

Topic 10 – Gymnosperms

Reading:

- 1) Hoefnagles Chapter 19, section 4 (19.4)
- 2) Lab Manual Chapter on Gymnosperms
- 3) Optional: Rushforth et al. Chapter 8 (Gymnosperms)

I. Characteristics of

- A. Sporophytes
 1. Dominant
 2. Axillary Branching (except cycads)
 3. Eustele
 4. Secondary Growth
 5. Heterosporous
 - a. Microspores
 - b. Megaspores
- B. Gametophytes
 1. Not dominant, not photosynthetic, relatively small
 2. Characteristics of (see Hoefnagels Fig 19.13)
 - a. Microgametophyte
 - b. Megagametophyte
- C. Naked Seed Plants
- D. Three Groups to Know
 1. Cycads
 2. Conifers
 3. Ginkgo

II. Cycads

- A. Vegetative Morphology
 1. Trees or Shrubs
 2. Pinnate Leaves in Rosettes
 3. Unbranched or anomalously branched stem (no axillary branching)
- B. Reproductive Morphology
 1. Dioecious
- C. Economic Botany

See Lecture Topic 01 (Introduction to Botany)
- D. Biogeography

Tropical and Subtropical, worldwide.

III. Conifers

- A. Vegetative Morphology
 1. Branched Trees or Shrubs
 2. Leaves Needle-like or Scale-like
 4. Leaves Usually Evergreen
 5. Resin Canals
- B. Reproductive Morphology

1. Monoecious or Dioecious
2. Male Strobilus
 1. Microsporophyll
 2. Microsporangia
 3. Pollen
3. Female Cone
 1. Bract
 2. Cone (ovuliferous) Scale
 3. Ovule
 4. Seed

C. Economic Botany

1. Lumber & Paper Pulp
2. Pine Nuts
3. Turpentine & Rosin
4. Amber
5. Sounding Boards
6. Christmas Trees
7. Boat Sealer, Caulk, Patch
8. Survival Food
9. Scurvy Prevention

D. Biogeography

1. Pine and Cypress Families in the Northern Hemisphere
2. Podocarp and Araucoid Families in the Southern Hemisphere

IV. Ginkgos

A. Vegetative Morphology

1. Branched Trees
2. Leaves Borne Singly and Clustered on Short Shoots
4. Leaves Fan-shaped w/ Dichotomous Venation

B. Reproductive Morphology

1. Dioecious
2. Male
 - Strobilus
3. Female
 - Pair of ovules (seeds) on reduced leaf

C. Economic Botany

1. Ornamental
2. Seeds an Asian Delicacy
3. Leaf Extract & Memory/Blood Flow

D. Biogeography

1. One extant population in China
2. Fossil record indicates that they were present through Asia and Western North America.