**Working group sessions 4 and 7: The Value of Long-Term Ecological Research (Michael Paul Nelson and Chelsea Batavia)**

**Objectives** Long-term ecological research is critically important as we strive to understand the long-term outcomes and implications, i.e. “sustainability,” of our management actions and conservation schemes. For the past 35 years the US has seen a promising increase in long-term ecological research, including the NSF funded Long-Term Ecological Research program at 24 sites around the country. Over the past 5 years, however, two of these sites have been de-funded. Just when we need it most, we seem to be at risk of losing long-term ecological research. This development creates an opportunity and a need for serious critical reflection on the value of long-term ecological research. The purpose of these working group sessions was to examine how the long-term ecological research community itself, or a notable subset thereof, defends itself and the value of long-term ecological research. Our interest is ultimately to formalize and critique the arguments being made by the long-term ecological research community, possibly supplemented with additional arguments that, we hope, might offer a strong defense for the value of long-term ecological research for both the scientific community and society at large.

**Summary**

*Day 1:* 17 individuals attended the first of two working groups sessions. After introducing the purpose of the exercise and obtaining participants’ consent (as per IRB requirements, Oregon State University study ID 6993), attendees were asked to spend a few minutes independently brainstorming reasons why long-term ecological research is valuable. They then worked in small groups to discuss and compile a fairly comprehensive set of reasons, each of which was recorded on an index card. After they finished generating reasons, the groups categorized their index cards into three separate piles: best reasons, adequate reasons, and bad reasons. Once the ranking was finished, the groups were also asked to assign each reason a score from 1 to 10, indicating how persuasive they believed it would be for broader audiences. At the end of the session the groups briefly reported out on their experiences and described the processes they used to sort and categorize reasons.

After the session ended, and using the reasons catalogued on index cards, we (the session leaders) generated a table of reasons in which several broad themes emerged. According to the Day 1 participants, long- term ecological research is valuable because:

* it builds understanding that helps us (people and scientists) better understand our place or role in the world
* it builds understanding that is essential to sustain human life
* it is necessary to accurately portray ecological reality, which operates on long time scales
* it makes a unique contribution to science
* it fosters interdisciplinary thinking and interdisciplinary communities
* it provides an important long-term or historical context for scientific findings
* it has personal benefits for scientists engaged in long-term research
* it produces more general logistical benefits (e.g. funding or employment)

Over the course of the evening and the following morning, we chose three reasons to formulate as rough drafts of arguments to be presented for commentary and critique on Day 2.

*Day 2:* 15 individuals, several of whom had been present the previous day, attended the second session. We began by again obtaining consent to participate, and then gave a brief overview of argument analysis. Argument analysis involves formulating reasons, such as those collected on Day 1, into arguments, built as a series of premises and conclusions. Once explicitly formulated, an argument can be systematically evaluated for soundness by assessing the extent to which 1) its premises necessarily entail its conclusion, and 2) all its premises are true. The majority of Day 2 was spent presenting attendees with the drafts of the three arguments we had formulated out of reasons compiled on Day 1, and discussing how premises needed to be revised or adjusted. The arguments generated lively conversation in which several interesting themes and questions emerged, including:

* The extent to which the value of long-term ecological research depends on it being place based and fostering interdisciplinary communities. Is there a value to the long-term element that is distinct from these two factors?
* The value of long-term ecological research is embedded in broader arguments about the value of ecology itself. This begs the question, why is ecological understanding important? Is it intrinsically important, or is it important because it is necessary to find a solution for global problems (e.g. initiatives for sustainability)?
  + If the value of ecological understanding is only functional in the latter sense, is it somehow “cheapened?”
  + Is an argument for the intrinsic value of ecological understanding (i.e. for science) compelling for society at large?
* Is long-term research equivalent to the data it produces, or is there something more, which also constitutes its value?
* Long-term research is unique because it allows for continuous learning. New research builds on what has come before, and the research process itself (e.g. experimental design) also improves.

**Outcomes** The reasons generated on Day 1 will contribute to a formal analysis of arguments about the value of long-term ecological research. Results of this analysis will be published in appropriate outlets.