**Chapter 1 Studying The State Of Our Earth**

**Key Ideas**

* Our environment includes the living and nonliving components of our planet.
* Environmental science uses knowledge from many disciplines
* Humans have been altering the Earth for millions of years
* Technology and the growing human environment have had a global environmental impact
* The natural world provides many things for us, such as clean water, timber fisheries, and crops.
* Genetics, species, and ecosystem diversity are the different forms of biodiversity
* The five global indicators that help us monitor the health of our ecosystem are biodiversity, food production, global surface temperature, the size of the human population and resource depletion.
* Living sustainably means acting in a way so that activities that are crucial to human society can continue
* Basic human needs include air, water, food, and shelter
* A person’s ecological footprint is a measure of how much that person consumes, and is expressed in area of land.
* The steps of scientific method are: observe and question, form a testable hypothesis, collect data, interpret results, and disseminate findings.
* In an experiment, the group that you are testing is called the experimental group.
* A control group is a group that experiences exactly the same conditions as the experimental group, except for the single variable under study.
* Challenges to environmental science include:
  + The lack of “control” planet to which earth can be compared
  + The fact that many dilemmas are subjective- there is no single measure of environmental quality.
  + The number of interacting systems in environmental science makes it a very complex science and one that is frequently subject to debate.

**Vocabulary**

Define the following terms:

1. Environment
2. Environmental science
3. System
4. Ecosystem
5. Biotic
6. Abiotic
7. Environmentalist
8. Environmental Studies
9. Ecosystem services
10. Environmental indicators
11. Sustainability
12. Biodiversity
13. Species
14. Speciation
15. Background extinction rate
16. Greenhouse gases
17. Anthropogenic
18. Development
19. Scientific method
20. Hypothesis
21. Null hypothesis
22. Replication
23. Sample size
24. Accuracy
25. Precision
26. Uncertainty
27. Inductive reasoning
28. Deductive reasoning
29. Critical thinking
30. Theory
31. Natural law
32. Control group
33. Natural experiment

**Questions**

1. Describe the difference between genetic diversity, species diversity and ecosystem diversity.
2. Give three examples of anthropogenic activities.
3. Summarize the They Mysterious Neuse River Fish Killer.
4. What does an ecological footprint tell us? What is important to calculate?
5. What does an environmental indicator tell scientists?
6. In what ways is environmental science different from other sciences?
7. What is the current world population? U.S. population?
8. Explain the scientific method and its application to the study of environmental problems.
9. Fill in the table below

|  |  |  |  |
| --- | --- | --- | --- |
| **Indicator** | **Recent trend** | **Outlook** | **Overall impact** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

1. Exploring your footprint: Make a list of the activities you did today and attempt to describe their impact on the five global environmental indicators described in this chapter. For each activity, such as eating lunch or traveling to school, make as complete a list as you can of the resource and fuels that went into the activity and try to determine the impacts of using those resources. After completing your inventory, visits the website of the global footprint network www.footprintnetwork.org and complete the personal footprint calculator. Compare the impacts you described with the impacts you are asked to identify in the personal footprint calculator.

Write a brief summary describing your footprint.