

# 2022 REGIONAL ENVIROTHON Wildlife Test (25 total points)

**INSTRUCTIONS:** Write your answers on the Respondent Sheet.

- 1. Which of these following native snake species of Iowa is poisonous?
  - a. Rattlesnakes
  - b. Northern Water Snakes
  - c. Prairie Rattlesnakes
  - d. None of the above
- 2. Cecropia Moths, Iowa's largest moth species, go through a process of metamorphosis. What is the correct order of the process?
  - a. Egg caterpillar pupa adult
  - b. Egg worm chrysalis adult
  - c. Egg caterpillar chrysalis adult
  - d. Egg caterpillar cocoon adult
- 3. What is the largest species in the rodent family?
  - a. River Otter (Lontra canadensis)
  - b. Wolverine (Gulo gulo)
  - c. American Beaver (Castor canadensis)
  - d. Woodchuck (Marmota monax)
- 4. Female American Goldfinches utilize thistles and cattails to make their nests. What time of year do they nest?
  - a. Early Spring (March and April)
  - b. Early Summer (May and June)
  - c. Late Summer (July and August)
  - d. Fall (September and October)
- 5. Which of the following is an example of the function of a keystone species?
  - a. Woodpeckers carving out holes in trees for nesting
  - b. Bluegills controlling zooplankton populations
  - c. Millipedes eating decaying wood plant matter
  - d. None of the above

- 6. Bulls, cows and calves are terms that are used with what large North American mammal species?
  - a. Moose, Bison, Elk, and White-tail Deer
  - b. Bison and Elk only
  - c. Moose and Elk only
  - d. Moose, Bison, and Elk

MATCHING: Match the definition with the appropriate scientific term .

- a. Bioaccumulation
- b. Wildlife Corridors
- c. Citizen Science
- d. Natural Disturbances
- e. Ecosystem Services

- f. Dendrology
- g. Habitat Fragmentation
- h. Biodiversity
- i. Phenology
- j. Flyway
- 7. \_\_\_\_\_ The process that causes the concentration of a substance to increase as it moves up the food web.
- 8. \_\_\_\_\_The study of how the biological world times natural events.
- 9. \_\_\_\_\_A positive benefit that wildlife provides to humans, which can include regulating, supporting, cultural or provisioning.
- 10. \_\_\_\_\_Public volunteers give their time to assist scientists in scientific research.
- 11. \_\_\_\_\_Human expansion that forces wildlife into smaller tracts of land which can cause the decline of many wildlife species.
- 12. \_\_\_\_\_Tract of land that connects different wildlife habitats that might otherwise be separated by human development.

### 13. The following species lay their eggs in water.

- a. Tiger Salamander
- b. Northern Pike
- c. Grey Tree Frog
- d. All of the above
- 14. The following can be hunted in Iowa:
  - a. Hungarian Partridge, Bobwhite Quail, Woodcock
  - b. River Otter, Bobcat, Moose
  - c. Elk, Mourning Dove, Wood Duck
  - d. A and C only
  - e. Bobolink

15. Eastern Wild Turkeys (Meleagris gallopavo silvestris) were reintroduced in Iowa in the \_\_\_\_\_\_.

- a. 1920s
- b. 1940s
- c. 1970s
- d. They were never reintroduced.

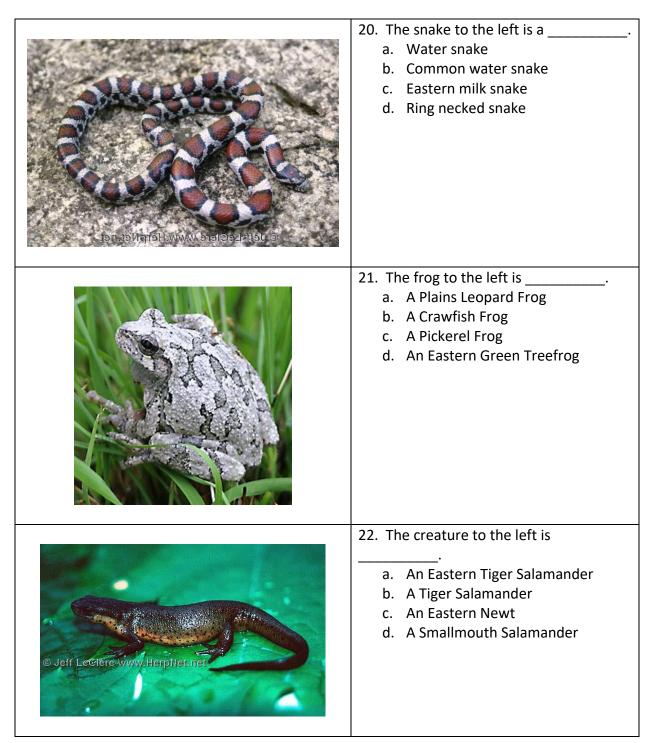
16. \_\_\_\_\_are the fastest birds of prey, clocked at over 200 mph when diving.

- a. American Kestrel
- b. Sharp-shinned Hawk
- c. Peregrine Falcon
- d. Osprey
- 17. The following insects migrate south for the winter:
  - a. Monarch Butterflies
  - b. Common Green Darners
  - c. Viceroys
  - d. A and B only
- 18. Wood ducks are lowa's only tree nesting duck species. Soon after hatching, Wood duck chicks will plummet as far as 50 ft. to the ground. These chicks are a great example of a species in which the young hatch with feathers, good eyesight, and have the ability to feed themselves. Ornithologists use this word to describe this type of baby:
  - a. Precocial
  - b. Altricial
  - c. Nidicolous
  - d. None of the above

19. Over\_\_\_\_\_\_species of moths have been recorded in the state of Iowa.

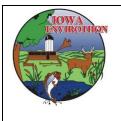
- a. 50
- b. 200
- c. 500
- d. 2000

**IDENTIFICATION:** Identify each of the following.



	<ul> <li>23. To the left is a</li> <li>a. Blanding's Turtle</li> <li>b. Wood Turtle</li> <li>c. Yellow Mud Turtle</li> <li>d. Box Turtle</li> </ul>
	<ul> <li>24. To the left is a</li> <li>a. Six-lined Racerunner</li> <li>b. Slender Glass Lizard</li> <li>c. Northern Prairie Skink</li> <li>d. Prairie Skink</li> </ul>
Photo by Gary Irwin	<ul> <li>25. The bird to the left is</li> <li>a. A Golden Eagle</li> <li>b. An Osprey</li> <li>c. A Turkey Vulture</li> <li>d. A Red-tailed Hawk</li> </ul>

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TEST REVISION DATE	02/14/2011
CONTENT EXPERT	Katie Klus - Naturalist III at Black Hawk County Conservation



## 2022 REGIONAL ENVIROTHON Soils Test (25 total points)

**INSTRUCTIONS:** Write your answers on the Respondent Sheet.

**MATCHING:** Match the term to the description that best fits.

A. Erosion

- H. Sand
- B. A horizonC. Organic Matter
- I. Glacial till J. Bacteria
- E. Earthworms

D. Loess

- F. Permeability
- G. B horizon

- L. C horizon
- M. Silt
- N. Bedrock

- O. Limestone
- P. Infiltration
- Q. pH
- R. Clay
- S. Compaction
- T. Manure
- 1. \_\_\_\_\_ This mineral particle has the most surface area and therefore interacts most with water and nutrients

K. Aggregate stability

- 2. \_\_\_\_\_ This particle holds the least amount of water
- 3. \_\_\_\_\_ The ability of a particular soil to absorb water
- 4. \_\_\_\_\_ Process where soil particles are moved by wind or water
- 5. \_\_\_\_\_ The highest biological activity would be expected in this layer
- 6. \_\_\_\_\_ This layer lacks development and appears similar to the material as it was deposited (parent material)
- 7. \_\_\_\_\_ Wind-blown material that covers much of Iowa
- 8. \_\_\_\_\_ Organism associated with high levels of soil quality
- 9. \_\_\_\_\_ This accumulated in Iowa's soils due to the wet prairie history
- 10. \_\_\_\_\_ This soil component controls nutrient availability to plants

**MULTIPLE CHOICE:** Select the best possible answer from those provided.

- 11. Which soil order makes up the majority of Iowa's land area?
  - a. Mollisols
  - b. Alfisols
  - c. Entisols
  - d. Inceptisols
  - e. Histtosols

- 12. Soil texture refers to what?
  - a. The mix of sand, silt, and clay
  - b. How the soil sticks together or aggregates
  - c. The appearance of the surface
  - d. How the soil holds together when put in water
- 13. In estimating erosion with the USLE or RUSLE, which of the following is NOT considered?
  - a. Soil texture or susceptibility to erosion
  - b. Slope steepness and length
  - c. Previous year's erosion
  - d. Cropping practices
- 14. Compaction \_\_\_\_\_.
  - a. Generally causes increased root growth
  - b. Is needed for nutrient transport
  - c. Is naturally forming in Iowa
  - d. Can cause more runoff and erosion
- 15. Which soil organism colonizes plant roots?
  - a. Decomposer
  - b. Mycorrhizal fungi
  - c. Nematodes
  - d. Arthropods
- 16. The three main texture classifications of soil are \_\_\_\_\_\_.
  - a. Loam, sandy loam, and silty loam
  - b. Clay, sand, and silt
  - c. Bedrock, sand, and clay
  - d. Rock, silt, and humus
- 17. Which of the following is NOT one of the five main soil forming factors?
  - a. Climate
  - b. Living organisms
  - c. Time
  - d. Animal activity and waste
  - e. Parent material

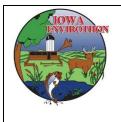
18. Thin, wearing away of the uppermost surface of the soil profile is called \_\_\_\_\_\_.

- a. Rill erosion
- b. Mass wasting
- c. Sheet erosion
- d. Soil creep

- 19. Which practice most effectively holds soil on a slope during a rain event?
  - a. Live, rooted plant cover
  - b. Undisturbed residue from previous crop
  - c. Contour tillage
  - d. Vertical tillage parallel to the slope
- 20. A 3% slope \_\_\_\_\_.
  - a. Is not steep enough to cause worry about soil erosion
  - b. Means that there is a 3 foot drop in elevation over a horizontal distance of 100 feet
  - c. Does not occur often in Iowa
  - d. Means that there is a 3 foot rise in elevation over a horizontal distance of 10 feet
- 21. Which of the following activities is most likely to decrease soils health?
  - a. Contour farming
  - b. Leave soil bare over winter
  - c. Strip-cropping
  - d. Adding organic matter to the soil
- 22. The four principle components of soil are \_\_\_\_\_\_.
  - a. Colloids, water, oxygen, and compost
  - b. Air, water, minerals, and organic matter
  - c. Sand, rocks, organic matter, and air
  - d. Water, rocks, oxygen, and compost
- 23. What area is adjacent to surface waters such as stream banks and shorelines?
  - a. Upland
  - b. Wetland
  - c. Riparian
  - d. Buffer
- 24. The soil food web contains proportions of bacteria, fungi, and other organisms. Which of the following statements is true?
  - a. Soil food web proportions are identical under different types of vegetation.
  - b. Forests and pastures have unique soil web proportions.
  - c. Management practices do not change the soil food web proportion if using conservation management practices.
  - d. None of the statements are true.

- 25. Growing cover crops is one practice that improves soil health. Cover crops can address which of the following concerns farmers may have in regards to their fields?
  - a. Erosion control
  - b. Build organic matter levels
  - c. Break-up a compaction layer
  - d. Recycle nutrients
  - e. All of the above

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TEST REVISION DATE	02/17/2022	
CONTENT EXPERT	Amber Anderson, MS - ISU Assistant Teaching Professor	



# **2022 REGIONAL ENVIROTHON Forestry Test** (25 total points)

**INSTRUCTIONS:** Write your answers on the Respondent Sheet.

**MATCHING:** Match the term to the description that best fits.

- U. Xylem
- V. Cambium

X. Sapwood

Y. Species composition

- W. Bark

- Z. Heartwood AA. Root cap BB. Silviculture CC. Phloem DD. Primary Succession
- **EE.** Secondary Succession FF. Meristem GG. Alternate HH. Opposite II. Trunk
- 1. \_\_\_\_\_ Main support of the tree and tree growth; it contains transport vessels for water, nutrients, and sugars
- 2. \_\_\_\_\_ Found just below the bark; transport water and nutrients up the tree
- 3. \_\_\_\_\_ Transports sugars from leaves to roots and other parts of the plant
- 4. \_\_\_\_\_ Area of growth
- 5. \_\_\_\_\_ Region of tissue expansion that occurs at the tips of both twigs and roots
- 6. \_\_\_\_\_ Where new soil is formed and vegetation must start from a new substrate; can be caused by flooding
- 7. Where a disturbance clears vegetation, but existing soils and seed sources still exist on the site; this can be caused by fires
- 8. \_\_\_\_\_ Science of controlling the establishment, growth, composition, health, and quality of forests and woodlands
- 9. \_\_\_\_\_ Measurement of the different types of trees located within a particular area
- 10. Branching pattern unique to trees such as maple, ash, dogwood, and buckeye

**MULTIPLE CHOICE:** Select the best possible answer from those provided.

- 11. The native insect two-lined chestnut borer (*Agrilus bilineatus*) is an example of .
  - a. An invasive pest
  - b. Abiotic factor
  - c. Biotic factor
  - d. A parasite

- 12. Which of the following trees has compound leaves?
  - a. Sugar maple (Acer saccharum)
  - b. Red oak (Quercus rubra)
  - c. Grey dogwood (Cornus racemosa)
  - d. Green ash (Fraxinus pennsylvanica)

13. The living outermost portion of a woody stem or branch is \_\_\_\_\_\_.

- a. Heartwood
- b. Pith
- c. Growth rings
- d. Sapwood

14. Trees provide the following benefits, EXCEPT for \_\_\_\_\_\_.

- a. Increasing storm water
- b. Reducing energy costs
- c. Improving air quality
- d. Intercepting rainfall

15. What are some of the abiotic factors affecting the growth of trees?

- a. Bacteria
- b. Wind
- c. Water
- d. Fungi
- e. Sunlight
- f. All of the above
- g. B, C, & E

16. Which one of the following trees disperse their seed using wind?

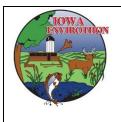
- a. Cottonwood
- b. Cherries
- c. Walnuts
- d. Oaks
- 17. Forest composition changes with soil type, elevation, and slope aspect. Which slopes will have tree species adapted to hot and dry conditions?
  - a. South and West
  - b. East and South
  - c. North and East
  - d. West and North
- 18. Community tree inventories provide which of the following data?
  - a. Species diversity
  - b. Maintenance recommendations
  - c. Tree prices
  - d. Both A & B

- 19. Black walnut, red oak, and white ash trees are all considered \_\_\_\_\_\_.
  - a. Softwoods
  - b. Canopy trees
  - c. Hardwoods
  - d. Conifers

**MATCHING:** Match the term to the description that best fits.

- A. White Oak
- B. Red Oak
- C. Black Walnut
- D. Kentucky Coffeetree
- E. Silver Maple
- F. Sugar Maple
- G. Eastern Red Cedar
- H. Eastern White Pine
- I. Blue Spruce
- 20. \_\_\_\_\_ Produces short, wide seed pods. The seeds were previously steeped to make a drink by Indigenous cultures
- 21. \_\_\_\_\_ Produces a samara seed and is found naturally in bottomland forests; bats often shelter under its loose bark
- 22. \_\_\_\_\_ Is only evergreen native to all parts of Iowa, and despite its name is actually a Juniper
- 23. \_\_\_\_\_ Second in lumber value and is used for making barrels of various kinds, but a higher value is derived from the seed that is used by over 45 species of wildlife in Iowa
- 24. \_\_\_\_\_ Has doubly compound leaves and produces a large nut. The roots produce toxins which can deter tomatoes, lilac, and apples if planted nearby
- 25. \_\_\_\_\_ Has light green needles that come in bundles of 5 and are soft and flexible

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CONTENT EXPERT	Gabrielle Edwards, Urban Forestry Program Specialist at Iowa DNR



# 2022 REGIONAL ENVIROTHON Aquatics Test (25 total points)

**INSTRUCTIONS:** Write your answers on the Respondent Sheet.

**MATCHING:** Match the term to the description that best fits.

JJ. European watermilfoil PP. Duckweed VV. White water lily KK. Amphipods QQ. Tertiary Consumer WW. Phytoplankton LL. Coontail RR. Lacustrine wetlands XX. Zooplankton MM. Fen wetland SS. Wetlands YY. Primary consumers NN. Palustrine wetlands TT. Prairie pothole marshes OO.Invertebrates UU. Sago pondweed

- 26. \_\_\_\_\_ Wetland marshes that are the result of glacial movement
- 27. \_\_\_\_\_ A wetland with no visible water, rich in biodiversity, and usually alkaline
- 28. \_\_\_\_\_ Tiny shrimp-like detritivores
- 29. \_\_\_\_\_ Plant that grows underwater with floating leaves
- 30. \_\_\_\_\_ Branching underwater plant that is a favorite food among ducks and geese
- 31. \_\_\_\_\_ Base of the food chain in many aquatic environments
- 32. \_\_\_\_\_ These types of ecological systems are considered the most productive and diverse biological communities on Earth
- 33. \_\_\_\_\_ A widespread invasive plant species
- 34. \_\_\_\_\_ Wetland that borders the edge of a large body of water and has emergent and submersed plants
- 35. \_\_\_\_\_ Walleye and largemouth bass

**MULTIPLE CHOICE:** Select the best possible answer from those provided.

36. The bottom 1/3 tier of Iowa has most of the farm ponds.

- a. True
- b. False
- 37. The common carp is a member of which family of fish?
  - e. Sunfish
  - f. Perch

- g. Minnow
- h. Sucker

38. An aquatic environment composed of running water, such as streams and rivers, is called a

- e. Lentic ecosystem
- f. Watershed
- g. Lotic ecosystem
- h. Riverine wetland

39. The number of all wetlands that were historically found in Iowa \_\_\_\_\_\_.

- e. Has increased due to government incentives
- f. Has been reduced about 95%
- g. Has been reduced almost 50%
- h. Has remained about the same.

### 40. What type of plant is arrowhead?

- e. Emergent
- f. Submersed
- g. Free-floating
- h. Tertiary

### 41. Floodplains are \_\_\_\_\_

- a. Areas in a field where water stands following a heavy rain
- b. Low lying areas that border only some water bodies
- c. Are flood prone areas where human development is always restricted
- d. Are nature's storage area for heavy rains that help reduce downstream flooding
- 42. Which one of the following statements is true concerning trout species in Iowa?
  - f. There are only about 25 cold water trout streams in Iowa
  - g. Most trout streams in Iowa are in the northwest part of the state
  - h. There are three different species of trout present in the state
  - i. Iowa's trout streams are state owned

### 43. Oxbows are found in \_\_\_\_\_.

- e. Upper reaches of a river
- f. Lakes that are filled in with nutrients
- g. Abandoned river channels that are cut off from the river
- h. Prairie potholes that are enlarged

44. Runoff from home lawns can add what to Iowa's surface waters?

- e. Sediment
- f. Nutrients
- g. Pesticides
- h. A and C only
- i. All of the above

45. Fish are identified using body shape, fins, scales, and mouth shape. Where is the caudal fin located?

- e. Tail
- f. Belly
- g. Behind the gills
- h. Back

46. If over \_\_\_\_\_\_ of a watershed is converted to impervious surfaces, significant ecologic damage can occur from polluted runoff, lack of ground water recharge, and increased flooding.

- e. 2%
- f. 10%
- g. 25%
- h. 30%

47. Rain gardens should be designed to handle the runoff from \_\_\_\_\_\_ inches of rain.

- e. 1.25
- f. 2
- g. 2.25
- h. 3

48. A watershed is generally defined as \_\_\_\_\_\_.

- e. A building that stores water
- f. All the land area that drains to a common point or water body
- g. All the water area that drains to a given point in a landform
- h. A moment in time when you cross into a new area.
- 49. What is the most common form of nitrogen found in streams and lakes?
  - e. Phosphorus
  - f. Nitrite
  - g. Nitrate
  - h. All of the above
- 50. Wetlands help improve water quality by \_\_\_\_\_\_.
  - f. Removing pollutants from surface water
  - g. Releasing sediment
  - h. Allowing nutrients and organic waste to flow
  - i. All of the above

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CONTENT EXPERT	Dr. Joseph E. Morris at Iowa State University