

LAB D

Preparation

A. Handouts

1. Exercise instruction sheet
2. Soils Site Analysis Form (and Form Guidelines)
3. Field photocopies of sheet #38 with #1 – 6 stops listed and Edwards tract highlighted.
4. Soil Survey Books, with Edwards tract highlighted (1 per student, and personal use)

B. Notify students to bring Lab C assignment/ USGS topo (to turn in), and Edwards topo (for field)

C. Clean up Soil Pits

E. Set up office laptop at KB

F. Indiana Soil Assoc. Map (post) & ML Property Soils Map (post) – with masking tape

G. Cue .pptx on projector

H. Volina soil sample & paper towel

I. sippy cup with water to wet texture field samples (fanny pack)

J. soil augers (2) & pit spade

K. ML keys & Bus key

Opening (cue pptx)

A. Collect last week's labs & Ormas Topos (keep Edwards Tract Map for field)

I. Identifying Soils as They Affect:

A. Other Biotic and Abiotic Components

B. Other Ecosystem Processes

II. Understand How Soils Were Formed (Soil Genesis) (referred to by Dr. Beyeler)

A. Glacial action in Noble County and almost all of northern Indiana

III. Dr. Beyeler Covered How Soils Arranged in "Horizons" Making up a "Soil Profile"

A. We will observe these in the field

IV. She Also Covered Some of the Physical Soil Characteristics that Describe These Horizons

(pptx. Slide #1)

A. Texture - Soil Texture Class Triangle- also posted on Moodle (pass around Volina loam sample)

1. Organic Soils (no mineral constituents- like sand silt or clay... not on soil triangle)

a) Muck – fairly-well decomposed OM

i. relatively high in nutrient content (anion/cation attraction)

- ii. very dark color
- b) Peat - largely un-decomposed OM accumulated where there has been excess moisture

D. Dr. Beyeler Also Talked About Color

1. Most obvious and easily determined of soil characteristics
 - a) Little direct influence on functioning of the soil
 - i. but can affect biotic components - dark soil warms up faster in spring
2. Darker soils - tend to indicate more OM

(slides 2-4)

3. Observing soils on the landscape – as they relate to topo features

(remaining slides)

E. Drainage Class: Excessively ☐ Well ☐ Moderately-Well ☐ Poorly ☐ Very Poorly (*make note for exercise*)

1. This will affect the moisture-holding capacity of the soil on a given site which, in turn, will affect the species of plants that are adapted to growing in those moisture conditions.
2. Can categorize moisture-holding capacity of a site with similar soil characteristics:

Xeric <----- ☐ Mesic <----- ☐ Hydric

Drainage Class: Excessively ☐ Well ☐ Moderately-Well ☐ Poorly ☐ Very Poorly

Soil Texture: +Sand ☐ ----- +Silt ----- +Clay ----- ☐

Depth to Water table below ground

Note: pptx is posted on Moodle for this lab session date

V. Using Soil Survey – (*Handout Soil Surveys*)

A. What soils are in a County?

1. Soil Associations (*consult 1st fold-out map*) - a landscape that has a distinctive proportional pattern of soils (*refer to key and Page #3*)
 - a) gives generally idea of relation of soils in county, but not suitable for planning and management
 - b) *refer to Ind. Soil Assoc. Map*
2. Soil Series - classification of soils having “profiles” almost alike (*starting page #12 “Adrian”*)
3. Mapping Unit - further defines the “soil type” as a reflection of where it is found on the landscape
 - a) *page 12 – “Ad”; “Am”*
 - b) see page before first fold out of Soil Associations – “*Guide to Mapping Units*”

B. Where they are located in a County

1. Consult map index (*2nd fold out*)
 - a) Find map index number for the Edwards tract
2. Consult Soils Map on page #38
 - a) mapping units (soil types)
 - b) Our field investigation site - highlighted
 - ii. soil legend on back of Map Index foldout

C. How they can be used without degrading their productivity and character (*page 47*)

1. Woodland Groups - pgs 57 (text) & 60 (chart) (note: “existing stands”- use for lab exercise)

Reference posted ML Soils Map

VI. Distribute and Review:

- A. Exercise Sheet
- B. Copies of sheet #38 of soil survey
- C. Soil Site Analysis Form (with example guidelines on back) – completed out of class
- D. Edwards Topo Map – brought back from last lab

VIII. Go to Field (*wet soil samples with gooseneck bottle*)

A. Each take:

- 1. Field Notebook
- 2. Photocopy of soils map (each take copy of sheet #38 with stops indicated in highlighted area)
 - a) place in field notebook
- 3. Edwards topo map – with locations noted of soil pit sites.

B. Field Sites (*note locations of soil pits on topo map*)

- 1. ChC - Chelsea fine sand (6-12%): Woodland Soil (borings)
 - a) Fungal mats with mycelium
 - b) OM color into profile
 - c) Tree species response
 - d) grazed, harvested, field run-off
- 2. ChC - Chelsea fine sand - eroded (6-12%): Old Field Soil
- 3. Msc3 - Morley silty clay loam (6-12%)
- 4. Ho - Houghton Muck drained (3 borings)
 - a) find water table
- 5. La : lake borders (lacustrine) (borings)
 - a) sediment overburden on shoreline sand
 - b) fine muck line at edge of shoreline

6. Oshtemo loamy sand (2-6%)

a) gravelly glacial outwash