

~~Dominique~~

October 09, 2009

Who do you represent?

Dr. Robert Waide  
LTER Network Office  
CERIA Building, Suite 320  
UNM Biology Department, MSC03-2020  
1 University of New Mexico, Albuquerque, NM 87131-0001

**Re: Recommendations to the LTER Network Office for Fostering Successful Graduate Student Cross-Site Socio-Ecological Research**

Dear Dr. Waide:

This is an exciting time for graduate students in the LTER network given the synergy emerging around integrated socio-ecological research. It is clear from the Decadal Plan's Integrative Science for Society and the Environment (ISSE) framework (Robertson et al. 2007) and the 2009 All Scientists Meeting (ASM) plenaries and working groups that socio-ecological research is becoming a central aspect of the LTER research program and is of paramount importance to the Network's continuing success. The forthcoming ULTRA and the ISSE research activities also point to the growing importance of this work and to the potential to perform additional and important integrative socio-ecological research, especially across LTER sites.

The 2009 ASM working group entitled *Identifying the barriers and benefits to graduate student cross-site socio-ecological research in urban systems* revealed that many graduate students are acutely interested in understanding and carrying out integrative and cross-site socio-ecological research. The graduate students in this working group represented a number of urban and non-urban LTER sites including the Baltimore Ecosystem Study, Bonanza Creek, Cedar Creek, Central Arizona-Phoenix, Florida Coastal Everglades, Harvard Forest, and Luquillo LTERs. Therefore, LTER efforts to develop the research and frameworks to fulfill its vision of a more robust socio-ecological research program should engage LTER graduate students. With hundreds of highly motivated graduate students in the LTER network, there is tremendous potential to tap this collective brainpower to fuel and enhance the LTER's socio-ecological research. Furthermore, this graduate student interest is an unprecedented and auspicious opportunity to harness emerging talent and to create a group of researchers attuned to important cross-cutting socio-ecological issues and trained to understand and address them at multiple sites and scales as teams. These efforts will enhance the relevancy of LTER work to policy-makers and to the communities in which the LTER works.

As graduate students in the LTER network, we would like to take this moment to call attention to what we see as opportunities to build a full program for innovative, interdisciplinary and cross-site socio-ecological research premised on strong graduate student involvement. Importantly, it is clear that maximizing graduate student involvement in the LTER's cross-site socio-ecological research program will require a strong partnership between the graduate students, the LNO, the LTER Executive Board and LTER sites. Creating additional opportunities for interdisciplinary graduate student training and collaboration as

well as enhancing the existing LTER network cyberinfrastructure to facilitate communication and data sharing are important cornerstones of such a partnership.

## Discussion and Recommendations

### ***Priority Area: Improve Information Access and Data Management for Graduate Students Interested in or Involved in Cross-Site Socio-Ecological Research***

*Discussion:* Cross-site socio-ecological research poses specific technical, informational and logistical challenges for graduate students. Graduate students often have vastly different levels of experience with both the LTER network and interdisciplinary research and are not always aware of or adequately trained to access available LTER resources or data for cross-site socio-ecological research.

Prospective LTER graduate students are often not informed about the possibilities for cross-site socio-ecological research within the LTER or cognizant of the kinds of resources and data sets that would be available to them for such research if they joined an LTER site. To remedy this issue and increase the attractiveness of the LTER to potential graduate students interested in cross-site socio-ecological research, the LTER should make cross-site socio-ecological research and resources more visible on its website.

Further, prospective and current graduate students are often unsure of how to tap into the LTER's socio-ecological research community and initiate cross-site collaborations. One specific issue area for graduate students is that it is sometimes difficult to find potential collaborators and to identify cross-site socio-ecological research at other sites. Often, graduate students only learn about the research projects of Principal Investigators (PIs), post-docs, and other graduate students when these investigators publish their results. This issue is especially prevalent among graduate students at sites that do not tend to focus on socio-ecological research.

Another issue is that there is not currently a centralized location for references, publications and other resources on cross-site socio-ecological research available to graduate students. Therefore, improvements could be made to the LTER network website to help graduate students more easily access socio-ecological research resources and initiate cross-site dialogues and research. Improved social networking capabilities via the LTER website are critical to satisfying this need. We are aware that the Network Office is already working hard to develop a social networking site for graduate students and researchers. We applaud these efforts and want to work closely with the LNO to ensure that this site meets the needs of graduate students, especially those who are interested in cross-site socio-ecological research.

Another issue for graduate students interested in cross-site socio-ecological research is data availability, access, and discovery - an issue that we know the Network Office has been working on for quite some time. While this is less of an issue for those graduate students who have been involved in LTER for some time, new graduate students are often unaware of the tools and techniques available to foster cross-site socio-ecological research. For example, some new graduate students are unaware of the data holdings or collaboration technologies

35 references

*who*

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(such as videoconferencing) available through the LTER network. Adding data and technological tutorials to the LTER orientations given by site representatives could increase graduate student knowledge about data availability, access and discovery.

*Information Access and Data Management Recommendations:*

1. Edit the LTER main website so that it more prominently features socio-ecological research:
  - o Add a page in the "LTER research" menu that specifically discusses socio-ecological research projects (similar to those for Microbial Ecology and Remote Sensing/GIS). This page should include short videos that showcase the history of socio-ecological research in the LTER and current research projects by graduate students and researchers.
  - o The "Vignettes" page under "Site Science" and the "Collaboration/Synthesis" page under "LTER research" should also feature research projects which are socio-ecological and cross-site. This webpage could also host or link to short videos about the highlighted socio-ecological research
  - o On the front page, add a "Featured Cross-Site Socio-Ecological Collaboration" to the rotating list of "Featured Sites."
2. Develop the cyberinfrastructure for and make available through the LTER website a cross-site socio-ecological research resource library. (Under the direction of Rebecca Hale - [rlhale@asu.edu](mailto:rlhale@asu.edu) - this graduate student working group is currently producing the content for this library.) *Let's hear about this*
3. Help develop a new "graduate student orientation to the network" video and handbook to foster more awareness among graduate students of available LTER data, collaborative tools and resources, especially for cross-site socio-ecological research. The video can be posted on the LTER website for general access and administered by site representatives at site orientations, while the handbook should be mailed to all new graduate students, along with a personalized welcome letter, once they register with the LNO.
4. Continue to develop and deploy the cyberinfrastructure necessary to enable LTER researchers and graduate students to share data; specifically encouraging:
  - o Cross-site data discovery initiatives, so that students can learn what data is available to them outside of their site
  - o Data sharing and data integration, specifically with metadata standards (like EML)
5. Continue to develop and deploy the graduate student social networking site, specifically:
  - o Ensuring that the new site will include a specific component or section for cross-site socio-ecological research
  - o Ensuring that the site is open to non-LTER students, researchers, and other participants (possibly via an invite system)

*Difficulty in obtaining information*

*Good idea. Who could help?*

*How different*

*Up to grad school*

***Priority Area: Strengthen the Institutional Framework for Cross-Site Socio-Ecological Research by Graduate Students***

*Discussion:* As mentioned in the above section, it is essential for prospective and new graduate students to be made aware of opportunities for LTER cross-site socio-ecological research from the outset through an enhanced LTER website and an informative new student handbook or course. This will encourage more graduate students to pursue these kinds of research endeavors. Also, because this research is often more time intensive, it benefits students to have the necessary information to immediately initiate this kind of research.

In fact, one of the biggest challenges facing graduate students interested in cross-site socio-ecological research is the learning curve for interdisciplinary, multi-site work. Graduate students must learn to communicate across disciplines, topics and sites to develop research questions and approaches. Further, there is inconsistent and uneven interdisciplinary training within and among LTER sites available to graduate students. Thus, in order for graduate students to succeed, it is essential that they 1) have opportunities for additional training in the classroom and with more advanced LTER sites on socio-ecological theory and methods, 2) have increased digital and on-the-ground opportunities to work with and dialogue other researchers and graduate students conducting socio-ecological work, 3) receive funding to collect cross-site socio-ecological data and 4) receive funding for face-to-face meetings to address and overcome interdisciplinary and cross-site research challenges.

Hand in hand with the above comments, the need for additional incentives – especially funding - to foster this kind of work within the LTER cannot be overstated.

*Institutional Recommendations:*

1. Continue to develop and deploy the graduate student social networking site, specifically:
  - o Ensuring that the new site will include a specific component or section for cross-site socio-ecological research
2. Support continued funding for the cross-site online course "From Yardstick to Gyroscope" to teach graduate students about interdisciplinary methods in socio-ecological research and for the development of a similar course on interdisciplinary theory.
3. Support funding 1) for the development of digital products that capture, present and explain the content from LTER cross-site interdisciplinary methods and theory courses and 2) for hosting these materials on the LTER website to make them available to a wider audience.
4. Develop a funding mechanism and program to enable graduate students to train in socio-ecological research methods, theory and approaches at other LTER sites with relevant expertise. This program could include funding to support introductory summer short courses (1-2 weeks) at LTER sites with a socio-ecological research focus. Short courses could be offered at different LTER sites on a rotating basis, could be open to graduate students, faculty and Principle Investigators, and based on the Bonanza Creek Program.

Why is Funding needed?

Who will prepare

EB

Their goal would be to introduce participants to a site's socio-ecological research program (research questions, key players, theory, methods). Secondly, this program could include funding for more in-depth student site exchanges. Students could apply for longer term "fellowships in residence" to collect data and/or receive more extensive methods training at other LTER sites for their doctoral or master's research.

- Request to EB - very little interest*
- when completed*
- OK*
- OK*
5. Develop a consistent funding mechanism for LTER graduate students to meet annually for a multi-day workshop focused on furthering socio-ecological cross-site research and its data integration.
  6. Continue funding post-ASM graduate student collaborations and products on cross-site socio-ecological research.
  7. Encourage site representatives to educate graduate students about cross-site socio-ecological research and data access.
  8. Work with graduate student representatives to create a network-wide mentoring program that links senior graduate students to incoming graduate students interested in cross-site socio-ecological research.

### Concluding Remarks

We greatly appreciate the opportunity to comment on this important issue. The 2009 All Scientists Meeting demonstrated that the LTER's graduate student community is keenly interested in and excited about plugging into the LTER's evolving and innovative cross-site socio-ecological research program, exemplified by the ISSE and the new ULTRA initiatives. The benefits of greater graduate student involvement in the LTER's cross-site socio-ecological research program are numerous. Building in more opportunities for graduate students to pursue this type of research will strengthen the LTER graduate student community and the LTER network. It will create a group of researchers attuned to important cross-cutting socio-ecological issues and trained to understand and address them at multiple sites and scales as teams, thus enhancing the credibility, legitimacy, and saliency of LTER work to policy-makers and to the communities in which the LTER works.

In conclusion, we look forward to your thoughts and suggestions on this letter and on how to best move forward with our recommendations. We recognize that the LNO may be addressing some of our recommendations already and are eager to learn more about these initiatives, including the LNO's work on a social networking tool. In addition, we have shared our letter with Chelsea Prather and Amber Hardison, the LTER graduate student representatives. They are fully supportive of our efforts and, in light of our requests, would like to work with us to add specific features to the graduate student website under development and to incorporate the cross-site socio-ecological research resource library into the graduate student website. Looking forward, we would like to send a shorter and more specific version of this letter to the LTER Executive Board. Thus, we believe that the most logical next step is to speak with you and then redraft this letter for the Board.

Recommendations to LNO on Fostering Cross-Site Socio-Ecological Research for LTER Graduate Students

We suggest organizing a conference call between the graduate student letter-writing committee, and the LNO to further discuss the recommendations identified herein. Please contact Rebecca Garvoille at [rgarv001@fiu.edu](mailto:rgarv001@fiu.edu) or (425) 208-6852 to arrange this conversation or with any questions.

Sincerely,

Rebecca Garvoille (FCE) ✓  
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11/20/09  
Socio Ecology GS

1. In contact with Amber + Chelsea

2. Recommendations

- get grad students on SCP committee
- content for web page could be provided by GS

3. Resource library - Rebecca Hale

- living bibliography
- research examples
- ~~papers~~ - not actually papers
- case studies in + outside of LTER
- Handbook
- non-LTER resources
- presentations
- lectures, syllabi

4. Graduate student orientation

- start with handbook