**(AP) ENVIRONMENTAL SCIENCE 2022-23 March 1, 2023**

**Today’s Agenda (Day 115)**

1. Housekeeping Items

🡪 BRING:

1. Homework Check:

🡪

1. Class Activity:

🡪 SCIENCE FAIR COUNTDOWN – 2 days to competition!

\*PRESENTATIONS: Mock

🡪 **THURSDAY:** Begin Ch 13 PPT Review

1. **Section 13.3 – Soil and Land**
2. **Section 13.4 – Soil Formation**
3. Section 13.5 – Soil Properties
4. Section 13.6 – Soil Profile
5. Section 13.7 – Soil Erosion
6. Section 13.8 – Soil Conservation Practices
7. Section 13.9 – Conventional Versus Conservation Tillage
8. Section 13.10 – Protecting Soil on Non-farmland

HOMEWORK:

* READ: Chapter 13 – Soil and Its Uses
* COMPLETE: SF Report Draft; Chapter 13 Vocabulary
* **STUDY**: Chapter 13 Vocabulary Quiz and Test

REMINDER**~~:~~**

* QUIZ: Ch 13 Vocabulary 🡪 Mar. 2
* **TEST: Ch 13 🡪 March 7**

Chapter 13 Vocabulary

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Asthenosphere | Chemical weathering | Conservation tillage | Contour farming | Crust | Erosion |
| Friable | Horizon | Humus | Hyperaccumulators | Land | Leaching lithosphere |
| Litter loam | Mantle | Mechanical weathering | Parent material | Phytoremediation | Plate tectonics |
| Reduced tillage | Soil | Soil profile | Soil texture | Strip farming | Terraces |
| Waterways | Weathering | windbreaks |  |  |  |

**A picture containing diagram

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**(AP) ENVIRONMENTAL SCIENCE 2022-23 READING GUIDECHAPTER 13**

REVIEW QUESTIONS

1. How are soil and land different?

2. Name the five major components of soil.

3. Describe the process of soil formation.

4. Name five physical and chemical processes that break parent material into smaller pieces.

5. In addition to fertility, what other characteristics determine the usefulness of soil?

6. How does soil particle size affect texture and drainage?

7. Describe a soil profile.

8. Define erosion.

9. Describe three soil conservation practices that help to reduce soil erosion.

10. Besides cropland, what are other possible uses of soil?

CRITICAL THINKING QUESTIONS [for APES students only]

1. Minimum tillage soil conservation often uses greater amounts of herbicides to control weeds. What do you think about this practice? Why?

2. As populations grow, should we try to bring more land into food production, or should we use technology to aid in producing more food on the land we already have in production? What are the trade-offs?

3. Given what you know about soil formation, how might you explain the presence of a thick A horizon in soils in the North American Midwest?

4. Why should nonfarmers be interested in soil conservation?

5. Imagine that you are a scientist hired to consult on a project to evaluate land-use practices at the edge of a small city. The area in question has deep ravines and hills. What kinds of agricultural, commercial, and logging practices would you recommend in this area to help preserve the environment?

6. Look at your own community. Can you see examples of improper land use (urban or rural)? What are the consequences of these land-use practices? What recommendations would you make to improve land use?

**(AP) ENVIRONMENTAL SCIENCE 2022-23 ACTIVITY**

**ACTIVITY: Making and using a quadrat**

**Setting up a quadrat**

1. A picture containing tree, outdoor, swing, garden

   Description automatically generatedChoose the location and the type of monitoring you wish to do. Consider any safety concerns associated with monitoring the site – especially when working within marine habitats.
2. Make a 1 m2 quadrat by measuring 4 m of string. Cut the string. Tie knots at 1 m intervals. The knots and string ends form the quadrat corners. Alternatively, use any objects that can form four straight 1 m sides.
3. Place the quadrat(s) randomly in the area you wish to monitor.
4. You can also mark out smaller sections to form four quarters within the 1 m2 – this can make it easier to carry out a count in groups.
5. Take a photo of the quadrat.

# ACTIVITY: Blades of Grass/Weeds/Flora

**(Lab Activity Worksheet)**

**Group Members:**

**Data Collection: Quadrat Location: \_\_\_\_\_\_**

|  |  |  |
| --- | --- | --- |
| **Square Number** | **Number of blades of grass**  (or other prevalent flora) | **Number of weeds** |
| **1** |  |  |
| **2** |  |  |
| **3** |  |  |
| **Average** |  |  |

**Data Analysis:**

**Total number of blades of grass (estimated): \_\_\_\_\_\_\_\_\_\_\_\_ x 100 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_** **avg # of blades of grass**

**Total number of weeds (estimated):** **\_\_\_\_\_\_\_\_\_\_\_\_ x 100 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_** **avg # of weeds**

**Total number of plants in 1 square meter (estimated):**

**\_\_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_**

**total blades of grass total # of weeds**

**Percent weeds in 1 square meter (estimated):**

**( \_\_\_\_\_\_\_\_\_\_\_\_ „ \_\_\_\_\_\_\_\_\_\_ ) x 100 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**total # of weeds total # of plants**

**Questions:**

1. Why do we take three representative samples in estimating the population of something?
2. What is a representative sample?
3. Instead of using a representative sample to determine the size of a population, why not just count the individuals to determine the total number?
4. How do you think the Florida Game and Fresh Water Commission determined that there are over one million alligators in the state?
5. You have been asked to determine the number of pencils in the school. How might you estimate the total number of pencils? List the steps that you will take to calculate the number or pencils. Include a description of how you will obtain an accurate sample.
6. Estimate the number of blades of grass that might exist in a football field. (Assume the field has the same kind of grass as in the school yard and is roughly 2,000 square meters.)
7. Spotted Seatrout spawn over seagrass beds. The seagrasses provide protection for young Spotted Seatrout and many other kinds of fish. How might knowledge of the number and density of seagrass beds help fish biologists estimate the future number of Spotted Seatrout?

**(AP) ENVIRONMENTAL SCIENCE 2022-23 ACTIVITY**

**ACTIVITY: Create a Field Identification Guide of**

**Common Caribbean Weeds, Shrubs and Trees**

How to Make a Field Guide

A field guide is an important tool to help a person identify a specific species. It usually has a picture and description of the species. You are going to make a field guide.

Here is what your field guide must have:

* A cover with a title
* A table of contents
* A page explaining the purpose of your field guide (how is it going to help someone identify the **six** **species** you have selected).
* One page that discusses the characteristics of the family to which your species belong.
* A brief explanation stating why carefully observation is important.
* A page dedicated to each species. This must include:
* Scientific name (binomial nomenclature) Hierarchy from Domain to species.
* A **hand drawn/digital** picture of your species.
* A thorough description of your species. As you write it, ask yourself, “Could someone use this description and identify the species?”
* Interesting information and facts about the species.
* To raise your level to 4, add two additional species and include the following information: where it lives, what it eats, what eats it, and what other species live in the same area.

As you do this assignment, remember what you will be using this in the gardens. So, make a DIGITAL FIELD GUIDE…perhaps in SLIDES format

# Species One - TEMPLATE

|  |  |
| --- | --- |
| Common Name: | Scientific Name: |
| Description of species: |  |
| Identifying characteristics/markings/etc. |  |
| Interesting facts: |  |