NCF-Envirothon
Wildlife Sample Test Questions

1. (6 pts) Identify the species whose skulls are located on the table. (6 points)

A. **Muskrat (*Ondatra zibethicus*)**
B. **Grey Fox (*Urocyon cinereoargenteus*)**
C. **Coyote (*Canis latrans*)**

(Two points for each correct identification, common names or scientific names accepted)

2. (1 pts) Which of the species identified above would most closely be related to prairie habitat?

Coyote

3. (3 pts) Based on the morphology and dentition of the marked skull, identify the species, diet and habitat. Explain your reasoning for each.

River Otter skull. The dentition suggests an omnivorous diet (arrangement and variety of teeth). The skull is laterally compressed, indicating an aquatic species with hydrodynamic morphology.

(1 point each for correct ID, diet, and habitat.)

4. (8 pts) Locate the pictures (4 photos labeled 4A – 4D) of nests and burrows that are commonly found around water. Match the species with the appropriate nest or burrow. Not all of the species in the list below will be used.

A. _____**Crawfish**_____

B. _____**Belted Kingfisher**_____

C. _____**Canada Goose**_____

D. _____**Muskrat**_____

(Two points for each correct answer)

5. (2 pts) Answer the following questions about the specimen:

a. (1 pt) Identify this mount:
Bobwhite Quail, Northern Bobwhite, Northern Bobwhite Quail

b. (1 pt) Name the type of habitat that should be managed for this species:

Early successional; weedy fields/meadows, clear cuts/open woods with native grasses; good habitat supports 1 bird/acre

6. (6 pts) Name the three levels of species diversity at different scales that researchers generally accept.

A._____ (**Alpha**)
B._____ (**Beta**)
C._____ (**Gamma**)

(Two points for each type of diversity)

7. (2 pts) Why are legumes important to bobwhite quail and other ground nesting birds? What management practice could you implement at this site to increase legumes?

Legumes attract insects which are an important food item for young birds.
Management practices include prescribed burn, strip disking, and interseeding legumes.

8. (2 pts) There are important differences in nutritional and palatability values between red oaks and white oaks. Why are red oaks more heavily utilized by wildlife later in the winter?

1 – Animal energy requirements are higher in winter and red oaks contain higher lipid levels compared to white oak
2 – White oak acorns germinate earlier in the fall, so are not as available in late winter and
3 – White acorns are frequently eaten first due to their palatability so aren't as available later.

(Two points awarded for any of these correct answers)

9. (6 pts) The health and numbers of native insect pollinators (wild bees, flies, wasps, moths, butterflies, and other pollinating insects) have declined due to a number of factors, including exposure to pathogens, parasites and pesticides, as well as habitat fragmentation. Provide 3 recommended management practices for this site to improve pollinator habitat. (6 points)

- **Plant a variety of native flowers**
- **Protect pollinator nesting areas**

- **Preserve natural areas**
- **Be wise with pesticides - use of pesticides only when necessary, try to avoid spraying in areas where pollinators live and during times of low temperatures, and guard against pesticide drift from ground or aerial applications.**

(2 points awarded for each correct answer, for a total of 6 points)

10. (4 pts) Provide 2 potential implications an overstocked, monotypic forest can have on wildlife populations.

- **no understory = provides little food or cover for wildlife**
- **low diversity = low diversity of wildlife species that can be supported by the habitat**
- **should a disease or invasive species invade the monotypic stand of trees, the entire forest can be decimated, leaving no habitat or cover for wildlife**

(Two points for each correct impact; total of four points)

11. (3 pts) In an ecological context, what is carrying capacity? How does carrying capacity influence wildlife management decisions?

Carry Capacity is the equilibrium or balance between any life form and its environment or how many organisms an environment can support. Populations fluctuate naturally so knowing the maximum population that an area can support is important to making informed decisions.

(1 point for definition, 2 points for why it impacts decision making)

12. (3 pts) Define population. What is the difference between a population and a community? What is the difference between a community and an ecosystem?

A population is a group of organisms of the same species that lives in the same geographic area (Could also say that they are capable of interbreeding). A community is the collection of populations of different species living in the same geographic area. An ecosystem is composed of a community and the abiotic environment.

(1 point for population definition, 1 point for community definition, 1 point for ecosystem definition)

13. (3 pts) In Canada, waterfowl hunting is not managed provincially, but on a multi-national scale. What is the name of the Act that manages waterfowl and other migratory birds, and which countries are covered by the Act? Explain the need for a multi-national Act.

Waterfowl hunting is managed under the Migratory Birds Convention Act (of 1916). The Act covers Canada, the United States of America, and Mexico because many of the birds covered in the Act migrate through all 3 countries.

(1 point each for name of act, identification of countries included in act, and explanation of why a multi-national Act was needed.)

14. (3 pts) What does it mean for a species to be endemic to an area? Are endemic species more or less likely to become endangered? Explain your answer.

An endemic species is only native to one area, and is not naturally found in any other part of the world. These types of species are more likely to become endangered because they have become specialized to one particular habitat type and are less likely to be resilient to pressures.

(1 point for definition, 1 point more/less likely to become endangered, and 1 point for explanation)

15. (5 pts) Describe the effect of trophic cascade on an ecosystem, caused by the lack of an apex predator.

The removal of an apex predator produces a trophic cascade by allowing its prey species to suddenly experience a population spike. This increase of prey species increases pressure on its own food source and other species that compete for the same resources can decline. Additionally, due to increase browse riparian vegetation is decreased as and can cause severe erosion in the streams and rivers, making habitat unsuitable for certain aquatic organisms. Parallel to this is the lack of carcasses left over from apex predator kills – these kills provide food for scavenger species such as crows, vultures, coyotes, and insects.

16. (4 pts) An amphibian indicator species, the Gray Treefrog, is in decline. The Gray Treefrog breeds in April through August. Male frogs call to females from trees adjacent to breeding ponds. Once a female chooses a mate, she will lay her eggs on the surface of shallow water in swamps, ponds, or vernal pools. The female requires surface vegetation on which to attach her eggs. The eggs hatch into tadpoles within five days, and then take approximately two months to change into froglets. Considering the life cycle of the species, outline 2 reasons for their decline and briefly describe a management plan that will aid in its recovery and address the issues you identified.

Possible reasons for Gray Treefrog decline include habitat fragmentation, deforestation, climate change, pollution, agriculture and urbanization. Management plans will need to address multiple issues to be effective. Should reference the 2 issues the team identified earlier

(2 points for reasons for decline, 2 points for management plan)

17. (1 pt) During extreme cold temperatures, white-footed mice (*Peromyscus leucopus*) will sometimes go through short periods of inactivity to conserve energy. This is an example of____.

a. Aestivation
b. Hibernation
c. Torpor
d. Winter lethargy

18. (3pts) Name 3 reasons for species rarity:

1) Habitat loss and degradation
2) Invasive species and competition
3) Habitat specificity
4) Low reproductive output
5) Over exploitation and persecution
6) Disease

19. (2 pts) A key piece of U.S. federal legislation was passed in 1937 and provides funding for the establishment and management of National Wildlife Refuges and the management of state and provincial wildlife programs. Name this Act and describe where the money comes from.

Wildlife Restoration Act or Pittman-Robertson Act (1 pt); The money comes from an 11% excise tax placed on the sale of firearms and ammunition (1 pt)

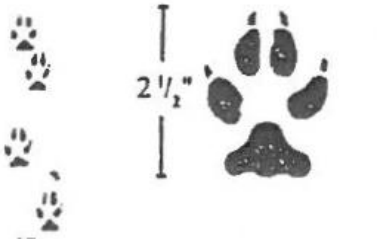
20. (4 pts) Define genetic diversity and species diversity. Why is it important for wildlife managers to maintain these types of diversity?

Genetic diversity is the total number of genes in a population (1 pt) while species diversity is a combination of species richness and evenness (1 pt). It is important to have a genetically diverse wildlife population because these populations have a greater chance of adapting to changing environments. Species diversity helps boost ecosystem productivity. (2 pts)

21. (3 pts) Emerald ash borer is native to Asia, and its larvae feed off of ash (*Fraxinus* sp.) trees, causing the trees to die. Ash trees are important for lumber and for native wildlife. In North America, is emerald ash borer better classified as an exotic or invasive species? Explain why.

It is an invasive species (1 pt). Exotic species are non-native species which have been introduced to a new area. Invasive species are exotic species which cause biological, economic, or human-health related harm (1 pt). Because emerald ash borer kills native tree species, it is best classified as an invasive species. (1 pt)

22. (2 pts) Near a pond you find the fresh remains of a leg bone that is hollow. Nearby is scat that is slimy and green in color with just a bit of white on it and the tracks below:



Answer : ___**B**___

2 pts./_____

Which scenario best represents what happened here?

a) A Turkey was preyed upon by a bobcat
b) A Canada Goose was preyed upon by a coyote
c) A Bullfrog was preyed upon by a mink
d) A young Eastern Cottontail rabbit was preyed upon by a barred owl

23. (4 pts) Describe <u>four</u> (4) characteristics of an introduced species that would lead you to believe it might become invasive.

- **Grow quickly**
- **Reproduce in large numbers, frequent reproduction, short periods to reproductive age**
- **Spread easily**
- **Have no natural predators**
- **Resistant to diseases**
- **Can survive under many habitat conditions**
- **Displace / outcompete native species**
- **Other reasonable answers accepted**

24. (3 pts) The protection of one species is the driving force for protecting Long Leaf Pine habitat, however the habitat protection has also resulted in the conservation of many other species.

In this scenario the species being protected is referred to as what type of species?
<u>Umbrella</u> (1 pt)

From the above scenario which species is the best example of this? _____**C**_____(1 pt)

a. Red Wolf
b. Red Shouldered Hawk
c. Red Cockaded Woodpecker
d. Gopher tortoise

For all species who fall into this category their home range is usually: **Large** (1 pt)

25. (2 pts) List two (2) adaptations of wildlife to changing climate:

- **Animals moving to higher elevations seeking cooler temperatures**
- **Animals moving to higher latitudes seeking cooler temperatures**
- **Marine species might move north seeking cooler waters**
- **Animals might change their breeding cycles, possibly earlier in the season**
- **Other reasonable answers accepted**

(1 point for each correct answer)

26. (5 pts) Write the name of the activity pattern that best fits the statement or animal:

a. _____**nocturnal**_____ active primarily at night

b. _____**diurnal**_____ active primarily during the day

c. _____**crepuscular**_____ active at dawn and dusk

d. _____**diurnal**_____ Bobwhite quail

e. _____**nocturnal**_____ Southern Leopard Frog

(One point for each correct answer)

27. (4 pts) The Coyote is one of the most adaptable mammals in North America. List two (2) characteristics of this species and a brief description of why each of the characteristic supports this species adaptability to changing conditions:

- **Compensatory reproduction - When populations are reduced, the remaining coyotes respond by breeding at a younger age and producing larger litter sizes with high pup survivorship, making their populations resilient.**
- **Diet – Coyotes are omnivorous and will eat meat, carrion, fruit, vegetables, insects, etc.**
- **Habitat – Coyote habitat can range from agricultural fields to forests, to suburban/urban environments.**
- **Dispersal – Coyotes have high dispersal rates and can travel over 100 miles.**
- **Other reasonable answers accepted.**

(One point for each characteristic and one point for each correct description, total of four points)

28. (6 pts) Integrated Pest Management (IPM), is one method being used to control insect pests that attempts to consider environmental protection in addition to effective pest control. This form of pest management uses a combination of methods drawn from traditional (pesticides) and nontraditional (organic/sustainable) practices to fight specific insect pests. IPM is particularly useful in agricultural systems.

List three (3) tools or methods used in Integrated Pest Management; and include one (1) example of each IPM.

(1) Biological Controls - use of predators, such as bats and spiders, to control insect pests; interfering with pest insects' reproductive cycles through the use of hormones or pheromones
(2) Non-toxic substances - lime put on infected plants
(3) Chemical insecticides - ovicides and larvicides used against insect eggs and larvae, respectively
(4) Agricultural methods - planting polyculture (multiple crops) as opposed to monoculture (one crop); rotating crops; varying the time of planting or harvesting
(5) Mechanical (physical) controls - traps, screens, nets, and physical removal of pests by humans

(One point for each tool or method, and one point for each example, total of six points)