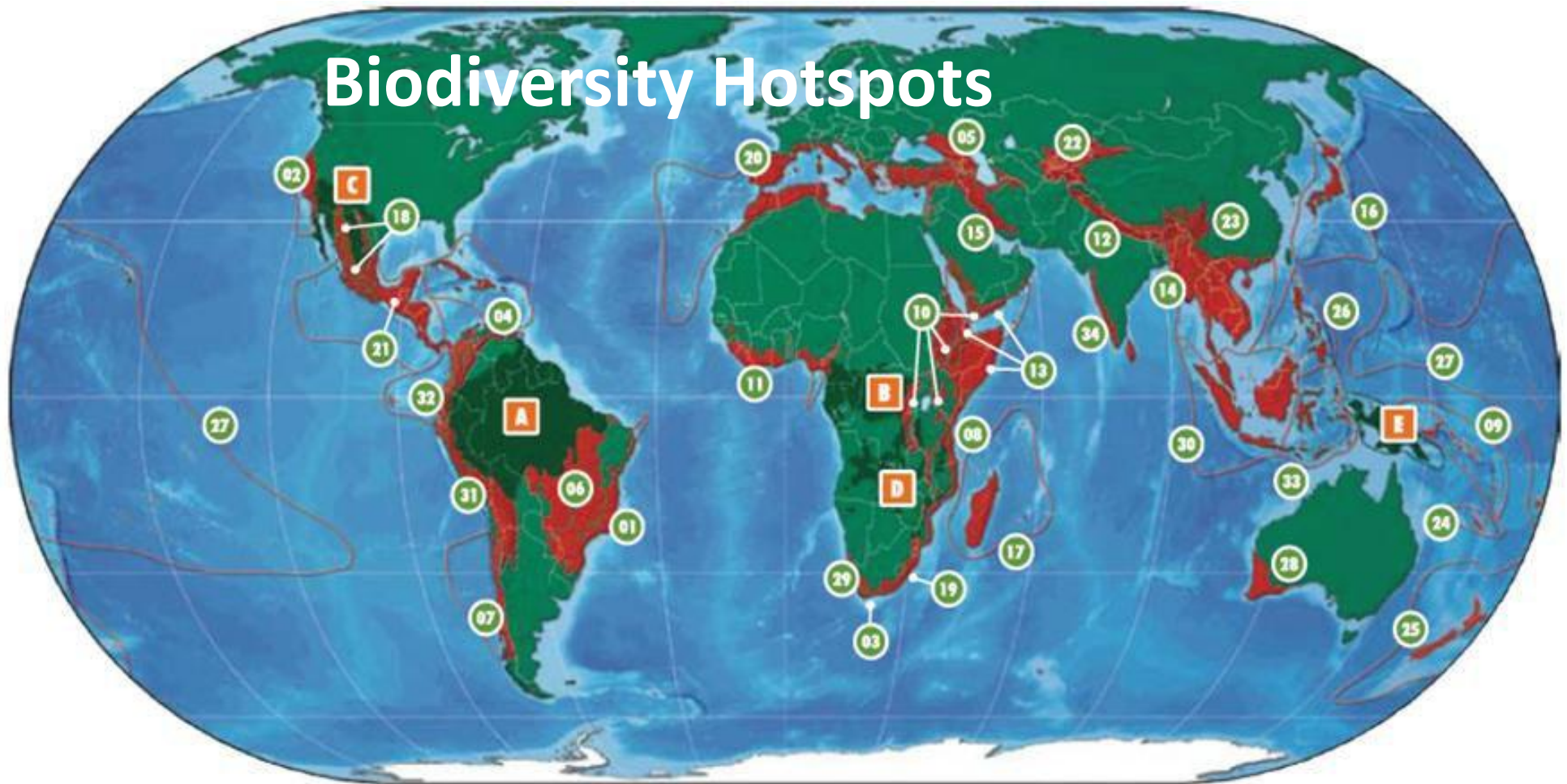
Hotspots



Noxa Gaiñe - Haroldo Castro



Biodiversity Hotspots



Biodiversity Hotspots

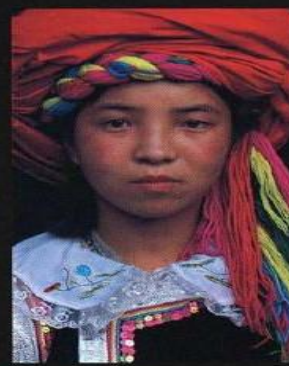
- | | | | |
|--|--|---------------------------------|--------------------------------|
| 01 Atlantic Forest | 09 East Melanesian Islands | 18 Madrean Pine-Oak Woodlands | 28 Southwest Australia |
| 02 California Floristic Province | 10 Eastern Afromontane | 19 Maputaland-Pondoland-Albany | 29 Succulent Karoo |
| 03 Cape Floristic Region | 11 Guinean Forests of West Africa | 20 Mediterranean Basin | 30 Sundaland |
| 04 Caribbean Islands | 12 Himalaya | 21 Mesoamerica | 31 Tropical Andes |
| 05 Caucasus | 13 Horn of Africa | 22 Mountains of Central Asia | 32 Tumbes-Chocó-Magdalena |
| 06 Cerrado | 14 Indo-Burma | 23 Mountains of Southwest China | 33 Wallacea |
| 07 Chilean Winter Rainfall-Valdivian Forests | 15 Irano-Anatolian | 24 New Caledonia | 34 Western Ghats and Sri Lanka |
| 08 Coastal Forests of Eastern Africa | 16 Japan | 25 New Zealand | |
| | 17 Madagascar and Indian Ocean Islands | 26 Philippines | |
| | | 27 Polynesia-Micronesia | |

Major Natural Regions



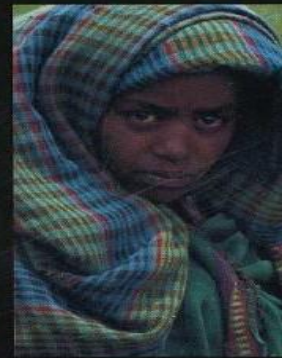
High Biodiversity Wilderness Areas

- A** Amazon
- B** Congo Basin
- C** Deserts of North America
- D** Miombo-Mopane
Woodlands and Savannas
- E** New Guinea



AGRICULTURAL BIODIVERSITY

Principles e geographic distribution with reference to Africa



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Professor Emeritus
Universidade de Brasília
2014

First: Theory and Principles

1. Definition of the term genetic resources



2. History of the movement and the pioneers

2.1 Vavilov 1920's



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2.2 Bennett, Frankel



Course by Nagib Nassar

2.2 Harlan and Swaminathan movement, 1969



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2.3 Unit on genetic resources, FAO, 1970's

2.4 International Agricultural Centers, late 1970's

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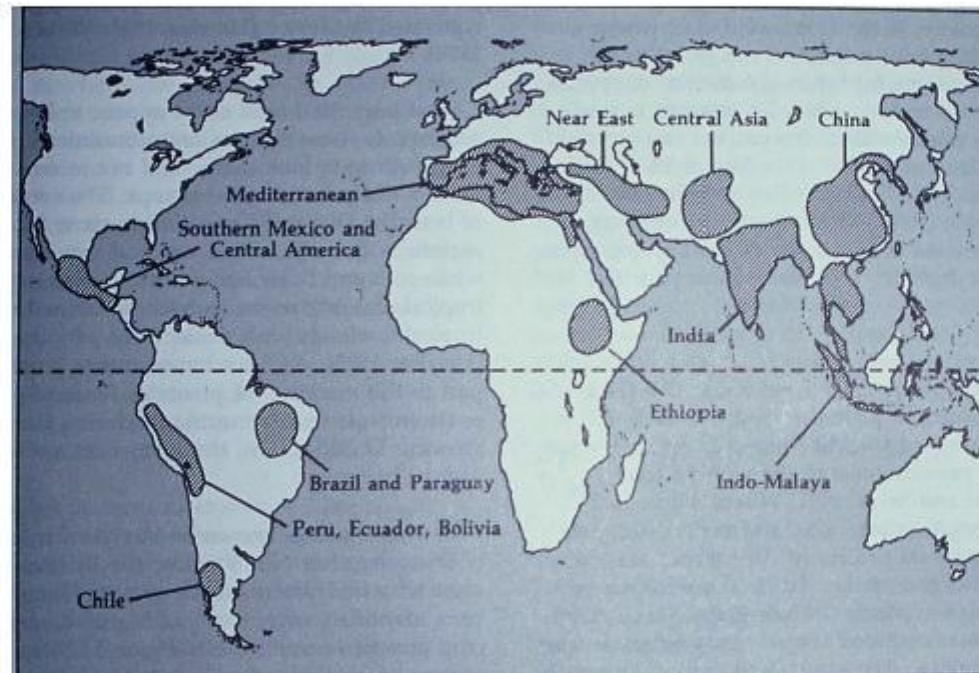
3. Centers of Diversity:

3.1 Vavilovian concept and map of the centers



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4. Centers of Origin and centers of Diversity in details



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1. The Chinese Center



-Tea (chá)

Camellia sinensis



-Soybean (Soja)

Glycine hispida



-Apricot (Damasco)

Prunus armeniaca



- Bean (Vagem)

Phaseolus vulgaris



-Peach (Pêssego)

Prunus persica



- Orange (Laranja)

Citrus sinensis



-Sesame (Gergelim)

Sesamum indicum



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2. The Indian Center



-Tree cotton (Algodão)

Gossypium arboreum



-Rice (Arroz)

Oryza sativa



-Egg plant (Beringela)

Solanum melongena



-African millet

Eleusine coracana



-Taro yam

Colocasia antiquorum



-Chick pea (Grão de Bico)

Cicer arietinum



-Cucumber (Pepino)

Cucumis sativus



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2a. The Indo-Malayan Center



-Yam

Dioscorea spp.



**-Coconut
(côco)**

Cocos nucifera



-Pomelo

Citrus maxima



-Banana

Musa spp.



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3. The Central Asiatic Center



**-Pear
(Pêra)**
Pyrus communis



**-Bread wheat
(Trigo)**
Triticum aestivum



**-Chick Pea
(Grão-de-bico)**
Cicer arietinum



**-Pea
(Ervilha)**
Pisum sativum



**-Safflower
(Açafrão)**
Carthamus tinctorius



**-Lentil
(Lentilha)**
Lens esculenta



**-Radish
(Rabanete)**
Raphanus sativus



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4. The Near Eastern Center (Asia Mener)



**-Melon
(Melão)**

Cucumis melo



**-Fig
(Figo)**

Ficus carica



**-Grape
(Uva)**

Vitis vinifera



-Durum wheat

Triticum durum



-Bread wheat

Triticum aestivum



**-Chick pea
(Gão-de-bico)**

Cicer arietinum



**-Lentil
(Lentilha)**

Lens esculenta



**-Pea
(Ervilha)**

Pisum sativum



**-Blue Alfalfa
(Alfalfa)**

Medicago sativa



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5. The Mediterranean Center



-Lettuce
(Alface)
Lactuca sativa



-Oats
(Aveia)
Avena strigosa



-Durum wheat
Triticum durum



-Cabbage
(Couve)
Brassica oleracea



-Broad bean
(Fava)
Vicia faba



-Olive
(Azeitona)
Olea europea



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6. The Abyssinian Center



-Sesame
(Gergilim)

Sesamum indicum



-Castor bean
(Mamona)

Ricinus communis



-Coffe
(Café)

Coffea Arabica



-Durum wheat

Triticum durum



-Teff

Eragrostis abyssinica



-Barley
(Cevada)

Hordeum vulgare



-Pea
(Ervilha)

Pisum sativum



-Chick pea
(Grão-de-Bico)

Cicer arietinum



-Poulard wheat

Triticum turgidum



Course by Nagib Nassar

7. The South Mexican and Central American Center



**-Corn
(Milho)**
Zea mays



**-Upland cotton
(Algodão)**
Gossypium hirsutum



**-Common beans
(Vagem)**
Phaseolus vulgaris



**-Sisal hemp
*Agave sisalana***



**-Pepper
(Pimenta)**
Capsicum annum

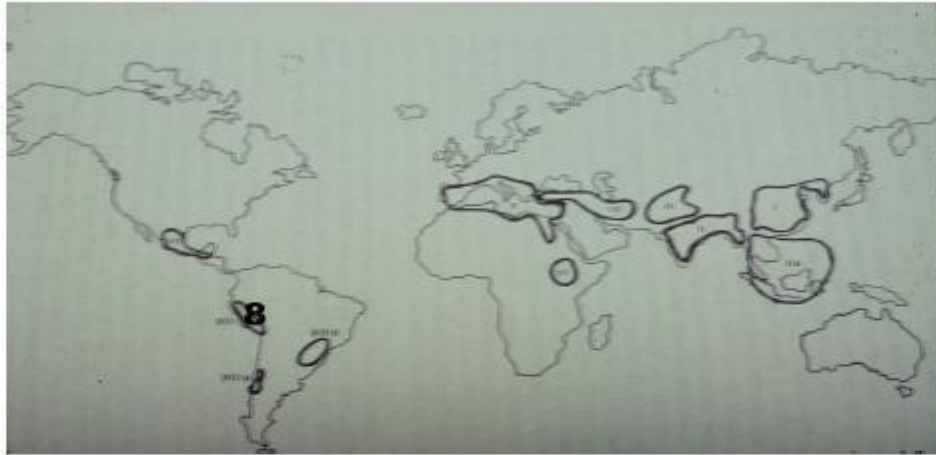


**-Squash
(Abóbora)**
Cucurbita spp.



Course by Nagib Nassar

8. South American (Peruvian-Ecuadorean-Bolivian) Center



-Tobacco (Fumo)

Nicotiana tabacum



-Sweet Potato (Batata Doce)

Ipomoea batatas



-Tomato (Tomate)

Lycopersicum esculentum



-Potato (Batata)

Solanum tuberosum



-Sea Island Cotton (Algodão)

Gossypium barbadense



-Lima bean (Feijão Fava)

Phaseolus lunatus



-Papaya (Mamão)

Carica papaya



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8a, 8b The Chiloe and the Brazilian-Paraguayan Center



**-Peanut
(Amendoim)**
Arachis hypogaea



**-Potato
(Batata)**
Solanum tuberosum
(The Chiloe Center)



**-Rubber tree
(Seringueira)**
Hevea brasiliensis



**-Manioc
(Mandioca)**
Manihot esculenta



**-Pineapple
(Abacaxi)**
Ananas comosa



**-Cacao
(Cacau)**
Theobroma cacao



**-Purple granadilla
(Maracujá)**
Passiflora edulis



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