2019 New Hampshire Envirothon - Wildlife Section

The information below is designed to assist in preparing for the wildlife section of this year's New Hampshire Envirothon. The wildlife section will evaluate knowledge of general wildlife biology and basic wildlife management. An understanding of basic ecology and habitat management concepts and principles is important. In addition, students should be familiar with this year's theme, **Technology to Support New Hampshire Agricultural Communities**, as it relates to wildlife.

The wildlife section test is composed of three sections. *Section I* is the wildlife identification section in which teams will be asked to identify wildlife found in New Hampshire through the use of pictures, calls, pelts, mounts or scat-track combinations. *Section II* is the vocabulary section in which teams will be asked to identify ecological concepts and principles. *Section III* is the synthesis section in which teams will need to put their knowledge of species habitat needs and wildlife biology/management techniques together and apply that knowledge to make decisions regarding real world scenarios in a series of multi-part essay questions. The test is based on the objectives listed below.

Objectives:

Section I
1. Identify common New Hampshire wildlife listed on the attached species list through pictures, calls, pelts, mounts, shells, or scat/ track combinations.

Section II
2. Define and explain basic ecological concepts and terminology, including limiting factor, carrying capacity, territory, home range, niche, extirpated, ecosystem, biotic, abiotic, etc.

Section III
3. Name physical and behavioral adaptations of wildlife that enable them to survive winter and be able to cite examples. (i.e. migration, hibernation, changes in food, fur/feathers, home range, etc.)

4. Describe ways famers and wildlife managers of agricultural lands can enhance habitat for wildlife. Understand some of the basic "tools" of wildlife managers (hunting, habitat manipulation, population census techniques, people management, etc.)
5. Describe the flow of energy between biotic and abiotic parts in an ecosystem.
6. Explain why a landscape would/would not be suitable for a species considering its habitat needs.
7. List ways a land manager can improve the landscape for specific species by knowing their habitat requirements.
8. Describe major factors that pose risks to wildlife.
9. Explain how agricultural lands can benefit wildlife species.
10. Name ways agricultural lands are managed that are detrimental to wildlife.
11. Explain the role pollinators have on the agricultural landscape.
12. Describe the anticipated impact of climate change on at least five wildlife species in New Hampshire.
13. Describe how the federal Wildlife and Sport Fish Restoration Program benefits wildlife populations.

Study Aids and Questions
Past tests are posted on the wildlife section's webpage on the NH Envirothon website so teams can become familiar with the types of questions that will be asked and the test format.

If advisors have questions regarding the above information, feel free to contact a representative of the wildlife section, Mary Goodyear, New Hampshire Fish and Game Department.11 Hazen Drive, Concord, NH 03301; 271-6649 or mary.goodyear@wildlife.nh.gov

References:
References are located on the wildlife section webpage on the NH Envirothon website.

Wildlife Identification List:
Below are the lists of fish and wildlife species students should know. In addition, it is important to be familiar with their habitat requirements and natural histories in order to answer some of the Section III questions. (*Note*: Students are not expected to know scientific names.)

Fish:

With the use of a dichotomous key (find the key on the wildlife page of the NH Envirothon website), be able to identify the following fishes of New Hampshire from pictures or drawings:

Sunfish Family (Centrarchidae)
Micropterus: largemouth bass (*salmoides*) and smallmouth bass (*dolomieui*)
Lepomis: redbreast (*auritus*), pumpkinseed (*gibbosus*) and bluegill (*macrochirus*)

Catfish Family (Ictaluridae)
Ictalurus: brown bullhead (*nebulosus*) and yellow bullhead (*natalis*)

Sucker Family (Catostomidae)
Catostomus: white sucker (*commersonii*) and longnose sucker (*catostomus*)
Creek chubsucker (*Erimyzon oblongus*)

Perch Family (Percidae)
Yellow perch (*Perca flavescens*)
Walleye (*Stizostedion vitreum*)

Amphibians and Reptiles:

Without the use of a key, be able to identify the following species of amphibians
and reptiles from shells, pictures or vocalizations:

Salamanders
Spotted salamander (*Ambystoma maculatum*)
Red-backed salamander (*Plethodon cinereus*)

Turtles
Spotted turtle (*Clemmys guttata*)
Snapping turtle (*Chelydra serpentine*)
Eastern box turtle (*Terrapene carolina*)

Frogs
Spring peeper (*Pseudacris crucifer*)
Bull frog (*Rana catesbeiana*)

Snakes
Ring-neck (*Diadophis punctatus*)
Garter snake (*Thamnophis sirtalis*)

Birds

Without the use of a key, be able to identify the following species of birds from pictures, mounts or vocalizations (Note: bird pictures will be males in breeding plumage):

Game Species
Mallard (*Anas platyrhynchos*)
Canada goose (*Branta canadensis*)
Wild turkey (*Melegris gallopavo*)

Pasture Birds
Killdeer (*Charadrius vociferous*)
American woodcock (*Scolopax minor*)

Wading Birds
American bittern (*Botaurus Ientiginosus*)
Great blue heron (*Ardea erodias*)

Passerines
American robin (*Turdus migrayorius*)
American crow (*Corvus brachryhynchos*)
Bluebird (*Sialia sialis*)
Blue jay (*Cyanocitta cristata*)
European starling (*Sturnus vulgaris*)

Brown-headed cowbird (*Molothrus ater*)
Bobolink (*Dolichonyx oryzivorus*)
Black-capped chickadee (*Poecile atricapillus*)
Eastern meadowlark (*Sturnella magna*)

Raptors
American kestrel (*Falco sparverius*)
Broad-winged hawk (*Buteo platypterus*)
Red-tailed hawk (*Buteo jamaicensis*)

Barred owl (*Strix varia*)
Great-horned owl (*Bubo virginianus*)
Bald eagle (*Haliaeetus leucocephalus*)

Mammals

Without the use of a key, be able to identify the following species of mammals from study skins, pelts, mounts, pictures, and/or scat-track combinations:

Eastern Coyote (*Canis latrans*)
Grey Fox (*Urocyon cinereoargenteus*)
Red Fox (*Vulpes vulpes*)
Raccoon (*Procyon lotor*)
Porcupine (*Erethizon dorsatum*)
Virginia Opossum (*Didelphis virginiana*)
White-tailed Deer (*Odocoileus virginianus*)
Moose (*Alces alces*)
Ermine/Weasel (*Mustela erminea*)
Mink (*Mustela vison*)
Fisher (*Martes pennanti*)
Eastern Chipmunk (*Tamias striatus*)
Red Squirrel (*Tamiascirus hudsonicus*)

Gray Squirrel (*Sciurus carolinensis*)
Beaver (*Castor canadensis*)
Muskrat (*Ondatra zibethicus*)
Striped Skunk (*Mephitis mephitis)*
Woodchuck (*Marmota monax*)
House Mouse (*Mus musculus)*
Norway Rat (*Rattus norvegicus*)
Bobcat (*Felis Rufus*)
Canada Lynx (*Lynx canadensis*)
Snowshoe Hare (*Lepus americanus*)
Eastern Cottontail (*Sylvilagus floridanus*)
Little Brown Bat (*Myotis lucifugus*)
Big Brown Bat (*Eptesicus fuscus*)