

## **External Review**

### **Cooperative Institute for Limnology and Ecosystems Research (CILER)**

**Report of a Review Conducted 6-7 October 2010**

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## **Introductory Comments**

In addition to their role of supporting NOAA's research mission, the most successful Cooperative Institutes (CIs) are recognized as independent centers of excellence that bring together diverse communities of public interests, academic researchers, and government scientists. For a CI to thrive it needs to have a culture and resource base that encourages collaboration, nurtures innovation, and rewards individual entrepreneurship in pursuit of shared goals.

When new CILER director Allen Burton arrived in 2008, CILER's culture was one primarily focused on supporting NOAA/GLERL's research mission. Research initiatives and intellectual leadership generally flowed from GLERL to CILER rather than moving reciprocally between the two and out into the broader community. Along with his colleagues, Dr. Burton has invested a great deal of time and energy over the past two years in efforts to change CILER's culture to one more in keeping with NOAA's vision for a successful CI. As a result of these efforts, CILER is entering an exciting stage in its development. Opportunities abound, but the organization still faces many challenges. Substantial progress has been made defining scientific issues, objectives, and goals. Now effort should be directed toward further defining and refining an institutional vision and the strategies necessary to achieve that vision. Because CILER is still relatively unknown within the region, a critical component of that strategy should be identification of the qualities that can and do make it distinctive as a Great Lakes research enterprise. Once identified, these qualities would form the basis for creating a "brand" by which CILER would be recognized within the Great Lakes region and among NOAA's other successful CIs.

Because of the recent significant investment in research in the Great Lakes by a number of federal agencies, CILER has opportunities that did not exist at the time of the earlier review and it should seize these opportunities. In this report we identify some of those opportunities. We acknowledge that this will require additional support from NOAA, but believe this would be a good investment for NOAA given the leveraging CIs can provide NOAA in fulfilling its

mission. Other CIs face similar funding challenges. In Appendix C we make some recommendations to the SAB that we believe apply to all CIs.

Over the past two years, the scholarly productivity of CILER scientists has been high. Publication of high quality in peer-reviewed journals is a critically important metric for assessing CIs, but only one.

Another issue is governance. Appropriate governance structures not only can significantly reduce the probability of institutions getting off track, but can be of great help in providing direction and stability. We were unable to identify any effective governance body for CILER now or at any time in its history. The Executive Board might be able to provide that function, but it would require changing its mandate, supplementing the membership, and increasing the frequency of meetings.

Many of the themes that emerged from our review are recurrent and cut across education and outreach, and the entire science enterprise—the science plan, the science, and science management. We acknowledge this redundancy in our report—which is due in large part to the prescribed format for review reports—but believe it also has a virtue in that it sends a strong signal as to what CILER needs to do to achieve the level of distinctiveness and excellence possible as a Great Lakes program.

Having a tenured faculty appointment of the CILER director with the University of Michigan is clearly an asset for CILER, but managing the time commitment between CILER and the University may be a challenge. Assuming the majority of support for the CILER director from NOAA and from the host university is for this role, then the director's primary responsibility must be to CILER. We believe this is necessary if CILER is to achieve and sustain its full potential.

## **Education and Outreach**

The 2005 review of CILER recommended that attention to Education and Outreach be strengthened, thus we were surprised to find that even the part-time outreach person had been eliminated. We were, however, impressed with the array of education and outreach activities

that CILER executes and the quality of those programs and projects despite the fact that minimal funding is given to CILER for these purposes

This review team believes strongly that the benefits to CILER and NOAA of having a staff member with experience and expertise in environmental education and outreach who is dedicated to these roles far outweigh the costs, and that this is key to increasing the visibility of CILER and the importance and relevance of its research and educational programs to the overall Great Lakes research and education enterprise. CILER's education and outreach programs rely heavily on GLERL staff. While the present education and outreach projects are diverse and of high quality, they do not form a coherent program and do not contribute to establishing an independent identity for CILER.

## **Findings**

- CILER is an integral part of the Great Lakes network of research and educational institutions, but its unique role is poorly articulated and not widely recognized. This became clear to us in our discussions with CILER staff concerning their vision for what CILER could, and perhaps should, become.
- Results of CILER's research are communicated primarily through scientific forums, collaborative project meetings, workshops, and, in some cases, through action alerts/forecasts. This limited slate of outreach activities seriously limits the audience of those who could benefit directly from this information.
- Workshops are convened to share lessons learned (e.g. Saginaw Bay Multiple Stressors workshop). Through this mechanism, participating managers can influence the formulation of scientific questions to ensure that they are responsive to management needs.
- CILER leverages some of the Great Lakes Sea Grant needs assessment work, which is aimed at determining what new data and information are needed on a regional scale.
- CILER has contributed by taking technical data, synthesizing it, and transforming it into information for public consumption through web-improvements and by providing web pages with summarized information (e.g., Coastal Watch information). We believe this is an area of great opportunity which can help distinguish CILER from many other institutions in the Great Lakes region.

- We believe that one of CILER's most important roles is synthesis of data around a set of important management questions, and translation of the data into information that is directly useful to managers and to interested stakeholders (e.g. Saginaw Bay Workshop for Multiple Stressors)
- CILER should be the focal point for communication of NOAA's work in the Great Lakes region to external parties including both natural resource and environmental managers and the general public. This role needs to be strengthened and be made more visible.
- CILER has close partnerships with Michigan Sea Grant (e.g. Climate change project for NOAA GLRT), COSEE Great Lakes (planned collaboration), and CEGLHH (identify and assess user needs and disseminate information via HAB forecasts).
- Other CILER partners include the University of Michigan's School of Natural Resources and Environment (SNRE), Ocean Leadership, USGS, GLC, and others. These partnerships are a key to CILER's success, but CILER's role needs to be clarified in all of these collaborations.
- It often is difficult to determine whether researchers are CILER or GLERL or who they are "most affiliated with" from an organizational perspective. This has both advantages and disadvantages, but on balance we believe it works against the branding of CILER which needs to be a priority.
- The CILER seminar series is an important outreach vehicle. Until recently its geographic reach was limited to those who could be present in person. Recently, it was expanded to include remote participation via webinar allowing many more to be involved.
- CILER is involved in many important activities such as student tours, National Ocean Science Bowl, Partners for Excellence high school program, and National Marine Educators' groups. Most of these activities are outreach, but they don't necessarily inform curricula. The committee was impressed by CILER outreach to elementary and secondary school groups (e.g. through involvement with the Dexter High School students).
- The Fellows Program provides valuable training and on the job experience at collaborating federal and university institutions (e.g. HEC project—six institutions

involved, and multidisciplinary topics covered as a result).

- Improvements/plans to expand and enhance CILER's education and outreach activities include: joining the CI Communicators Network e-mail listserve; further updating of their webpage (project summaries, NOAA's National Strategic plan); and recruiting additional schools to participate in the National Ocean Science Bowl. These are all planned activities.
- CILER does not have an Education & Outreach plan. We requested a preliminary one and were provided with the plan included in Appendix A.

## **Recommendations**

1. CILER should develop a comprehensive outreach/education plan (in partnership with the GLERL/GL SG Network). The plan might emphasize some of the following:
  - Development of K-12 curriculum modules about the Great Lakes region, based upon research findings including CILER projects.
  - Workshops for teachers that deal with Great Lakes issues.
  - Collaboration with aquariums, science centers, and natural history museums in the region to raise public awareness about important Great Lakes issues and to deepen understanding of threats and opportunities. These might include hands-on opportunities through field trips.
  - Expanded and enhanced mechanisms (on a project basis) for communication of research results to decision-makers and stakeholders.
2. Systematic tracking of the educational and career trajectories of students at all levels who have been involved with CILER. An attempt should be made to reconstruct as much of the history of program involvement as possible. It should identify the individual, the project he/she worked on, her/his mentor, where they are now, etc.<sup>1</sup>.
3. CILER has made significant improvements in its website; however additional improvements should be made. For example, some tabs are null with no descriptions. The site should also have the capacity to track viewers and to offer visitors the

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<sup>1</sup> We requested this document in our de-briefing session and a first draft is included in Appendix B.

opportunity to provide comments on friendliness and usability of the site.

4. CILER should continue to explore development of web-accessible tools that can quickly and easily aggregate research results and model results for public review (e.g. CoastWatch tools).
5. CILER needs to add a “push person” to its staff to deliver research results to external stakeholders. Funding should be found to fund a part-time education and outreach person. Possible mechanisms might include discretionary funding or recovery of funds from the largest funded projects (e.g. multi-year projects such as Saginaw Bay) to help fund a part-time outreach person.
6. It would be of great benefit to CILER and to NOAA if each CILER project included an outreach and education component, Research projects that are of direct and immediate societal importance need greater dissemination to add value. This will also help with marketing/branding of CILER.
7. CILER should track participation in its seminar series to document expanding geographic representation.
8. CILER should explore possible partnerships with student AmeriCorps groups.
9. CILER could use top-down approaches to help recruit students in particular areas of research for student fellowships. This could be an effective way of enhancing the future Great Lakes workforce with expertise in under-represented areas.
10. CILER needs better tracking programs for student/fellow and mentoring conducted by its researchers.
11. CILER needs to articulate more clearly the value that CILER brings to the host University. The benefits of expanded opportunities for involvement of faculty and students in Great Lakes research and education, involvement in environmental management issues with decision-makers should be obvious but may be undervalued by much of the University. Additional participation of CILER scientists in SNRE courses and lecture series might go a long way toward helping ensure buy-in by the Dean/Provost to the value added by CILER. Participation by CILER researchers in undergraduate thesis review and on graduate thesis/dissertation committees would further reinforce CILER’s value.
12. CILER could contribute to the University of Michigan and other regional institutions

through adjunct professorships for CILER staff. This would also elevate awareness of CILER. CILER should extend this offer, but the decision remains with the academic institutions.

## **Science Plan**

Because CILER has been so closely associated with GLERL, much of its science direction has followed from the projects being led by GLERL scientists. Although it is clear that CILER scientists have made significant contributions to these efforts, it also is clear that CILER, as an institution, lacks an effective means for developing new intellectual opportunities that would complement rather than supplement work being done at GLERL. This issue also was noted by the last review committee.

We believe that CILER must develop a unique identity that extends beyond its interactions with GLERL. As we have noted, it was difficult for us to assess the relative roles of CILER and GLERL in the planning and implementation of joint research projects. To be most effective and to become a “force” in the Great Lakes research community, CILER must get beyond its current role as an extension of GLERL’s research capabilities.

We also believe that a strong commitment by the University of Michigan is necessary for CILER to succeed as a recognized, multi-institutional, center of excellence for Great Lakes research. CILER could be a catalyst for combining teams of faculty members from a diverse assemblage of departments and schools both from the host university and from the partner institutions to develop new ideas and initiatives.

## **Findings**

- There is no clearly articulated description of the Great Lakes Science Enterprise and how CILER fits into this landscape.
- Participation of University of Michigan faculty in the CILER planning processes beyond the CILER Director is limited.
- Involvement of academic partners beyond the University of Michigan is limited although they did participate in developing the funded proposal that was funded by NOAA.



- The CILER research themes specified in the RFP process are appropriate and sufficient, but a strategic vision direction is lacking. This is an opportunity and responsibility for CILER’s leadership.
- An on-going series of relevant scientific workshops/meetings brings together participants from the wider Great Lakes science community, but the leadership roles of CILER vs. those of GLERL in these sessions are not clearly identified.
- If the University of Michigan starts the Strategic Waters Initiative and Management--SWIM—there may be new opportunities for CILER beyond those that currently exist with OAR/GLERL. The leadership role of the director of CILER in the development of SWIM that he described to us should position CILER well to seize these opportunities.
- One area of research that was under-represented in all the information we were provided is the social sciences, broadly defined.
- We did not see any CILER document that rises to the level of a coherent science plan and shows how CILER compliments and contributes to the overall NOAA science plan.

## **Recommendations**

- 13.** CILER should develop vision and mission statements that describe its unique value as part of the NOAA Great Lakes research enterprise. These are among its distinctive areas of potential CILER contributions:
- As a research project interface between academic community and NOAA offices (not exclusively GLERL).
  - As a conduit for communication between project scientists and stakeholders including the interested public.
  - As a facilitator of NOAA research by brokering post-doctoral and student participation in projects.
  - The social sciences and the contributions they can make in identifying, evaluating, and implementing alternative management strategies
- 14.** CILER should increase active participation of members of the extended research consortium in its governance and planning. Mechanisms could include:
- Hosting of annual meetings of consortium members.

- Including representatives of consortium members on Council of Fellows; representatives can be selected, elected, or rotate among members.

**15.** CILER should assign a senior mentor to each younger staff member to nurture professional development and enhance scientific mentoring. In the case of recent PhDs these might include:

- Provide guidance with publication of research work;
- Provide funds for travel to professional meetings for presentation of research; and
- Facilitate networking among younger staff throughout the consortium.

And younger staff members without graduate degrees might be encouraged to pursue further graduate study.

**16.** In coordination with the appropriate University and GLERL leaders, CILER should formulate a strategic science plan for the next five years identifying the actions necessary to achieve the vision. The plan should focus on what CILER can and intends to do to make a singular contribution that will distinguish it from other programs within the Great Lakes region. This is a prerequisite to effective branding of CILER and to strategic—as opposed to fortuitous, unplanned—growth.

**17.** CILER leadership should work with colleagues at GLERL and the UM School of Natural Resources and Environment (SNRE) to review existing documents that identify research priorities for the Great Lakes region, select those best suited for CILER to pursue, and then use this as a “strawman” document with leading scientists and a few policy-makers from throughout the region to validate and get buy-in on targets of opportunity for CILER. One of the advantages CILER has over academic institutions and NOAA is its tremendous flexibility in making strategic short term appointments of highly specialized personnel.

## **Science Review**

### **Findings**

- CILER scientists and their university and government-based colleagues conduct world-class environmental research. The research activities are conducted by an array

of CILER research scientists, research fellows, research investigators, and graduate students.

- The collection of research projects is consistent with overall NOAA goals and objectives and is in alignment with NOAA's strategic plan. The research portfolio contains individual PI projects, and several large-scale, collaborative projects involving a number of government and university scientists.
- While CILER has an impressive portfolio of research projects, in the aggregate they do not rise to the level of a carefully conceived and coherent research program with a capital "P". This was mentioned in the previous section.
- A number of the profiled research projects are of clear interest and relevance to regional governmental agencies and other partners (e.g. water utilities). For example, on-going projects of direct societal relevance include those pertaining to climate change and associated hydrology changes in the Great Lakes, beach closures, HABs, invasive species, and identification of marine sanctuaries.
- Some research findings have been translated directly into policy changes (e.g. NOBOB ships' ballast project findings). Other on-going studies have the potential to do so (e.g. Saginaw Bay, Lake Erie anoxia studies).
- The leadership role of CILER as an institution in Great Lakes research often is obscure and should be better articulated. This is an element of a larger challenge to better brand CILER within the Great Lakes region and beyond. This was pointed out in the previous review and remains a challenge.
- The roles of CILER should be articulated more clearly in all aspects of program development including the selection, definition, and development of large-scale projects; the selection of fellows, and allocation of postdoctoral fellows and funding of different research themes. Often, it would be as helpful to reviewers to know not only what was funded and why, but also what was not funded and why.
- The role of university faculty in carrying out the mission of CILER, particularly outside of the University of Michigan could be strengthened. The advantages to faculty of working on CILER projects need to be more clearly articulated. The benefits of enhanced collaboration will accrue to CILER, GLERL, and the Great Lakes University community.

- Involvement of CILER researchers outside of the Great Lakes domain can contribute to the visibility of CILER nationally. This can also contribute to its success within the region **if** the issues those projects address have analogs in the Great Lakes. It is essential to make these connections explicit and unambiguous.

## **Recommendations**

- 18.** One way to increase visibility of important CILER studies is to communicate more directly and on a more timely basis with outreach partners and to elected and appointed officials.
- 19.** In many instances, CILER participates in team projects creating clear opportunities for project leadership. Such leadership would clearly help differentiate CILER from many of the other research institutions in the basin, many of which are far less likely to willingly assume a coordinating and leadership role.
- 20.** If CILER were able to secure funding for competitive awards of undergraduate research fellowships, graduate fellowships, and postdoctoral fellowships, it would have an opportunity to exert top-down influence on research themes it deems most important. These awards should be available not only at the host institution, but also at partner institutions. This would have the added benefit of preparing the future Great Lakes scientific workforce with expertise and experience needed to deal effectively with emerging environmental issues.
- 21.** Buy-in from CILER partners in other government labs and particularly in partner universities is vital to CILER's growth prospects and visibility. Open-competitions for Fellows/postdoctoral fellows supported by CILER are one way to increase faculty participation. Doing this within theme areas does not pose a conflict if the opportunity rotates among the themes.

One way to increase the importance of CILER to the host university and to partner universities would be to enhance the participation of CILER scientists in the educational process by lecturing in existing courses and even offering occasional courses and by serving on student committees.

## Science Management

### Findings

- As pointed out earlier, the CILER research projects are of high quality and are in alignment with NOAA's strategic priorities, but in the aggregate they do not constitute a coherent research plan. It is the responsibility of management to correct this deficiency.
- It is also the responsibility of management to be more aggressive and more imaginative in reaching beyond Ann Arbor to include more of CILER's partners.

**Recommendations** (Some of these same recommendations were made earlier in this review report. They are printed here in italics.)

- *CILER should develop a vision and mission statement that describes its unique value as part of the NOAA Great Lakes research enterprise. It might include some of the following elements:*
  - *Research project interface between academic community and NOAA offices (not exclusively GLERL)*
  - *Conduit for communication between project scientists and stakeholders including interested public*
  - *Facilitation of NOAA research by facilitating postdoctoral and student participation in projects and participation of partner universities.*
- *In coordination with the appropriate University and GLERL managers, formulate a strategic plan for the next five years of CILER activity outlining the actions necessary to achieve the vision established above.*
- *Increase active participation from members of extended research consortium in CILER governance and planning.*
  - *Host annual meeting of consortium members*
  - *Include representatives of consortium members on Council of Fellows; representatives can be selected, elected, or rotate among members.*

- *Use research consortium members to help develop long-range scientific plan for CILER – transform the consortium members from occasional clients to constant allies.*
  - *Assign senior mentor (counselor) for younger staff members (postdoctoral fellows and research investigators) to focus on professional development (to supplement scientific mentoring from project scientists)*
    - *Guidance with publication of research work*
    - *Provide funds for travel to professional meetings for presentations*
    - *Facilitate networking among younger staff throughout the consortium*
- 22.** The CILER director should meet as soon as possible with the current dean to discuss strategy for either (a) having direct NOAA/CILER representation on the search committee for the new dean of SNRE or (b) providing input to the search committee outlining CILER’s vision for expanding its future interactions with and contributions to SNRE.<sup>2</sup>
- 23.** Strengthen the external CILER support network by engaging CILER alumni. Foster communication among alumni; enlist them for activities like internal reviews of plans and products.
- 24.** Take advantage of retirements of senior staff from GLERL and regional universities by offering “senior” part-time positions at CILER. Use senior scientists as mentors to create an informal “brain trust” to advance CILER’s goals and reputation.

## **Closing Observations**

With renewed interest and funding for the Great Lakes, and new leaders at both CILER and GLERL, CILER has an opportunity to take a leadership role in research, education, and outreach in the Great Lakes Region. Seizing this opportunity will take a concerted and

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<sup>2</sup> We were advised by the Director of CILER after submitting our initial draft review report that he had made the request to the Provost for participation on the search committee and that the request was declined, but that he was advised that he and the Director of GLERL would be involved in the interview process. We have left this recommendation in the report to underscore the importance we place on having a strong collaboration of CILER with the University of Michigan in which the University places a high value on the contributions CILER makes to the University and the region.

coordinated effort by the director and his senior staff first working alone and then in collaboration with GLERL, the University of Michigan, other partners, and key stakeholder groups, to identify the specific areas where CILER can make singular contributions to the existing Great Lakes research and educational enterprise. The importance of this effort and the commitment it will take should not be underestimated. We believe it is the only way to brand CILER, to have CILER achieve its full potential and in doing so to make the contribution it can make to NOAA. This will require additional funding from NOAA, particularly for Task I functions<sup>3</sup>, and that the University of Michigan provide a level of direct financial support at least equivalent to what it committed to NOAA in its re-competition proposal.

## **Final Rating**

### **Satisfactory**

According to NOAA, Satisfactory indicates that “the CI has achieved some or all of its agreed goals and has demonstrated acceptable performance. Its performance, however, is not considered outstanding and/or the CI’s resource commitment provides a limited enhancement of NOAA’s resources. For acceptable performance, NOAA may opt to renew a CI for a period less than five years that may be at a significantly reduced funding level, pending availability of funding.”

Following this definition, we believe "Satisfactory", properly characterizes CILER’s accomplishments, but we believe it would be neither appropriate nor in its own best interests for NOAA to diminish its commitment to CILER. Indeed, we are impressed with the progress made over the past two years under Dr. Allen Burton’s leadership and hope that he can take CILER to the next level—“Outstanding”—over the next several years. This will require

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<sup>3</sup> We believe this funding situation pertains to many, perhaps all, NOAA CIs (See Appendix C).

greater financial support from NOAA, a stronger commitment to the collaboration by the University of Michigan based upon an appreciation of the value CILER can bring to its programs, and leadership by CILER in articulating a vision that captures the unique qualities it brings to the Great Lakes research, management, and educational enterprise; and clear and compelling evidence that it has capitalized on these opportunities. We believe these are worthy and achievable goals; goals worth the investment it will take by CILER, by the University of Michigan, and by NOAA. Cooperative Institutes are collaborations between NOAA and one, or more, universities. Without the commitments of all partners, CIs do not achieve their potential. We recommend that the NOAA Administrator designate someone to meet with a high level official of the University of Michigan and secure a written reaffirmation of the commitments it made during the designation process.



## **Appendix A**

### **Outline of Education & Outreach Plan Provided to Review Team after the Review**

#### **CILER Outreach Strategy**

**October 14, 2010**

##### Background

Until October 2009, CILER supported a part-time Education and Outreach Coordinator position (Task 1 funding) that predominantly focused on preparation for the annual Great Lakes regional competition of the National Ocean Sciences Bowl (NOSB), an ocean and freshwater science-focused quiz bowl geared toward high school student teams. This position was eliminated due to inadequate Task 1 funding support. Since the elimination of this position last year, the NOSB was supported through a subcontract and NOAA Headquarters support. Other outreach activities have relied on Michigan Sea Grant and NOAA-GLERL support or the use of CILER staff to oversee the Summer Fellows program, which matches talented undergraduate and graduate students with federal and academic mentors focused on Great Lakes research. It is evident that CILER needs to expand its outreach and, hopefully, increased funding will allow for an Outreach Coordinator position to be re-created.

##### Ongoing Outreach Activities

Current outreach activities include the NOSB, the CILER-GLERL seminar series, summer fellow presentations, website updating, and High School Partners for Excellence. This latter program is similar to the Summer Fellows program, but focused on less stringent research project requirements for younger students.

##### Outreach Expansion Strategy

If funding is secured for an Outreach Coordinator, the above activities will be expanded to include:

- 1) Tracking personnel that have left CILER's training programs

Develop a database, with support from alumni records through SNRE and research partners throughout the Great Lakes basin. This information could prove critical to refining CILER programs for improved retention of talent for Great Lakes research in academia and NOAA.

- 2) Tracking and dissemination of research products to assist regional stakeholders (e.g., Great Lakes managers, citizens (including K-12), policymakers). Engagement with stakeholder groups to formulate project objectives for proposals.

Conduct surveys of stakeholders and monitor government and media websites. Meet with local and federal government staff/managers, industry, not-for-profit organizations, and

citizen groups to: 1) share results of ongoing research, 2) discuss ways to apply research findings to their issues of concern, and 3) optimize proposals for action oriented, problem solving results. Create “virtual” and visual displays for use in K-12 events, museums, scientific conferences, career day events, science fairs, and GLERL or NOAA open houses.

3) Increase communication to CILER consortium members, external partners, and other Great Lakes researchers.

Meet with research consortium members at least annually to explain CILER’s role in the Great Lakes community and how they can feel more involved as regional partners. Improve web-based communication.

4) “What’s New” or “Hot Item” bulletins

Increase this activity, which is similar to what NOAA-OAR does with their website and listserves for Cooperative Institutes nationwide. Insure regular CILER website postings of hot research topics by CILER-GLERL or CILER-GLERL-Academic Partner collaborators. This can also be broadcast through listserves, such as GLIN.

## Appendix B

### Tracking of CILER-Supported Student and Postdoctoral Fellows Provided to the Review Team after the Review

<b>Position</b>	<b>Year</b>	<b>Name</b>	<b>Transition from CILER</b>	<b>Active GL Research or Collaboration</b>
Assistant Research Scientist		Tom Johengen	Retained - Promotion to Associate Research Scientist	yes
Assistant Research Scientist	1998	Dima Beletsky	Retained - Promotion to Associate Research Scientist	yes
Research Investigator	2006	Donna Kashian	Asst Professor - Wayne State University	yes
Research Investigator	2006	Alan Wilson	Asst Professor - Auburn University	no
Research Investigator		Steve Henderson	Asst Professor - University of Washington	no
Research Investigator	2006	Tomas Hook	Asst Professor - Purdue University	yes
Research Investigator	2006	Carlo DeMarchi	Asst Professor - Case Western Reserve University	yes
Post-doctoral Fellow	2009	Eric Anderson	Retained - Promotion to Assistant Research Scientist	yes
Post-doctoral Fellow		David Raikow	EPA -NIST, Cincinnati	no
Post-doctoral Fellow	2002	Radka Picklova	Odenburg University, Germany	no
Post-doctoral Fellow	1998	Marie Bundy	National Marine Sanctuary Program, NOAA	yes
Research Technician	2002	Steve Constant	NOAA-GLERL Marine Instrumentation Lab	yes
Research Technician	1998	Steve Pothoven	NOAA-GLERL Principal Investigator	yes
Research Technician		Andrew Yagela	NOAA-GLERL Muskegon Field Station	yes
Research Technician		Giselle Maira	NOAA-GLERL Webmaster and Librarian	yes
Research Technician		Melissa Clouse	Old Dominion	no
Research		Katie Birkett	USGS	yes

Technician				
Graduate Student Researcher	1995	Megan Agy	Washington SeaGrant	no
Graduate Student Researcher		Andrew Winkelman	Graduate School for PhD	n/a
Graduate Student Researcher		Drew Foley	Environmental Consultant Firm	no
Graduate Student Researcher		Nate Bosch	Asst Professor - Grace College, IN	yes
Graduate Student Researcher		Katie Marco	EPA - Washington	no
Graduate Student Researcher	1999	Larissa Sano	Estuarine Research Foundation	no
Graduate Student Researcher		Kevin Prangle	Post-Doc, Ohio State University	yes
Graduate Student Researcher		Juli Reinhardt	USEPA fellowship	yes
Graduate Student Researcher	1996	Sander Robinson	CILER Research Lab Specialist and Administration	yes
Graduate Student Researcher		James Roberts	Post-Doc, Colorado State University	yes
Graduate Student Researcher		Damon Krueger	Post-Doc, Michigan State University	yes
Undergraduate Student Researcher		Steve Skripnik	Environmental Consulting	yes
Undergraduate Student Researcher		Patricia Chang	University/Environmental Consulting	no
Undergraduate Student Researcher		Devon Bonnie	Graduate School - Univ. Illinois	yes
Summer Fellow	2009	Ashley Burtner	Retained to Permanent Research Support	yes
Summer Fellow	2010	Roman Kowch	Accepted to NOAA's Hollings fellowship	yes
Summer Fellow	2010	William	Grad. School, Environmental	yes

		Holman	Engineering	
Summer Fellow	2009-2010	Maia Dedrick	Work at TBNMS. Grad. Student in archaeology.	yes
Summer Fellow	2010	Han Sang Kim	Grad. Student, Texas A and M	no
Summer Fellow	2010	Jo Ann Banda	Fish and Wildlife Biologist, USFWS	yes
Summer Fellow	2010	Aimee Hoover	Ph.D. student, fish behavior	yes
Summer Fellow	1999	Craig Riley	URS Corporation	no
Summer Fellow	2008-2009	Larissa Herrera	Former Summer Fellow, now Long Term Fellow	yes
Summer Fellow	2008	Kerrin Mabrey	Retained as Research Assistant	yes
Summer Fellow	2008	Bryan Sederberg	Environmental Consulting	yes
Summer Fellow	2006	Julie Mida	Ph.D. Student, SNRE, U of M	yes
Summer Fellow	2006	Andrea Jaeger	Ph.D. Student, MSU	yes
Summer Fellow	2008	Greg Jacobs	USGS, Pennsylvania Fish and Game Commission	yes
Summer Fellow	2009	John Cawood	Environmental Education, Chicago	yes
Summer Fellow	2006	Arthur Covert	Ph.D., Computer Science	no
Summer Fellow	2006	Andrea Jaeger	Ph.D student, Dept. Fisheries/Wildlife, MSU	yes
Summer Fellow	2006-2007	Stephanie Wegscheider	German DLR (Space Agency)	yes
Summer Fellow	2006	Anna Belyaeva	Ph.D. student, Iowa State University	yes
Summer Fellow	2006	Chris Rae	Dental School, U of M	no
Summer Fellow	2006	Hal Gunder	Environmental Law, Case Western Reserve Univ.	yes
Summer Fellow	2006	Ted Bambikidis	M.S., Aquatic Ecology; currently Americorps volunteer	no
Summer Fellow	2006	Yuehan Lu	Assistant Professor, University of Alabama	no
Summer Fellow	2003	Elizabeth Graham	M.S., Environmental Sciences, University of Canterbury	no
Summer Fellow	2005	Sean Sisler	Biologist, Minnesota DNR	yes
Summer Fellow	2007	Kara Lindelof	M.S. student, University of Toledo	yes
Summer Fellow	2006	Kyle Molton	M.S. student, MSU Fisheries and Wildlife Dept.	yes

## Appendix C

### **SAB Level Issues for all CIs**

During our review of CILER a number of issues came up that we believe are deserving of attention by the SAB. These are very briefly described below.

- Task I funding from NOAA is insufficient to cover essential Education and Outreach functions required for CIs to thrive. Relatively modest increases could have a large effect on CI performance and the benefit NOAA derives from them. At CILER, for example the Director had to eliminate the position of Education and Outreach Coordinator and the postdoctoral program was funded with a one-time allocation made available from a specific university research project.
- Part of the challenge in funding CIs arises from the ambiguity as to whether funding—all or in part—of CIs by NOAA should be considered extramural funding or intramural funding. Many academics view funding for CIs as NOAA “funding its own” even though all the research funding for CIs supports university employees and infrastructure and a considerable fraction goes directly to university faculty members.
- The competitive award process established for CI renewal has resulted in more specific themes and perhaps less flexibility in changing themes once a new Cooperative Agreement has been established. Losing the flexibility to adapt thematic focus as required would be detrimental to the CIs and to NOAA.
- In recent years the NOAA competitive programs like CPO (Climate Program Office) and COP (Coastal Ocean Program) have funded CI investigators under their CI’s Cooperative Agreement through so-called “shadow awards”. These were abandoned last winter and since then official NOAA policy is that CI’s cannot receive funding from competitive programs under their pre-existing Cooperative Agreement, only through separate awards. This is highly detrimental to faculty involvement in CI’s and to regional CI’s fulfilling the role they were designed to fill of bringing together diverse multi-institutional capabilities.



## Appendix D

### Science Review Panel Biographies

**Dr. Jerry Schubel**, Chair

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Dr. Schubel has been President of the Aquarium of the Pacific since 2002. He is President Emeritus of the New England Aquarium, and from 1974-1994, was Dean of Stony Brook University's Marine Sciences Research Center. For three of those years, he served as the University's provost. Prior to 1994, Dr. Schubel was an adjunct professor, research scientist and Associate Director of The Johns Hopkins University's Chesapeake Bay Institute.

Schubel has worked throughout his professional life at the interfaces of science, management, and policy on issues dealing with the coastal ocean. He has published more than 200 scientific papers and has written extensively for general audiences. He chaired the National Sea Grant Review Panel, the National Research Council's Marine Board, and has served on numerous NRC committees. He is a former member of EPA's Science Advisory Board, a member of the NOAA Science Advisory Board, and a member of the Science Advisory Panel for California's Ocean Protection Council. He served on the Census of Marine Life U.S. National Committee and the National Science Foundation's Education and Human Resources Advisory Committee. He chaired the Ocean Research and Resources Advisory Panel (ORRAP).

Dr. Schubel holds a Bachelor of Science degree from Alma College, Alma, Michigan; a Master's degree from Harvard University; and a Ph.D. in oceanography from Johns Hopkins University. He received an honorary doctorate from the Massachusetts Maritime Academy in 1998.

**Dr. Barry Lesht**

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312-413-3176

Dr. Barry Lesht is currently Senior Environmental Scientist with CSC, Inc. Dr. Lesht also holds appointments as Adjunct Professor in the Department of Earth and Environmental Sciences at the University of Illinois at Chicago and Adjunct Associate Professor in the Department of Geosciences at Western Michigan University. His recent research focuses on the application of satellite remote sensing to describe and understand biological, geological, and physical processes and climatic trends in the Great Lakes. Additional research interests include assimilation of satellite observations into dynamic models of environmental processes, application of non-parametric statistics to environmental data, and field study of physical processes at the sediment-water interface. Before joining CSC, Dr. Lesht held positions of Assistant Physicist, Physicist, Associate Director, and Director of the Environmental Research Division at



Argonne National Laboratory. He holds a B.A. in Earth Sciences from Washington University in St. Louis, an M.A. and Ph.D. in Geophysical Sciences from the University of Chicago as well as an MBA from the University of Chicago Booth School of Business. Dr. Lesht was a postdoctoral fellow at the Graduate School of Oceanography at the University of Rhode Island and a National Research Council Fellow at NOAA's Atlantic Oceanographic and Meteorological Laboratory. He has served on several national and international panels dealing with Great Lakes issues as well as on review committees for the U.S. EPA Mid-Continent Ecology Division and U.S. EPA Large Lakes Research Station. Dr. Lesht is an Associate Editor of the Journal of Great Lakes Research and former Secretary and Treasurer of the International Association for Great Lakes Research. That Association honored his contributions to the Great Lakes with its Anderson-Everett Award in 1994.

Dr. Hugh MacIsaac

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Dr. Hugh MacIsaac is a professor and Fisheries and oceans' Invasive Species research Chair at the Great Lakes Institute for Environmental Research at the University of Windsor. Hugh directs the Canadian Aquatic Invasive Species Network, a consortium of 34 faculty members from universities and Fisheries and Oceans' labs, who work on projects pertaining to aquatic invasive species. His interests are in vector and pathways of invasive species introductions. MacIsaac has a BSc from the University of Windsor, a MSc from the University of Toronto, and a PhD from Dartmouth College.

**Dr. Peter B. Ortner**

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Dr. Peter Ortner is a member of the faculty in the Department of Marine Biology and Fisheries (MBF) of the University of Miami, Rosenstiel School of Marine and Atmospheric Science and serves as Director of the Cooperative Institute for Marine and Atmospheric Studies. He has been an adjunct member of the UM faculty (both RSMAS and Law) for more than three decades. Dr. Ortner's research interests include: physical regulation of biological systems; coastal zone management, ecosystem restoration, and fisheries management science and policy; coastal ecosystem effects of hurricane landfall; coastal ecosystem implications of regional and global climate change and climate variability; fisheries oceanography; marine sources of biogenic volatiles and radiatively important trace substances; and zooplankton sampling technology, particularly optical or acoustic and volunteer observing ship technology development. Dr. Ortner has published more than 80 referred articles and more than 20 grey literature reports or workshop proceedings. He has also served in a variety of managerial and research positions in NOAA, most recently as Acting Director and Chief Scientist of OAR's Atlantic Oceanographic and Meteorological Laboratory and previously as Director of Special Programs in the Ocean Sciences Division of the Geosciences Directorate for NSF. He is the Chair-Elect of the University Oceanographic Laboratories and Facilities (UNOLS) Council.

Heather Stirratt

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Heather Stirratt is the Great Lakes Regional Coordinator for NOAA's National Ocean Service (NOS). As an employee of NOAA's Coastal Services Center, Ms. Stirratt is working to better integrate NOS programs and enhance connections with customers and partners in the Great Lakes region. Currently, she is focusing on the following programmatic areas for the Great Lakes: habitat restoration, mapping, marine spatial planning, commerce and transportation, community resiliency, and climate change. Ms. Stirratt currently serves as the NOAA NOS representative to the NOAA Great Lakes Regional Team, NOAA representative to the Great Lakes Regional Collaboration Habitat and Species Working Group, NOAA representative to the International Joint Commission's Adaptive Management Working Group, NOAA representative to the Lake Superior Lakewide Management Working Group, and Chair of the NOAA Great Lakes Climate Working Group.





