

Based on Mader, Sylvia S. 1996. *Biology* - 5th Ed. WCB  
and  
Cox, G.W. 1997. *Conservation Biology* - 2nd ed. WCB  
and  
Levine, J.S. and K.R. Miller. 1994. *Biology: Discovering Life*. D.C. Heath  
Wetlands, Lakes and Streams  
Reading: Chapters 15, 16 in Cox – pp. 55-57 in Levine and Miller

## I. Aquatic Communities

### A. Freshwater

#### 1. lakes (lentic)

- a) Know Figure 3.5 (review)

#### 2. rivers and streams (lotic)

### B. Marine

Figure 3.35 p60

#### 1. nearshore

- a) estuary
- b) rocky shore
- c) sandy beach
- d) coral reef

#### 2. offshore

- a) pelagic
- b) benthic

## II. Wetlands

### A. transitional between aquatic and terrestrial ecosystems

1. often covered by water at least part of the year
2. plant community has many hydrophilic species
3. examples:

- a) marshes - dominated by grasses
  - (1) bogs - acidic, carnivorous plants, fewer grasses
  - (2) fens - alkaline waters
  - (3) salt marshes - mostly grasses
    - (a) often in estuaries
    - (b) grade into mud flats
    - (c) intermediate salt contents, high nutrient levels
- b) swamps - dominated by woody plants
  - (1) mangrove swamps
- c) hardwood bottomland forests
- d) prairie potholes
- e) vernal pools

4. wetlands occupy 6% of Earth's surface

**5. high productivity**

- a) water
- b) lots of light

**6. refuge and breeding ground for migratory birds**

- a) lots of invertebrates, fish, frogs, etc.
- b) high activity during wet season

**Videodisc:**

**Habitats:**

18199 - Marsh  
18200 - prairie potholes  
18201 - bullrush  
17071 - wet grassland  
18691 - South American savanna - wet season  
17439 - cordgrass  
18674 - sawgrass (everglades)  
17592 - saltgrass  
17864 - estuary, low tide  
17865 - estuary  
17875 - estuary - tidal flats  
17876 - sandpiper, feeding  
19211 - estuary diagram  
19212 - same  
17431 - forest/swamp  
17288 - cypress swamp  
17083 - cypress, close-up with pneumatophores  
18676 - pneumatophores  
18678 - red mangrove seedlings  
18679 - black mangrove pneumatophores

17082 - lake edge  
18121 - pond edge

**Plants:**

18122 - cattails  
18119 - skunk cabbage

17165 - marsh mallow  
17232 - sundew  
17233 - pitcher plants  
17234 - pitcher plant - close-up  
40838 - venus fly trap play sequence  
20489 - cranberry harvest

**Animals:**

16094 - pickerel frog  
16172 - alligator with nest  
16175 - spotted turtle  
16176 - spotted turtle  
16179 - diamondback terrapin  
16180 - bog turtle  
16163 - water snake  
16544-16547 - red-winged blackbirds  
16256 - grebe  
16278 - green heron  
16279 - flamingos  
16780 - flamingos  
16781 - flamingo and chick  
16365 - great blue heron  
16288 - bald eagles  
16289 - bald eagle (imm.) with fish  
16756 - muskrat  
16825 - beaver-cut trees  
18447 - beaver  
18552-18554 - beaver

### III. Wetland destruction

- a) often drained:
  - (1) **agriculture**
  - (2) **reduce disease**
  - (3) **urban sprawl (cities located near water)**
  - (4) **filled on floodplains (Marietta)**
  - (5) **canals (oil exploration in Mississippi delta)**
- b) useful:
  - (1) **absorbing floods**
  - (2) **reduce erosion**
  - (3) **groundwater recharge**
  - (4) **filtering wastes**
  - (5) **wildlife habitat**
  - (6) **breeding ground**
  - (7) **commercial products:**
    - (a) cranberries, blueberries, blackberries, rice, peat moss
- c) threats:
  - (1) **agriculture**
  - (2) **pollution**
  - (3) **dams**
    - (a) flood wetlands
    - (b) prevent silt from accumulating at delta
  - (4) **dumps**
  - (5) **levees - prevents seasonal filling**
  - (6) **up to 1/2 of wetlands in lower 48 states destroyed**
  - (7) **only 10% of Ohio wetlands remain**
- d) legislation
  - (1) **the 1972 Clean Water Act - protects coastal wetlands**
  - (2) **Emergency Wetlands Resources Act - 1986 - designate and acquire critical wetlands**
  - (3) **Wetlands reserve program - reclaim farmland as wetlands**
  - (4) **Bush administration - narrowed definition of wetlands, excluding many (1/3) from protection**

**IV. Eutrophication:**

**A. Nutrient Levels**

1. **Low nutrient levels – oligotrophic**
2. **High nutrient levels – eutrophic**
3. **Movement from oligotrophic to eutrophic is natural, but slow**
4. **Humans accelerate movement - eutrophication**

**B. Causes of Eutrophication**

1. **Sewage**
2. **Fertilizer runoff & contamination of groundwater**
3. **Soil erosion**
4. **Phosphorous principle problem in freshwater**

**C. Problems posed by eutrophication**

1. **Algal blooms**
  - a) Taste, odor
  - b) Shade out tracheophytes
  - c) Deplete O<sub>2</sub> levels at night
2. **Change in species composition of lakes**
3. **Problems exacerbated by stratification, particularly in hypolimnion**