Llano Estacado Master Naturalist Curriculum Guide

Unit 18: Aquatic Systems Ecology and Management

We forget that the water cycle and the life cycle are one.

- Jacques Cousteau

Unit Goals: After completing this unit, volunteers should be able to:

* describe the characteristics of water,
* communicate the characteristics and properties of aquatic systems,
* understand and communicate how aquatic systems function,
* be familiar with management techniques for aquatic systems
* understand and communicate threats to aquatic systems.

**Characteristics of Water**

1. Water has unique properties which make on Earth possible. Which of these is not a characteristic of water?
   1. develop surface tension
   2. be a solid liquid or gas over a relatively small temperature range
   3. has a pH greater than 7
   4. be less dense as a solid
   5. have a high specific heat
   6. dissolve other substances

**Characterizing Aquatic Systems**

1. A watershed is the land from which water drains into a common watercourse. It includes all surface water, groundwater, soils vegetation and human activities contained in the area.
2. Ephemeral bodies of water such as a playa are classified as part of the \_\_\_\_\_\_\_\_\_\_\_ water system.
3. What is the closest river to the Midland-Odessa area? \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_which is in the Rio Grande River Basin.

**How do Aquatic Ecosystems Work?**

1. Eutrophication is part of the succession process. We classify lakes on the amount of nutrients they have. Put oligotrophic, eutrophic, and mesotrophic in these in order by increasing nutrient:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Nutrient Increase

1. Lotic systems conditions fluctuate widely depending on the slope of the stream, flooding and drought.
2. Aquatic systems support a wide variety of plants of native plants from microscopic algae to trees which are adapted to life in the water. List two **non-native** aquatic plants that are a problem in Texas. \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Like plants, aquatic fauna have special adaptations for life in the water. Name two. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Management: How Do We Mimic Natural Processes in Aquatic Systems**

1. T or F Most Texas streams and rivers have been modified for cultural purposes.
2. State the most important Management question:
3. Circle the letter of the one which is **not** a water management strategy?
4. establishing better vegetation cover
5. reducing nutrient inputs
6. prevent all fishing and recreational activities
7. reducing livestock and agricultural impacts
8. creating a riparian buffer
9. These ingredients are essential to successfully manage a pond.
   1. pond construction and management
   2. species \_\_\_\_\_\_\_\_\_\_\_and stocking
   3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of unwanted and reduction of overpopulated species
   4. liming and possible fertilization
   5. harvesting and \_\_\_\_\_\_\_\_\_\_ keeping
   6. maintenance of species balance
   7. management of aquatic vegetation
10. List three methods are used to manage aquatic vegetation.
11. In addition to measuring chemical and physical water quality, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_populations are used.
12. List the main threat to aquatic systems. \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Additional References For Unit 18

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