"What Makes a Quality Lake?"

DVD Questions:
Answer Key

Name: _____Class Period: _____ Date:_____

1. The rapid growth in Florida's population has affected many lakes. List three changes that have occurred in Florida lakes due to rapid population growth.

A. less wildlife

B. changes in water quality from increased nutrients

C. increased sediments in lakes

2. Lakes have many different uses in Florida. List several examples of these uses.

Recreational fishing, commercial fishing, boating, skiing, swimming, bird watching

3.List key concept ideas for the following words:

A. Algae – naturally occurring microscopic plants that depend on water, nutrients and sunlight to grow

B. Eutrophication – nutrient enrichment

C. Nitrogen – a naturally occurring nutrient that promotes plant growth

D. Nutrient enrichment -- an increase in nutrients

E. Phosphorous – a naturally occurring nutrient that promotes plant growth; it is also mined from soils in parts of Florida.

4. There are four trophic state categories used to describe lakes. Define each of them briefly.

A. Oligotrophic: lowest level of biological productivity; clear water; few plants and fish and not much wildlife

B. Mesotrophic: moderately clear water and moderate amount of plants

C. Eutrotrophic: high level of biological productivity; lots of aquatic plants and clear water or few aquatic plants and less clear water (lots of algae); potential to support lots of fish

D. Hypertrophic: highest level of biological productivity; cloudy water; very productive in terms algae, aquatic plants, fish and other wildlife

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5. Explain the effects of nitrogen and phosphorous on a lake's water quality:

Nitrogen and phosphorous are nutrients that enable plants to grow, including algae. When these two nutrients are increased, water clarity usually decreases due to a greater abundance of algae. More nutrients also means there might be a greater abundance of large plants (macrophytes).

6. Describe how water flush rates affect the nutrient levels in a lake.

A fast flush rate doe not allow the nutrients to be used by the plants, whereas a slow flush rate allows more nutrients to be taken up by algae and large plants (macrophytes).

7. Several different factors can affect the sedimentation rates in a lake. Please discuss how the following two factors might influence sedimentation.

Increased nutrients: Increased nutrients from lawn fertilizers, agriculture, and other sources contribute to increased nutrients in the lakes via runoff. The increase in nutrients promotes more plant growth. As plants grow and then degrade, the rotting materials settle to the bottom of the lake, increasing muck layers (sediments).

Flushing rate: a fast flushing rate in a lake decreases the nutrients available for plant growth, therefore there are not as many plants or algae. With fewer plants, degradation of materials is not as great and there is less sedimentation.

8. Humans can have a direct impact on lakes. Examples include housing development, recreational boating activities, industry, agriculture and aquaculture. What are some of the changes that occur in lakes due to human impact?

Nutrient levels may increase from more lawns being fertilized and algae blooms will reduce water clarity; sediments may increase from nearby construction sites or land-clearing activities, reducing water clarity; wildlife habitats are altered when plants and trees are removed for development; wildlife often leave the area for lack of habitat or food; or in some instances, a lake may actually become more productive from the nutrients and wildlife may be increased.

9. Water clarity in a lake can be affected by various factors. Explain how the following two factors can change water clarity.

- An increase in the abundance of algae will decrease water clarity**.**
- Increased nutrient levels -- can result in an abundance of aquatic plants. An increase in plants can make water more clear because the nutrients are "taken up" by plant tissues and are not available for the algal growth.

10. Fill in the blanks:

The presence of aquatic plants will generally not improve water quality unless at least **____%** of the bottom is covered with submersed plants.

A eutrophic lake is not a dead lake. Instead it is a productive lake.

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