BSCI106 – Principles of Biology II: Ecology and Evolution
Integrating sustainability into a large course laboratory
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When I next lecture in BSCI106 (Fall 2011) I will incorporate issues of sustainability more explicitly into the lecture curriculum, but for 2010/2011 I will focus on making sustainability a prominent feature of our ecology labs. BSCI106 enroll approximately 1400 students/year, so the potential impact is large. The lab curriculum includes a four-week module devoted to ecology with a current focus on experimental design, data analysis, and demonstration of some key concepts in ecology. I will keep this general organization, but will revise the labs to include more application to environmental impact. For example, we currently have an aquatic ecology lab that includes competition between blue-green bacteria and green algae. We provide a brief description of eutrophication as a context for this lab, but we will now highlight local examples.

The most extensive laboratory revisions will be to our Lotic ecology lab – I will describe these revisions in more detail (see fig. 1 for outline).

Current status:
Students collect data on physical variables and biological diversity in Paint Branch creek and compare these values to headwater data we provide. The students interpret differences in the context of the River Continuum Concept (a general concept about how conditions and diversity change within a stream from headwaters to ocean) and, in a very vague way, impacts made by humans. Little effort is made to document local human impact, and no effort at all is made to place Paint Branch creek in the Chesapeake watershed or to relate stream conditions to the health of the bay.

Goals:
1) To place greater focus on human impacts on the health of Paint Branch creek
2) To help students to understand the physical relationship between Paint Branch Creek and the Chesapeake Bay
3) To help students appreciate the cumulative effect of small local impacts on the health of the Chesapeake Bay

Planned revisions:
As before, we will have students work in groups to collect data. We will change the nature of the data collection slightly, and will place more emphasis on placing our results in a broader context. There will be four groups, and each group will be responsible for presenting their findings to the rest of the lab class.

Group 1: Measure physical variables of stream and compare to upstream data
Group 2: Measure biological diversity, construct a food web, and compare to upstream data.

<u>Group 3:</u> Document local human impact on Paint Branch creek, and make
predictions for how this influences community structure (diversity and
species composition).

<u>Group 4:</u> Document local human impact, evaluate patterns of land use in the
Chesapeake Bay watershed (we will provide land use data), and relate
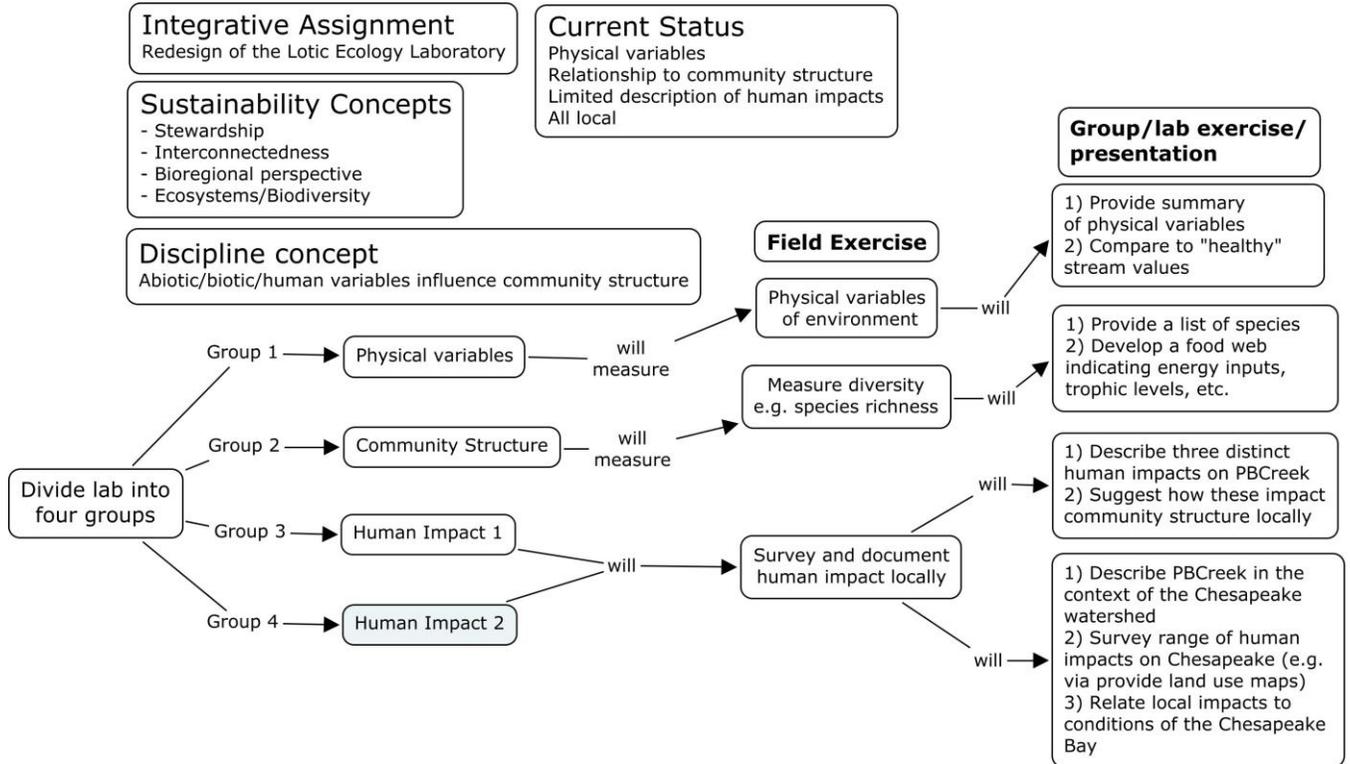human impact to the Chesapeake Bay.

Figure 1. Structure of revised Lotic Ecology lab.