

Lecture 1 Exam Study Sheet Plant Geography 2019 Spring

I. **Introduction – Read:** *Text*. Chpt. 1: The Science of Biogeography [pp. 4-14]

what is biogeography – be able to define it
3 approaches to biogeography & what each does

II. **Climate and Vegetation – Read:** *Text*. Chpt. 3: The Physical Template [pp. 47-68]

outcomes of earth's rotation, tilt, and path around the sun – impact on seasonality and heat budget
(e.g., equator vs. poles)

important latitudinal lines (e.g., where and why is the Tropic of Capricorn defined?)

Hadley cells, Coriolis effect, wind patterns – trade winds or easterlies and westerlies: where do these come from and where do they impact continents (latitude and continental side)

equatorial low, subtropical high, ITC zone – how do these shift during the annual cycle

major warm and cold ocean currents, directions of rotation, what continents they affect

temperature apse rates, Hopkin's bioclimatic law, adiabatic cooling/drying

subsolar convectional precipitation, orographic precipitation, adiabatic warming leeward side of mountain

know where to expect precipitation patterns on continents and corresponding biomes (*be able to locate these on a world map or idealized continent map!*)

Recognize and interpret climate diagrams for biomes

III. **Vegetation vs. Flora**

Humboldt's contribution to phytogeography – be able to discuss “vegetation vs. flora”

Raunkiaer life forms – what are the *basic* types (*be able to match dominant life form for each biome*)

What biomes show strong convergence in vegetation AND big differences in flora or fauna?

What biomes are strongly shaped by response to fire?

What biomes are strongly shaped by response to salt?

What biomes are strongly shaped by response to seasonality?

What biomes are strongly shaped by deciduousness and why?

IV. **Biomes – Read:** *Text*. Chpt. 5: Distributions of Communities [pp. 136-150]; optional readings from Archibold on each biome type available at CANVAS

1. **Tropical Rainforest** (*note examples from Greenhouse Tour #1*)

where located, climate pattern

diversity, complexity, soil

canopy emergents & their adaptations

dominant families (1 or 2) of trees

adaptations in the battle for light (a characteristic or two) of herbs, lianas, epiphytes, stranglers, hemi-epiphytes

2. **Cloud Forests** (*note examples from Greenhouse Tour #1*)

characteristic vegetation or life forms that dominate

what is found above cloud forests in taller tropical mountains, why?

3. **Mangroves communities** (*note examples from Greenhouse Tour #1*)

adaptations - both vegetative and reproductive – to this unusual setting

4. **Tropical Deciduous Forest** (*note examples from Greenhouse Tour #1*)

location, climate, seasonality
nature of adaptations to aridity (deciduousness, spiny trunks, photosynthetic trunks)
parasites

5. **Thornforest & Thornscrub** (*note examples from Greenhouse Tour #1*)

convergence in adaptation to environment
continuum of dry forest types both in terms of latitude and elevation to tropical deciduous forest
and to desert

6. **Tropical Savannas**

convergent adaptations to savannas
specific ecological factors affecting savanna vegetation in the llanos, sand savannas, cerrados

7. **Deserts** (*note examples from Greenhouse Tour #1*)

locations of rainless deserts, fog deserts
nephelophytes, halophytes, xerophytes, succulents
match characteristic plant genus/family to Namib, Peruvian fog desert, N. Amer. Deserts
why is their gradation in desert-ness from Chihuahuan to Sonoran to Mojave?
pattern of floristic links across globe

8. **Mediterranean**

location and characteristic climate
dominant vegetation types and nature of convergent adaptations, heath community
Ericaceae (blueberry family), geophytes
adaptations to fire

9. **Temperate Forests**

know basic climatic conditions and therefore general locations of each
gradient of forest types from SE North America to northern Wisconsin/Minnesota
subtropical moist forests or temperate evergreen: what major leaf adaptation is seen?
temperate rainforests: why absent from Africa? How are the northern and southern Hemisphere
floras so different? What major plant groups dominate here?
temperate deciduous forest: what does the deciduous habit gain? Floristic links?
boreal and alpine forest: what plant group dominates? why worldwide similarity in flora?

10. **Arctic and Alpine**

nature of tundra and/or alpine biome; why are these similar in vegetation and flora?
major life forms, reproductive strategies

11. **Grasslands and Steppes**

where are they generally found? Characteristic fauna?
plant adaptations to fire, grazing
3 dominant families