Fall 2008

ESS 101 - Introduction to Geology - "Studying the values of nature and the science of streams in WCU's Gordon Natural Area"

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<u>Lab/discussion period 2</u>. Studying the values of nature and the science of streams in WCU's Gordon Natural Area

Introduction

One of the slides in our first class stated that science today is being applied to problems of "societal interest." What makes a problem of interest to people? This is an important question when environmental issues are considered. Some problems are obvious and are of clear interest to us— pollution of our drinking water and local environment, development in hazardous areas. Global climate change is moving toward this level of interest. But have we lost our interest in other areas that nevertheless are critical to our lives?

To answer this question depends on two different types of awareness. It depends on science and the scientific understanding of environmental systems, but it also depends on the values that we see in the environment. Our valuation of the natural environment motivates us to take the scientific knowledge seriously and to act. It's been said, "We manage what we measure," but we could add, "We measure what we value."

Values are informed by experience, and values of nature are built by experience of nature. One reason people have limited interest in environmental issues may be because many people have limited contact with nature. All around you the human-built world dominates experience. Most of us rarely get the chance to see, hear, smell, touch, taste – and therefore think about— what is natural and what natural processes give us. It's not surprising that few of us care how little we understand nature, even though it's the basis for our life.

The Gordon Natural Area (GNA) is a place where each of us can begin to construct a more complete idea of nature and what it provides. We'll do this by learning a typology of the values of nature and then connecting that typology to what we observe.

One of the General Education goals for this course (syllabus).

Students will be able to:

- …understand scientific principles and methods and their application in the generation and testing of knowledge; and understanding the advantages, limitations, and ethical implications of scientific approaches to understanding.

A typology of the values of nature

Stephen Kellert, in the Forestry School at Yale University, developed a typology of natural values to investigate how people with different nationalities, experiences, jobs, educational levels, and ages respond to nature. His results suggest that there are differences related to these factors and that, at least in part, the value we put on nature can change through time.

The values and brief descriptions are listed on the next two pages with blank space below them. *Fill in your own* descriptions, observations or new found understandings of nature that you gain during our field trip. *Refer to specific things* you saw, heard, or otherwise experienced during the trip.

Kellert's typology

Aesthetic— the value of emotions, such as pleasure or awe, evoked by the splendor or beauty of the natural world.

Dominionistic— the value of mastering, suppressing or controlling nature, sometimes carried to excess.

Ecologistic-scientific— the value obtained from studying the geological, physical, biological, and chemical processes in nature.

Humanistic— the value of the emotional attachment, intimacy, bonding, and companionship with animals or landscapes.

Moralistic— the value of an ethic that seeks to minimize harm to natural things and to creatures viewed as fundamentally like ourselves because of an underlying kinship.

Naturalistic— the value of the satisfaction people obtain from the direct experience of nature and wildlife.

Negativistic— the value of fear, aversion, and dislike evoked by nature, extending in the extreme case to excessive, irrational, or cruel behavior.

Symbolic— the value of nature for communicating ideas and emotions through stories, myths, and metaphors.

Utilitarian— the value of the material benefits derived from nature to satisfy human needs (food, medicine, clothing, other resources).

Specific questions:
1. Given its use here, what is a "typology?" Why is a typology useful?

2. Show which values of nature you thought about most before this lab. Use the top chart on the last page.

3. General notes: what do you see, hear and otherwise experience that relates to your valuation of nature?

Observing characteristics of streams in the field
On the field trip you will be able to see or measure aspects of streams that we will talk about in class over the next two weeks. This a chance for you to better understand the terms through seeing and doing. For each of the terms, describe what we saw or did on the trip.

Bank; channel

Meander; cut bank; point bar (sketch)

Staff gage

Tributary

Sediment

Gradient (measurement)

Stream flow (measurement)

Cross-sectional area (triangle method)

Velocity (float method)

Flow (= area x velocity)

After lab

1. Looking back at your notes and reflecting on the walk, which values do you think you gained a better appreciation of during our short trip. Use the bottom chart on the last page.

2. Which values of nature would you like to understand better, and why?

Lab/discussion report

At the beginning of your next lab period you should hand in this handout with all questions answered. In addition, you should write a 300-word to 400-word essay that explains, in your own words, what you learned about the values of nature during the field trip. You should use examples from the trip to give substance to your essay.

Answers to questions (complete; substantial, thorough):

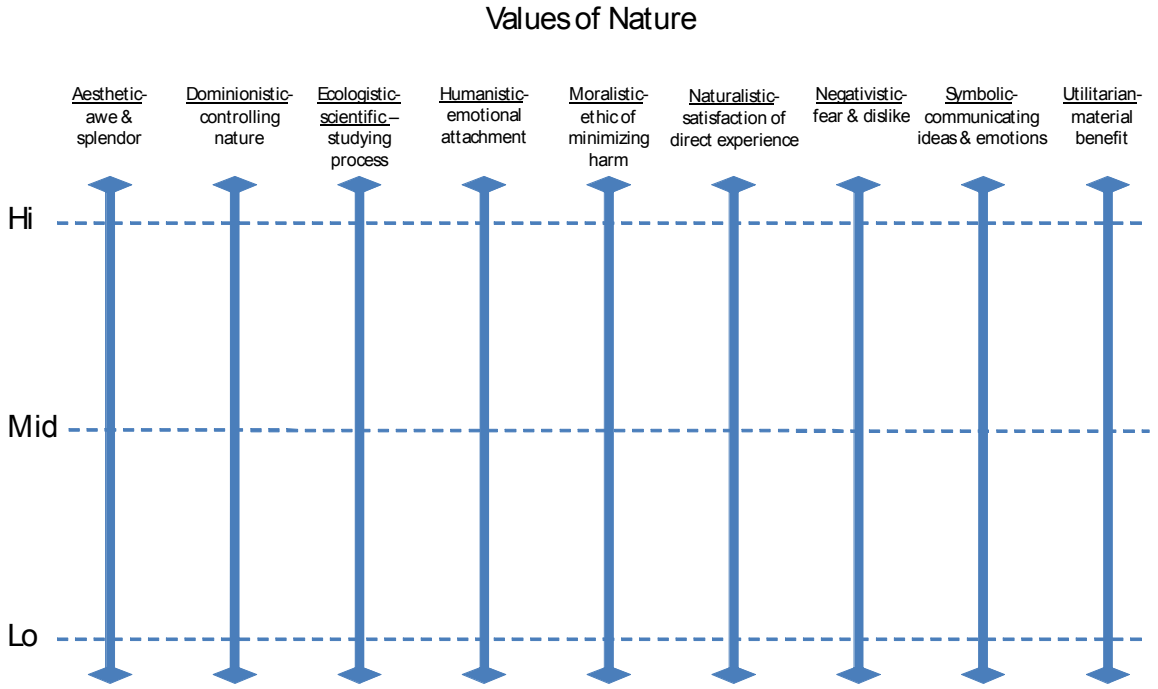
0 1 2 3 4 5

Essay: on topic; well organized & logical, substantial content; accurate, relevant examples; appropriate length:

(...what you learned about the values of nature during the field trip...)

0 1 2 3 4 5 6 7 8 9 10

Locate yourself on the values scales before the lab.



Locate yourself on the values scales after the lab.