

## **WVMN Class Description**

<b>Title:</b>	<b>HUMANS AND THE ENVIRONMENT</b>
<b>Objectives:</b>	To better understand how humans interact with their environment. Students will explore the concepts of ecosystem integrity and biological diversity and the interdependence of all life, and they will explore current major environmental issues, their causes and possible solutions.
<b>Class type:</b>	Elective
<b>Time:</b>	2 hours
<b>Optimal season:</b>	All seasons
<b>Materials:</b>	No special materials needed.
<b>Expected outcomes:</b>	The student will gain a basic understanding of <ol style="list-style-type: none"><li>1. the many ways that human life is inextricably linked with that of all other species to a greater or lesser degree.</li><li>2. how our human-devised habitats only <i>seem</i> to separate us from the natural processes of ecosystems.</li><li>3. meanings of, and the relationship between, ecological integrity, ecological health, biological diversity and human existence.</li><li>4. the concept of ecological services.</li><li>5. the major environmental problems facing humans today.</li><li>6. the origins of the cultural value systems that have allowed us to disregard the ecological costs of doing business, and know how and why these need to be addressed for humans to become environmental stewards as much as "guests at the table"</li><li>7. behaviors that humans could develop in the face of our inevitable ignorance of the complexities of the earth's ecological processes.</li><li>8. why we need to assess and factor in ecological costs and understand the environmental economics concept of diminishing returns.</li></ol>

### **WVMN Class Outline**

1. Human life and survival inextricably linked with the environment
  - a. Humans are subject to the primary limiting factors affecting all species such as carrying capacity (i.e. population thresholds); water, food and energy availability; pollution, competition, cooperation, climatic factors
  - b. Discuss ecosystem services, how humans depend on them and their primary sources, ecosystem integrity; and biological diversity
  - c. Energy cycling, nutrient cycling, and the water cycle are the engines maintaining ecosystem integrity and biodiversity; conversely fuel for these engines is in part derived from ecosystems in a dynamic cyclical pattern
2. Historical perspective of the human footprint upon the earth
  - a. Pre-historical extinctions due to over-harvesting (i.e., large mammals during Ice Age)
  - b. Civilization collapse due to over-expansion, overpopulation, soil degradation (i.e., Roman Civilization; Ancient Mayans; Mid-western Dust Bowl)
3. The human ecological footprint or ecological price
  - a. Ecological costs of doing business being ignored and ultimately deferred
  - b. Evaluate the ecological price tag of, for example
    - dumping industrial waste and raw sewage into rivers and streams
    - urban sprawl with increased impervious surfaces and diversion of acres of rainwater into storm drains
    - clear cutting of Appalachian forests from about 1880 to 1925

- mountaintop removal mining and valley fill
  - c. Economic principle of diminishing returns applied to environmental cleanup
- 4. Global and local environmental issues of the century
  - a. Discuss ozone depletion, how ozone is an ecosystem service; how human ignorance nearly led to a planetary disaster; and how abatement of the ozone problem could be a model for environmental management
  - b. Loss of biological diversity causes and consequences
  - c. Global warming causes and consequences
  - d. Water pollution (from air or runoff) feedlots, human wastewater, sedimentation, fertilizer and other chemical pollutants
- 5. Human value systems and cultural beliefs influence how humans relate to their environment
- 6. Future of the human species relative to the current state of the environment
  - a. Population growth
  - b. Pollution control standards worldwide
  - c. Energy demands
  - d. What are some local solutions?
- 7. How far have we come? (specifically West Virginia)
  - a. Clean Water Act and effluents/sediments from mining and logging
  - b. Clean Air Act and industrial pollutants