

Biogeography. Lecture 30

Alexey Shipunov

Minot State University

April 25, 2014



Outline

Biogeography of the World

Biogeography of South America, or Neotropics



Biogeography of the World

Biogeography of South America, or Neotropics





[Southern, tropical, low, new Andes, Amazon and Parana]



South America: 13 biogeographical regions

1. Tropical Central America
2. West Indies
3. Venezuela and Guiana Shield
4. Amazonian Basin
5. Brazilian Northeast
6. Brazilian Plateau
7. Gran Chaco
8. North and Central Andes (Columbia, Ecuador and Peru)
9. Pampas
10. Atacama desert
11. *Galapagos Islands*
12. Patagonia and Juan Fernandez
13. *South American Antarctic Islands*



Regions 3 and 4: Venezuela, Guiana Shield and Amazonia

- ▶ Llanos are northern grasslands in South America; they cover the big part of Venezuela
- ▶ Guiana Shield is the famous “lost world” with a high level of endemism in both plant and animal groups
- ▶ **Amazonia** is a geologically new region, speciation processes are just starting there. Nevertheless, the diversity is overwhelming.
- ▶ The most famous plant and animal representatives are:
 - ▶ Victoria regia giant waterlily, chocolate tree (Theobroma cacao) and Brazil nut (Bertholletia excelsa), papaya (Carica papaya) and guarana (Paulinia cupana)
 - ▶ Morpho butterfly, Theraphosa blondi giant birdeater spider, and leafcutter ants (Atta colombica)
 - ▶ Four-eyed (Anableps) and piranha (Hydrolycus) fish
 - ▶ Trumpeter (Psophia) and toucans (Ramphastos) birds
 - ▶ Anteaters like tamandua, tree anteater (Tamandua tetradactyla), American tapir (Tapirus terrestris), giant capybara (Hydrochoerus), specific Platyrrhini monkeys, Desmodus vampire bats and Bradypus sloths.



Regions 5 and 6: Brazilian Northeast and Brazilian Plateau

- ▶ Drier, sometimes semi-desert regions. Brazilian Northeast is extremely species-poor comparing with Amazonia (somehow, analogous to Dekkan Plateau in India).
- ▶ Unusual dry spiny forest, caatinga with domination of cactuses and legumes. One of native plants, cashew (*Anacardium occidentale*) is widely cultivated.
- ▶ One of the most splendid natural attractions on Earth—Iguazu waterfall.
- ▶ The home of many agricultural plants like peanuts (*Arachis hypogaea*) and bromeliad pineapples (*Ananas comosus*).



Regions 7 and 9: Gran Chaco and Pampas

- ▶ The west of region—Bolivian yungas, Andes foothills rich of plantations, homeland of quinine tree, Cinchona
- ▶ To the east, in Grand Chaco, there are contrasted dry and wet periods: wetlands in rain season and semi-deserts otherwise, dominated with “palo borracho”, “drunken tree” Ceiba speciosa
- ▶ Rich fauna (e.g., most species of armadillos including the giant tatu carreta Priodontes maximus) and maned wolf Chrysocyon brachyurus; and the second center of Cactaceae distribution
- ▶ Famous Gondwana lungfishes have one representative in South America, Lepidosiren. Two other genera live in Africa and Eastern Australia. Another Gondwana group, ratite birds, have representative in Pampas: American nandu (Rhea americana)
- ▶ Pampas, like llanos is another grassland region of South America



Region 8: North and Central Andes

- ▶ Unusual, rich alpine regions with the domination of specific plant groups like *Aragoa*, *Puya raimondii*, balsa (*Ochroma lagopus*), the tree with a lightest wood
- ▶ **Paramo**—specific alpine wetlands dominated with *Espeletia*, the amazing life form from aster family
- ▶ Puna—alpine grasslands, supported with large camelid herbivores like guanaco (*Lama guanicoe*) and alpaca (*Vicugna pacos*)
- ▶ One of highest diversity hotspots of birds (1,500 species versus 700 for **all** North America)
- ▶ The homeland of great South American civilizations



Region 10: Atacama desert

- ▶ The driest place on Earth: zero precipitation level
- ▶ Systematically broken by El Niño when cold Humboldt current is deviating from the coast
- ▶ Frequent earthquakes
- ▶ Dense fogs (fog density in “lomas” is sometimes up to 200-300 mm)
- ▶ Extremely rich marine/coastal (e.g., Humboldt’s penguin *Spheniscus humboldtii*), and very poor terrestrial life



Region 12: Patagonia

- ▶ The southern temperate region with flora similar to Australia and New Zealand (!)
- ▶ Conifer forests (*Araucaria araucana*, *Libocedrus*, *Saxegothaea*) domination
- ▶ In more humid regions, the main dominant is birch-like *Nothofagus* (same genus as in New Zealand)
- ▶ Many giant Patagonian animals (like giant xenarthran *Megatherium* and *Glyptodon*) are now extinct



Summary for South America

- ▶ Low and narrow continent: the wettest of tropical regions
- ▶ Part of Gondwana: many groups which are also distributed in Australia, New Zealand and Africa
- ▶ Isolated for most of Cenozoic: unique groups of plants and animals (e.g., Xenarthra)



For Further Reading



A. Shipunov.

Biogeography [Electronic resource].

2014—onwards.

Mode of access:

http://ashipunov.info/shipunov/school/biol_330



South America.

http://en.wikipedia.org/wiki/South_America

