



# **Middle School Envirothon**

## **Resource Packet 2025**

\*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 biodiversity
  - b. Wildlife diseases
    - i. Epizootic Hemorrhagic Disease in deer - <https://www.envirothonpa.org/documents/EpizooticHemorrhagicDisease.pdf>
    - ii. Lyme Disease - <https://www.pgc.pa.gov/Wildlife/WildlifeHealth/Pages/LymeDisease.aspx>
4. Role of PA Game Commission
  - a. State Game land regulations
  - b. List the major impacts on habitat and biodiversity in the state - <https://www.envirothonpa.org/station/wildlife/>

### **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. Diagram of a stream and label the parts
  - c. How does the water flow through the 5 Great Lakes, from the starting lake to the last lake?
  - d. The water cycle
- 3. Concerns
  - a. Invasive species
  - b. Timbering and Trout - <https://www.envirothonpa.org/documents/timberingtrout.pdf>
  - c. Unlawful acts - <https://www.pa.gov/content/dam/copapwp-pagov/en/fishandboat/documents/fishing/regulations/summarybook.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 to how the Soil Conservation Service was started
  - b. Erosion – definition, possible solutions
  - c. Identifying physical features on a topographic map – including contour lines  
([http://education.nationalgeographic.com/mapping/interactive-map/?ar\\_a=1](http://education.nationalgeographic.com/mapping/interactive-map/?ar_a=1))
- 3. Soil Chemistry
  - a. How is soil formed and what role does climate play in soil formation?
  - 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. Wildfire in Pennsylvania - <https://www.envirothonpa.org/wp-content/uploads/2018/10/3-4-wildfire.pdf>
  - 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)**

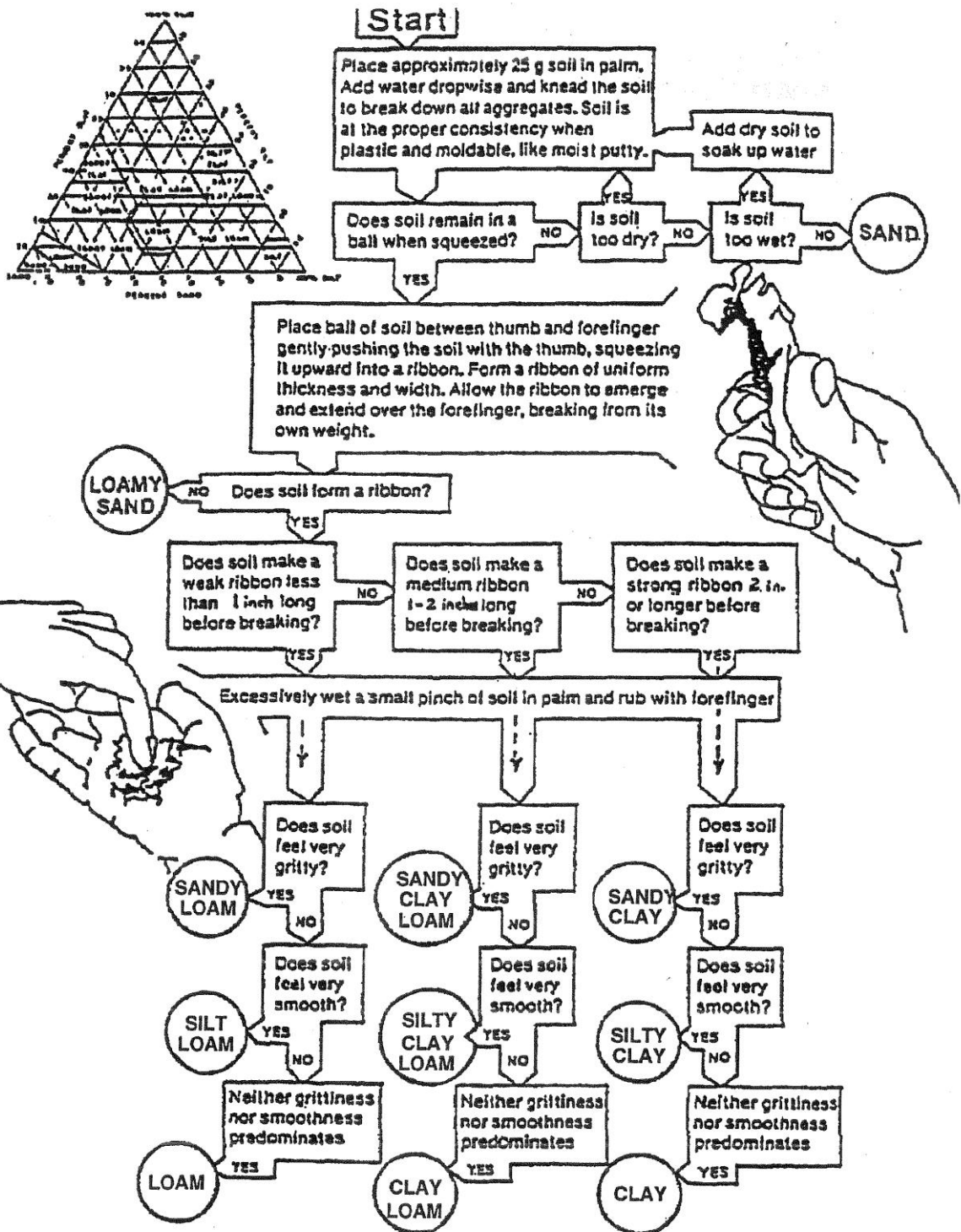
Bobcat	White-tailed Deer	Great Egret
Black bear	River Otter	Baltimore Oriole
Pheasant	Belted Kingfisher	Scarlet Tanager
American Goshawk	American Bittern	Eastern Meadowlark
Bobolink	Opossum	Beaver
Cooper's hawk	Elk	Striped skunk
Common Grackle	Wild Turkey	Mink

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

Atlantic Sturgeon	Burbot	Hickory Shad
Spotted Gar	Creek Chub	Pumpkinseed
Dobsonfly larvae	Water Strider	Freshwater snail
Backswimmer	Stonefly larvae	Dragonfly larvae
Eastern Cricket Frog	Eastern American Toad	Wood Frog
Pickrel Frog	Gray Tree Frog	Eastern Spadefoot
Eastern hellbender	Eastern Box Turtle	Yellow spotted salamander
Eastern Milk snake	Red-eared slider	Red Eft
E. Massasauga Rattlesnake	Ribbon snake	Round Goby
Hydrilla	Purple Loosestrife	Sea Lamprey

**Basic list of Trees/plants:**

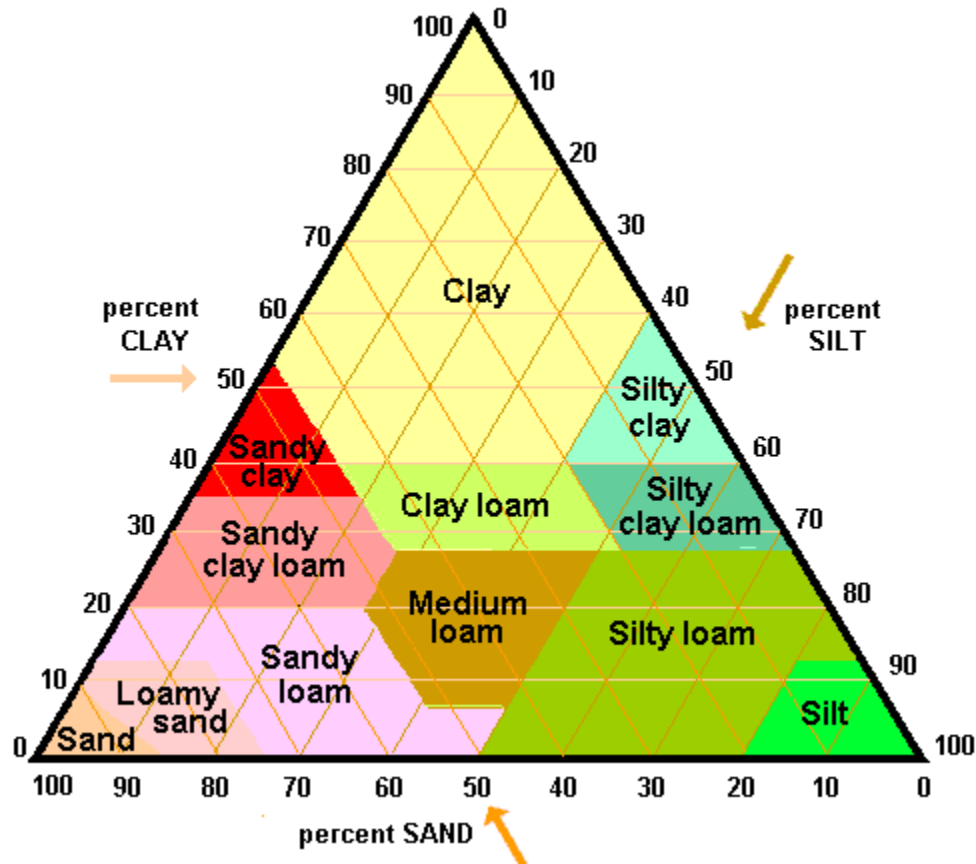
Staghorn Sumac	Red Maple	White Ash
White Pine	Eastern Hemlock	Ironwood/Hophornbeam
Yellow Birch	Black Cherry	Witch hazel
Sassafras	Tuliptree	Elm
Sugar Maple	Basswood	Quaking Aspen
Japanese Honeysuckle	Multiflora Rose	Garlic Mustard
Autumn Olive	Tree of Heaven	Phragmites
Spotted Lanternfly	Hemlock Wooly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



## The Textural Triangle

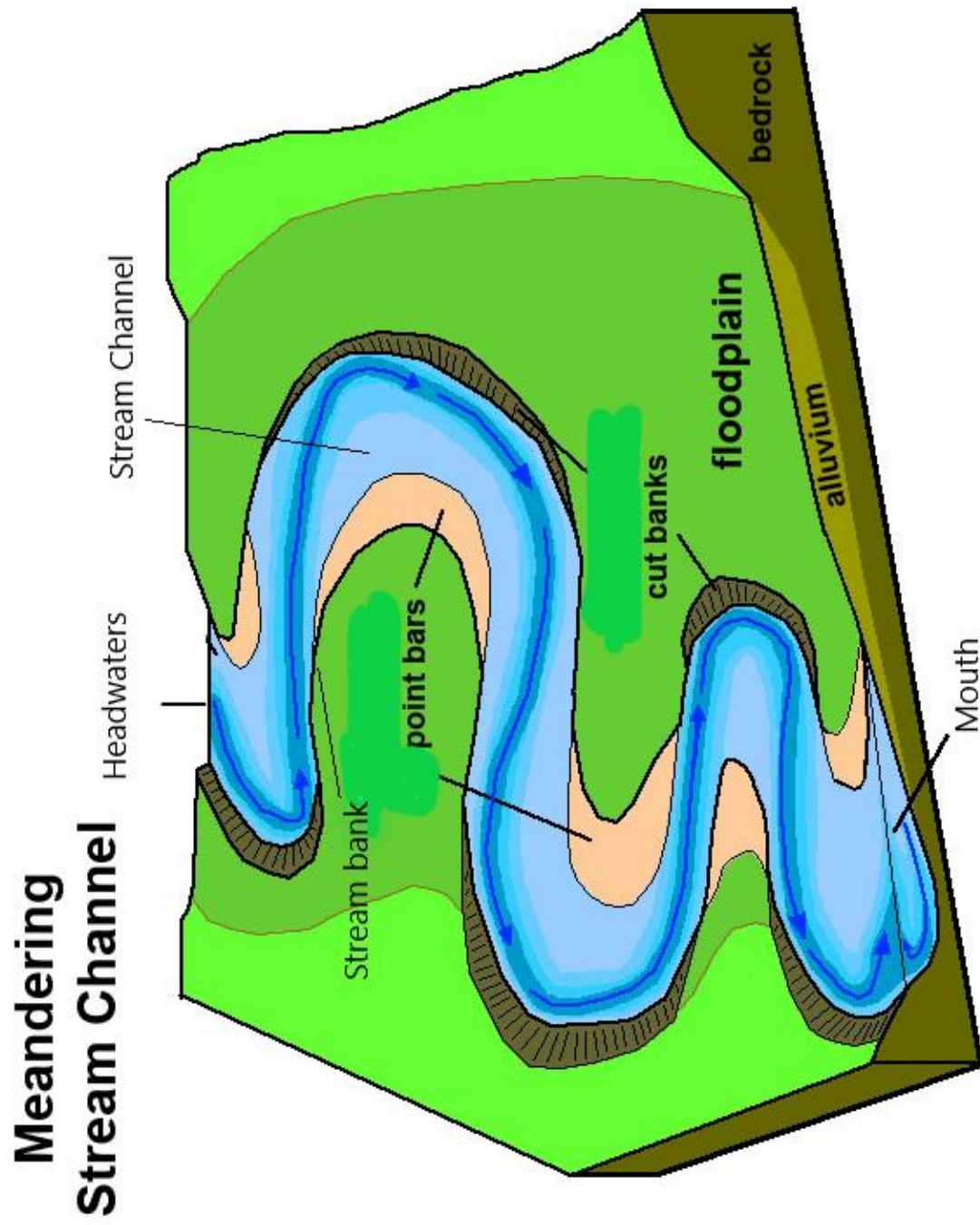
Soil classification is typically made based on the relative proportions of silt, sand and clay. Follow any two component percentages to find the nominal name for the soil type. For example, 30% sand, 30% clay and 40% silt:

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**.

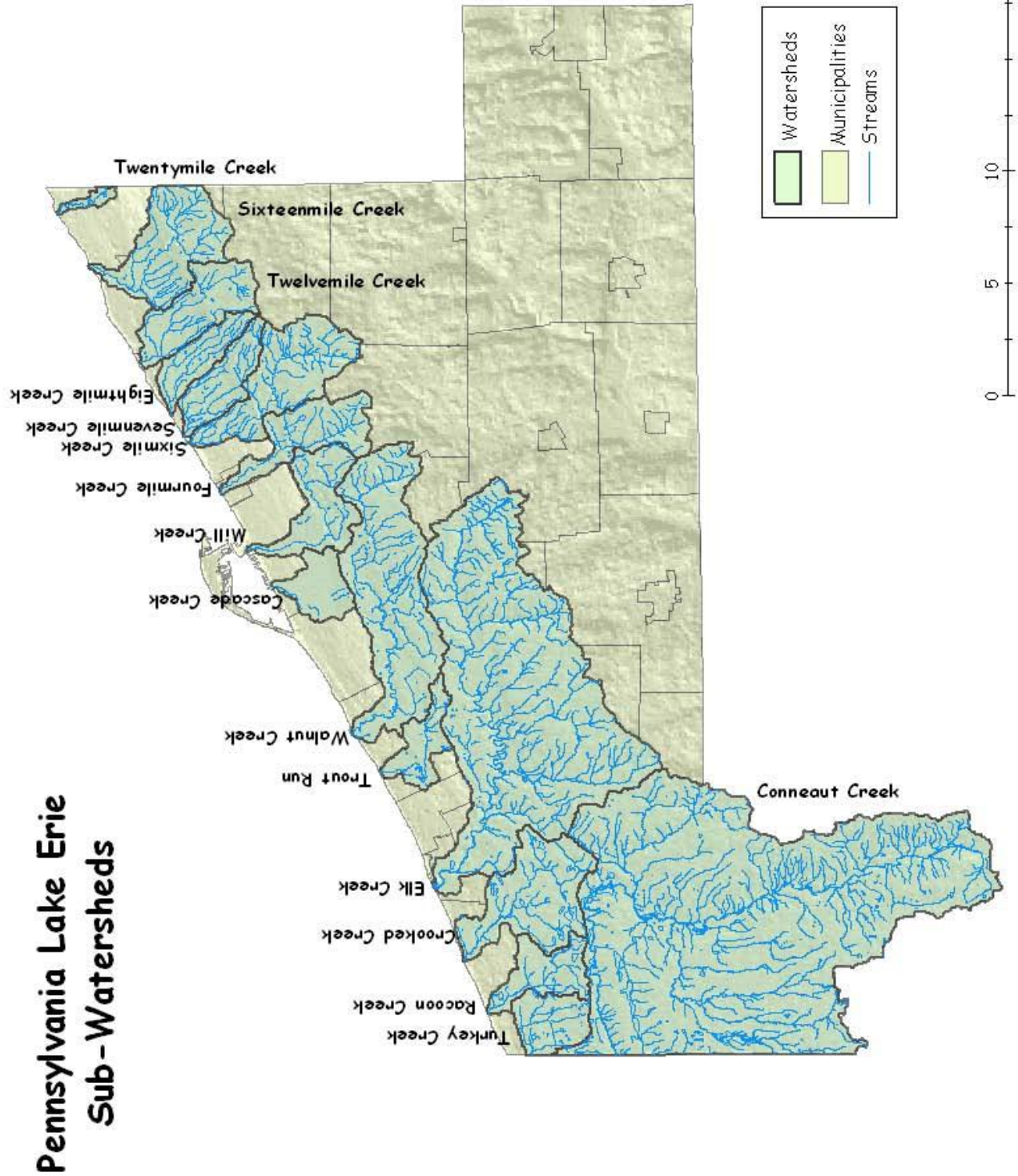


Soil Triangle is from the Idaho Association of Soil Conservation Districts, copyright 2010.

**\*\*ALSO KNOW THE DEFINITION OF "MEANDER" \*\***







Adapted from the PA Envirothon High School resources