



Middle School Envirothon

Resource Packet 2026

*Written tests will include approximately 15 questions in a multiple choice, fill-in, or short answer format, including hands-on identification. They will be completed as a team.

Wildlife

1. Animals (see table)
 - a. Identification – mounts, skins, tracks and bird calls
 - b. Habitats
2. Ecology
 - a. Food requirements (omnivore, herbivore, carnivore)
 - b. Basic food chains and webs
 - c. Predator /prey relationships
3. Concerns
 - a. Human impact and carrying capacity
 - b. Wildlife diseases
 - i. Epizootic Hemorrhagic Disease in deer -
<https://www.pa.gov/agencies/pgc/wildlife/wildlife-health/wildlife-diseases/epizootic-hemorrhagic-disease>
 - ii. Avian Influenza -
<https://www.pa.gov/agencies/pgc/wildlife/wildlife-health/wildlife-diseases/avian-influenza>
4. Role of PA Game Commission
 - a. State Game land regulations
https://read.nxtbook.com/pgc/huntingtrapping/20252026/state_game_lands_regulations.html
 - b. List the major impacts on habitat and biodiversity in the state - <https://www.envirothonpa.org/wp-content/uploads/2025/09/PA-Species-and-Biodiversity-UPDATED-2025.docx>

Aquatics

- 1. Identification (see table) - <https://www.paherps.com/herps/frogs-toads/>**
 - a. Fish**
 - b. Macroinvertebrates**
 - c. Amphibians and reptiles (including life cycles)**
- 2. Watersheds**
 - a. Definition of a watershed and Watersheds in Erie County: Names and ID on a map – Conneaut Creek, Elk Creek, Walnut Creek, Cascade Creek, Mill Creek, 6 Mile Creek, 16 Mile Creek, 20 Mile Creek**
 - b. How does the water flow through the 5 Great Lakes, from the starting lake to the last lake?**
 - c. The water cycle**
- 3. Concerns**
 - a. Threatened and Endangered species**
<https://www.envirothonpa.org/wp-content/uploads/2019/11/endan.pdf>
 - b. Shoreline erosion**
<https://www.envirothonpa.org/wp-content/uploads/2013/12/Lake-Shoreline-Stabilization-Practices.pdf>

Soils and Land Use

- 1. Basic Soils knowledge**
 - a. Soil horizons**
 - b. Soil texture triangle**
 - c. Sand, silt, and clay properties**
- 2. Lake Erie Watershed**
 - a. History – Explain events leading up to the start of the Soil Conservation District**
 - b. Identifying physical features on a topographic map – including contour lines**
http://education.nationalgeographic.com/mapping/interactive-map/?ar_a=1

3. Soil Chemistry

a. Secrets of Soil

https://www.envirothonpa.org/documents/soilhealth_nuggets.pdf

b. NPK – what does it mean, why are they important -

<https://www.envirothonpa.org/pdfs/How%20Does%20Your%20Garden%20Grow.pdf>

Forestry

1. Plant and tree identification (see table) using bark, leaves, and IDing using a botanical key – “Key to Some Common Trees of PA”

a. Basic tree terms

- i. Bark
- ii. Heartwood
- iii. Sapwood
- iv. Roots
- v. Leaves

b. Insect Threats

- i. Be able to name 3 and their effect on our plants/trees – Emerald Ash Borer, Spongy Moth, Spotted lanternfly, Hemlock Wooly Adelgid
- ii. <https://www.cookforestconservancy.org/invasive-insects/>

2. Biology

- a. Plant cycle – seed, seedling, plant/tree, flower, fruit
- b. Transpiration
- c. Photosynthesis

3. Community

a. Forestry in a changing climate -

<https://elibrary.dcnr.pa.gov/PDFProvider.ashx?action=PDFStream&docID=4681534&revision=0&docName=Managing+for+Forest+Resilience+Ridge+and+Valley&nativeExt=pdf&PromptToSave=False&Size=3161075&ViewerMode=2&overlay=0>

b. Measuring tree volume with a Biltmore stick -

<https://forestry.usu.edu/rural-forests/forest-management/measuring-stick>

Basic list of Wildlife: (Note: bird call ID highlighted in yellow)

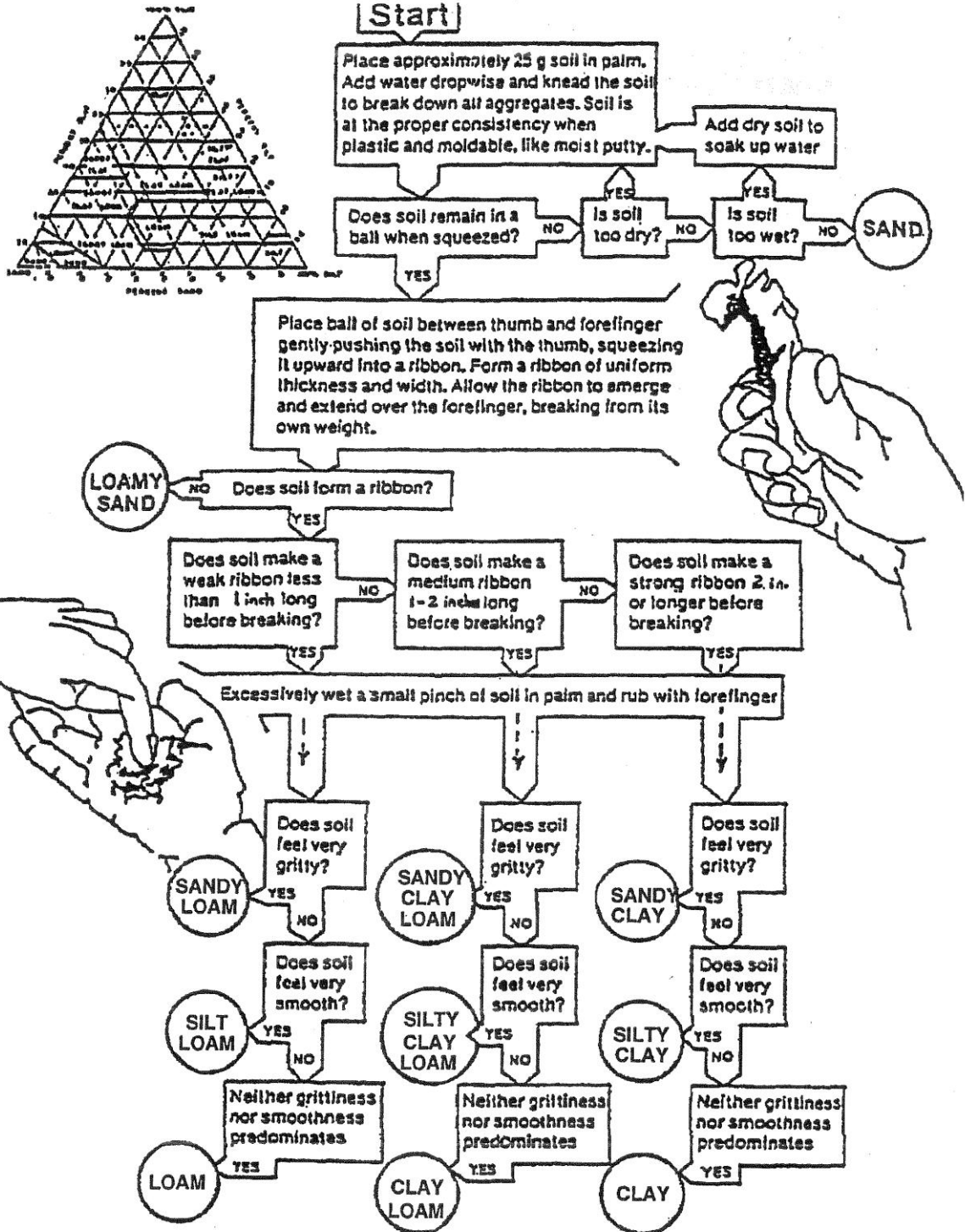
Ring-necked duck	White-tailed Deer	Great Egret
Black bear	River Otter	Baltimore Oriole
Chimney Swift	Belted Kingfisher	Red Squirrel
American Goshawk	Osprey	Mourning Dove
Woodchuck	Opossum	Beaver
Cooper's hawk	Fisher	Bufflehead
Common Grackle	Chickadee	Mink

Basic list of Aquatic species: (Note: Frog and Toad call ID in yellow)

Brook Trout	Burbot	Chesapeake Logperch
Muskellunge	Northern Pike	Yellow Perch
Dobsonfly larvae	Water Strider	Caddisfly
Isopod/Aquatic sowbug	Rusty Crayfish	Dragonfly larvae
Eastern Cricket Frog	Green Frog	Wood Frog
Spring Peeper	Gray Tree Frog	Eastern Spadefoot
Eastern hellbender	Mudpuppy	Green salamander
Timber Rattlesnake	Bog Turtle	Wood Turtle
E. Massasauga Rattlesnake	Spotted Turtle	Round Goby
Hydrilla	Purple Loosestrife	Yellow bellied slider

Basic list of Trees/plants:

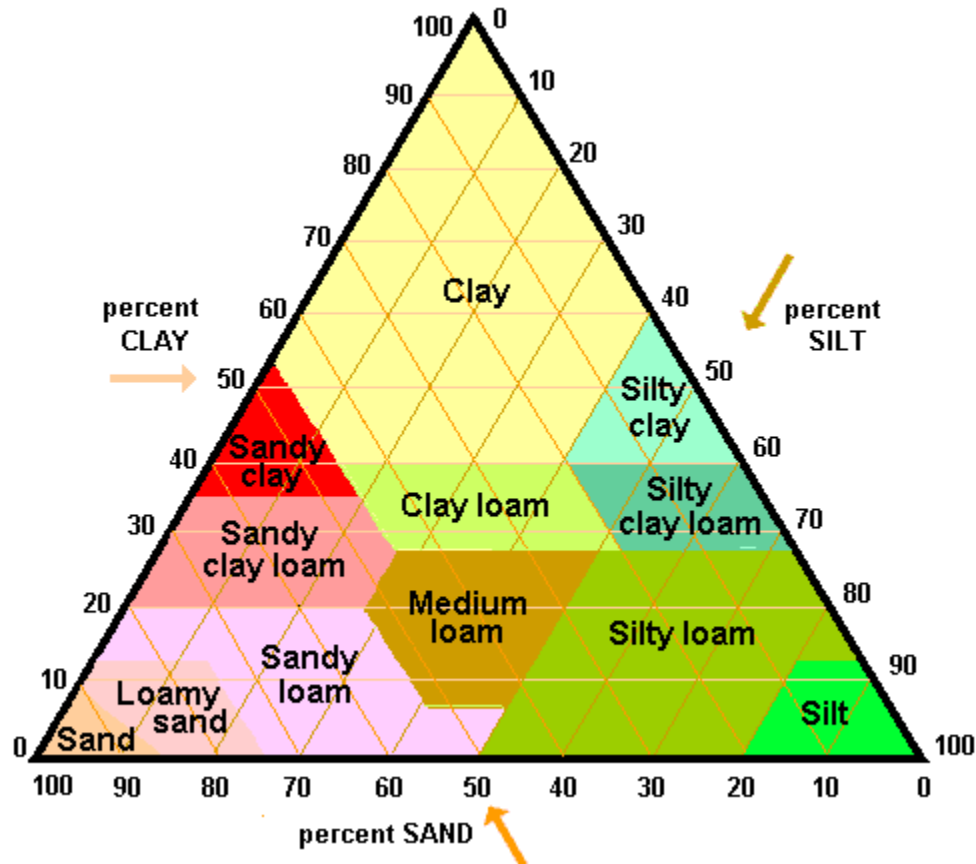
Staghorn Sumac	Red Maple	White Ash
White Pine	Eastern Hemlock	Ironwood/Hophornbeam
Yellow Birch	Black Cherry	Witch hazel
Sassafras	Tuliptree	Elm
Sugar Maple	Basswood	Quaking Aspen
Bush Honeysuckle	Multiflora Rose	Garlic Mustard
Autumn Olive	Tree of Heaven	Japanese Barberry



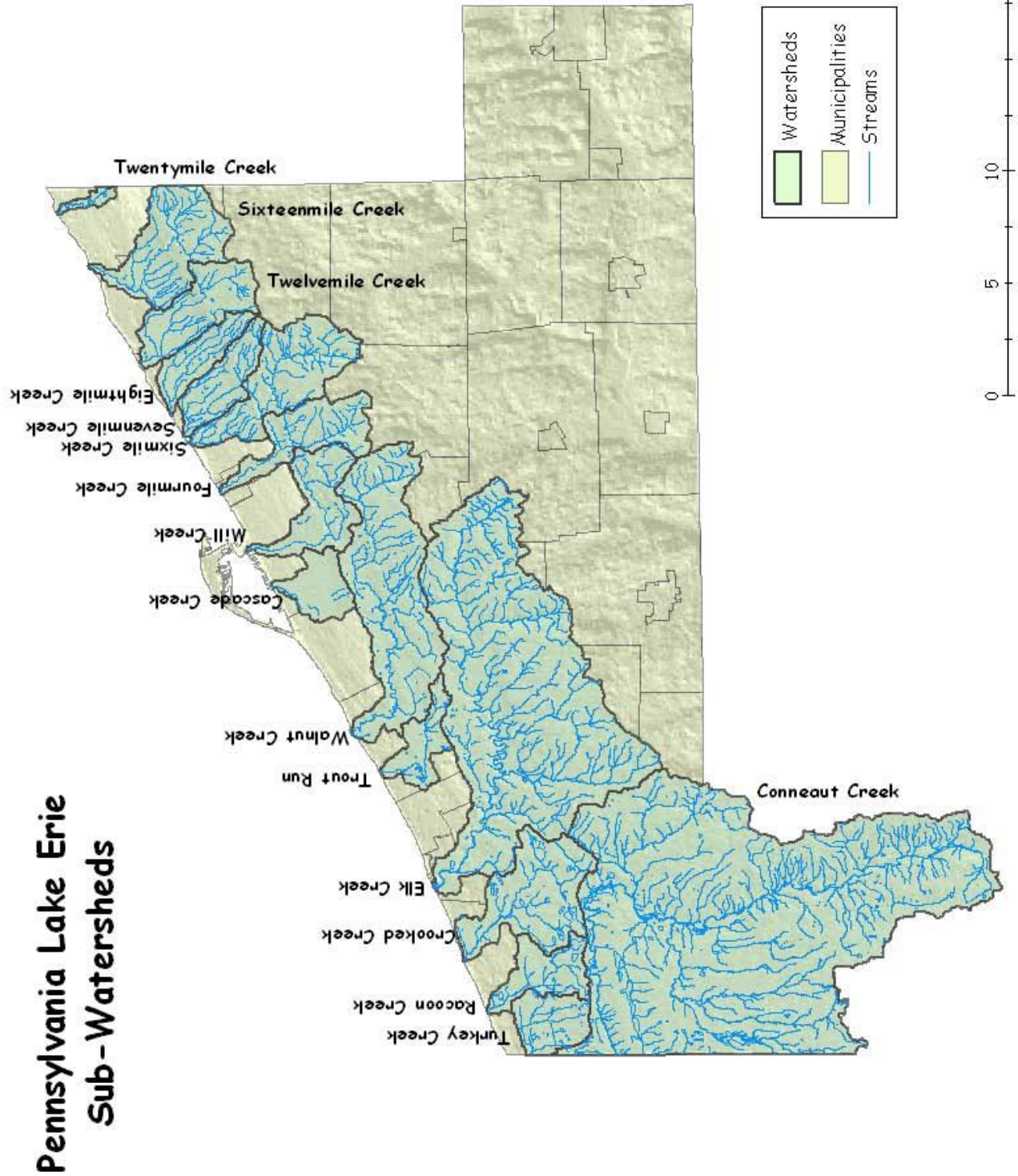
The Textural Triangle

Soil classification is typically made based on the relative proportions of silt, sand and clay. Follow any two component percentages to find the nominal name for the soil type. For example, 30% sand, 30% clay and 40% silt:

Find 30% along the bottom (sand) line, and follow the slanted line up and to the left. Stop at the horizontal line for 30% clay, and find the soil type: **clay loam**.



Soil Triangle is from the Idaho Association of Soil Conservation Districts, copyright 2010.



Adapted from the PA Envirothon High School resources