2012 NEW HAMPSHIRE ENVIROTHON: FISH AND WILDLIFE TEST

SECTION I - Wildlife Identification [1 pt each] **Team #:_____**

Calls

1. *Wild Turkey*
2. *Barred Owl*
3. *Song Sparrow*
4. *Spring Peeper*
5. Is Number 4 an **obligate** Vernal Pool species? (Y/N) __*N*___

Fish

5. *Smallmouth Bass*
6. *Bluegill Sunfish*
7. *Yellow Perch*

Amphibians/Reptiles

8. *Red Spotted Newt*
9. *Common Garter Snake*
10. *Snapping Turtle*

Mammals

11. *Red Fox pelt*
12. What family is Number 11 in?

__*Canid*_____

13. *Red Squirrel picture*
14. *Fisher pelt*
15. *Otter pelt*
16. What family is Number 15 in?

____*mustelid*_____

17. *Bobcat tracks and scat*
18. *Raccoon tracks and scat*
19. *Beaver pelt*

Birds

21. *American Robin*
22. *Red-tailed Hawk*
23. *Wood duck*
24. *Eastern Phoebe*
25. *Northern Saw-whet Owl*

SECTION IIA - Vocabulary **TEAM #:_____**

Write the letter of the matching definition in the blank provided. (2 points each)

mast	_*C*__	A. Tender shoots, twigs and leaves of trees and shrubs that are eaten by wildlife.
extirpation	_*F*__	B. Animals for which there is a legal hunting or trapping season.
biomagnification	_*I*__	C. Nuts accumulated on the forest floor that provide food for wildlife .
edge effect	_*G*__	D. An action that has evolved over time that enhances a species ability to survive.
snags	_*J*__	E. Located along the banks of a stream or river.
browse	_*A*__	F. The localized elimination of a species from part of its range.
behavioral adaptation	_*D*__	G. The tendency of wildlife to use the areas where two vegetative types come together.
forb	_*H*__	H. A non-woody plant other than grass.
game	_*B*__	I. The process where increasing concentrations of contaminants are found in species higher up in the food chain.
riparian	_*E*__	J. Dead trees still standing in the forest.

SECTION IIB

Fill in the blanks (2 points each)

1. This year marks the 75th anniversary of the Sport Fish and Wildlife Restoration Program which raises funds to enhance fish and wildlife populations via a federal excise tax on the sale of *firearms* and *ammunition*.
   (*Other acceptable answers are archery equipment, motor boat fuel and fishing equipment*)

2. *Carrying capacity* represents the number of individuals in a population that a given habitat can support without it becoming degraded.

3. When males and females of the same species have different physical characteristics, they are said to exhibit *sexual dimorphism*.

4. A condition present in an environment that restricts the continued growth of a population is called a *limiting factor*.

5. A prescribed burn is an example of a *management technique* that helps dictate the size of a wildlife population in a given area.

Section III – Concepts **Team #:_____**

Question 1 (20 points): A local land trust (land trusts purchase or hold land for open space) has been gifted 250 acres of land in Rockingham County, New Hampshire. The land trust wishes to manage the land for wildlife and they have contracted you to make recommendations to them.

A. List 5 things you can do to understand the property and its habitat to help you prepare your management recommendations (5 points)

Observe the species on the property
Inventory the habitat
Make a map of the habitats
Make a list of species you would expect on the property based on the habitat
Research the history of the property
Inventory the wildlife
Check state databases for any known contaminant sources

B. Provide a method for inventorying the following species (10 points):

1. American woodcock*: peeting survey, bird checklist, breeding bird atlas, hunter survey*

2. Ruffed grouse*: drumming survey, bird checklist, breeding bird atlas, hunter survey*

3. Eastern bluebird*: nest box survey, breeding bird survey, bird checklist, breeding bird atlas*

4. Eastern coyote*: predator scent post survey, snow track survey, mammal checklist*

5. Cottontail rabbit*: mammal checklist, snow track survey, pellet counts*

6. Wood frog*: amphibian checklist, calling survey, egg mass counts*

7. Little brown bat*: mammal checklist, acoustic equipment, house counts*
Note: This species is not in the Landowner's Guide, so some latitude should be given

8. Painted turtle: *Amphibian checklist, basking Survey*,

9. Ovenbird: *breeding bird survey, bird checklist, breeding bird atlas*

10. Red-backed salamander: *Cover board survey, amphibian checklist*

Section III – Concepts **Team #:_____**

C. Name three tools that you can use to improve wildlife habitat quantity and/or quality (3 points).

Control Non-Native Invasive Vegetation, Delay Crop Harvest, Establish Field Buffers, Establish Native Grasses and Forbs, Forest Management Techniques, Leave Grain Unharvested, Manipulate Succession, Nesting Structures, Plant/Manage Food Plots, Plant Trees, Plant Shrubs,
Ponds: Construction/Reconstruction, Ponds: Deepen Edges, Ponds: Fertilize/Lime

B. Name two tools that you can use to manipulate wildlife population numbers (2 points).

Change numbers of permits (increase/decrease), manipulate season length, open/close seasons, open/close areas subject to harvest, sex specific targets, slot limits, translocation, reintroduction

Question 2 (6 points): Animals have adaptations to enhance their survival. This may include how they attain food resources, avoid predation, and survive adverse weather.

Provide three (3) physical/behavioral examples of adaptations and explain the advantage it is likely to provide (1 pt each).

	Adaption	Advantage
1.	*Migration*	*assure abundance of food resources*
2.	*Seasonal change in plumage color*	*mate attraction;cryptic coloration*
3.	*Bill shape/size*	*partitioning of food resources*
4.	*Feeding habitat specificity*	*partitioning of food resources*
5.	*Flocking/yarding*	*predation avoidance/locating food resources*
6.	*Cryptic coloration of eggs*	*predation avoidance*
7.	*Nest placement (grass or beach)*	*predator avoidance/maintenance of temperature*
8.	*Distraction displays*	*predator avoidance*
9.	*Hibernation or food storage*	*avoid winter's lack of food*

Question 3 (4 points): For each species listed below, name the primary limiting factor that determines where they can be found.

Species	Limiting Factor
Brook Trout	*Water temp and O_2 levels*
Common Merganser*	*Nesting cavities*
Broad-winged Hawk	*Deciduous forests with openings, also near water*
Canada Lynx	*Snowshoe hare density*

*Hint – think breeding season

Section III – Concepts **Team #:_____**

Question 4 (15 points): Non-Point Source Pollution

A. Name 5 main categories of Non-Point Source Pollution (5 points)

1. *wet deposition (rain, snow, snowmelt, hail, etc.)*
2. *dry deposition (particulate atmospheric)*
3. *agricultural runoff (pesticides, fertilizer, soil erosion*
4. *road runoff (road salt, oil, sand, etc.)*
5. *leaf litter fall (logging, mining)*
6. *urban (industrial, commercial, combined sewers)*
7. *suburban (personal care products, lawn care products, paint)*
8. *fires (PAHs, heavy metals)*
9. *thermal (industrial and powerplant discharges)*
10. *recreational (golf courses, athletic fields, campgrounds)*

B. For the following species: 1) select an individual Non-Point Source Pollution category (use all 5 described above and 2) describe its potential negative consequences to each species (5 points)

1) Common Merganser
Category: *wet deposition*

Consequences: *contaminate or eliminate prey base, decrease breeding output, increase metal loads, behavioral impacts*

2) Brook Trout
Category: *agricultural runoff*

Consequences: *habitat degredation due to sedimentation, suspended sediments/turbidity, contaminant induced algal blooms with decreased O2, contaminant loads=deformities, death, decreased reproduction, decreased spawning bed quality*

3) Red-spotted newt
Category: *leaf litter fall or agricultural runoff*

Consequences: *contaminant exposure, potential behavioral, reproductive impacts, decreased prey base, loss of breeding habitat.*

4) Bluegill Sunfish
Category: *road runoff, agricultural runoff*

Consequences: *dec. nearshore nesting quality, potential for uptake and effects of contaminants, decreased reproduction due to egg/larval mortality*

Section III – Concepts **Team #:_____**

5) Snapping Turtle

Category: *wet and dry deposition, agricultural runoff, recreational*

Consequences: *MeHg uptake through food chain, behavioral impacts, maternal contaminant transfer to hatchlings, decreased reproductive output*

C. Name management techniques to minimize or help control the Non-Point Source Pollution for each of the categories identified in Part A. (5 points)

A. wet and dry deposition – reduce vehicle emissions, inc. vehicle mileage, reduce industrial emissions (coal, incinerators, etc.) via technology, limit wastestream items, inc. recycling, redesign products to limit harmful COCs, reduce carbon footprint to reduce global warming, promote alternate energy, etc.

B. suburban runoff – limit or avoid use of pesticides/fertilizers, manage timing of applications of pesticides/fertilizers, use organic or biodegradable personal care products, minimize waste stream runoff

C. agricultural runoff – leave buffer zones, manage livestock waste stream, keep livestock out of SW, manage/prevent livestock overgrazing, use IPM, limit pesticide use, go organic, limit nutrient use, manage application timing, manage drainage patterns, collect drainage, manage cover crops, limit use of chemicals in livestock, etc.

D. road runoff – keep roads clean of debris, chem. pollution, sediment/soil; have oil/water separators at collection points, avoid combined sewage/SW lines,

E. recreational – minimize/manage pesticide/fertilizer use