Title:LTER: Long Term Ecological Research at the Hubbard Brook Experimental Forest
Institution: Institute of Ecosystem Studies
NSF Program:LONG TERM ECOLOGICAL RESEARCH
Principal Investigator: Lovett, Gary M.

Rating: Excellent

Review:

In the context of the five review elements, please
evaluate the strengths and weaknesses of the proposal with respect to intellectual merit.

What is the potential for the proposed activity to advance knowledge and understanding within its own field or across different fields?

Overall, this is the type of proposal I wanted to see from a Hubbard Brook LTER proposal. It maintains the focus on long-term datasets, which have immense value, and thoughtfully expands into new areas. Hubbard Brook has long been a special place for ecological research, and simply continuing the long-term datasets has immense potential to advance knowledge and understanding in a variety of fields. This proposal does a nice job of pointing out some of the benefits of long-term monitoring, for instance, the expectation that the next six years will provide an excellent opportunity to study in detail the effects of the ash borer. Simply continuing the long-term datasets could be construed as stale, so I have been happy to see that the PIs on this proposal, and others working at Hubbard Brook, have done an excellent job of expanding the scope of their work, in spatial reach (to the whole valley), area of study, and other ways.

To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?

As I mentioned in response to the previous question, I find the proposed work to be extremely valuable. Many of the proposed activities are exceptionally creative and original, and in keeping with the strengths of Hubbard Brook. One minor criticism related to originality is that some of the concepts are presented without acknowledging that work outside of Hubbard Brook and the Northeastern US has made important, relevant contributions. For example, the expansion of the Vitousek and Reiners 1975 conceptual model, while interesting, is presented as though no progress has been made expanding this conceptual model since 1975, whereas it builds on concepts developed in other work. See, for example, Hedin et al. 1995 Ecology, Vitousek et al. 1998 book chapter, Perakis & Hedin 2002 Nature, Hedin et al. 2003 Ecology, Vitousek 2004 book, Rastetter et al. 2005 Ecological Applications, Menge et al. 2012 Plos One, Hilton et al. 2013 Biogeosciences, Taylor et al. 2015 Ecology, and others. Evaluating the precise sinks and/or losses of N at Hubbard Brook is an eminently worthwhile endeavorùI do not with to imply otherwiseùand I think that the proposed work along these lines will be fascinating.

Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a

sound rationale? Does the plan incorporate a mechanism to assess success?

Absolutely. The PIs have clearly thought carefully about organization, information sharing, data management, and all of the other challenges associated with such a large project. The project as a whole, and these PIs, have a proven track record of planning and carrying out work with sound logistics.

How well qualified is the individual, team, or institution to conduct the proposed activities?

The Hubbard Brook LTER, these PIs, and others working at the site have an excellent track record of productivity and expertise in the required areas. The lead PIs have extensive experience running and organizing large projects. I was pleased to see that the feedback from the mid-term review to broaden the expertise and diversity of the PI group was taken to heart, and I think the project as a whole will benefit from this wider diversity of PIs.

Are there adequate resources available to the PI (either at the home institution or through collaborations) to carry out the proposed activities?

Yes.

In the context of the five review elements, please
evaluate the strengths and weaknesses of the proposal with respect to broader impacts.

What is the potential for the proposed activity to benefit society or advance desired societal outcomes?

Work at Hubbard Brook has traditionally been much better integrated into societal issues that the average field site, and the proposed work seems likely to continue this trend. The suite of outreach impacts appear to be well established and organized, and strike me as worthwhile activities.

To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?

In my opinion creativity and originality are less important in broader impacts than intellectual merit. I find the broader impacts in the proposal to have a high likelihood of success and a strong impact, which seems more relevant than whether they are flashy and new.

Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?

Yes.

How well qualified is the individual, team, or institution to conduct the proposed activities?

Very qualified.

Are there adequate resources available to the PI (either at the home institution or through collaborations) to carry out the proposed activities?

Yes.

Please evaluate the strengths and
weaknesses of the proposal with respect to any additional solicitation-specific review criteria, if applicable

Summary Statement

Overall, this is an excellent proposal. It maintains the focus on Hubbard Brook's long-term datasets, which have immense value, and expands into new areas in ways that will provide great benefit. The proposal nicely articulates key questions that will be the focus of the next six years, and I'm excited to see what they find.