

## CT Envirothon Aquatics Exam 2016

Print the name of your Team/School on the line in the upper right hand corner of this page and **EACH** additional page. For each of the questions in this exam you will either circle the correct answer or fill in the blank space(s) provided.

All specimen identifications are included in the first half of the exam and you are allowed to use the provided keys to ID each organism. There are two questions per specimen and each specimen identification question number correlates to the specimen # (e.g. 1A and 1B). Each question from #1A – #22 is worth 3 points, and the bonus question #23 is worth 1 point. Questions #24 – #28 are focused on the current topic and worth 2 points each. **GOOD LUCK!!!**

**Please utilize the *Key to Saltwater Invertebrates* to identify the following organisms:**

1A) Identify the species in container #1.

- a) *Asterias forbesi*
- b) *Mercenaria mercenaria*
- c) *Argopecten irradians*
- d) *Limulus polyphemus*

1B) Is the specimen in container #1 considered a native or invasive species to Long Island Sound?

- a) **native**
- b) invasive

2A) Identify the species in container #2.

- a) *Crepidula fornicata*
- b) *Carcinus maenas*
- c) *Busycon carica*
- d) *Mercenaria mercenaria*

2B) What feeding strategy does the species in container #2 display?

- a) grazing
- b) **active predation**
- c) burrowing
- d) suspension feeding

**Use *The Amphibians of Connecticut* to identify the following organisms:**

3A) Identify the species in container #3.

- a) *Pseudacris crucifer*
- b) *Rana clamitans*
- c) *Rana catesbeiana*
- d) *Hyla versicolor*

3B) What is the primary food source for the adult form of the species in container #3?

- a) fish
- b) insects and other invertebrates
- c) tadpoles
- d) all of the above

4A) What is the species in container #4?

- a) *Plethodon glutinosus*
- b) *Ambystoma laterale*
- c) *Notophthalmus viridescens*
- d) *Ambystoma maculatum*

4B) What is the range in Connecticut of the species in container #4?

- a) Northeastern Connecticut
- b) Coastal Connecticut
- c) Northwestern Connecticut
- d) Statewide across Connecticut

5A) What is the species in container #5?

- a) *Scaphiopus holbrookii*
- b) *Rana sylvatica*
- c) *Pseudacris crucifer*
- d) *Rana palustris*

5B) Adult forms of the species in container #5 live in what conditions?

- a) terrestrial
- b) aquatic

Use the *Connecticut Fish Key* to identify the following organisms:

6A) What species is in container #6?

- a) *Apeltes quadracus*
- b) *Anguilla rostrata*
- c) *Notemigonus crysoleucus*
- d) *Morone saxatilis*

6B) What type of reproductive migration does the fish in container #6 display?

- a) potamodromous
- b) anadromous
- c) amphidromous
- d) catadromous

7A) What species is in container #7?

- a) *Lepomis macrochirus*
- b) *Fundulus majalis*
- c) *Apeltes quadracus*
- d) *Menidia menidia*

7B) What type of scales does the fish in container #7 have?

- a) placoid
- b) ctenoid
- c) cycloid
- d) lacks scales

Use the *Freshwater Mussels of CT Guide* for the following shell:

8A) What species is in container #8?

- a) *Anodonta imbecilis*
- b) *Elliptio complanata*
- c) *Lampsilis cariosa*
- d) *Strophitus undulatus*

8B) Is the species in container #8 protected through the State of Connecticut's Endangered and Threatened Species laws?

- a) No, it is common.
- b) Yes, it is endangered.
- c) Yes, it is threatened.
- c) No, it is an invasive.

Use the *Guide to Riffle Dwelling Macroinvertebrates* for the following organisms:

9A) What is the family in vial # 9?

- a) *Tipulidae*
- b) *Psephenidae*
- c) *Philopotamidae*
- d) *Elmidae*

9B) What type of feeding group does the specimen in vial # 9 belong to?

- a) scraper
- b) collector-filterer
- c) predator
- d) gatherer

10A) What is the family in vial #10?

- a) *Gomphidae*
- b) *Pteronarcyidae*
- c) *Oligochaeta*
- d) *Amphipoda*

10B) What is the pollution tolerance value for the family in vial #10?

- a) 0
- b) 5
- c) 1
- d) 7

Use the *Invasive Aquatic Plants in CT Guide* for the following plant:

11A) What is the plant in photo #11?

- a) *Marsilea quadrifolia*
- b) *Najas flexilis*
- c) *Trapa natans*
- d) *Cabomba caroliniana*

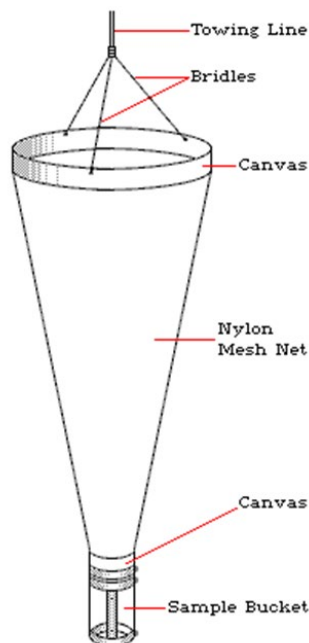
11B) What methods help prevent the species in photo #11 and other aquatic plant species from spreading?

- a) Inspect and remove all visible plants, fish, and animals as well as mud at the boat launch.
- b) Empty all water from boats and other items before you leave the area you are visiting.
- c) Dry equipment, and if possible, allow for 5 days of drying time before entering new waters.
- d) All of the above

**For the remaining questions on the exam, no ID guides or other reference materials may be used, unless indicated. All questions come directly from the workshop training session including many of the materials posted on the CT Envirothon website and are referenced for your future learning. Please ask station leaders if you have any specific questions as you work through the exam.**

The following six questions are based on the “Watershed Jeopardy” session during the Aquatics 2016 Workshop.

12) This equipment is used to sample algae:



a) What is a kick net?

**b) What is a plankton net?**

c) What is a dip net?

d) What is a bag?

13) PO<sub>4</sub>:

**a) What is phosphate?**

b) What is pH?

c) What is ammonia?

d) What is phosphorous?

14) In coastal areas, excessive ground water pumping may cause fresh ground water to mix with this, causing contamination?

a) What is phosphate?

**b) What is salt water?**

c) What is tap water?

d) What is silt?

15) Groundwater makes up this % of the world's freshwater:

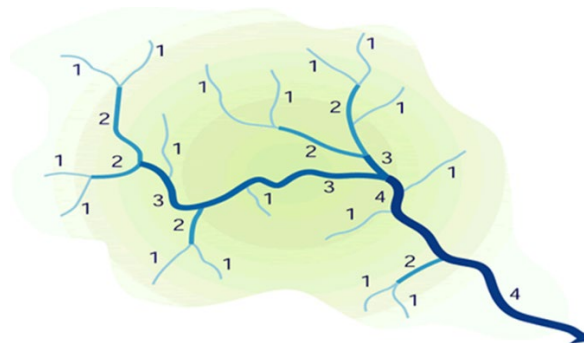
- a) What is 70%?
- b) What is 65%?
- c) What is 30%?**
- d) What is 20%?

16) A curved lake in a floodplain:



- a) What is an oxbow?**
- b) What is a pond?
- c) What is a vernal pool?
- d) What is a riffle?

17) These numbers in the graphic below are used to describe this:



- a) What is gradient?
- b) What is permability?
- c) What is wetland classification?
- d) What is stream order?**

The following three questions are based on the “Nonpoint Source Pollution: A Challenge to Control” session during the Aquatics 2016 Workshop.

18) Which of the following is a major **source** of nonpoint source pollution?

- a) toxins
- b) pathogens
- c) thermal
- d) urban storm water

19) Stormwater regulations, under Section 319 of the Clean Water Act, do NOT apply to which of the following?

- a) Municipal Separate Storm Sewer Systems (MS4s)
- b) Construction Activities
- c) Residential Activities
- d) Industrial Activities

The following three questions are based on the “Wetlands” session during the Aquatics 2016 Workshop.

20) Wetlands are characterized by:

- a) Hydrology
- b) Soils
- c) Vegetation
- d) All of the above

21) According to the Cowardin System, what classification includes all nontidal wetlands dominated by trees, shrubs, persistent emergent vegetation, and tidal wetlands with salinity less than 0.5%?

- a) Lacustrine
- b) Palustrine
- c) Estuarine
- d) Riverine

22) Which of the following is considered a wetland **function**?

- a) Education
- b) Economic Benefits
- c) Wildlife Habitat
- d) Recreation

23) **\*\*BONUS\*\*** What does your team do to protect your local aquatic resources?

**(ANY answer receives 1 point)**

**The following questions on the exam are directly focused on the Current Topic for 2016 “Invasive Species.” These questions are worth 2 points each. Please ask station leaders if you have any specific questions. (Current Issue: List of Resources document).**

Questions 24 & 25 are based on the Current Issue Focus Concept “Detection/Prevention” presented during the Aquatics Workshop.

24) Social media, print media, and hands-on training sessions ALL are examples of ways to accomplish educational outreach for identification, prevention, and detection of invasive species.

**True**                      False

25) Which of the following is not a consideration in Early Detection/Rapid Response?

- A. What the species looks like
- B. Where you find it
- C. Country of origin**
- D. How it can be controlled
- E. How it spreads

The following three questions are based on the “Watershed Jeopardy: Double Jeopardy” session during the Aquatics 2016 Workshop.

26) The three main methods of invasive species control are:

- a) Biological, chemical, and mechanical**                      b) Chemical, natural, and physical
- c) Mechanical, electrical, civil    d) Physical, toxic, and abrasive

27) Name a group working to control invasive species in Connecticut

- a) CTDEEP    b) USDA
- c) NRCS    **d) All of the above**

28) The majority of CT Invasive species come from which continent?

- a) Europe    **b) Asia**
- c) South America    d) Australia