# Middle School Envirothon

# Resource Packet 2027

*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. Definition of biodiversity and how it is beneficial to the environment
    b. Epizootic Hemorrhagic Disease - https://www.pa.gov/agencies/pgc/wildlife/wildlife-health/wildlife-diseases/epizootic-hemorrhagic-disease
4. Role of PA Game Commission

## Aquatics

1. Identification (see table)
    a. Fish
    b. Macroinvertebrates
    c. Amphibians and reptiles (including life cycles)
2. Watersheds
    a. 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. Function and value of wetlands

3. Concerns
    a. Invasive species
    b. Threats to aquatic habitats - http://www.envirothonpa.org/wp-content/uploads/2016/10/SWAP_Aquatic_Species.pdf
    c. Conservation actions for aquatic species - http://www.envirothonpa.org/wp-content/uploads/2016/10/SWAP_At-Risk_Species.pdf
4. Role of PA Fish and Boat Commission

## 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 – glacial lake
    b. Erosion – definition, possible solutions
    c. Identifying physical features on a topographic map – including contour lines (https://flexbooks.ck12.org/cbook/ck-12-middle-school-earth-science-flexbook2.0/section/2.9/primary/lesson/topographic-and-geologic-maps-ms-es/
3. Soil Chemistry
    a. Soil forming process and the FBI (fungi, bacteria, and insects) https://www.soils4teachers.org/formation
    b. Minerals in the soil - https://www.envirothonpa.org/wp-content/uploads/2013/12/How-Does-Your-Garden-Grow.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. Forest Insects and Diseases
        i. Current Threats and contributing factors
        ii. http://www.dcnr.pa.gov/Conservation/ForestsAndTrees/InsectsAndDiseases/Pages/default.aspx
2. Biology
    a. Plant cycle – seed, seedling, plant/tree, flower, fruit
    b. Transpiration
    c. Photosynthesis
3. Community
    a. Be able to identify and use a Biltmore stick
    b. Wildfires in PA - http://www.envirothonpa.org/wp-content/uploads/2018/10/3-4-wildfire.pdf

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

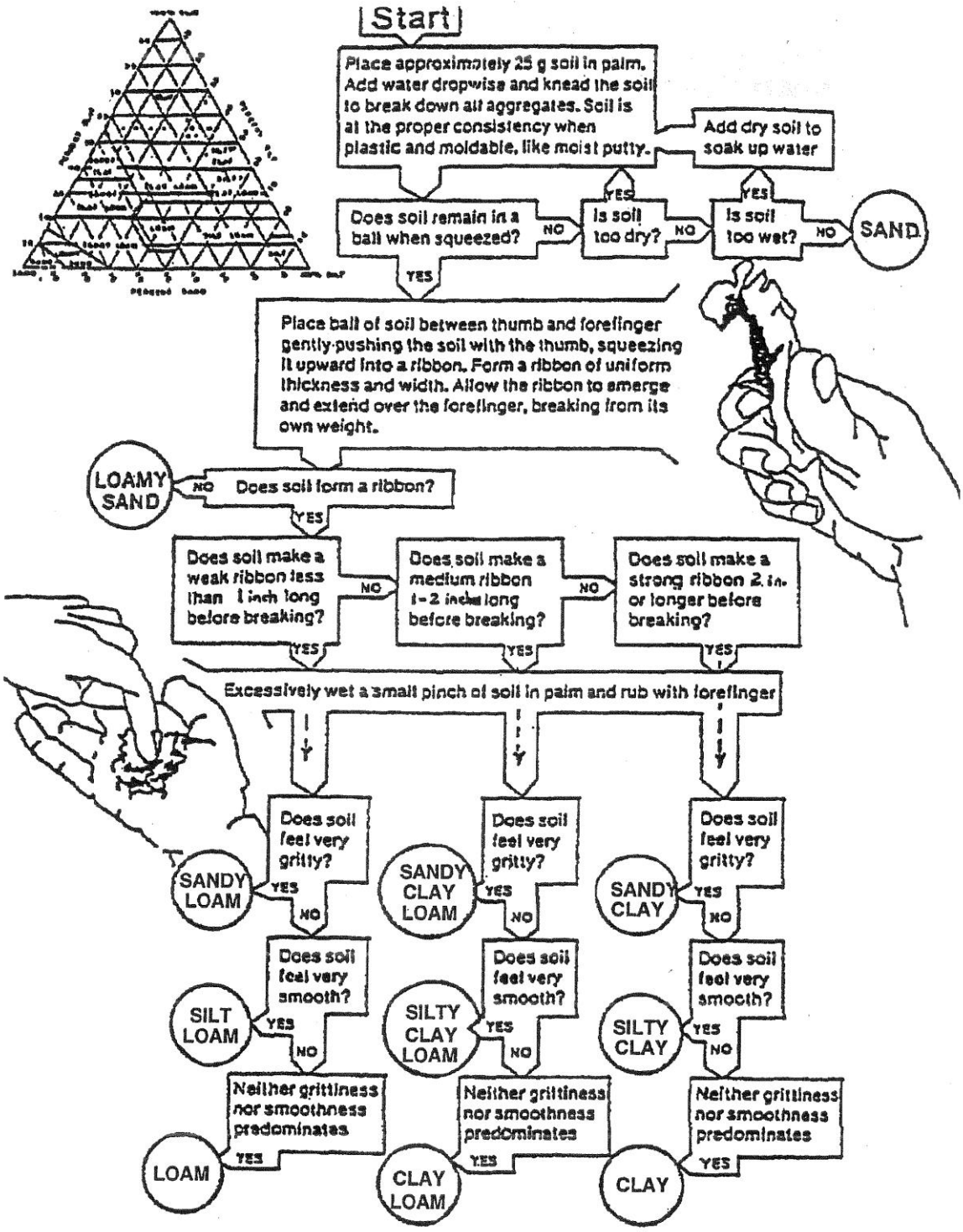
| | | |
|---|---|---|
| Allegheny Woodrat | Cottontail rabbit | Great Blue Heron |
| Woodchuck | Meadowlark | Ruffed Grouse |
| Bear | Baltimore Oriole | Wood Thrush |
| Black capped chickadee | Common Grackle | Northern Saw-whet |
| American Robin | Bobcat | Porcupine |
| Kestrel | Fisher | Striped skunk |
| Veery | Mallard Duck | Deer Mouse |

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

| | | |
|---|---|---|
| Atlantic Sturgeon | Largemouth Bass | Walleye |
| Brook Trout/Brown trout | Yellow Perch | White Crappie |
| Aquatic Sowbug | Mayfly larvae | Caddisfly larvae |
| Cranefly larvae | Scud | Dobsonfly larvae |
| Pickerel Frog | Upland Chorus Frog | American Toad |
| Bullfrog | Northern Leopard Frog | Eastern Spadefoot Toad |
| Eastern hellbender | Red eft | Marbled salamander |
| Eastern redbelly turtle | Wood turtle | Eastern Milk snake |
| Kirtland's snake | Eastern Garter snake | Round Goby |
| DIDYMO | American Eel | Clubshell mussel |

## Basic list of Trees/plants:

| | | |
|---|---|---|
| Staghorn Sumac | Red Maple | White Ash |
| Bitternut Hickory | Eastern Hemlock | Ironwood/Hophornbeam |
| Yellow Birch | Black Cherry | Witch hazel |
| Sassafrass | Tuliptree | Elm |
| Sugar Maple | Basswood | Quaking Aspen |
| Hawthorn | Black Willow | Garlic Mustard |
| Tree of Heaven | Autumn Olive | Phragmites |
| Spotted Lanterfly | Wooly Adelgid | Asian Longhorned Beetle |

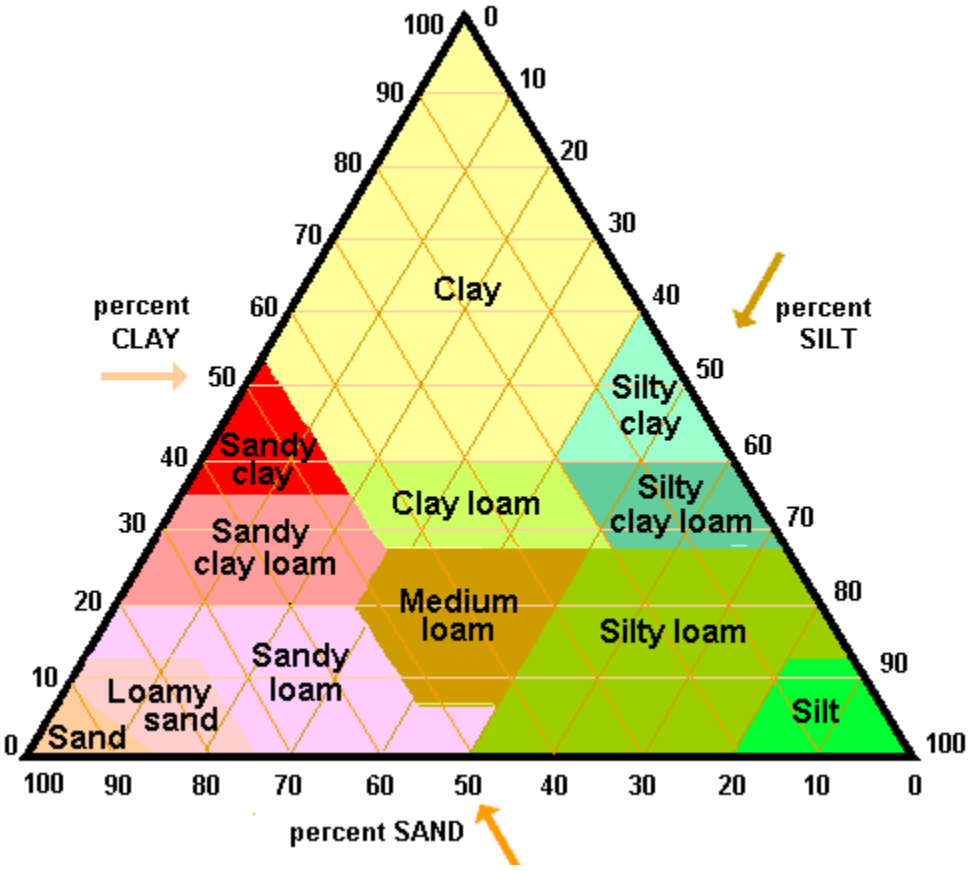



Adapted from the PA Envirothon High School resources

# The Textural Triangle

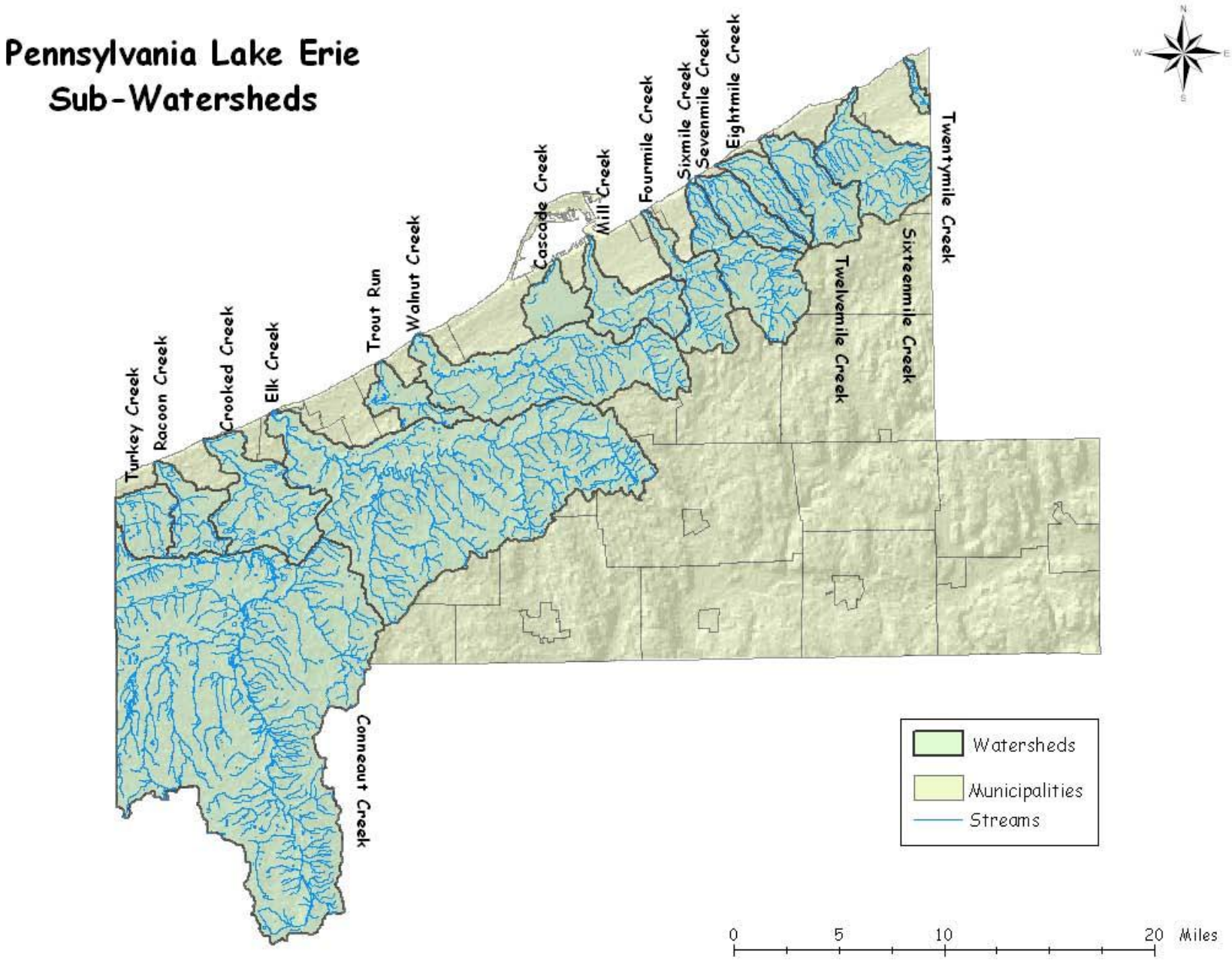
Soil classification is typically made based on the relative proportions of silt, sand and clay. Follow any two component percentages to find the nominal name for the soil type. For example, 30% sand, 30% clay and 40% silt:

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.

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