2021 Massachusetts Envirothon
Wildlife Questions for the Petersham Natural Resource Challenge
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(CDC and State COVID-19 guidelines for group gatherings, wearing of face coverings, and social distancing should be followed)

Topographic, aerial (satellite) & GIS maps can be used to evaluate potential habitat for wildlife and conflicting use of the landscape. The GIS map and data layers being provided will allow you to meld various wildlife related issues as you explore the environmental impacts of land-use decisions on local wildlife. Keep in mind that natural landscapes and natural communities are not separate units but overlap in their composition, structure and physical characteristics. Everything in the natural world is connected!

QUESTION #1

You have learned the general habitat type & the specific features of a habitat determine which wildlife species would be found there.

(1) Using various resources provided, describe what the school complex site looked like prior to the construction and then after the construction.

With an understanding of your descriptions from part (1):

(2) Name three wildlife species that may have been found on the site prior to the construction but are less likely to be found after the construction.

(3) Name three wildlife species that may have benefited after the construction.

In your role as an environmental consultant offer specific reasons for your answers and how the citations of resources used tie into that answer.

Scoring:

- 1-3 points – no answer or incorrect answer
- 4-6 points – very little – limited description of site, one or two wildlife species named, no citations mentioned
- 7-9 points – average – general description of site, two or three wildlife species named, no connection of citations to answer
- 10-12 points – above average – general description of site, four wildlife species named, connection of citations to answers
- 13-16 points – lots of knowledge –detailed description of site, six wildlife species named, connection of citations to answers

QUESTION #2

Understanding a) what vernal pools are, b) how and when they are formed, c) how water flows across the given landscape, d) the requirements for survival of the wildlife species contained within, e) the place of vernal pools on the landscape and f) the impacts of use of the surrounding land are all important in protecting this critical habitat.

(1) How might the construction of the school complex have an impact on the certified vernal pools in the landscape?

In your role as an environmental consultant offer specific reasons for your answers and how the citations of resources used tie into that answer.

Scoring:

- 1-3 points – no answer or incorrect answer
- 4-6 points – very little – limited understanding of vernal pools, limited knowledge of location of certified vernal pools on the landscape, one impact identified, no citations mentioned
- 7-9 points – average – general understanding of vernal pools, two or three impacts identified, no connection of citations to answers
- 10-12 points – above average – clear understanding of vernal pools, four impacts identified, connection of citations to answers
- 13-16 points – lots of knowledge –clear understanding of vernal pools and the connections to surrounding landscape, six impacts identified, connection of citations to answers

QUESTION #3

Wildlife, forests, soil, and water are vulnerable to change as a result of changing climate.——There are adaptation strategies that have been designed to help ecosystems and populations cope with the adverse impact of climate change. The land for the school complex was greatly changed in order for the construction to occur. Keeping a changing climate in mind,

(1) What type of landscaping could you utilize at the school site to increase biodiversity and promote and restore a healthy resilient ecosystem?

In your role as an environmental consultant offer specific reasons for your answers and how the citations of resources used tie into that answer.

Scoring:

- 1-3 points – no answer or incorrect answer
- 4-6 points – very little – limited understanding of climate change, limited understanding of type of landscaping, no connection of citations to answers
- 7-9 points – average – general understanding of climate change, understanding of type of landscaping, no connection of citations to answers
- 10-12 points – above average – clear understanding of climate change, connection of citations to answers
- 13-16 points – lots of knowledge – clear understanding of climate change, mention of specific species used in landscaping, connection of citations to answers

QUESTION #4

A diversity of vegetation (grasses, herbaceous, shrubs, trees) is critical in that it forms the basis for habitats & ecosystems that support wildlife.

(1) In considering the larger landscape (hint: zoom out on the map to view land well to the North, South, West, and East of the school complex) assess the land use in all directions as you move through the areas radiating away from the school complex, and determine what might impact the availability of quality vegetation.

(2) Describe the value to wildlife of contiguous vegetated areas within the larger landscape.

In your role as an environmental consultant offer specific reasons for your answers and how the citations of resources used tie into that answer.

Scoring:

- 1-3 points – no answer or incorrect answer
- 4-6 points – very little – limited understanding of the larger landscape impacts, limited understanding of value of contiguous vegetation to wildlife, no citations mentioned
- 7-9 points – average – general understanding of larger landscape, mention of two impacts, names one value to wildlife of contiguous vegetated areas, no connection of citations to answers
- 10-12 points – above average – clear understanding of larger landscape impacts, mention of three or four impacts, names two values to wildlife of contiguous vegetated areas, connection of citations to answers
- 13-16 points – lots of knowledge – clear understanding of land use within the larger landscape, names four larger landscape impacts, names four values to wildlife, connection of citations to answers

QUESTION #5

There are numerous wetland types dispersed throughout the surrounding landscape.

(1) Describe the variety of different wetland types and how they are integrated into or connected to the system of wildlife, forest, and soil.

(2) What impact might the school complex have on each of these wetland types?

In your role as an environmental consultant offer specific reasons for your answers and how the citations of resources used tie into that answer.

Scoring:

- 1-3 points – no answer or incorrect answer
- 4-6 points – very little – limited understanding of wetland types, limited understanding of integration, limited understanding of impacts, no citations mentioned
- 7-9 points – average – describes three wetland types and connection/integration, describes two impacts, no connection of citations to answers
- 10-12 points – above average – describes four wetland types and connection/integration, describes three impacts, connection of citations to answers
- 13-16 points – lots of knowledge – describes six wetland types and integration/connection, describes four impacts, connection of citations to answers

SUPPORTING RESOURCES

GIS DATA LAYERS:
Descriptions of each data layer listed below can be found at
https://www.mass.gov/service-details/natural-heritage-gis-resources

NHESP Priority Habitats of Rare Species
NHESP Estimated Habitats of Rare Wildlife
https://www.mass.gov/service-details/regulatory-maps-priority-estimated-habitats

NHESP Natural Communities
https://www.mass.gov/doc/priority-natural-communities/download

BioMap2 Core Habitat & Critical Natural Landscapes
https://www.mass.gov/doc/biomap2-summary-report/download

Vernal Pools
https://www.mass.gov/vernal-pools
https://www.mass.gov/doc/vernal-pool-core/

ADDITIONAL SUPPORTING RESOURCES:

Northeast Climate Adaptation Science Center (NE CASC)
https://necsc.umass.edu/
https://www.umass.edu/necsc/outreach-and-products

MassWildlife and Climate Adaptation
https://www.mass.gov/service-details/masswildlife-and-climate-adaption

Taking Cues from Nature to Adapt to Climate Change
https://static1.squarespace.com/static/59cbe1e04c326dc7d7bfa01c/t/5f03299c362f28571126cd29/1594042819457/Nature+Based+Solutions+Resource_Final.pdf

Massachusetts State Wildlife Action Plan (SWAP)
https://www.mass.gov/files/documents/2016/12/uo/ma-swap-public-draft-26june2015-chapter5.pdf

Confronting Our Changing Winters pdf
https://hubbardbrook.org/sites/default/files/documents/HBRF/reports/ConfrontingOurChangingWinters.pdf

Ecological Drought in the Northeast United States – Anticipating changes to iconic species, landscapes, and ecosystems
https://necsc.umass.edu/sites/default/files/NE%20CSC%20Ecodrought%202016_0.pdf

White-tailed Deer in the Northeastern Forests: Understanding and Assessing Impacts
https://www.fs.usda.gov/naspf/sites/default/files/NA-IN-02-14_WhitetailedDeerNEForestsWEB.pdf