

## 2016 New Hampshire Envirothon: Fish and Wildlife Test

Score: \_\_\_\_\_

Team #: \_\_\_\_\_

### Section I - Wildlife Identification (25 points - 1 pt. each)

#### Calls

1. great horned owl
2. killdeer
3. wood frog
4. blue jay

#### Fish

5. brook trout
6. yellow perch
7. bluegill sunfish
8. white sucker

#### Amphibians/Reptiles

9. green snake
10. spring peeper
11. spotted salamander
12. wood turtle

#### Mammals

13. striped skunk
14. fisher
15. Virginia opossum
16. Eastern coyote
17. bobcat
18. raccoon

#### Birds

19. house sparrow
20. European starling
21. red-tailed hawk
22. American woodcock
23. barred owl
24. American bittern
25. great black-backed gull

**Section II (30 points)**

**Team #:** \_\_\_\_\_

**Write the letter of the matching definition in the blank provided. There are more definitions than terms, so read them carefully! (2 pts. each)**

- |                   |   |  |
|-------------------|---|--|
| Introduced        | L | A. Animals that are most active during the day.  |
| Diurnal           | A | B. Maintenance of constant internal physiological conditions in the face of a varying external environment                                       |
| Edge effect       | N | C. Seasonal, depression wetlands which are important for amphibian breeding  |
| Riparian          | M | D. Plant or animal that originated or naturally grows in a particular area   |
| Ecosystem         | O | E. A group of plants and animals living and interacting with one another in a specific region under relatively similar environmental conditions. |
| Extirpated        | R | F. The simultaneous demand by two or more organisms for limited environmental resources, such as light or nutrients.                             |
| Indigenous        | D | G. Numbers of individuals in a population that a given habitat can support.  |
| Carrying capacity | G | H. Animals that eat primarily vegetative matter.   |
| Community         | E | I. A condition present in an environment in such short supply that it restricts growth, reproduction or other life processes                     |
| Adaptation        | S | J. A region on mountain tops where extreme weather conditions make survival impossible for tall trees  |
| Limiting factor   | I | K. Animals most active during dawn and dusk  |
| Invasive          | Q | L. A non-native species intentionally or accidentally brought into an ecosystem  |
| Succession        | P | M. Located along the banks of a stream, river or other water way.  |
| Vernal Pool       | C | N. The tendency of wildlife to use the areas where two vegetative types come together.   |
| Competition       | F | O. Natural unit that includes all the living and non-living parts interacting  |

**P.** The sequence of change in habitat types that occurs after a site has been modified by a disturbance.

**Q.** Plant or animal species with the ability to significantly spread and displace native or desirable species.

**R.** Plant or animal no longer living in part of its range.

**Section II Continued**

**S.** The process that allows for individuals with inherited characteristics most suited to their environment to pass on those characteristics to their descendants

**T.** Permanent wetlands found in forests – important areas for fish breeding

**Section III Concepts (45 points)**

**Team #:** \_\_\_\_\_

**Question 1 (15 Points)**

Think about the wildlife management practices that you learned about in the Wildlife Habitat Evaluation Program from the website as well as your other reading. Imagine that you are a habitat wildlife biologist with N.H. Fish and Game.

**1a.** Name three things you can do to improve the **habitat** for wildlife on **agricultural lands**. (1 point each)

*delay crop harvest, establish field buffers, leave some crop unharvested, plant/manage food plots, control non-native vegetation, establish native grasses and forbs, grazing management.*

**1b.** Name three things you can do to improve the **habitat** for wildlife in **ponds and streams**. (1 point each)

*ponds – deepen edges, lime, repair spillway, reduce turbidity by reseeding, water control structures:  
streams – remove fish barriers, install coarse woody debris/boulders*

**1c.** Name three things you can do to improve the **habitat** for wildlife in **urban areas**. (1 point each)

*artificial feeders, mowing, planting native annual and perennial forbs, rooftop/balcony gardens*

**1d.** Now, imagine you are a population biologist with N.H. Fish and Game. Name three tools you can use to manipulate wildlife population numbers in the state. (1 point each)

*Manipulating season length for hunted/fished species, closing seasons, closing areas to harvest, sex specific targets, slot limits, translocation, reintroduction, collaborative efforts with adjacent states*

**1e.** Pollinator populations (bees, butterflies, moths, and some bats and birds) have been declining in recent years. Name three things you could do in your own backyard or in your local community to help improve habitat for these species. (1 point each)

*replace a part of your lawn with pollinator friendly seed mixes, decrease or eliminate the use of pesticides, bat houses, provide bee nesting sites, educate your neighbors, convince your town to plant pollinator host plants on town property*

**Section III: Question 2 (10 points)**

**Team #:** \_\_\_\_\_

Winter is the most stressful time of year for most forms of New Hampshire wildlife. The key hardships are a lack of food and cold temperatures.

Name five (5) physical and/or behavioral adaptations that wildlife have to deal with winter in New Hampshire and name one species that uses that adaptation. (1 point each)

Adapation:

Species

1. *Migration*

*birds*

2. *Hibernation (torpor)*

*chipmunk, bat, woodchuck, opossum, frog, turtle, bear*

3. *Grow a winter coat/change coat color*  
*change color*  
*winter coat*

*hare, ermine*  
*mammals*

4. *Store food for the winter*

*squirrel, beaver, muskrat*

5. *Seasonal habitat changes*

*deer: (yarding)*  
*small mammals/weasels;*  
*(subnivian space)*  
*grouse, turkey: (softwood cover.)*  
*birds: (flocking to feeders, migration)*

### **Question 3 (10 pts)**

The biggest boon to wildlife in the United States came in 1937 when Congress passed the Federal Aid in Wildlife Restoration Act. Due to its success similar legislation was passed in 1950 to aid in the restoration of sport fish populations. Together, the two programs are referred to as the Wildlife and Sport Fish Restoration (WSFR) Program.

**3a.** Why was there a need to restore wildlife populations in 1937 when the Federal Aid in Wildlife Act was first passed by Congress? (2 points)

*Numbers of many wildlife species were dwindling or gone altogether because of unregulated hunting and loss of habitat. The act was designed to counteract the wildlife crisis by providing local funding for wildlife management research; the selection, restoration, rehabilitation and improvement of wildlife habitat.*

**3b.** How is money raised through the WSFR program to benefit wildlife and sport fish populations? (2 points)

*Through an excise tax levied on the sale of sporting firearms and ammunition, archery equipment, fishing equipment, boat motors and motorboat fuel.*

**3c.** What types of projects can be funded with WSFR funds? (2 points)

*Wildlife management research, species reintroductions, habitat restoration, public use/access, hunter education, boat access, aquatic resource education, Let's Go Fishing Program*

**3d.** Identify one successful wildlife or sport fish-related project or program in New Hampshire funded through the WSFR Program. (2 points)

*Turkey reintroduction, increased moose population, hunter education, bobcat research, Let's Go Fishing, stream stocking of hatchery-raised trout, boat access*

**3e.** Who, ultimately pays for sport fish and wildlife restoration in the United States? (2 points)

*Consumptive users/sportsmen/hunters and anglers*

**Section III: Question 4 (10 points)**

Based on your reading of the 2016 Envirothon Study Guide, *Invasive Species: A Challenge to the Environment, Economy, and Society* and your knowledge of the 2016 NH Envirothon wildlife identification list answer the following questions. (10 points)

**4a.** Identify two ways non-native invasive species impact native wildlife. (2 points)

*Out-competes native species for food, shelter and space; introduce disease; may hybridize with native species; may cause the extirpation or extinction of a species; alters natural processes.*

**4b.** How do invasive species impact ecosystems? True or False (2 points)

  T   Invasive species outcompete and replace native species, altering the connections between biotic and abiotic elements in an ecosystem.

  T   Invasive can alter the amount of sunlight and space native species need to thrive.

T Invasive species alter the quality of water and soil that can prohibit other species from growing in the same area.

F Invasive species add extra nutrients to an ecosystem and help other species.

**4c.** What 2 invasive bird species that currently reside in New Hampshire impact cavity nesting birds like the Eastern bluebird? (1 point)

*European starling and European house sparrow*

**4d.** Describe how these invasive bird species negatively affect native birds. (1 point)

*They take over cavity nests; fight and bully other birds for food sources.*

**4e.** Name a species of invasive fish. (1 point)

*common carp*

**4f.** Identify one way this fish species impacts native species. (1 point)

*Its feeding habits increase turbidity (sediments--silt, clay, detritus, etc.) in the water/ stream; it dislodges vegetation that other species use for cover, nesting, and food; preys on the eggs of other fish.*

**4g.** Describe two ways citizens can help prevent the spread of non-native pest species. (2 points)

*Wash boats/trailers and flush motors between launchings; do not release pets into the wild; do not transport firewood from contaminated areas; plant native species in gardens/yards*