

Envirothon 2019 – Aquatic Questions

1. Aquatic invasive species are plants and animals that are not native to Ohio but now live in our waters. They change the dynamics of underwater habitats and are degrading the quality of our waterways. What are the ways that you can help stop the spread of aquatic invasive species?

- A. Throw un-used fishing bait back into the water
- B. Learn to identify invasive species
- C. Drain and clean your boat and equipment after each use
- D. B and C**

2. The study of inland waters – ponds, lakes, and streams – is called

- A. Aquaology
- B. Limnology**
- C. Ecology
- D. Hydrology

3. The provided item labeled “#3” is one of the oldest and simplest collecting methods. It is known as a

- A. Burlse funnel
- B. Hoop seine
- C. Plankton net**
- D. Mesh sampler

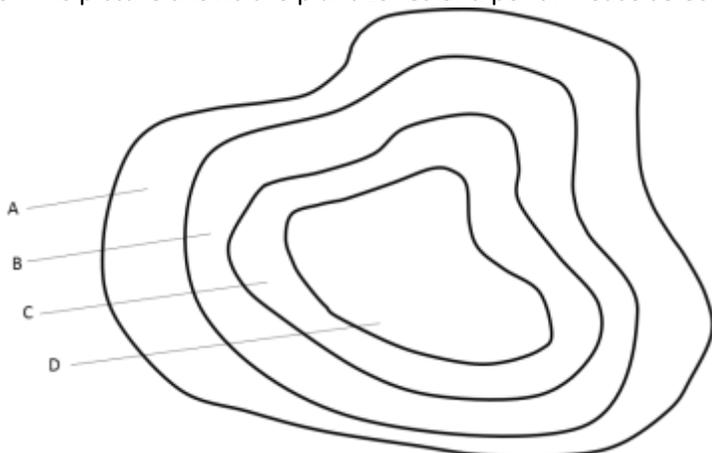
4. The Ohio Division of Wildlife maintains a state endangered species list, and the U.S. Fish and Wildlife Service maintains a federal endangered species list. Ohio can offer more protection to a federally listed species, but it cannot provide less protection. Which of the following Ohio endangered species is also a federally endangered species?

- A. Lake sturgeon
- B. Northern riffleshell**
- C. Eastern spadefoot
- D. Water penny

5. Genetic material from a plant or animal can be found in the air, water, or soil. This could be in the form of skin cells, scales, secretions, feces, or mucus. The material collected from water samples in the field can be used to indicate the potential presence of an individual species. This genetic material is commonly known as:

- A. Ancient DNA (aDNA)
- B. Autosomal DNA (AtDNA)
- C. Environmental DNA (eDNA)**
- D. Mitochondrial DNA (mtDNA)

6. This picture shows the plant zones of a pond. Please select the letter that represents the Emergent Plant Zone



(answer: A)

7. The provided fish labeled “#7” is common throughout Ohio, but they prefer clear ponds and lakes with rooted vegetation. This fish is a:

- A. Redear sunfish
- B. White crappie
- C. Smallmouth bass
- D. Bluegill

8. All animals need food, so having something available to eat is very important for the success of an organism in any given environment. Choose the organism that is the most commonly eaten by freshwater invertebrates:

- A. Algae
- B. Duckweed
- C. Water lily
- D. Cattail

9. You are a fish biologist sampling the fish population in Raccoon Creek, very near to this site, when someone visiting the park stops to ask you if there are any Brown Trout in the creek. Select the answer you would give the visitor:

- A. Yes, there are lots of invertebrates and small fish for them to eat
- B. No, the summer water temperature is too warm for Brown Trout to successfully reproduce
- C. Yes, there is plenty of overhanging vegetation and cover to provide suitable habitat
- D. No, there are too many predators in Raccoon Creek that would eat all the small Brown Trout

10. Under the 4R Principles of Nutrient Stewardship, farmers are encouraged to make nutrients available at the right time when crops need them. The program recommends not applying phosphorous if a large rainfall is in the weather forecast. What is the basis for this recommendation?

- A. Phosphorus is water-soluble, so if it gets wet it is rendered ineffective and cannot be taken up by the plants
- B. Rainfall makes soil more alkaline, and under these conditions phosphorus will form less soluble compounds
- C. Driving a tractor over the field to apply the phosphorus compacts the soil, leaving the roots of the plants unable to absorb water from the rainfall
- D. Rainfall washes the phosphorus into nearby waterways, which contributes to environmental damage like harmful algal blooms and reduced water quality

11. The provided item labeled “#11” is a picture of an otolith taken from a Largemouth Bass. The female bass was sampled in Tycoon Lake on April 30, 2018. It weighed 1,459 grams and it measured 455mm long. The otolith is the earbone of the fish and contains information about seasonal growth of the fish. Using the picture, determine how many years old the fish was when it was sampled.

- A. 6
- B. 8
- C. 10
- D. 12

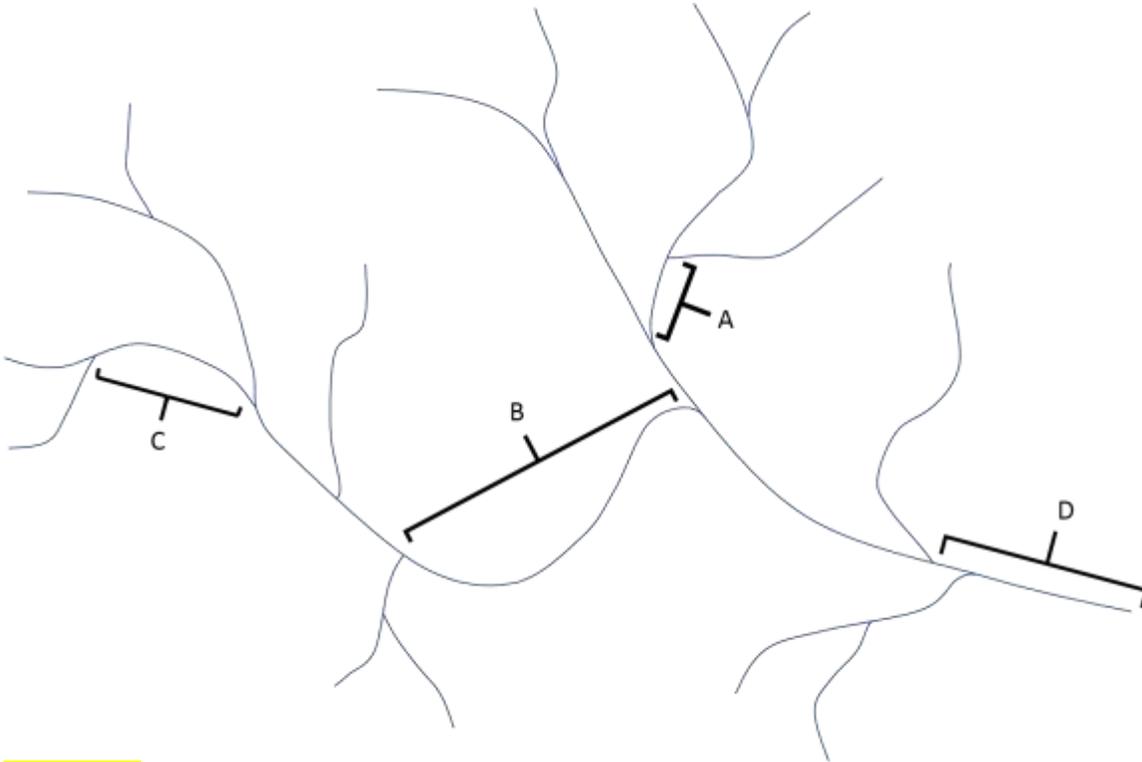
12. There are two major processes involved in the natural development of flood plains: _____ describes the process in which earthen materials are worn away and transported by natural forces; _____ describes the process in which earthen materials are deposited and increase land elevation.

- A. Weathering; degradation
- B. Corrosion; attrition
- C. Friction; deterioration
- D. Erosion; aggradation

13. Fairy shrimp belong to which taxonomic class?

- A. Insecta
- B. Branchiopoda
- C. Diplopoda
- D. Bivalvia

14. Stream order is a classification system that indicates the level of branching in a river system. A number is assigned to a stream based on their number of tributaries. In the following picture, select the letter that represents a 3rd order stream:



(Answer: B)

15. According to the National Water Quality Assessment, this type of pollution is the leading source of water quality impacts on surveyed rivers and streams:

- A. Forestry nonpoint source pollution
- B. Acid mine drainage
- C. Agricultural nonpoint source pollution
- D. Hydraulic fracturing

16. Temperature layering occurs in deep lakes where the surface water warmed by the sunlight is less dense than cold water and it floats on the cool lower layers. The layer of sudden temperature drop that acts as a barrier to vertical movements is known as a:

- A. Lithosphere
- B. Thermocline
- C. Regolith
- D. Epipelagic zone

17. _____ help control nonpoint source pollution by holding and using nutrients and reducing sediment.

- A. Riparian areas
- B. Aquatic plants
- C. Flood walls
- D. Spillways

18. Which of the following refers to a unique habitat of brackish water – a mixture of fresh water draining from the land, and salty seawater?

- A. Beach
- B. Vernal pool
- C. Wetland
- D. Estuary

19. Water management is becoming an increasing concern in agriculture, both in dealing with too much water or too little water. New tools and methods to better manage water is critical to the future global success of farming. With an ET Gauge, farmers can monitor crop and soil water loss and optimize their water use by reading measurements designed to tell them when to irrigate. ET, an acronym for a part of the water cycle, stands for:

- A. Evapotranspiration
- B. Environmental transpiration
- C. Evaporation time
- D. Evaporation trend

20. Hydrilla is a submerged, perennial aquatic plant that has earned the nickname “world’s worst invasive aquatic plant.” Named after Hydra, the 9-headed serpent of Greek mythology, it can grow an entirely new plant from a tiny stem fragment. Find the label “#20” at the Aquatics Station and identify the hydrilla plant.

- A.
- B.
- C.
- D.

21. Hellgrammites are aquatic larvae that are a key indicator of stream health. They are popular food among fish and are popular bait for anglers. What is the name of the adult insect that a hellgrammite metamorphosizes into?

- A. Eastern Dobsonfly
- B. Antlion
- C. Green lacewing
- D. Water scorpion

22. Subsurface tile drainage has been used beneath poorly drained agricultural lands since the late 1800s. More recently farmers have started using subsurface drainage with adjustable, in-line control structures which allow them to periodically adjust the height at which the water table triggers drainage. This helps decrease nitrate losses through the root zone. What other benefit can farmers get from controlling subsurface drainage?

- A. The control structure can be raised in the spring and fall so that the soil is wet for planting and/or harvesting
- B. The water table level can be set lower to decrease aeration of the soil
- C. The control structure can be raised to increase outflow
- D. The water table level can be set higher during drier conditions to make more water available to growing crops

23. Which of the following statements about dissolved oxygen is true?

- A. Excess organic material in the water can increase dissolved oxygen
- B. Rapidly moving water, like large rivers and fast streams, typically contain more dissolved oxygen
- C. Dissolved oxygen levels are the lowest in the winter
- D. As the amount of dissolved oxygen drops below normal levels in water bodies, the water quality is increased

24. Most salamanders spend their larval stage in the water and their adult stage on land. This species is the opposite. The juvenile spends 2 to 3 years foraging on the forest floor before returning to the water to breed and live the remainder of its adult life.

- A. Mudpuppy
- B. Eastern Tiger Salamander
- C. Red-spotted Newt
- D. Redback Salamander

25. Walleye belong to which family of fish?

- A. Cyprinidae
- B. Percichthyidae
- C. Centrarchidae
- D. Percidae