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National Sea Grant Advisory Board Semiannual Meeting
Wednesday, February 11 and Thursday, February 12, 2009

Consortium for Ocean Leadership
1201 New York Ave., NW
Washington, DC

Tuesday, Feb. 10

Arrive in Washington, DC

6:00 PM, John A. Knauss Marine Policy Fellowship reception, United States Botanic Garden, 245 First Street, S.W., Washington, DC, 20024.

Wednesday, Feb. 11, Consortium for Ocean Leadership

8:30 – Call to Order – R. West, Advisory Board Chair

- Opening of Meeting
- Roll Call
- Review of Day's Activities/Approval of Agenda
- Introductions
- Chair's Introductory Remarks

9:00 – NSGO Director's report, L. Cammen

10:00 – Report of the Sea Grant Futures Committee - Report and Discussion, J. Harris

10:30 – Break

10:45 - Report of the Sea Grant Futures Committee (con't.) - Report and Discussion, J. Harris

11:15 – Regional Collaboration and Engagement in NOAA – L. Furgione, Assistant Administrator, Office of Program Planning and Integration

11:45 – Opportunities for NOAA/Sea Grant in a Changing Landscape, M. Davidson, Director of the NOAA Coastal Services Center

12:15 – Working Lunch, Update on Ocean Issues, K. Wheeler, Director of External Affairs, Consortium for Ocean Leadership

1:15 – State of Sea Grant Report (2010) - Report and Discussion, R. West and J. Woeste

1:30 - Report of the Research Review Committee (con't.) – Report and Discussion, R. Duce

3:00 - Break

3:15 – Sea Grant Communications Committee – Report and Discussion, F. Kudrna

4:15 - Oceans and Atmospheric Research in a new Administration, Presentation and Discussion – R. Spinrad, Assistant Administrator, Oceans and Atmospheric Research

5:15 – Adjourn

6:00 – Reception & Dinner, Tuscana West, 1350 I Street, NW

Thursday, February 12

8:00 – Coastal trends and issues: Implications for Sea Grant, M. Glackin, Deputy Under Secretary

9:00 – Review agenda and re-cap actions from previous day, R. West

9:15 – NOAA Climate Services: Opportunities for Sea Grant, C. Koblinsky, Director, NOAA Climate Program Office

10:00 – Break

10:15 - The View from the Office of Science and Technology Policy, D. Walker, Assistant Director for Environment, Science Division

11:00 – Sea Grant Association report, G. Grau, President

12:00 – Working Lunch, begin Administrative session (closed to public)

- Work schedule, assignments
- Board’s budget
- Expiration of terms/need for new members
- Nominations process and recommendations
- Fall meeting

3:30 Adjourn

SHAPE THE FUTURE OF OCEAN, COASTAL AND GREAT LAKES RESOURCES



The Sea Grant Association
cordially invites you to join us for
The John A. Knauss Fellowship Program
30th Anniversary Celebration
February 10, 2009
US Botanic Gardens
6:00 - 8:00 pm

Sea Grant Association



John A. Knauss

Fall 2008 National Sea Grant Advisory Board Meeting
November 11, 2008

Chair's Report – R. West

- Robin Alden has resigned.
- LaDon Swann (MS/AL) will call in later today to discuss regional team efforts.

NSGO Director's Report – L. Cammen and S. Grimes

- Pressing issues: Climate change, economic downturn
- Sea Grant update: Declining budget, increased demands from OMB/DOC (reporting, accountability, national impacts, deliverables, outcomes, etc). Pressure to tell a national story—integrate 32 programs. Budget: CORE funding maintained at 2005 level but there were cuts in other funding efforts. Some funding set aside for focus teams. Fund Sea Grant Academy (training for new extension agents). NSGO will try to set aside small funding for collaboration with NOAA regional teams.
- CORE will maintain level funding, there will be no PRP review in 2009, FEE will phase out over the next few years, and Alabama SG funds will be held in reserve.
- Budget changes mean: Reductions in:
 - Representation, advocacy in NOAA and Congress
 - Advocacy for role and scope of program
 - National program and partnership development
 - Staff, travel, Board budget
- NOAA transition: Current head is Dr. William J. Brennan. On January 20, 2009 Mary Glackin will take over until a new Head of NOAA is appointed. NSGO needs a transitional document.
- Coastal Strategy (Sami Grimes lead): Response from OMB is now undergoing NOAA clearance. Emerging priorities for NOAA coastal programs are: Hazards and climate change ('09-'10), Competing Coastal Uses and Habitat Loss, and Coastal Pollution and Human Health Effects. The NSGO would like the Board to point out direction NOAA should be going with this.
- Coastal climate service likely within the next year but we're unsure how it will be structured. Jim Hurley will carry this through the end of the year and then hand it over to Mike Liffmann. A white paper on how Sea Grant can play a role in the climate service is in development. The NSGO is also talking with cooperative extension in the interior to integrate ourselves and come up with a joint approach.
- Engagement Strategy: NOAA is responding to SAB recommendations (March '09). Sea Grant is using this to push extension and outreach and reinforce concept of engagement and support from the inside. Sea Grant is taking a leadership role in this through the NOAA Engagement Executive Committee (see organizational chart in Cammen's presentation).
 - The SAB is forming a committee to review research side of this (Kudrna). When this happens, there will be a public notice seeking members for working group. Frank Kudrna will let everyone know when this occurs.
- NSGO Personnel: Mike Liffmann is replacing Jim Murray as Extension Leader/PO in the NSGO. Hiring of a Social science PO, Aquaculture PO and a possible replacement of Joe Brown (FTE) is in progress.
- NIMS: Responded to hundreds of recommendations for improvements, weekly updates, trainings for programs. Programs have begun to enter info themselves.
- PIE (S. Grimes) – Response to NRC recommendations. Designed to enhance SG national identity and let national planning lead state planning. Strategic plan with four

focus areas, but is flexible and able to be modified if need be. We are in the implementation process right now. When the implementation plan is done, it will be an appendix to strategic plan. National plan will measure progress and guide for program to align their outcomes and measure with those at the national level to help tell the national story. Plan alignment is occurring now and information should be coming in over the next few weeks. Once the implementation plan is finished, programs will need to develop/align their performance measures with those at the national level (happening next spring). State plans have never been approved at the national level before. The PIE document outline and strategic plan was sent to Hill last week. Plan doesn't have details of criteria. Sami Grimes is leading the evaluation criteria working group to work on the details.

- Yearly: Annual reports/self-evaluation, NSGO fall review – Board observes
- Every 2 years: State of the SG – Board responsibility
- Every 4 years: Site visits – Board members participate, performance review panel (PRP) – Board members participate
- Sami Grimes: (See powerpoint presentation)
 - Evaluation Criteria Working Group met in July 2008 to develop criteria and make recommendations. Criteria were to be simple and transparent and descriptive, not prescriptive. Distinction between PRP and site visits and no need to rank programs.
 - Comments on the report are due November 20, 2009.

Comments:

- Sea Grant needs to redefine itself with new administration and break out of funding mold. Get into investment in alternative energy (Harris).
- Tidal energy could be particularly beneficial. However, how do we take Sea Grant in a new direction when new strategic plans might take us in another direction? (Weis)
- The Board should form a small task committee to develop creative ideas for a new direction (Duce).
- Concern over congressional earmarks and affect on SGA and overall program. Not a constructive way to go about getting additional funds. How do we communicate this to Congress? (Anderson)
- Board could go back to Senator's office and discuss the fact that the whole program needs to grow, not just one program. There needs to be some kind of response. Board could form a group to discuss this and come up with a recommendation? (Woeste)
- Board could come up with a statement by 11/13) for one of the members to take to Senator Shelby's office (West).
- Evaluation Process: A half-day doesn't seem like enough time to write a review of a program.
 - The PO will help set up the review and the team will be well prepared and ready to write by that time.
 - There will be standardization of reports.
- Please send comments to Leon and Sami (Cammen).
- A copy of Leon's Powerpoint will be sent out to the Board.

SGA Report – P. Anderson (See hand-out)

- Reauthorization a success.
- Retreat: included short and long-term advocacy plans. Dear colleague letters as well as plans to partner with NSGO to have a constant presence on Hill.

- Need to tackle the challenge of being brief and concise when communicating what Sea Grant is to new administration/transition team. Thinking about focusing on priorities (economy, education, etc) and on what Sea Grant can deliver rather than on what we've done in the past. We'll need some background for credibility but our message shouldn't focus on that.
- SGA has concerns about NIMS, and relying on it to communicate what Sea Grant does.
- Network Advisory Council is moving along nicely.
- SGA membership – lot of new members. Leadership – SGA President serves for 6 years, Gordon Grau (HI) will take over next year. Anderson will work with Grau in the future. New President will be announced later this week. The SGA Spring meeting will take place February 9-10, 2009. The Reception will be at the Botanical Gardens on the 10th (also the 30th anniversary of Knauss fellowship)
- The Board offers a unique lens for Sea Grant and the network needs your advice and ideas (critical thinking and creativity).
- NOAA outreach: SGA and the Board should have complimentary message – it would be good to work on advocacy/outreach together (with NOAA and Congress).

Comments:

There isn't a national identity. West:

- Sea Grant needs a mechanism to keep updated on congressional caucus activities. We also need to improve visibility of NOAA (not just Sea Grant) (West).
- For a caucus to be successful, there needs to be a strong constituent base to push them forward (Harris).
- We need to know where Knauss fellows are in Congress (Weis).
- Many fellows don't know Sea Grant well enough to sell it to their congressional offices (Byrne).
- Sea Grant's elevator message needs to focus on what the program can do that no one else is doing (Rabalais).
- Land Grant has the Peter McGraw engagement award – each university can submit a proposal—Anderson might want to bring this up with SGA because none of the proposals so far have highlight coastal issues. This is an opportunity to do outreach, not just inreach. Might want to send delegation to state offices (with one message) instead of inviting offices to briefing (they might not come) (Byrne).

Report of the Research Review Committee – R. Duce

- Data problems: Not exactly sure how much has been spent on research. Only CORE funding was included in this report. Program development funds are counted as management funds. Only one project type as allowed (projects with research and extension only counted as one or the other).
- Percent spent on research has gone down slowly from 1995 to 2008. Extension has increased, as has administration.
- Dollars have remained roughly steady around \$20m (until 2006) but buying power has decreased. Research publications have also begun to decrease.
- Board Research Committee is charged with determining long-term implications, reasons for decline, do we still need to focus on research, how to evaluate research performance, can the decline in research funding be reversed and if so, how?
- First meeting was in Sept. 2008 in Silver Spring to identify approach:
 - NIMS research data being verified
 - Each committee member responsible for a charge
 - Questionnaires have been sent to SG Directors and NOAA Lab Directors

- Committee members are synthesizing responses.
- Considering interviews with congressional and OMB staff.
- Responses from NOAA offices not as detailed as responses from Sea Grant directors (though most saw Sea Grant as a partner). It's too early to give a generalized response (although there seems to be general discontent with NIMS). Synthesis of responses should be complete by January 2009.

Comments:

- Recommendation that the committee sit down with Dr. Spinrad to discuss this report sometime after the synthesis is complete and figure out how Sea Grant fits into NOAA research plan (West).
- NIMS data is tracking proposed research, not actually realized research. Even though data isn't 100% correct, there shouldn't be much change in the trends. In terms of perceptions, NOAA research council was briefed last week on this research study and Sea Grant in general. They want to see the final report and they suggested that we brief SAB as well. The budget offices also want to hear about it. Sea Grant research tends to focus on smaller projects and doesn't fit in with big, noble prize winning OAR research. That doesn't mean Sea Grant research isn't aligned with what NOAA is doing (Cammen).
- OAR has annual rewards for outstanding research papers (limited to federal employees). Sea Grant papers are only eligible if an OAR employee is on the paper. Could the Board carry that message that OAR should change this rule to include Sea Grant? (Cammen)

**Motion to approve minutes from conference calls and last meeting
Byrne motions - Stubblefield seconds – Approved.**

Stakeholder's Session

- Value of Sea Grant:
 - Stakeholders draw heavily on Sea Grant expertise/advice. In terms of the state of Louisiana, people don't fully understand how important Sea Grant and NOAA are to coastal populations. Louisiana is going to have to learn how to live smarter and NOAA and Sea Grant are ideally suited to aid in this. A policy think-tank would be useful to communicate this to coastal populations.
 - SG provides critical link—research to communities.
 - SG specialists are trusted by communities (EPA rotated personnel out every few weeks). Link to university research lends credibility.
- How do you communicate the value of Sea Grant:
 - Communicate it to the people you're serving—get them to support you. Remind them that it's Sea Grant and NOAA providing the funding.
 - Make sure congressional offices know you're a resource.
- Do constituents realize Sea Grant is part of NOAA?
 - No. Put the Sea Grant/NOAA logo on everything.
 - Direct beneficiaries know, but others don't.
 - Sea Grant is more often associated with LSU, not NOAA.
- Louisiana is somewhat short-sighted as to what kinds of investments need to be made to prepare for hazards. Recovery money is too late—damage has been done. Sea Grant is useful because it can share impacts/info/experiences from other states dealing with similar issues.
- Sea Grant is essential to have around immediately after a storm (need more people). There is a lot of info constituents need immediately after a storm. Sea Grant could be particularly useful by providing post-storm assessments of impact.

- The State of Louisiana could do more to fund Sea Grant.
- If you could change NOAA, how would you do so?
 - More externalization. Easiest way to contact NOAA is still through Silver Spring. NOAA needs to be more integrated into the community.
- The Sea Grant workforce has to handle multiple issues and adapt to changes.
- How do you weigh the pros and cons of land use options?
 - Sea Grant can help make these decisions based on economic/demographic assessments and then work with the state to implement decisions in a wise manner. Help people understand science-based consequences and if decisions are made, how to minimize negative impacts.
- Sea Grant's involvement is needed from the very beginning at all levels of development.
- If Sea Grant loses the research piece, it will lose a bit connection to universities/credibility.
- There needs to be an increased combination of federal and state resources for Sea Grant. If state and federal match, it's a shared investment. If it's lopsided, then the state treats it as a freebie.

NOAA's GOM regional efforts and role including follow-up to SAB Extension, Outreach and Education report – L. Swann

- Background: Regional teams started 2-3 years ago. Buck Sutter involved SG in NOAA Gulf Regional Team. When the SAB came out with recommendations, LaDon Swann contacted them to express willingness to work with them under the regional framework. Asked to put together a regional workshop on engagement (Jan-Feb 2008) and again in August (2008) to bring in NOAA folks (80 people across the Gulf), NERS, NWS, all line offices. Panel of 17 constituents from mainly MS/AL participated in a day and a half meeting. Sutter then asked Sea Grant programs to develop coordinating team with reps from each Sea Grant program in the region. At this point, Sea Grant simply needs to be persistent and show them we're engaged. Involvement revolves primarily around education and outreach. Funding is limited, roughly \$50K (budget for all NOAA regional teams money comes from PPI) and other in leveraged funds.

Comments:

- NOAA leadership on this particular team is perhaps a major reason why it has worked in the Gulf and not so much in other regions. Other regional teams have taken the position that if you aren't an FTE, you don't belong at the table (Cammen)
- The SAB might want to hold a meeting in the Gulf to demonstrate how regionalization is taking place here. You might want to work together to get the SAB invited to Louisiana (Kudrna).
- Gulf programs already work together well. There has been ample opportunity to bond over hazards and shared concerns (Liffmann).
- We're working with other groups to kick in funding and could get significant impacts in 2-3 years (Swann).
- The SAB is working on pilot project in the Gulf – hiring Sea Grant staff to assign to various line offices in the region, helping to get their products to constituents. This probably can't be done without adding resources. And each region needs someone completely dedicated to regional efforts (Swann).
- Suggest adding "programmatic activities" link on NSGO website with link to EOP website (Stephan).
- Workshops cost \$10K; similar workshops in other regions could be very beneficial (Swann).

- Not sure which line offices will house regional teams (Cammen)
- What should the board do with all this? Make a statement describing the interaction in the Gulf and presenting that as something we would like to duplicate in other regions that Sea Grant serves (Cammen).

Coastal Issues in Louisiana – G. Graves, C. Wilson and N. Rabalais

- Can't replicate access through Louisiana to other parts of the country
- Important to the nation for a variety of reasons.
- State's CZMA plan has not been updated since this Master Plan. CZM plan should be updated next year and expand geographical area.
- Very positive experience with Sea Grant fellows on the Hill, but I don't think the average hill office is aware of capacity of SG network and availability of SG to provide advise and information. Fellows provided great access to SG network for hill offices. Ease of access and awareness of info is very important so having fellows in the office is key (Graves).
- Cooperative extension has been very involved but there is no national initiative to deal with LA problems (Rabalais).

No public comment

Motion to Adjourn - Approved

November 13, 2008

- Request for information from Chuck Wilson to promote Ocean Commotion in upcoming newsletter (Schmitt)
- Concern that the Sea Grant logo wasn't apparent enough at the Ocean Commotion exhibit (Bell)

Closed Session Begins

- Board will attend the Knauss reception in February 2009.
- Interest in having more meetings in the field rather than the program office.
- Comments on Duce Research Report?
 - Committee has a list of 10 people (NOAA and outside agencies) to interview and will try to do interviews during week of next Board meeting in February.
 - The committee will conduct all interviews by anyone can join. Committee will let the Board know when interviews are scheduled.
 - The purpose is to get impressions of SG, why funding has decreased, etc.
 - Research committee meeting will be Hawaii.
 - West will report to SGA on status of the research committee and get feedback from SGA on draft evaluation report.
- **HCE Update – J. Weis**
 - First meeting in June 2008. Developed 3 main goals.
 - Focus Teams help NSGO develop implementation plans and identify progress and gaps. They will also review annual reports every year to see if SG is on track, make suggestions if we're not, and develop synthesis documents.
 - Each focus team will be given 25K (Murray).

Comments:

- There is a re-competition for two of the NURP centers in the Atlantic—has SG been asked to participate? (West)
 - Yes, SG expects to be involved in the center. A few programs have been included in some of the proposals (Cammen).
- Jeff Stephan will forward summary of Arlie Meeting to new panel meetings.
- The point of focus teams is to demonstrate that SG is a national program. The details (outcomes, performance measures, etc.) are developed in the national implementation plan. It was sent out to the focus teams for review. Sami Grimes is working on decreasing the number of performance measures and cleaning up the document, which should be done by end of December. Programs are also developing more detailed measures, outcomes, etc. that will roll up into national plan. The next big step is the development of state strategic plans (Cammen).
- The final implementation plan will be complete by the end of December. Evaluation criteria should be done before the holidays as well. The draft has gone out to the network for comments (Cammen).
- What can panel do in the near-term?
 - The second draft of national implementation plan will be out shortly. It will be compressed, with fewer performance measures. Please take a close look at these. Also, Evaluation criteria report—please review this and provide comments within the next week or two (Cammen).
- Cammen will go to the hill next month to talk about the new strategic plan and PIE document.
- The first evaluation under this new system will take place in the fall of 2009. NSGO will send out an announcement shortly.
- **Rollie Schmitten volunteers to participate in the SSS focus team.**
- **Harris and Simmons volunteer to participate on the SCD focus team.**
- **Evaluation Criteria**
 - Board and SGA need to submit feedback on evaluation criteria.
 - Evaluation is against what programs proposed to do and programs that perform better should be rewarded. Rankings are out, but we are still going to have a formal evaluation system. NSGO is not certain how this will translate into funding. The funding process should be reasonably transparent. There will be some rules that everyone will know. It won't be left up to the Director (Cammen).

Procedures Manual

- Received comments from the Board and made some of them. Would like to make final changes during the meeting and then approve the document. The new manual is consistent with new reauthorization (Bell).
 - Kristin or Sami can double check to make sure that the procedures manual matches the reauthorization language.
- Board needs to address minimum participation and level of involvement with individual SG program in particular. It needs to be consistent with the FACA act.
 - Details shouldn't be in the preamble (Rabalais).
 - Members can serve two 4 year terms plus one year extension. Leon will be asked to extend current members for another year (Sept. 08-09). If it's necessary to keep someone beyond that the Board is allowed to vote to extend for another year (West).

- It takes awhile to get a replacement—there needs to be flexibility (Bell).
 - That was changed in the new legislation—nine years is now the max (West).
- Is a board member allowed to serve on a SG advisory committee?
 - No, as noted on page two of procedures manual (West).
 - The Board discussed this in the past and it was approved with the caveats that the member can't participate on a PAT of that program (Stephan).
 - Board reached consensus that direct involvement isn't okay—reflected in the minutes.
 - The Board can do the minimum per the legislation or it can go beyond that and set its own additional rules.
 - Concern that there is perceived conflict of interest—prohibiting direct involvement might make the Board more credible. Board might not have the man power to recuse ourselves in evaluation processes. Whatever is decided needs to be in the procedures manual.

MOTION: Propose an amendment that would prohibit any individual who serves as an advisor to a SG program from serving on the Board (Rabalais). Second: Vortmann. Failed (5 in favor, 7 opposed).

MOTION: To approve procedures manual with amendments consistent to current legislation (Kudrna). Second: Byrne. Approved.

Board Assignments Review:

- By law, the Board has to decide on the Board's budget. In December, West will meet with NSGO to determine budget—there will be reductions.
- Board participation in focus team activities will come from the Board's budget, not the focus team budget.
- Given budget constraints, the Board should look at the stipend for members (Byrne).
- What should we continue?
- Board needs to let the Chair know what assignments to keep and what to get rid of due to budget constraints.
 - Could do more virtual meetings to cut down on travel.
 - PRP will also be very expensive.
- Old committees:
 - Committees were ad hoc because there was money—they were not standing committees.
 - The executive committee has too many people on it and isn't really necessary (West).

Nomination process:

- Please continually provide names for potential Board nominees (West).
- Need more diversity and someone from the Great Lakes.

Next Steps for the NSGAB – R. West

- SG has a recognition problem. Board should find out whether this is a problem with communication or the model.
 - Constituents need to reach out to hill.
 - Better media relations.
 - Are we trying to be too much everyone—should we focus are message?

- As for the model, research is going away, is that impacting the model's success?
- Does the Board need to get the word out to next administration that it's not being recognized within NOAA and therefore needs to be moved, renamed, or repackaged?
- One problem in the past has been mixed messages. We've done better this past year with a unified approach to reauthorization (Kudrna).
- There also needs to be improved identification of Sea Grant. Jackets would probably be helpful.
- Board will form two committees; one to figure out how to promote SG and another to figure out what's wrong with the model.
- Futures Committee:
 - Harris (Chair), Stubblefield, Vortmann, Simmons, Weis, and possibly Gordon Grau (Hawaii Sea Grant).
- Communication Committee: Kudrna (Chair), Woeste, West, Stephan, Rabalais.
- There needs to be someone in the NSGO to coordinate all the communicators to help with advocacy (West).
- First Futures Subcommittee meeting will be during the research committee meeting in Hawaii in January, where they will come up with an agenda for discussion in February. Simmons, Heath, and West will join them in Hawaii.
- Both groups will report out to panel in February.
- West and Woeste will go to hill and visit with Senator Shelby.
- Suggestion that the Board take a role in the climate change issue (Murray). NSGO needs advise from the Board on defining SG's role in NOAA climate services program.
 - SG might want to focus only on extension in terms of the climate program—don't try to do too much (Kudrna).
- February there will be a discussion by West, Woeste, and Murray on how to handle 2-year report.

Future Meetings/Events:

- Feb 10-11, Knauss event (reception on Feb. 10).
- Summer/fall 09 meeting – August – dates TBD.
 - Perhaps on the west coast. Murray and West will talk to Penny Dalton to see if it's a possibility.
- Panel to meet February 11 and 12th. Venue to TBN. Two committees will report back. West to present financial plan for next couple of years.
- Leon and a few Board members plan to visit Mary Glackin later next month to keep SG on the radar.

Other business:

- SG fellows don't know enough about SG.
 - Some part of the Knauss selection process that requires potential fellows to demonstrate some knowledge of SG (part of their essay)?
 - At the Assembly meeting in Seattle, there was talk of requiring fellows to spend a week with host office.
 - Chair encourages new panel members to serve on selection team for incoming fellows.
 - Request that West add Knauss issue to discussion with SGA later this week.

MOTION to adjourn: Kudrna. Second: Stephan.

NOAA National Sea Grant College Program



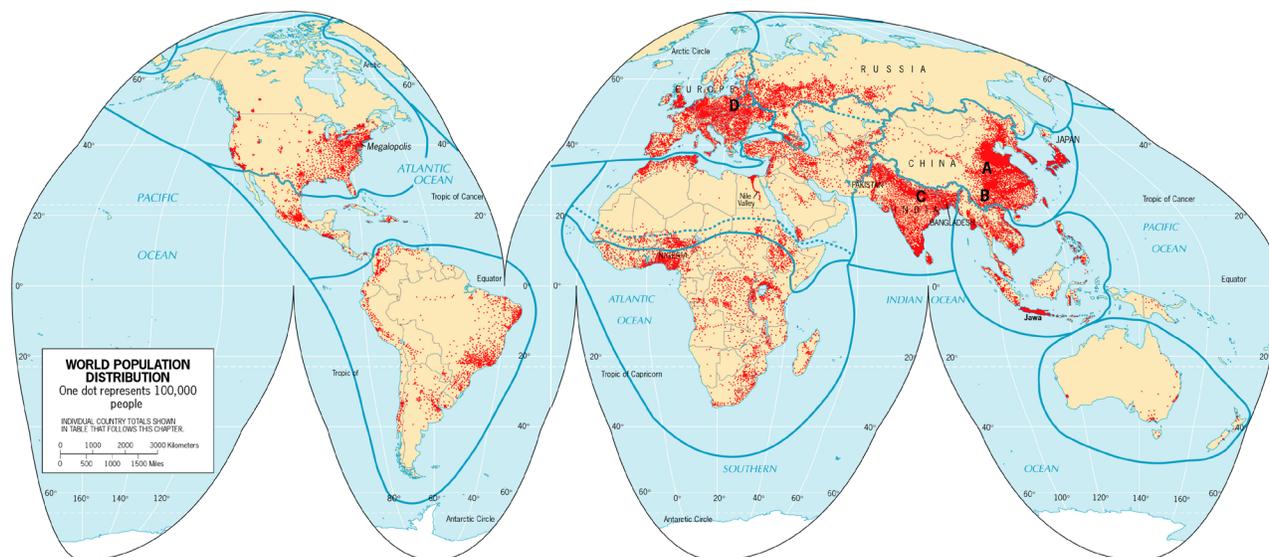
Strategic Plan 2009 — 2013

Meeting the Challenge



Sea Grant

World Population Density



Around the world hundreds of thousands move to the coast every year, making it increasingly important that we find adequate ways to balance human social and economic activities. Along with other coastal nations, America must use its coastal land, water, energy, and other natural resources in ways that preserve the health and productivity of coastal ecosystems.

Introduction

America's coasts are invaluable economic, cultural and environmental resources that are at risk in this first decade of the 21st century. Increased rates of climate-related environmental changes have made coastal communities vulnerable in ways never before imagined. Overfishing and habitat degradation have contributed to declines in many U.S. fisheries. Heightened concerns about human health and safety are bringing greater attention to port security, coastal infrastructure deterioration, and seafood safety. As hundreds of thousands more Americans move to the coast every year, it is increasingly important that we find adequate ways to balance human social and economic activities. America must use its coastal land, water, energy, and other natural resources in ways that preserve the health and productivity of coastal ecosystems and optimize benefits to U.S. citizens.

According to the U. S. Commission on Ocean Policy report, the U. S. coastal zone contributed \$4.5 trillion to the U. S. economy in 2005. The challenges we face on our coasts have significant implications for the nation as a whole, as well as for the people who live and work in coastal communities. Leaders at all levels—national, state, and local—must work with citizens, private sector businesses, and other organizations to utilize our intelligence, ingenuity, and financial resources to turn a time of potential crisis into a time of opportunity. As individuals and as a nation we must take immediate steps to educate ourselves about the magnitude of the threats we face and respond to these in bold and creative ways.

The world around us is changing. Globalization of technology, people, finance, products, and decision-making means factors beyond our national borders are affecting the vitality of U.S. coastal communities and economies. Businesses are functioning in an increasingly competitive global economy and many policy decisions are taking place at an international level. The need for collaborative problem-solving at the state, regional, national, and international levels has never been greater.

Severe challenges present the greatest opportunities for change, and Sea Grant is prepared to respond. One of the demonstrated strengths of individual Sea Grant programs is the ability to move rapidly to mobilize universities and other partners to address challenges across the country and around the world. Likewise, one of the strengths of the Sea Grant network is the ability, through the organization's coordinated state and regional structures, to implement the national goals of the National Oceanographic and Atmospheric Administration (NOAA) at local, state, and regional levels.

At this time of great risk and opportunity, the Sea Grant network and its individual programs will address the goals set forth in this plan with innovation and creativity, reflecting the particular needs of their own states and communities, as well as the nation as a whole.



SEA GRANT VISION AND MISSION

The National Sea Grant College Program envisions a future where people live along our coasts in harmony with the natural resources that attracted and sustain them. This is a vision of coastal America where we use our natural resources in ways that capture the economic and recreational benefits they offer, while preserving their quality and abundance for future generations.

This vision reinforces the vision articulated in NOAA's 2006-2011 Strategic Plan: “. . . an informed society that uses a comprehensive understanding of the role of the oceans, coasts, and atmosphere in the global ecosystem to make the best social and economic decisions.”

Sea Grant's mission is to provide integrated research, extension and education activities that increase citizens' understanding and responsible use of the nation's ocean, coastal and Great Lakes resources and support the informed personal, policy and management decisions that are integral to realizing this vision.

Sea Grant advances NOAA's mission “. . . to understand and predict changes in Earth's environment and conserve and manage coastal and marine resources to meet our Nation's economic, social, and environmental needs.”

ESSENCE OF SEA GRANT

Sea Grant was created almost 42 years ago to unite the academic power of the nation's universities with a wide range of public and private sector partners. Through these partnerships, Sea Grant provides integrated research, outreach, and education programs aimed at creating tangible benefits for ocean, coastal and Great Lakes environments and communities. Located within NOAA, Sea Grant brings together government, universities, and citizens living and working in America's coastal and Great Lakes states to use their resources to respond to problems and opportunities in these complex and dynamic environments.

Sea Grant is a national network comprised of the National Sea Grant Office, 32 university-based state programs, the National Sea Grant Review Panel, a National Law Center, a National Sea Grant Library, and hundreds of participating institutions. This network enables NOAA and the nation to harness the best science, technology, and human expertise to balance human and environmental needs in coastal communities. Sea Grant's alliance with major research universities provides access to more than 3,000 scientists, outreach specialists, educators, and students. Sea Grant's university-based programs are fundamental to the development of the future scientists and managers needed to conduct research and to guide the responsible use and conservation of our nation's coastal, ocean and Great Lakes resources. With its strong research capabilities, local knowledge, and on-the-ground workforce, Sea Grant offers NOAA and this country an unmatched ability to identify and capitalize on opportunities, and, to generate practical solutions to real problems in real places.

Sea Grant is required to match every \$2 of federal funding with \$1 of non-federal funds; many state programs far exceed this match. By leveraging additional money, Sea Grant expands the reach and effectiveness of NOAA and other partners in planning for and managing the future of America's ocean, coastal, and Great Lakes resources. The match required for federal funding also ensures that this country receives the maximum benefit from each dollar invested in Sea Grant.

SEA GRANT CORE VALUES

A strong set of core values has been the foundation of Sea Grant's work from its inception. Sea Grant was founded on a belief in the critical importance of strong partnerships. The organization's partnerships with leading research universities, with other NOAA programs, and with a wide range of public and private partners at the federal, state, and local levels, have proven to be a highly effective way to solve problems and create opportunities. In addition, Sea Grant's integration of research, extension, and education activities is at the heart of its mission. As a pioneer in what is referred to as "translational research: from discovery to application," Sea Grant ensures that unbiased, science-based information is accessible to all.

The diverse capabilities of Sea Grant's state programs enable the organization to be creative and responsive in generating policy-relevant research and in disseminating scientific and technological discoveries to a wide array of audiences. Because it is science-based, non-regulatory, and has an established presence in local communities, Sea Grant is a trusted broker, working to increase coastal, ocean and Great Lakes literacy among decision-makers and the public as a whole. Sea Grant's commitment to these core values is vital to achieving the goals set forth in this plan.

SEA GRANT IN NOAA

The goals and strategies outlined in this plan incorporate many NOAA priorities: promoting the health of coastal ecosystems; increasing the accessibility and application of quality research to support wise decision-making; increasing the number of fish stocks managed at sustainable levels; and, expanding literacy about coastal ecosystems.

The urgent need for practical solutions to coastal problems requires coordination, cooperation, partnerships, and effective investment. Sea Grant provides NOAA with access to Sea Grant's university-based capabilities in order to achieve shared goals. The National Marine Fisheries Service-Sea Grant Joint Graduate Fellowship, with its programs in population dynamics and marine resource economics, is just one example of the importance and effectiveness of this partnership. Sea Grant also works closely with National Ocean Service coastal programs to set national priorities for coastal management and to ensure closer coordination of coastal activities. Numerous partnerships exist between Sea Grant and the National Weather Service on subjects such as climate change, ocean and coastal observing, and rip currents.



NOAA's Coastal Services Center, the Office of Ocean and Coastal Resource Management, the National Centers for Coastal Ocean Science, and Sea Grant, are working to integrate their efforts more effectively. The purpose of collaborative planning among these programs is to ensure that NOAA's coastal programs are focused on national priorities, and that their work is coordinated, outcome-oriented, and built around each program's strengths. Additional NOAA programs will be brought into this effort to create a more inclusive coastal enterprise. Two of the focus areas of this plan, sustainable coastal development and hazard resilience in coastal communities, are designed to advance these integration efforts.

PLANNING PROCESS AND STRATEGIC APPROACH

This five-year strategic plan establishes direction for the Sea Grant network to address critical national needs in coastal, ocean and Great Lakes environments. The plan capitalizes on Sea Grant's unique capacities and strengths, allows for flexibility and creativity on the part of state Sea Grant programs, and supports many of the priorities in NOAA's strategic plan.

The collective Sea Grant network brought its wealth of experience to the task of creating this plan. The planning process began with a review of the U.S. Commission on Ocean Policy Report and the U.S. Ocean Action Plan, the NOAA Strategic Plan, the Ocean Research Priorities Plan and Implementation Strategy, the NOAA 5-Year Research Plan, Sea Grant state strategic plans, and other recent coastal/ocean plans and reports that set national, state and regional priorities. To elicit input and guidance, a national stakeholder's workshop was convened in Washington, DC in July 2007, with representatives from NOAA programs, other federal agencies, and non-profit organizations that focus on coastal, ocean and Great Lakes issues. In addition, to obtain the benefit of a wide range of stakeholder viewpoints, state Sea Grant programs were asked to share the outcomes of recent stakeholder meetings, surveys, and regional research agendas and initiatives, and to poll their advisory committees. The Sea Grant network convened for Sea Grant Week in San Diego, CA in October 2007 to identify priority goals and strategies for this strategic plan.

Three cross-cutting goals and four specific focus areas emerged from the strategic planning process. These goals and focus areas reflect America's most urgent needs in the coastal, ocean and Great Lakes arenas, NOAA priorities, and Sea Grant's strengths and core values. This strategic plan provides a national guide for the work of the state Sea Grant programs. The state programs will also develop their own strategic plans that contribute to the realization of national goals, while reflecting the specific needs and priorities of their states and regions. In addition, all parts of the Sea Grant network will work together to create a national implementation plan to accompany this document, establishing measurable objectives that will be used to evaluate progress in achieving the national strategic goals.

Cross-Cutting Goals

Managing coastal, ocean and Great Lakes resources in ways that balance human needs with environmental health requires progress in three fundamental areas:

- We need better information about how coastal, ocean and Great Lakes ecosystems function and how human activities affect coastal, ocean and Great Lakes habitats and living resources;
- We need citizens who understand the complexities of coastal environments and the interactions between human use and the health of coastal ecosystems;
- We need management and decision-making processes that are based on sound information, involve everyone who benefits from the beauty and bounty of America's coastal resources, and include mechanisms to evaluate trade-offs between human and environmental needs.

To facilitate progress in these areas and to help the nation understand, manage, and use its coastal, ocean and Great Lakes resources wisely, Sea Grant has identified three cross-cutting goals central to all that Sea Grant does. The three goals reflect the value of Sea Grant's integrated approach to research, extension, and education. They provide the foundation of Sea Grant's work and are integral to the success of this five-year plan.



Cross-Cutting Goals

Goal

Sound scientific information to advance understanding of the nature and value of our coastal, ocean, and Great Lakes resources; to identify new ways to conserve and use these resources; and to support evaluation of the environmental impacts and socio-economic trade-offs involved in coastal decision-making.

Short-term economics often influence coastal decision-makers to make their decisions without understanding the long-term social, environmental, and economic consequences of their decisions. Ecosystem functioning and values, emerging economic opportunities, and the social and economic costs and benefits of various human activities need to be translated into factors understood by the general public in order for sustainable uses of coastal environments to become a reality. Sea Grant has a long history of generating cutting-edge research and supporting technological innovations related to informed conservation and use of coastal, ocean and Great Lakes resources.

Strategies

- Support research to generate the scientific, technical, and legal information needed to increase understanding of coastal, ocean, and Great Lakes processes; support the development of new businesses, products, tools, and technologies; and answer the most pressing questions related to coastal, ocean and Great Lakes resource conservation, use, and management at the state and regional levels.
- Play a leadership role within and outside of the Sea Grant network in increasing the amount of socio-economic research available to help decision-makers evaluate socio-economic trade-offs and assess risks to the future health and productivity of coastal, ocean and Great Lakes resources.
- Integrate, translate, and disseminate research findings and technological discoveries to the citizens, industries, and leaders who need them to capitalize on opportunities and make wise management decisions.

Cross-Cutting Goals

Goal

An informed public that understands the value and vulnerability of coastal, ocean, and Great Lakes resources, and demands informed science-based decisions about the conservation, use, and management of these resources, and a well-trained workforce that will make this a reality.

The 2004 U.S. Commission on Ocean Policy Report emphasized that restoring and sustaining our coastal, ocean and Great Lakes environments requires an informed citizenry that understands the value and vulnerability of these resources. We also need scientists, planners, developers, engineers, and people involved in all water-related enterprises who understand the interactions between human activities and ecosystem health. NOAA has made ocean and aquatic literacy a strategic priority. Sea Grant has been a leader in K-12, undergraduate, graduate, professional, and technical education in coastal, ocean and Great Lakes-related areas for decades. Sea Grant is committed to playing a leadership role in partnership with the NOAA Office of Education and others to advance coastal, ocean and Great Lakes literacy. This can be done by capitalizing on Sea Grant's strong university partnerships, and by using its education and extension capacities to develop educational programs for schools, professional education, and workforce training.

Strategies

- Advance coastal, ocean and Great Lakes literacy through formal and informal learning opportunities in our schools, museums, aquariums, and other educational forums, such as the on-line, digital collections of the Aquatic Commons and the National Sea Grant Library.
- Use Sea Grant's strong university partnerships to create new research and education opportunities in marine and aquatic science for undergraduate and graduate students and to develop information products and training opportunities that will help build the workforce capacity for coastal-related jobs and professions.
- Collaborate within NOAA and with other partners to build public awareness about critical ocean, coastal, and Great Lakes issues, using the integrated research, extension, education, and communication capacities of the entire Sea Grant network.



Cross-Cutting Goals

Goal

Decision-making processes that involve the full-range of coastal interests, that integrate efforts of public and private partners at the federal, regional, state, and local levels, and provide mechanisms for establishing common understandings and generating outcomes that balance multiple interests.

The continued migration of people to our coastal areas increases the complexity of coastal decision-making and creates greater potential conflict among users at a time when coastal decision-making remains fragmented and narrowly focused. Sea Grant's long-standing relationships with a wide variety of stakeholders in coastal communities and its reputation as a source of unbiased information enable the organization to play a leadership role in promoting effective information sharing, consensus building, and integration of efforts in the coastal arena. Sea Grant can enhance its effectiveness by working closely with other NOAA coastal programs through regional research alliances and by employing international, national, and regional ocean observation systems.

Strategies

- Use Sea Grant's research, extension, and education capabilities to encourage and support the creation of public decision-making processes that minimize overlap, maximize effectiveness, and provide an integrated response to coastal problems and opportunities.
- Build consensus on complex issues such as coastal land use, energy development, public access, invasive species control, and climate change impacts by supporting cutting-edge research, building broader understanding among various constituency groups, and convening diverse groups of stakeholders to work together to find common solutions.
- Strengthen partnerships to promote national, regional, and issue-related collaboration among federal and state programs and other partners in order to support more effective and integrated coastal decision-making.

These three cross-cutting goals have been a foundation of Sea Grant's work since it was established, and they are fundamental to success in the focus areas outlined in this plan. The more specific goals and strategies outlined in the focus areas build on these cross-cutting goals, generating the knowledge and creative solutions needed to address challenges and opportunities related to healthy coastal ecosystems, sustainable coastal development, a safe and sustainable seafood supply, and hazard resilience in coastal communities.

Focus Areas

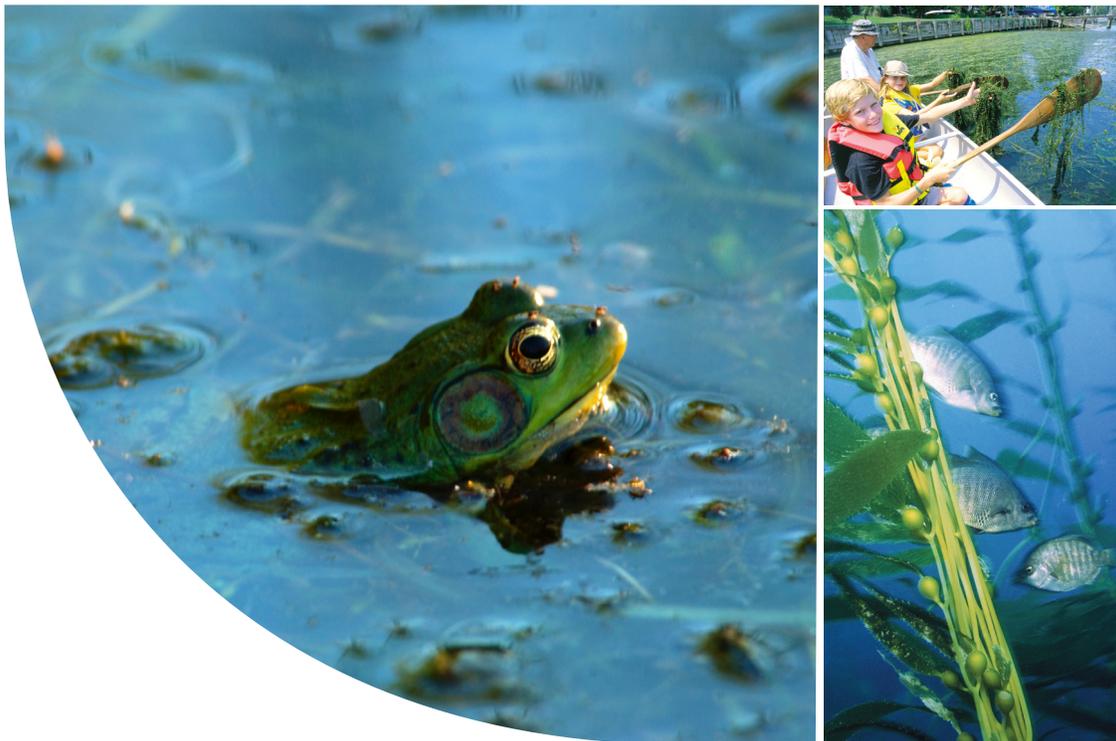
Over the next five years, Sea Grant will concentrate effort in four areas: **healthy coastal ecosystems; sustainable coastal development; a safe and sustainable seafood supply; and hazard resilience in coastal communities.** These four interrelated focus areas emerged from the strategic planning process as areas of critical importance to the health and vitality of the nation's coastal resources and communities. They respond to issues of major importance to NOAA, are consistent with the work of the NOAA coastal program integration effort, and are topical areas in which Sea Grant has made substantial contributions in the past and is positioned to make significant contributions in the future.

In each of the four focus areas, Sea Grant has identified goals to pursue and strategies designed to take advantage of its strengths in integrated research, outreach, and education, and its established presence in coastal communities. Understanding relationships and synergies across focus areas is vital to achieving the focus area goals. Sea Grant is one of many partners working to address these complex and interrelated issues. Understanding how activities in one area can support and complement other activities, and using partnerships to accomplish shared goals, are strategies inherent to Sea Grant, and will be central to achieving the goals outlined in this plan.



HEALTHY COASTAL ECOSYSTEMS

Healthy coastal ecosystems are the foundation for life along the coast. However, increasingly rapid coastal development, global overfishing, and other human activities are leading to water quality degradation, decline of fisheries, wetlands loss, proliferation of invasive species, and a host of other challenges that need to be understood in order to restore and maintain these ecosystems. Ecosystem functioning does not respect traditional political boundaries, and responsible management of ecosystems requires new kinds of thinking and actions. Sea Grant is a leader in regional approaches to understanding and maintaining healthy ecosystems, with planning efforts underway across the country to identify information gaps, set research priorities, and coordinate information and technology transfer to those who need it. Sea Grant has fostered efforts to address widespread problems such as invasive species that are found in geographically-dispersed areas, and has hired staff, shared among several state programs, to tackle these problems. Sea Grant’s regional consortia, nationwide networks, and international contacts are particularly well-suited to helping the nation address ecosystem health at the appropriate local, state, regional, national and global levels.



HEALTHY COASTAL ECOSYSTEMS

Goal

Sound scientific information to support ecosystem-based approaches to managing the coastal environment.

To realize the full potential of ecosystem-based management approaches, we need research that will lead to better understanding of present day conditions, basic ecosystem processes, the impacts of coastal and upland land uses on the health of coastal, ocean and Great Lakes environments, and the importance of healthy ecosystems to healthy fisheries. We also need to know more about how to transform our new knowledge and understandings into sound management principles and practices. Sea Grant will continue to build the scientific foundation needed by supporting research that provides accurate information related to ecosystem health and by accelerating the transfer of this information to coastal residents, resource managers, businesses and industries.

Strategies

- Conduct research on ecosystem processes, the relationships between coastal stressors—water quality degradation, contaminants, harmful algal blooms, invasive species, and wetlands loss—and long-term human and ecosystem health, and communicate this information to public and private planners, decision-makers and managers.
- Contribute to the development of baseline data, standards, and indicators to support ecosystem-based approaches to land use, water, fisheries, and other resource management, working with programs such as NOAA's National Centers for Coastal Ocean Science, ocean observing programs, and others.
- Develop methodologies that can be used to evaluate ecosystem-based management approaches to assess their effectiveness once they are in place, and to guide future management efforts, working with the National Marine Fisheries Service and other federal, state and local partners.

HEALTHY COASTAL ECOSYSTEMS

Goal

Widespread use of ecosystem-based approaches to managing land, water and living resources in coastal areas.

Achieving widespread use of ecosystem-based management approaches will require extensive efforts to communicate the effects of ecosystem degradation on natural resources, local economies, and human health to a wide range of audiences in ways that motivate them to respond. Sea Grant's strong research and extension capabilities provide scientific information and technical assistance on ecosystem-based management approaches. At the same time, the organization's outreach and education capabilities engage citizens in stewardship activities that promote healthy ecosystems. All these programs can result in regional and other collaborative approaches to address problems that extend beyond traditional geographic or governmental boundaries.

Strategies

- Work with partners within and outside of NOAA to develop data, models, and training activities that support ecosystem-based planning and management approaches, and share these with a wide variety of constituencies.
- Support the development of regional coastal observation systems and other collaborative efforts that advance our capability to predict the effects of human activities and environmental changes on coastal resources in order to take steps to mitigate their effects.
- Provide life-long learning programs for people of all ages that enhance understanding of coastal, ocean and Great Lakes environments and promote stewardship of healthy ecosystems.

HEALTHY COASTAL ECOSYSTEMS

Goal

Restored function and productivity of degraded ecosystems.

Past activities and events have led to deterioration of nursery areas for wild fish populations, loss of wetlands, closure of beaches and shellfish beds, and proliferation of invasive species. Sea Grant will help reverse these trends by identifying and assessing impaired ecosystems, and supporting the development of new policies, technologies, and processes that promote restoration of ocean, coastal, and Great Lakes ecosystems in ways that balance the needs of the natural systems with the needs of the humans who inhabit them. Sea Grant will use its nationwide network of extension, education and communication specialists to provide the technical assistance needed, and to share new information and technologies with local, state, regional, national, and international partners.

Strategies

- Support research to improve the effectiveness of ecosystem restoration and identify promising new restoration approaches and technologies.
- Invest in the development and dissemination of new information, policies, technologies and methods to address water quality degradation, prevent the introduction and spread of aquatic non-native species, and minimize the negative impacts of these on coastal, ocean and Great Lakes food webs.
- Provide technical support for citizens and businesses that need help with specific mitigation/restoration problems, giving them access to the latest information and techniques.

Sustainable Coastal Development

Coastal communities in America provide vital economic, social, and recreational opportunities for millions of Americans, but decades of population migration have transformed our coastal landscapes and intensified demand on finite coastal resources. The increase in population has resulted in new housing developments and recreation facilities, a new generation of energy development activities, port expansions, and other business activities. These changes are placing tremendous pressure on coastal lands, water supplies, and traditional ways of life. To accommodate more people and activity, and to balance growing demands on coastal resources, we must develop new policies, institutional capacities, and management approaches to guide the preservation and use of coastal, ocean and Great Lakes resources. Sea Grant will engage a diverse and growing coastal population in applying the best available scientific knowledge, and use its extension and education capabilities to support the development of healthy coastal communities that are economically and socially inclusive, are supported by diverse and vibrant economies, and function within the carrying capacity of their ecosystems.



Sustainable Coastal Development

Goal

Healthy coastal economies that include working waterfronts, an abundance of recreation and tourism opportunities, and coastal access for all citizens.

Marine resources and coastal amenities sustain local and national economies through fisheries and aquaculture, seafood processing, trade, energy production, tourism, and recreation enterprises. Urban ports and waterways continue to accommodate expanding international trade, staging areas for off-shore industries, growth in tourism and recreational boating, and changes in fishing fleets. At the same time, changing development patterns along the coast are threatening to displace traditional water-dependent industries and cut off water and beach access for coastal residents. Vacant industrial buildings and obsolete infrastructure facilities can be recaptured for new marine enterprises, public access, and planned mixed-use developments that bring enjoyment to residents and visitors alike. Sea Grant's long-standing relationships with coastal communities and industries make it ideally suited to provide information, tools, and techniques to support working waterfronts, responsible energy development, the development of accessible recreation and tourism activities, and adoption of sustainable development practices.

Strategies

- Support research and outreach activities that provide local communities with information and techniques to help them enhance their waterfront-related economic activities such as commercial and recreational fishing, aquaculture, tourism, and energy and port development, without diminishing the long-term health of the natural coastal environment.
- Support local, regional, and national efforts to preserve and increase public access to the nation's beaches and waterfronts through assessment of access needs, analysis of legal issues, and technical assistance.
- Use Sea Grant extension and education capabilities to engage coastal communities in planning processes that support the efforts of community leaders to identify and pursue sustainable economic development policies and programs.

Sustainable Coastal Development

Goal

Coastal communities that make efficient use of land, energy and water resources and protect the resources needed to sustain coastal ecosystems and quality of life.

The biggest challenge facing many coastal cities and towns today is how to manage growth in ways that do not diminish the health of the ecosystems these communities depend on. One way this is reflected nationally and internationally is in the high-level of concern about climate change and its associated effects. To respond to the challenges of growth at a local and regional level, communities are looking for ways to use land and water, generate energy, and dispose of waste that will preserve environmental health and economic vitality. Determining the amount of the land, water, and other natural resources needed to sustain healthy communities is an essential first step in establishing sustainable policies and growth practices. Only when the dimensions of this environmental footprint are identified can coastal communities understand what their carrying capacity is and what will be needed for generations to come. Sea Grant and its university partners are in a unique position to conduct research and develop models and forecasts that will help communities with this process.

Strategies

- Strengthen Sea Grant's research activities and extension capacity to help coastal communities determine the sustainable carrying capacity of their land, water, and other resources through resource assessments, scenario building, modeling, and other techniques.
- Support innovative research on land-use practices and building designs that promote energy and water conservation, coastal-ocean related renewable energy technologies, and the creation of other tools to help communities grow in sustainable ways.
- Work with NOAA's Climate Program Office, coastal programs, and other partners to help communities evaluate their ecological footprints and grow in environmentally sustainable ways.

Sustainable Coastal Development

Goal

Coastal citizens, community leaders, and industries that recognize the complex inter-relationships between social, economic and environmental values in coastal areas and work together to balance multiple uses and optimize environmental sustainability.

According to NOAA's "Population Trends Along the Coastal United States: 1980-2008," coastal counties constitute only 17 percent of the land area of the U.S. (not including Alaska) but account for 53% of the population and are among the most rapidly growing areas in the country. The pressures on our oceans, coasts, and Great Lakes resources continue to grow. Citizens and decision-makers have an urgent need for tools that will help them evaluate the implications of land-use changes, coastal development pressures, and increased resource use in approaching the policy and management decisions they face. Regional cooperation and coordinated land-use and watershed planning are essential. Sea Grant's well-established role as a trusted broker among a wide range of interests makes it a key player in providing sound information for decision-makers, convening stakeholders to seek common ground, and facilitating the development and implementation of new coastal policies, plans, management approaches, and consensus-building strategies.

Strategies

- Work with NOAA's Office of Ocean and Coastal Resource Management and Coastal Services Center, EPA's Offices of Smart Growth, and other federal, state and local partners to disseminate assessment tools, model plans and ordinances, best management practices, alternative development approaches, and other techniques that will enable the citizens of our coastal zones to develop their coastal economies in environmentally-sound ways.
- Build local capacity to evaluate cost-benefit trade-offs in the coastal zone through a greater emphasis on socio-economic research, impact studies, and other methods of evaluating alternative future scenarios for coastal communities.
- Foster regional cooperation and partnerships among local government officials, community stakeholders, and regional planning organizations to promote sustainable growth plans and strategies that protect local and regional natural resources that will ensure an abundance of these resources is available to serve future generations.

Safe and Sustainable Seafood Supply

The U.S. has witnessed the decline of many of its major fisheries while seafood consumption is on the rise, resulting in a seafood trade deficit of \$8 billion per year, according to U.S. Department of Agriculture Foreign Agricultural Service statistics. At the same time, Sea Grant, through its research, extension, and education activities, and work with partners, has produced important discoveries that have aided the stabilization and recovery of many endangered fisheries. According to the NOAA Aquaculture Program, aquaculture is in its infancy in the U.S., amounting to just over \$1 billion of a \$70 billion worldwide industry. Aquaculture creates important new opportunities to meet the increased demand for seafood, but a number of questions need to be addressed for its full potential to be realized. Seafood safety is a growing concern as international trade increases and fish diseases and contamination become bigger problems. Sea Grant has key roles to play in advancing public understanding of the nature of these problems and opportunities. Through the use of its research, extension, and education capacities, Sea Grant will support the kind of informed public and private decision-making that will lead to a sustainable supply of safe seafood long into the future.



Safe and Sustainable Seafood Supply

Goal

A sustainable supply of safe seafood to meet public demand.

Ensuring a sustainable supply of safe seafood requires an understanding of the effects of overfishing, past management decisions, and climate change on U.S. wild fish populations as well as the role ecosystem-based fisheries management can play. It also requires better understanding of the range of complex issues related to developing the domestic aquaculture industry. Sea Grant will make major contributions by supporting research that provides the knowledge needed to understand the factors stressing fisheries and the complexities of aquaculture development. Sea Grant will also translate and transfer useful research findings through extension and education activities to ensure responsible and productive use of these resources in the future.

Strategies

- Use Sea Grant's research, extension, education, and communication capabilities to develop and disseminate essential knowledge about natural and human threats to the long-term viability of wild fish populations, to identify ways to minimize these threats, and to use ecosystem-based fisheries management and other innovative approaches to accomplish this.
- Conduct integrated research, education, and outreach activities to support a viable domestic aquaculture industry with acceptable environmental impacts, in ways that are consistent with national objectives, building on the leadership role Sea Grant plays in this area.
- Work with NOAA's National Marine Fisheries Program, other federal and state partners, and the seafood industry to enhance the management and productivity of wild fisheries.

Safe and Sustainable Seafood Supply

Goal

A healthy domestic seafood industry that harvests, produces, processes, and markets seafood responsibly and efficiently.

A healthy seafood industry requires harvesting techniques that minimize by-catch and damage to marine habitats. It requires development of value-added products, enhanced quality assurance, and education about how to market under-utilized species. Sea Grant will involve harvesters, recreational fishermen, producers and managers in being responsible stewards as well as successful entrepreneurs. Sea Grant will support development of new technologies and participate in collaborative efforts to increase the range of seafood products produced, enhancing American competitiveness in global markets.

Strategies

- Engage harvesters, recreational fisherman, producers and managers in the development of research and management innovations related to the condition, use, and conservation of the natural resources they depend on.
- Support research, development, and transfer of new technologies to keep the domestic seafood industry financially competitive and environmentally responsible.
- Work with the seafood industry to develop new products and innovative marketing approaches to increase seafood availability and profitability.

Safe and Sustainable Seafood Supply

Goal

Informed consumers who understand the importance of ecosystem health and sustainable harvesting practices to the future of our domestic fisheries, who appreciate the health benefits of seafood consumption, and who understand how to evaluate the safety of the seafood products they buy.

Increased attention to the safety of domestic and international seafood has created an urgent need for rapid assessment techniques, certification programs, and standards for domestic and international seafood products, so consumers will have reliable information to inform their buying decisions. Sea Grant will involve industry representatives in the application of seafood safety standards, train inspectors and wholesalers in how to assess seafood quality, and develop educational materials related to seafood safety, quality, and security and make these materials readily available to consumers.

Strategies

- Enhance training and technical assistance programs related to the application of standards for safe domestic and imported seafood.
- Develop educational programs and materials that enhance the American public's understanding of what is required to maintain sustainable domestic fisheries and to build the public's awareness of differences in the quality, safety, and nutritional benefits of different seafood products so they will be informed advocates and consumers.
- Work in close coordination with the National Marine Fisheries Service and other federal partners to develop information portals that give access to factual information on seafood safety.

Hazard Resilience in Coastal Communities

Sea level rise, the increased number and intensity of coastal storms, the ongoing threat of oil spills, and other natural and human hazards are putting more people and property at risk along the nation's coasts, with major implications for human safety and the economic and environmental health of coastal areas. It is essential that residents of coastal communities understand these risks and learn what they can do to reduce their vulnerability and respond quickly and effectively when events occur. Sea Grant will use its integrated research, training, and technical assistance capabilities, and its presence in coastal communities to play a major role in helping local citizens, decision-makers, and industries plan for hazardous events and optimize the ability of their communities to respond and rebuild.



Hazard Resilience in Coastal Communities

Goal

Widespread understanding of the risks associated with living, working, and doing business along the nation's coasts.

Communities and businesses are increasingly vulnerable to hazardous events brought on by climate-related changes, land-use changes, and increased economic activity in coastal and Great Lakes waters. There is a great need for information and tools to help communities assess the risks they face and identify the options available to them to minimize those risks. Sea Grant will support the work of NOAA's Climate Program Office and its climate impact and adaptation-related activities. Sea Grant will work with other federal, state, and local partners, the banking and insurance industries, and others to develop forecasting and risk assessment tools, economic and environmental impact models, and other mechanisms that will help families, businesses, communities, and regions understand their risks and take them into account in making personal, business, and community-related decisions.

Strategies

- Conduct research to assess hazard-related risks and increase the availability and usefulness of hazard-related information and forecasting for citizens, industries, and decision-makers in coastal communities.
- Work with marine commercial enterprises to assess the risks associated with doing business in coastal areas in the context of hurricanes and other coastal storms, climate-related changes, and dramatic changes in port and international trade activities.
- Work with the NOAA Climate Change Program, NOAA's National Weather Service and other public and private sector partners to develop comprehensive education/literacy programs focused on the immediate and long-term effects of climate-related changes and other hazardous events on human safety and coastal property, and how to prepare for and survive those hazards.

Hazard Resilience in Coastal Communities

Goal

Community capacity to prepare for and respond to hazardous events.

It is not enough for communities and businesses to understand their vulnerabilities, they must act on this knowledge and become more resilient or the human and economic losses will continue to mount. Individuals, businesses, and communities need to develop comprehensive emergency preparedness and response plans that increase their resiliency and enable them to respond effectively. Sea Grant will contribute to this by building a sound knowledge base to improve forecasting capabilities, by identifying development and best management practices that reduce the vulnerability of people, buildings and businesses to coastal hazards, and by advancing ways communities can manage and recover from these events when they occur.

Strategies

- Help public and private decision-makers create and adopt policies, plans, and ordinances to reduce risks, manage catastrophic events and speed recovery.
- Create and disseminate, in partnership with NOAA's National Weather Service and other entities, integrated demographic and coastal hazard information databases that help measure human vulnerability in specific coastal regions, support hazard-related planning activities, and facilitate disaster relief efforts.
- Conduct research and communicate information on how the use of natural features and new technologies can help communities prepare for and mitigate the impacts of hazardous events.

Hazard Resilience in Coastal Communities

Goal

Effective response to coastal catastrophes.

Coastal, ocean, and Great Lakes catastrophes require the nation to mobilize a full-range of public and private partners and resources to mount an effective response. Sea Grant is supporting the development of linked regional, national, and international coastal observation networks, thereby improving the availability of information needed to respond to crises as they unfold. Sea Grant's knowledge of local contexts and communities can optimize response effectiveness by facilitating immediate links to local partners and capabilities. Sea Grant has a national network of scientists and outreach workers with broad knowledge and experience, and it will provide multi-disciplinary technical assistance to first responders, helping to minimize damage and promote recovery.

Strategies

- Work with NOAA's National Weather Service and the National Ocean Service, regional ocean observation systems, and other partners to make hazard-related data and data-derived products available and relevant to support decision-making during crisis events.
- Contribute to the nation's rapid response capability by developing ways to mobilize Sea Grant's national network of scientific and technical expertise to inform response strategies and activities.
- Make Sea Grant's local knowledge and contacts available to work with federal, state, regional, and local agencies, non-governmental organizations, and international partners that have hazardous event responsibilities, to facilitate the speed and quality of response to these crises.

Making it Happen

This strategic plan is designed to harness Sea Grant's unique combination of research, extension, and education capabilities with its strong federal-university-private sector partnerships to respond to the challenges inherent in the conservation and use of our nation's complex coastal, ocean and Great Lakes environments. The plan outlines ways to discover and grasp opportunities that will enhance the lives of Americans and people throughout the world. The National Sea Grant Office will initiate full network participation in the development of an implementation plan to accompany this Strategic Plan. The implementation plan will identify measurable outcomes by which to assess progress.

All state Sea Grant programs will align their own strategic plans with the national strategic and implementation plans so the energy, diversity, and creativity of individual Sea Grant programs and university partnerships may be mobilized to achieve these national goals. State plans will align with the strategic directions set forth in this plan and identify how state programs will contribute to the realization of the national goals in measurable ways. At the same time, these plans will respond to unique challenges and needs in the particular states and regions they serve.

The National Sea Grant Office will track and coordinate state-level accomplishments and impacts to highlight Sea Grant's contributions to achieving national goals. The National Sea Grant Office will also track and disseminate success stories so they can be replicated throughout the Sea Grant network and beyond. The National Sea Grant Review Panel will continue in its advisory role to help state programs and the National Sea Grant Office advance Sea Grant's goals.

Effective implementation of this plan will require additional resources for state Sea Grant programs to provide the integrated research, extension, and education activities needed now. Also, effective plan implementation will require an enhanced National Office that can provide strong national leadership and support the state programs in achieving their objectives.

Sea Grant will revisit this plan and its priorities often to ensure that the organization is maintaining focus, staying alert to new trends and opportunities, and accomplishing its five-year goals. The coordinated planning and implementation processes set in motion by this plan position Sea Grant to play a leadership role in responding to the urgent challenges facing this country and its ocean, coastal, and Great Lakes states and communities. Sea Grant is dedicated to working with a wide array of NOAA programs and other partners to transform a time of crisis in this country into a new era of opportunity in coastal resource protection, management, and use that will serve the nation well into this new century and beyond.

FOCUS AREA: HEALTHY COASTAL ECOSYSTEMS			
GOAL	STRATEGY	SHORT/MID-TERM OUTCOMES	LONG-TERM OUTCOMES
Sound scientific information to support ecosystem-based approaches to managing the coastal environment.	<p>Conduct research on ecosystem processes, the relationships between coastal stressors—water quality degradation, contaminants, harmful algal blooms, invasive species, and wetlands loss—and long-term human and ecosystem health, and communicate this information to public and private planners, decision-makers and managers.</p> <p>Contribute to the development of baseline data, standards, and indicators to support ecosystem-based approaches to land use, water, fisheries, and other resource management, working with programs such as NOAA’s National Centers for Coastal Ocean Science, ocean observing programs, and others.</p> <p>Develop methodologies that can be used to evaluate ecosystem-based management approaches to assess their effectiveness once they are in place, and to guide future management efforts, working with the National Marine Fisheries Service and other federal, state and local partners.</p>	<p>Baseline data, standards and indicators developed by Sea Grant and partners are used to support ecosystem-based approaches. Methodologies are developed and used to evaluate ecosystem-based management approaches and guide future management efforts.</p> <p>Planners know how to minimize impacts of land use, resource extraction, other human activities on ecosystems.</p>	Coastal residents, resource managers, businesses, and industries have access to sound scientific information to support ecosystem-based approaches to managing the coastal environment and restoration of degraded ecosystems.
Widespread use of ecosystem-based approaches to managing land, water and living resources in coastal areas.	<p>Work with partners within and outside of NOAA to develop data, models, and training activities that support ecosystem-based planning and management approaches, and share these with a wide variety of constituencies.</p> <p>Support the development of regional coastal observation systems and other collaborative efforts that advance our capability to predict the effects of human activities and environmental changes on coastal resources in order to take steps to mitigate their effects.</p> <p>Provide life-long learning programs for people of all ages that enhance understanding of coastal, ocean and Great Lakes environments and promote stewardship of healthy ecosystems.</p>	<p>Constituencies have access to data, models and training that support ecosystem-based planning and management approaches.</p> <p>Coastal residents, resource managers, businesses, and industries have the capability to predict the effects of human activities and environmental changes on coastal resources.</p> <p>People of all ages understand coastal, ocean and Great Lakes environments and the need for stewardship of healthy ecosystems.</p>	<p>Coastal residents, resource managers, businesses, and industries use ecosystem based approaches in the management of land, water, and living resources in coastal areas.</p> <p>Coastal residents, resource managers, businesses, and industries balance social, natural, physical science in managing resources, and work with all sectors in making decisions.</p>
Restored function and productivity of degraded ecosystems.	<p>Support research to improve the effectiveness of ecosystem restoration and identify promising new restoration approaches and technologies.</p> <p>Invest in the development and dissemination of new information, policies, technologies and methods to address water quality degradation, prevent the introduction and spread of aquatic non-native species, and minimize the negative impacts of these on coastal, ocean and Great Lakes food webs.</p> <p>Provide technical support for citizens and businesses that need help with specific mitigation/restoration problems, giving them access to the latest information and techniques.</p>	<p>Coastal residents, resource managers, businesses, and industries have access to new approaches and technologies developed to improve the effectiveness of restoration coastal ecosystems.</p> <p>Coastal residents, resource managers, businesses, and industries understand chronic and catastrophic causes and consequences of degraded ecosystems.</p> <p>Managers draw on both scientific information and the public to prioritize which ecosystems to restore and to set realistic restoration goals.</p>	<p>Managers have the resources and capacity to undertake restoration projects, do so, and evaluate and adapt as needed.</p> <p>Degraded ecosystems’ function and productivity is restored.</p>

Performance Measures:

- Number of [Percentage increase of] stakeholders who use ecosystem-based approaches in the management of land, water, and living resources in coastal areas as a result of Sea Grant research, communication, extension and education activities.
- Number of acres of degraded ecosystems restored with significant SG facilitation, research or other support.
- Number of coastal communities who have restored degraded ecosystems with significant SG facilitation, research or other support.

FOCUS AREA: SUSTAINABLE COASTAL DEVELOPMENT			
GOAL	STRATEGY	SHORT/MID-TERM OUTCOMES	LONG-TERM OUTCOMES
Healthy coastal economies that include working waterfronts, an abundance of recreation and tourism opportunities, and coastal access for all citizens.	<p>Support research and outreach activities that provide local communities with information and techniques to help them enhance their waterfront-related economic activities such as commercial and recreational fishing, aquaculture, tourism, and energy and port development, without diminishing the long-term health of the natural coastal environment.</p> <p>Support local, regional, and national efforts to preserve and increase public access to the nation's beaches and waterfronts through assessment of access needs, analysis of legal issues, and technical assistance.</p> <p>Use Sea Grant extension and education capabilities to engage coastal communities in planning processes that support the efforts of community leaders to identify and pursue sustainable economic development policies and programs.</p>	<p>Local communities have the information and techniques to enhance waterfront-related economic activities and protect the health of the natural coastal environment.</p> <p>Increased and preserved public access to the nation's beaches and waterfronts.</p> <p>Community leaders are able to identify and pursue sustainable economic development policies and programs.</p>	<p>Coastal communities and industries will have healthy economies that include working waterfronts, an abundance of recreation and tourism opportunities, and coastal access for all citizens.</p> <p>Coastal communities make efficient use of land, energy and water resources and protect the resources needed to sustain coastal ecosystems and quality of life.</p> <p>Coastal citizens, leaders and industries work together to balance multiple land uses and optimize environmental sustainability.</p>
Coastal communities that make efficient use of land, energy and water resources and protect the resources needed to sustain coastal ecosystems and quality of life.	<p>Strengthen Sea Grant's research activities and extension capacity to help coastal communities determine the sustainable carrying capacity of their land, water, and other resources through resource assessments, scenario building, modeling, and other techniques.</p> <p>Support innovative research on land-use practices and building designs that promote energy and water conservation, coastal-ocean related renewable energy technologies, and the creation of other tools to help communities grow in sustainable ways.</p> <p>Work with NOAA's Climate Program Office, coastal programs, and other partners to help communities evaluate their ecological footprints and grow in environmentally sustainable ways.</p>	<p>Coastal communities determine the sustainable carrying capacity of their land, water, and other resources.</p> <p>Coastal communities use a variety of tools and technologies to evaluate their ecological footprints, minimize the impact of the build environment and grow in environmentally sustainable ways.</p>	
Coastal citizens, community leaders, and industries that recognize the complex inter-relationships between social, economic and environmental values in coastal areas and work together to balance multiple uses and optimize environmental sustainability.	<p>Work with NOAA's Office of Ocean and Coastal Resource Management and Coastal Services Center, EPA's Offices of Smart Growth, and other federal, state and local partners to disseminate assessment tools, model plans and ordinances, best management practices, alternative development approaches, and other techniques that will enable the citizens of our coastal zones to develop their coastal economies in environmentally-sound ways.</p> <p>Build local capacity to evaluate cost-benefit trade-offs in the coastal zone through a greater emphasis on socio-economic research, impact studies, and other methods of evaluating alternative future scenarios for coastal communities.</p> <p>Foster regional cooperation and partnerships among local government officials, community stakeholders, and regional planning organizations to promote sustainable growth plans and strategies that protect local and regional natural resources that will ensure an abundance of these resources is available to serve future generations.</p>	<p>Coastal communities use a variety of tools and technologies to evaluate their ecological footprints, minimize the impact of the build environment and grow in environmentally sustainable ways.</p> <p>Coastal communities are able to evaluate cost-benefit trade-off in the coastal zone.</p> <p>Growth plans, policies and strategies are developed and adopted to protect local and regional natural resources to serve future generations.</p>	

Performance Measures:

- Number of coastal communities who address coastal development, encompassing economic and environmental sustainability as a result of Sea Grant.
- Number of coastal communities who have adopted/implement sustainable - economic and environmental - development practices (e.g., land-use planning, working waterfronts, energy efficiency, climate change planning) as a result of Sea Grant activities.
- Economic benefits derived from sustainable coastal policies and practices as a result of Sea Grant activities.

FOCUS AREA: SAFE & SUSTAINABLE SEAFOOD SUPPLY			
GOAL	STRATEGY	SHORT/MID-TERM OUTCOMES	LONG-TERM OUTCOMES
A sustainable supply of safe seafood to meet public demand	<p>Use Sea Grant's research, extension, education, and communication capabilities to develop and disseminate essential knowledge about natural and human threats to the long-term viability of wild fish populations, to identify ways to minimize these threats, and to use ecosystem-based fisheries management and other innovative approaches to accomplish this.</p> <p>Conduct integrated research, education, and outreach activities to support a viable domestic aquaculture industry with acceptable environmental impacts, in ways that are consistent with national objectives, building on the leadership role Sea Grant plays in this area.</p> <p>Work with NOAA's National Marine Fisheries Program, other federal and state partners, and the seafood industry to enhance the management and productivity of wild fisheries.</p>	<p>Natural and human threats to the long-term viability of wild fish populations are minimized.</p> <p>A viable domestic aquaculture industry with acceptable environmental impacts is supported.</p>	<p>The domestic seafood industry will harvest and produce seafood responsibly and efficiently.</p> <p>The seafood supply is sustainable and safe.</p> <p>Consumers make choices in seafood purchases that support safe, valuable and sustainable seafood industries.</p>
A healthy domestic seafood industry that harvests, produces, processes, and markets seafood responsibly and efficiently	<p>Engage harvesters, recreational fisherman, producers and managers in the development of research and management innovations related to the condition, use, and conservation of the natural resources they depend on.</p> <p>Support research, development, and transfer of new technologies to keep the domestic seafood industry financially competitive and environmentally responsible.</p> <p>Work with the seafood industry to develop new products and innovative marketing approaches to increase seafood availability and profitability.</p>	<p>Fishermen are knowledgeable and will employ efficient fishing techniques.</p> <p>The seafood processing industry will learn and understand techniques and processes to ensure the production and delivery of safe and healthy seafood.</p> <p>Increase in seafood availability and profitability.</p>	
Informed consumers who understand the importance of ecosystem health and sustainable harvesting practices to the future of our domestic fisheries, who appreciate the health benefits of seafood consumption, and who understand how to evaluate the safety of the seafood they buy	<p>Enhance training and technical assistance programs related to the application of standards for safe domestic and imported seafood.</p> <p>Develop educational programs and materials that enhance the American public's understanding of what is required to maintain sustainable domestic fisheries and to build the public's awareness of differences in the quality, safety, and nutritional benefits of different seafood products so they will be informed advocates and consumers.</p> <p>Work in close coordination with the National Marine Fisheries Service and other federal partners to develop information portals that give access to factual information on seafood safety.</p>	<p>Seafood safety information is available to the public.</p>	

Performance Measures:

- Economic (market and non-market) and societal benefits (jobs created and retained) derived from the discovery and/or application of new fishery production and management models or techniques that lead to increased sustainability and productivity from the fishery.
- Number of fishermen, resource managers and seafood businesses (harvesters, aquaculturists, processors and recreational fishermen) who adopt and implement responsible harvesting and processing techniques and practices.
- Number of producers, distributors and consumers of seafood who modify their practices using knowledge gained in fishery sustainability, seafood safety and the health benefits of seafood.

FOCUS AREA: HAZARD RESILIENCE IN COASTAL COMMUNITIES			
GOAL	STRATEGY	SHORT/MID-TERM OUTCOMES	LONG-TERM OUTCOMES
Widespread understanding of the risks associated with living, working, and doing business along the nation's coasts.	<p>Conduct research to assess hazard-related risks and increase the availability and usefulness of hazard-related information and forecasting for citizens, industries, and decision-makers in coastal communities.</p> <p>Work with marine commercial enterprises to assess the risks associated with doing business in coastal areas in the context of hurricanes and other coastal storms, climate-related changes, and dramatic changes in port and international trade activities.</p> <p>Work with the NOAA Climate Change Program, NOAA's National Weather Service, and other public and private sector partners to develop comprehensive education/literacy programs on the immediate and long-term effects of climate-related changes, and other hazardous events, on human safety and property along the coast, and how to prepare for and survive them.</p>	<p>Coastal decision-makers benefit from improved risk communication (i.e. better understanding of emergency forecasting, evacuation plans, rip current and surf zone hazards, etc.) and understand the benefits of coastal hazard risk planning.</p> <p>Coastal decision-makers are aware of existing and available hazard-related data and resources (i.e. wave gauge, water level/tide gauge, weather station data, etc.).</p>	<p>Coastal residents are aware of and understand the physical processes that produce hazards and climate change and the implications of those events for their communities.</p> <p>Coastal communities address social and environmental barriers to improve the community's ability to mitigate and respond to natural hazards.</p> <p>Coastal communities are able to effectively respond to coastal catastrophes.</p>
Community capacity to prepare for and respond to hazardous events.	<p>Help public and private decision-makers create and adopt policies, plans, and ordinances to reduce risks, manage catastrophic events and speed recovery.</p> <p>Create and disseminate, in partnership with NOAA's National Weather Service and other entities, integrated demographic and coastal hazard information databases that help measure human vulnerability in specific coastal regions, support hazard-related planning activities, and facilitate disaster relief efforts.</p> <p>Conduct research and communicate information on how the use of natural features and new technologies can help communities prepare for and mitigate the impacts of hazardous events.</p>	<p>Coastal communities have access to and the ability to utilize data and innovative and adaptive tools and techniques to minimize hazard risks (i.e. Planning BMPs, standards, resiliency index, construction BMPs, retrofits, flood-zone maps and freeboard).</p> <p>Coastal decision-makers have the capacity to apply data and resources to hazard planning and response.</p> <p>Coastal decision-makers have the knowledge and skills to assess local risk vulnerability and respond with appropriate policies and regulations.</p> <p>Coastal opinion leaders and decision-makers take proactive measures to ensure that hazards, risks, and vulnerabilities are communicated to property owners and perspective purchasers.</p>	
Effective response to coastal catastrophes	<p>Work with NOAA's National Weather Service and the National Ocean Service, regional ocean observation systems, and other partners to make hazard-related data and data-derived products available and relevant to support decision-making during crisis events.</p> <p>Contribute to the nation's rapid response capability by developing ways to mobilize Sea Grant's national network of scientific and technical expertise to inform response strategies and activities.</p> <p>Make Sea Grant's local knowledge and contacts available to work with federal, state, regional, and local agencies, non-governmental organizations, and international partners that have hazardous event responsibilities, to facilitate the speed and quality of response to these crises.</p>	<p>Coastal communities apply best available hazards and climate change information, tools, and technologies to maximize community resiliency to natural hazards.</p> <p>Communities are safe from hazards in their homes and places of work and experience minimum disruption to life and economy after a natural hazard event, through the use of risk-wise behavior that considers all hazards.</p>	

Performance Measures:

- Number of coastal communities and citizens provided with information/trained in local hazard resiliency, and hazard mitigation tools, techniques, and best practices.
- Number of coastal communities and citizens who adopt/implement hazard resiliency practices to prepare for and respond to/minimize coastal hazardous events.

The National Sea Grant College Program Planning, Implementation and Evaluation System

Background

In 1994, the National Research Council (NRC), which functions under the auspices of the National Academy of Sciences, reviewed the National Sea Grant College Program. In its *Review of the NOAA National Sea Grant College Program* report, the NRC recommended several actions, including carrying out systematic, periodic reviews of the individual programs. In response, Sea Grant developed an evaluation process that relied heavily on detailed site reviews carried out by an external Program Assessment Team every four years, beginning in 1998. The National Sea Grant College Program Act Amendments of 2002 (P.L. 107–299) directed the National Oceanic and Atmospheric Administration (NOAA) to contract with the NRC to carry out a review of the evaluation process and make appropriate recommendations to improve its overall effectiveness.

The subsequent NRC report, *Evaluation of the Sea Grant Review Process* (2006), assessed the impact of the new procedures and evaluation process on Sea Grant as a whole. Among the areas considered were: the quality of work produced by the program; its responsiveness to national, regional and local needs; and, the quality of its leadership, management and reputation. The NRC committee was also asked to make recommendations for improving the overall effectiveness of the evaluation process to ensure fairness, consistency and enhancement of performance.

In order to address the NRC recommendations, the National Sea Grant College Program (NSGCP) Director sought advice from two sources: a Response Integration Team (RIT) made up of representatives from the state Sea Grant programs and the National Sea Grant Office (NSGO); and, the National Sea Grant Review Panel (Review Panel). Drawing from the reports of both the RIT (*An Enhanced and Integrated Strategic Planning and Program Assessment Strategy for the National Sea Grant College Program*) and the Review Panel (*A Comprehensive Program Evaluation [COPE] Model for the National Sea Grant College Program*), and from input provided by members of the Sea Grant community at an October 2007 meeting in San Diego, an Integrated Planning, Implementation and Evaluation (PIE) System for Sea Grant was developed and is outlined below.

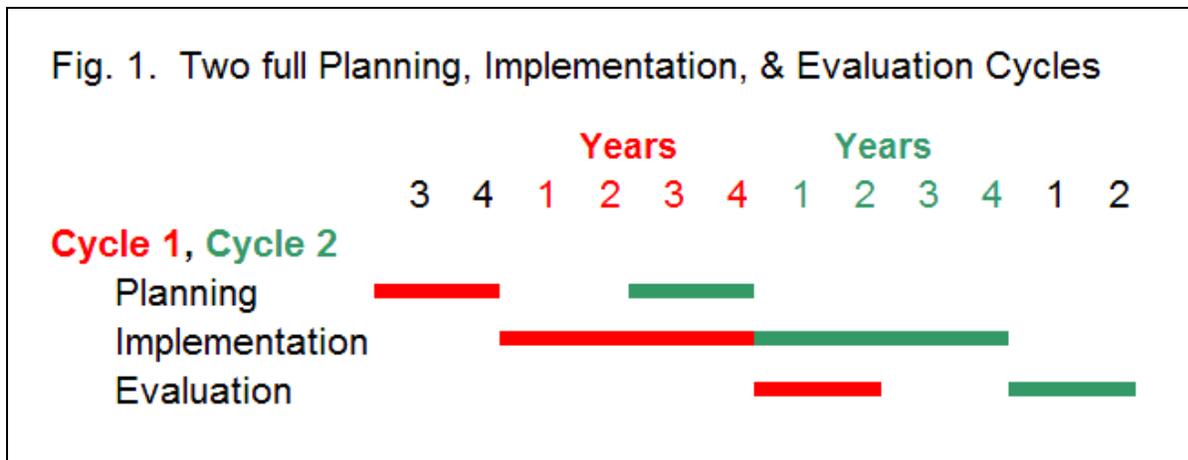
The PIE system captures the spirit of the National Research Council's recommendations, while also meeting criteria and needs articulated by the Congress, by the Office of Management and Budget, and by NOAA. As the implementation process begins, there will be a transition period which is discussed in the appendix of this document.

An Integrated Planning, Implementation, and Evaluation (PIE) System

The National Sea Grant College Program has long placed a premium on careful planning and rigorous evaluation at the state program level in order to ensure that Sea Grant would have the greatest impact at the local level. By developing a system that will capitalize on these capabilities at the national level, Sea Grant will be able to enhance its impact as a national

program. Better integration of planning, implementation and evaluation activities will maximize Sea Grant’s efficiency at all levels and make the best use of limited resources.

Accordingly, Sea Grant has developed an integrated PIE system that begins with rigorous strategic planning at both the national and state levels; implements those plans with coordinated and collaborative research, outreach and education activities at the state level; and evaluates the success of those efforts in meeting the objectives set forth in the strategic/implementation plans (Fig. 1).



I. Planning

National Strategic/Implementation Plans (every four years): Every four years, the Sea Grant network will develop a new national strategic plan over a nine-month period. Sea Grant’s national plan will be done in concert with the development of strategic plans for the state programs. Stakeholder input collected for state Sea Grant planning efforts will be synthesized and used, along with other relevant local and regional plans, to inform the national planning process. In addition, NOAA’s strategic plan, the Ocean Research Priorities Plan (and its successors), NOAA’s 5-year Research Plan, and other national plans will provide national stakeholder input and help set a national context for the plan. Sea Grant’s national plan will identify a limited set of national priorities that will serve as the foci for Sea Grant’s next four-year implementation cycle. Once the national plan is complete, network focus teams will provide more detail to each priority area as they develop national four-year implementation plans.

Individual Sea Grant Program Strategic/Implementation Plans (every four years): The national strategic and implementation plans will serve as the basis for the states to complete the development of their strategic plans. The state plans will include metrics and performance measures that can be rolled up to support national measures and metrics. Since each state has its own unique set of local and regional stakeholders, partners and priorities, the individual program plans will not necessarily address all of the national priority areas;

and, the plans may include additional emphases as appropriate. State plans will be developed with the federal program officer and reviewed and approved by the National Sea Grant Office (NSGO), in consultation with the National Sea Grant Review Panel. Sea Grant programs will use their plans to guide and inform requests for proposals. In addition, the plans will provide the basis for program evaluations. Understanding that plans are living documents, programs may make changes to their plan(s). If a program wishes to make a significant change to its plan, the change must be approved by the federal program officer so the change is documented for eventual evaluation purposes.

II. Implementation

While the NSGO and the Review Panel have legitimate roles in the planning and evaluation of Sea Grant program activities, implementing those activities to advance Sea Grant goals and objectives is the purview of the Sea Grant programs. This will not change.

In the PIE system, planning and evaluation are tools to help Sea Grant be as effective as possible in addressing national issues without impairing the organization's effectiveness in addressing local and regional issues. These changes may offer efficiencies that should improve each program's ability to address local, regional and national issues.

Sea Grant programs will continue to consider national goals as they plan and execute their research, outreach and education activities. Sea Grant programs will have their planning documents approved, and each program will retain the authority to implement its program as it sees fit in order to achieve the optimal results.

The PIE system and subsequent changes to program implementation will make it easier for programs to plan and act on a regional and national scale. For instance, project competitions, omnibus grant applications and awards will be synchronized to facilitate collaborative efforts among programs. There will be a common format for annual reports so that the accomplishments of individual projects and state programs can more easily be synthesized into national impacts.

III. Evaluation

Goal: Sea Grant's program evaluation process will show how its research, outreach and education capabilities have local, regional and national impacts. Program evaluation also provides the opportunity to discover ways in which the programs, and in turn the National Program, can improve. Evaluation is a continual process, both internal and external, and involves all facets of the Sea Grant network. Programs are evaluated in three general areas: 1) on their approach to management; 2) on the scope and success of their engagement with stakeholders; and, 3) on the impact their program has on society from both an environmental and a socio-economic perspective. Evaluation is based on the aligned state plans, but the process is intended to recognize that unplanned or rapid-response activities can also have significant impact.

The Office of Management and Budget, the Review Panel and other entities have recommended that the Sea Grant programs be recertified on a reasonable and regular schedule. The PIE system will serve as the recertification process for the programs (described in more detail, below).

Evaluation Criteria: The new evaluation criteria will draw on those used in the current Program Assessment Team review system, but will be more focused on achieving strategic results. An evaluation criteria working group, with members from the Sea Grant Review Panel, the Sea Grant Directors, the NSGO, and including outside experts, will review/refine the PAT criteria in concert with developing new criteria for the PIE system. This working group will begin its work in the spring of 2008.

Annual Reports/Self-Evaluation: Annual reports will be used by programs to evaluate progress against their strategic plans, national measures, and metrics over a one-year period. These reports will be used by the NSGO and programs to track and report progress. The programs' progress in meeting goals set forth in their plans and in producing accomplishments relative to those goals represents progress toward meeting national goals set forth in the national strategic and implementation plan.

Site Visits (every four years, beginning in 2009): Once every four years, a review team will visit each Sea Grant program for one-and-a-half days. The review teams will be chaired by the NSGO program officer and co-chaired by a member of the Review Panel with a Sea Grant Director as a review team member. Additional members of the teams may be drawn from the Review Panel and/or outside experts as needed. The review team will meet with the program management team, advisory committees and university administration to review and discuss broad issues related to two components: (1) program management and organization; and, (2) stakeholder engagement. The team will be provided with a limited and focused set of briefing materials. The team will prepare a site visit report with findings and recommendations relative to a defined set of criteria for self-improvement use by the state Sea Grant program. The teams will not score or grade the Sea Grant programs, but the reports will be given to both the programs and the NSGO.

Topical Assistance Team (TAT) Reviews (optional): The new system includes the option of TAT reviews for each individual Sea Grant program during the assessment cycle. The purpose of the TAT reviews is for program improvement and will be based upon needs identified by previous reviews and/or the need for the program to identify and respond to new opportunities.

Performance Review Panel (every four years, beginning in 2011): Every four years, once all site visits have been completed, a Performance Review Panel (PRP) will carry out a retrospective evaluation of the impact of each of the programs relative to their aligned plans. Annual reports, combined with a brief four-year summary document prepared by the programs, will provide the basis for the review. The PRP will be composed of 15 members with approximately half of the members drawn from the Review Panel and the remainder drawn from senior-level academia, government and industry. The PRP will rate each

program relative to a defined set of criteria, to be developed by the evaluation criteria working group, and will provide a report to the NSGO and the program.

State Program Response Memorandum (once every four years): Based on the site visit and PRP reports, the programs will have the opportunity to submit a memorandum to the NSGO responding to both reports. This information will be used as part of the NSGO fall review.

NSGO Fall Review (annually, beginning in September 2008): The NSGO will meet every year in the fall to discuss each program's progress relative to the state's plan, and to identify potential areas for improvement, which will be shared with the program. There will be no rating of the programs in all even numbered years, but programs will be rated or have the opportunity to be re-rated in all odd numbered years. Starting in 2011 following completion of the initial site visits and PRP evaluation, the NSGO will use the fall review every four years to give the programs a rating based upon the PRP Report, the site visit report, and the state program response memorandum. Programs will have the opportunity to appeal their rating two years later during the fall review by submitting a report to the NSGO of actions taken to improve the program since the previous four-year review.

Recertification: The four-year reviews will constitute the recertification process. A successful review will provide recertification of a state program for six years. If a program receives an unsuccessful rating, the program will be placed on a four-year probationary period. At the fall review of the second probationary year, the NSGO will assess the program's progress in addressing the issues that led to the unsuccessful rating. If the program has made satisfactory progress, it will be allowed to continue on probation for the remaining two years; if the program then receives a successful rating during the next four-year review, the program is considered to be recertified. However, if progress is deemed to be unsatisfactory after two years, or if a program receives a second consecutive unsuccessful rating during the four-year review, then that program will be referred to the Review Panel for possible decertification.

National "State of Sea Grant Program" Review (once every four years, beginning in 2012): Once every four years, the National Sea Grant Review Panel will provide a review of the "State of the Sea Grant Program." This review will assess the progress of the Sea Grant network in addressing the priority areas highlighted in the national strategic/implementation plan, analogous to the manner state programs will be evaluated in addressing their respective plans. This review will rely extensively on information collected from state program reports and reviews, and will give an analysis that will help inform the subsequent national strategic planning process. This national program review is central to the PIE system and will provide an assessment of the overall performance of the entire Sea Grant College Program.

Appendix: Transition

In order to function as a national program, the major aspects of planning, implementation and evaluation need to be coordinated across all state Sea Grant programs. However, currently, state programs are not all on the same four-year planning and award cycle. In addition, while most research projects are supported for two years, some programs hold competitions to select new projects in even years while others host competitions in odd years. As Sea Grant begins to implement its new integrated PIE system, there will be a transition period over the next two years in order to synchronize planning and implementation cycles throughout the network. (See Fig. 2 – detailed timeline)

Strategic/Implementation Planning: Following the release of Sea Grant’s national strategic and implementation plans, programs will have four months to align their state plans with the national plan. The intent is not to redo the state plans, but to indicate how the state plans support national priorities, and to ensure state performance measures and metrics will be able to roll up into national measures and metrics. Each program will submit an alignment memo describing the process used to review their current plan and indicating how the plan supports the national priorities. The alignment memo, coupled with current state plans, should include enough detail, in terms of specific performance measures and metrics, to provide a sufficient basis for annual self-reporting and for external evaluation of success by the PRP in 2011. These plans will guide Sea Grant through 2013. The alignment memos will be developed with the federal program officer and reviewed and approved by the NSGO, in consultation with the Review Panel. Details about the alignment memo criteria will follow.

Grant Award Alignment: All programs will be expected to submit a proposal for a new four-year award to start February 1, 2010. Of the 30 state Sea Grant programs, 20 are already scheduled to begin a new four-year award on that date. In order to move the other 10 programs to the same award cycle, new funding will be made available under a new award number starting in 2010. Old awards will be kept open to continue the work already approved in the previous award.

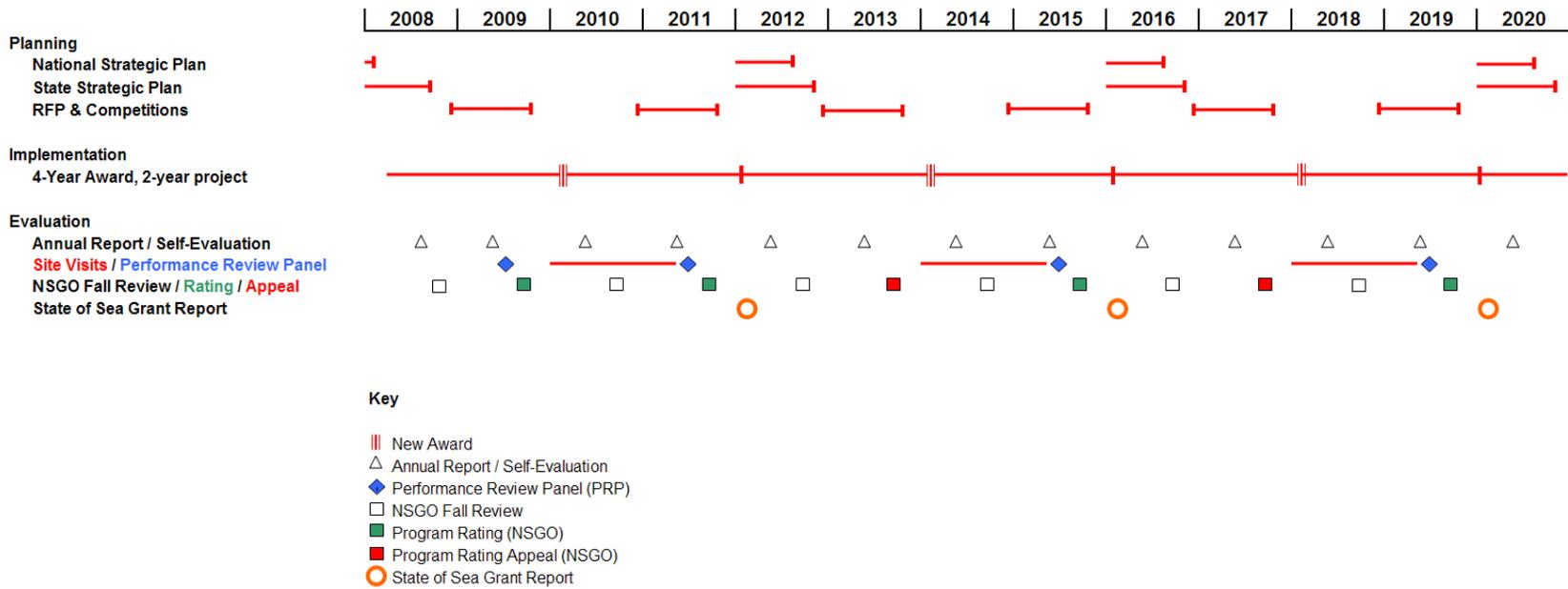
In order to align the start of new research projects and encourage collaborative activities, all programs will be expected to host competitions in the same year. There is already *de facto* alignment across the network with 22 state programs running research competitions in odd years, while only six programs run their competitions in even years; two programs hold competitions every year, and one program holds competitions once every three years. In order to move the six “even-year” programs to an odd-year cycle, it will be necessary for these programs to run a special one year competition in 2008 to ensure that funds are available for a 2009 competition for projects that would start with their new award in 2010; or, alternately, to run a special one year competition in 2010 and join the rest of the network in the 2011 competition cycle.

Transitional Rating Process: During the previous program assessment, one-quarter of the programs were evaluated each year between 2003 and 2006. The first full site visit and PRP evaluation are not scheduled until 2011. Thus some programs would not have been

evaluated for eight years. As an interim measure, and to provide a common starting point for the new PIE system, there will be a one time PRP evaluation and NSGO review in 2009 based on the 2002-2006 Program Assessment Review criteria.

- **Transition PRP (2009):** An initial PRP will evaluate programs according to the 2002-2006 Program Assessment Review “Producing Significant Results” criteria. This is a retrospective review of the programs from 2005-2008. The PRP will be composed of 15 members with approximately half of the members drawn from the Review Panel and the remainder drawn from senior-level academia, government and industry. The PRP will provide a report to the NSGO and the program.
- **Transition NSGO Program Rating Review (2009):** All state Sea Grant programs will be given the opportunity to provide information regarding improvements made in “Organizing and Managing the Program” and “Connecting with Users” since the last PAT review. The NSGO will review the PRP evaluations and these responses to assign interim ratings that will be in effect until 2011.

Fig. 2 Transition and first full Planning, Implementation, & Evaluation Cycle





October 3, 2008

MEMORANDUM FOR: Sea Grant Directors

FROM: Leon M. Cammen 
Director

SUBJECT: State Plan Alignment

Thanks to the combined hard work of the entire Sea Grant Network, we have finalized the National Strategic Plan and have distributed for review a draft of the National Implementation Plan. Together these documents will constitute Sea Grant's National Program Plan for 2009-2013. These collective planning efforts are essential in order to fully implement the new Planning, Implementation and Evaluation (PIE) system, respond to recommendations of the National Review Council, and position Sea Grant as a critical national program that supports the federal ocean, coastal and Great Lakes mission. The next step in the PIE process is for each program to align its planning with the national plans. There are two phases to this process:

- (1) Align your Sea Grant Program plan's goals and strategies with the goals and strategies in the National Strategic Plan (due November 21, 2008); and
- (2) Identify which national performance measures your program will be supporting and the targets relating to them. (due March 2009)

This memo provides guidance for the alignment process: it describes what is being asked of the programs; it provides instructions for preparing the alignment documents; and it explains the approval process.

WHAT IS THE ALIGNMENT PROCESS, AND WHY AM I BEING ASKED TO TAKE PART?

The alignment process concept was proposed by a team of representatives from the Sea Grant network as the primary tool to document and evaluate the relationships between the national plans and individual Program strategic plans. The National Sea Grant College Program (NSGCP) is a national program, thus all of its component Programs are expected to support the national strategic goals and strategies. Each Program is not expected to support *every* national goal and strategy. Programs have the flexibility and latitude to work in areas not included in the national plans, but a significant portion of your efforts should support the focus areas of the national plans.

The purpose of the alignment process is:

- (1) To assure all Program plans align with the national plans – documenting current and future plans used by all Programs and how they support the national plans.



(2) To assure from the outset of the PIE implementation that Program plans are ambitious with challenging goals and milestones, while meeting benchmarks of effective planning documents.

(3) To establish at the outset of the planning cycle a formal agreement between the Program and the NSGO that the Plan is acceptable and meets Sea Grant national planning criteria and standards.

HOW DO I PREPARE FOR THE ALIGNMENT PROCESS AND WHEN ARE MATERIALS DUE?

The first phase requires Programs to work with their program officers to align their plan goals and strategies with the goals and strategies in the National Strategic Plan, and to estimate the percentage of resources/effort that will go towards each focus area. This portion of the alignment process is due November 21, 2008.

The second phase is to determine which national performance measures your Program will support, and to align your Program's performance measures with the national measures (if they differ) and the targets relating to them. Since the National Implementation Plan is not yet complete, this phase of the alignment process will not be due until March 2009.

Phase I

The first phase of the planning alignment process is prepared in two parts: a cover letter, and a completed alignment template (attached) detailing focus areas, goals, and strategies. Along with the cover letter and alignment template, please also include a copy of your most recent (operative) strategic plan. Programs should coordinate closely with their NSGO Program Officer when preparing these alignment materials.

The cover letter should include: the term of the Program's current plan, how it was created, and a general summary of the extent of alignment between the national plans and the state plan, including proposed actions, if any, to better align the two plans. Examples of actions include additional input from stakeholder groups and advisory committees.

The attached alignment template is an Excel spreadsheet. Tab 1 lists the focus areas, goals and strategies in the national plan and has spaces for Programs to insert the corresponding focus areas, goals and strategies from their own plans. Nomenclature used to develop state plans often differs from the language used in the national plan. The national plan refers to "focus areas, goals, and strategies," while states often use terms such as "issues, sub-goals, objectives, approaches, and action items." State Programs need to compare the language of their current plan with that of the national plans to make a determination as to how the nomenclature corresponds.

In order to show where Sea Grant is allocating funding within the strategic plan nationally, we are requesting the estimated percentage of federal dollars each Program will spend in 2009 per focus area in Tab 2. This information will be useful in telling the national story, highlighting how

our investments span across the four focus areas. There will be an opportunity to update this information during the second portion of the alignment process, as mentioned above.

Upon completion of the final draft of the National Implementation Plan (anticipated in November 2008), additional tabs will be added to the template to complete the second phase of this process, which will include information regarding outcomes, performance measures and targets. The National Implementation Plan will not be finalized until all state Program information is gathered and targets can be summed to provide the national measures and targets.

HOW WILL THE ALIGNMENT OF MY PLANS BE EVALUATED AND APPROVED?

For the first phase, Program Officers will work with the Program Directors to ensure that the state plan's goals and strategies align with those in the national plan. During the second phase of the alignment process, all alignment documents will be reviewed by a small team of SG Review Panel members, who will convene in early spring 2009 to recommend acceptance, or needed modifications to the NSGCP Director, based on the following questions:

- (1) Does the Program adequately support the national plan?
- (2) Is the Program devoting a significant portion of its resources towards supporting one or more of the focus areas of the national plan?
- (3) Relative to other Programs, is this plan ambitious—does the plan set challenging goals and ambitious milestones given the amount of resources dedicated to the overall program?

If the answer to these three questions is yes, the review team will issue a finding that the alignment between the state and national plans is sufficient and recommend that the NSGCP Director approve the state plan. In addition, the review team will provide beneficial and useful observations and comments resulting from the alignment process review to the Programs through the NSGCP Director.

Given the active participation of all Programs in the creation of the national plan, it seems unlikely that any Program's strategic plan does not already adequately support the national plans. In the unlikely event that a Program strategic plan does not adequately support the national plan, the Program will be asked to develop a strategy for adapting its plan to support the national plan, before its plan will be approved.

Sea Grant Authorizing Legislation, as amended by the National Sea Grant College Program Amendments Act of 2008 (Public Law No: 110-394)

- § 1121. Congressional declaration of policy
- § 1122. Definitions [Caution: See prospective amendment note below.]
- § 1123. National sea grant college program
- § 1124. Program or project grants and contracts
- § 1126. Sea grant colleges and sea grant institutes
- § 1127. Fellowships
- § 1128. National Sea Grant Advisory Board
- § 1129. Interagency cooperation
- § 1131. Authorization of appropriations

§ 1121. Congressional declaration of policy

(a) Findings. The Congress finds and declares the following:

- (1) The national interest requires a strategy to—
 - (A) provide for the understanding and wise use of ocean, coastal, and Great Lakes resources and the environment;
 - (B) foster economic competitiveness;
 - (C) promote public stewardship and wise economic development of the coastal ocean and its margins, the Great Lakes, and the exclusive economic zone;
 - (D) encourage the development of preparation, forecast, analysis, mitigation, response, and recovery systems for coastal hazards;
 - (E) understand global environmental processes and their impacts of ocean, coastal, and Great Lakes resources; and
 - (F) promote domestic and international cooperative solutions to ocean, coastal, and Great Lakes issues.
- (2) Investment in a strong program of integrated research, education, extension, training, technology transfer, and public service is essential for this strategy.
- (3) The expanding use and development of ocean, coastal, and Great Lakes resources resulting from growing coastal area populations and the increasing pressures on the coastal and Great Lakes environment challenge the ability of the United States to manage such resources wisely.
- (4) The vitality of the Nation and the quality of life of its citizens depend increasingly on the understanding, assessment, development, management, utilization, and conservation of ocean, coastal, and Great Lakes resources. These resources supply food, energy, and minerals and contribute to human health, the quality of the environment, national security, and the enhancement of commerce.
- (5) The understanding, assessment, development, management, utilization, and conservation of such resources require a broad commitment and an intense involvement on the part of the Federal Government in continuing partnership with State and local governments, private industry, universities, organizations, and individuals concerned with or affected by ocean, coastal, and Great Lakes resources.
- (6) The National Oceanic and Atmospheric Administration, through the national sea grant college program, offers the most suitable locus and means for such commitment and engagement through the promotion of activities that will result

in greater such understanding, assessment, development, management, utilization, and conservation of ocean, coastal, and Great Lakes resources. The most cost-effective way to promote such activities is through continued and increased Federal support of the establishment, development, and operation of programs and projects by sea grant colleges, sea grant institutes, and other institutions, including strong collaborations between Administration scientists and research and outreach personnel at academic institutions.

- (b) Objective. The objective of this title [33 USCS §§ 1121 et seq.] is to increase the understanding, assessment, development, management, utilization, and conservation of the Nation’s ocean, coastal, and Great Lakes resources by providing assistance to promote a strong educational base, responsive research and training activities, broad and prompt dissemination of knowledge and techniques, and multidisciplinary approaches to environmental problems.
- (c) Purpose. It is the purpose of the Congress to achieve the objective of this title [33 USCS §§ 1121 et seq.] by extending and strengthening the national sea grant program, initially established in 1966, to promote integrated research, education, training, and extension services and activities in fields related to ocean, coastal, and Great Lakes resources.

§ 1122. Definitions [Caution: See prospective amendment note below.]

As used in this title [33 USCS §§ 1121 et seq.]—

- (1) The term “Administration” means the National Oceanic and Atmospheric Administration.
- (2) The term “Director” means the Director of the national sea grant college program, appointed pursuant to section 204(b) [33 USCS § 1123(b)].
- (3) [The] the term “director of a sea grant college” means a person designated by his or her institution to direct a sea grant college or sea grant institute.
- (4) The term “field related to ocean, coastal, and Great Lakes resources” means any discipline or field, including marine affairs, resource management, technology, education, or science, which is concerned with or likely to improve the understanding, assessment, development, management, utilization, or conservation of ocean, coastal, or Great Lakes resources.
- (5) The term “institution” means any public or private institution of higher education, institute, laboratory, or State or local agency.
- (6) The term “includes” and variants thereof should be read as if the phrase “but is not limited to” were also set forth.

- (7) The term “ocean, coastal, and Great Lakes resources” means the resources that are located in, derived from, or traceable to, the seabed, subsoil, and waters of—
- (A) the coastal zone, as defined in section 304(1) of the Coastal Zone Management Act (16 U.S.C. 1453(1));
 - (B) the Great Lakes;
 - (C) Lake Champlain (to the extent that such resources have hydrological, biological, physical, or geological characteristics and problems similar or related to those of the Great Lakes);
 - (D) the territorial sea;
 - (E) the exclusive economic zone;
 - (F) the Outer Continental Shelf;
 - (G) the high seas.
- (8) The term “resource” means—
- (A) living resources (including natural and cultured plant life, fish, shellfish, marine mammals, and wildlife);
 - (B) nonliving resources (including energy sources, minerals, and chemical substances);
 - (C) the habitat of a living resource, the coastal space, the ecosystems, the nutrient-rich areas, and the other components of the marine environment that contribute to or provide (or which are capable of contributing to or providing) recreational, scenic, esthetic, biological, habitational, commercial, economic, or conservation values; and
 - (D) man-made, tangible, intangible, actual, or potential resources.
- (9) The term “Board” means the National Sea Grant Advisory Board established under section 209..
- (10) The term “person” means any individual; any public or private corporation, partnership, or other association or entity (including any sea grant college, sea grant institute or other institution); or any State, political subdivision of a State, or agency or officer thereof.
- (11) The term “project” means any individually described activity in a field related to ocean, coastal, and Great Lakes resources involving research, education,

training, or extension services administered by a person with expertise in such a field.

- (12) The term “sea grant college” means any institution, or any association or alliance of two or more such institutions, designated as such by the Secretary under section 207 of this Act.
- (13) The term “sea grant institute” means any institution, or any association or alliance of two or more such institutions, designated as such by the Secretary under section 207 of this Act.
- (14) The term “sea grant program” means a program of research and outreach which is administered by one or more sea grant colleges or sea grant institutes.
- (15) The term “Secretary” means the Secretary of Commerce, acting through the Under Secretary of Commerce for Oceans and Atmosphere.
- (16) The term “State” means any State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Mariana Islands, or any other territory or possession of the United States.

§ 1123. National sea grant college program

- (a) Program maintenance. The Secretary shall maintain within the Administration a program to be known as the national sea grant college program. The national sea grant college program shall be administered by a national sea grant office within the Administration.
- (b) Program elements. The national sea grant college program shall consist of the financial assistance and other activities authorized in this title [33 USCS §§ 1121 et seq.], and shall provide support for the following elements—
 - (1) sea grant programs that comprise a national sea grant college program network, including international projects conducted within such programs and regional and national projects conducted among such programs;
 - (2) administration of the national sea grant college program and this title by the national sea grant office and the Administration;
 - (3) the fellowship program under section 208 [33 USCS § 1127]; and

- (4) any regional or national strategic investments in fields relating to ocean, coastal, and Great Lakes resources developed in consultation with the Board and with the approval of the sea grant colleges and the sea grant institutes.

(c) Responsibilities of the Secretary.

- (1) The Secretary, in consultation with the Board, sea grant colleges, and sea grant institutes, shall develop at least every 4 years a strategic plan that establishes priorities for the national sea grant college program, provides an appropriately balanced response to local, regional, and national needs, and is reflective of integration with the relevant portions of the strategic plans of the Department of Commerce and of the Administration.
- (2) The Secretary, in consultation with the Board, sea grant colleges, and sea grant institutes, shall establish guidelines related to the activities and responsibilities of sea grant colleges and sea grant institutes. Such guidelines shall include requirements for the conduct of merit review by the sea grant colleges and sea grant institutes of proposals for grants and contracts to be awarded under section 205 [33 USCS § 1124], providing, at a minimum, for standardized documentation of such proposals and peer review of all research projects.
- (3) The Secretary shall by regulation prescribe the qualifications required for designation of sea grant colleges and sea grant institutes under section 207 [33 USCS § 1126].
- (4) To carry out the provisions of this title [33 USCS §§ 1121 et seq.], the Secretary may—
 - (A) appoint, assign the duties, transfer, and fix the compensation of such personnel as may be necessary, in accordance with civil service laws;
 - (B) make appointments with respect to temporary and intermittent services to the extent authorized by section 3109 of title 5, United States Code;
 - (C) publish or arrange for the publication of, and otherwise disseminate, in cooperation with other offices and programs in the Administration and without regard to section 501 of title 44, United States Code, any information of research, educational, training or other value in fields related to ocean, coastal, or Great Lakes resources;
 - (D) enter into contracts, cooperative agreements, and other transactions without regard to section 5 of title 41, United States Code;

- (E) notwithstanding section 1342 of title 31, United States Code, accept donations and voluntary and uncompensated services;
- (F) accept funds from other Federal departments and agencies, including agencies within the Administration, to pay for and add to grants made and contracts entered into by the Secretary; and
- (G) promulgate such rules and regulations as may be necessary and appropriate.

(d) Director of the National Sea Grant College Program.

- (1) The Secretary shall appoint, as the Director of the National Sea Grant College Program, a qualified individual who has appropriate administrative experience and knowledge or expertise in fields related to ocean, coastal, and Great Lakes resources. The Director shall be appointed and compensated, without regard to the provisions of title 5, United States Code, governing appointments in the competitive service, at a rate payable under section 5376 of title 5, United States Code.
- (2) Subject to the supervision of the Secretary, the Director shall administer the national sea grant college program and oversee the operation of the national sea grant office. In addition to any other duty prescribed by law or assigned by the Secretary, the Director shall--
 - (A) facilitate and coordinate the development of a strategic plan under subsection (c)(1);
 - (B) advise the Secretary with respect to the expertise and capabilities which are available within or through the national sea grant college program and encourage the use of such expertise and capabilities, on a cooperative or other basis, by other offices and activities within the Administration, and other Federal departments and agencies;
 - (C) advise the Secretary on the designation of sea grant colleges and sea grant institutes, and, if appropriate, on the termination or suspension of any such designation; and
 - (D) encourage the establishment and growth of sea grant programs, and cooperation and coordination with other Federal activities in fields related to ocean, coastal, and Great Lakes resources.
- (3) With respect to sea grant colleges and sea grant institutes, the Director shall--

(A) evaluate and assess the performance of the programs of sea grant colleges and sea grant institutes, using the priorities, guidelines, and qualifications established by the Secretary under subsection (c), and determine which of the programs are the best managed and carry out the highest quality research, education, extension, and training activities;

(B) subject to the availability of appropriations, allocate funding among sea grant colleges and sea grant institutes so as to--

- (i) promote healthy competition among sea grant colleges and institutes;
- (ii) encourage collaborations among sea grant colleges and sea grant institutes to address regional and national priorities established under subsection (c)(1);
- (iii) ensure successful implementation of sea grant programs;
- (iv) to the maximum extent consistent with other provisions of this Act, provide a stable base of funding for sea grant colleges and institutes;
- (v) encourage and promote coordination and cooperation between the research, education, and outreach programs of the Administration and those of academic institutions; and
- (vi) encourage cooperation with Minority Serving Institutions to enhance collaborative research opportunities and increase the number of such students graduating in NOAA science areas; and ensure compliance with the guidelines for merit review under subsection (c)(2).

§ 1124. Program or project grants and contracts

(a) Authorization; purposes; limitation on amount. The Secretary may make grants and enter into contracts under this subsection to assist any sea grant program or project if the Secretary finds that such program or project will--

- (1) implement the objective set forth in section 202(b) [33 USCS § 1121(b)]; and
- (2) be responsive to the needs or problems of individual States or regions. The total amount paid pursuant to any such grant or contract may equal $66 \frac{2}{3}$ percent, or any lesser percent, of the total cost of the sea grant program or project involved; except that this limitation shall not apply in the case of grants or contracts paid for with funds accepted by the Secretary under section 204(c)(4)(F) or that are appropriated under section 208(b).

(b) Special grants; maximum amount; prerequisites. The Secretary may make special grants under this subsection to implement the objective set forth in section 202(b) [33 USCS § 1121(b)]. The amount of any such grant may equal 100 percent, or any lesser percent, of the total cost of the project involved. No grant may be made under this subsection unless the Secretary finds that--

- (1) no reasonable means is available through which the applicant can meet the matching requirement for a grant under subsection (a);
- (2) the probable benefit of such project outweighs the public interest in such matching requirement; and
- (3) the same or equivalent benefit cannot be obtained through the award of a contract or grant under subsection (a). The total amount that may be provided for grants under this subsection during any fiscal year shall not exceed an amount equal to 5 percent of the total funds appropriated for such year under section 212 [33 USCS § 1131].

(c) Eligibility and procedure. Any person may apply to the Secretary for a grant or contract under this section. Application shall be made in such form and manner, and with such content and other submissions, as the Secretary shall by regulation prescribe. The Secretary shall act upon each such application within 6 months after the date on which all required information is received.

(d) Terms and conditions.

- (1) Any grant made, or contract entered into, under this section shall be subject to the limitations and provisions set forth in paragraphs (2), (3), and (4) and to such other terms, conditions, and requirements as the Secretary deems necessary or appropriate. Terms, conditions, and requirements imposed by the Secretary under this paragraph shall minimize any requirement of prior Federal approval.
- (2) No payment under any grant or contract under this section may be applied to-
 - (A) the purchase or rental of any land; or
 - (B) the purchase, rental, construction, preservation, or repair of any building, dock, or vessel; except that payment under any such grant or contract may be applied to the short-term rental of buildings or facilities for meetings which are in direct support of any sea grant program or project and may, if approved by the Secretary, be applied to the purchase, rental, construction, preservation, or repair of non-self-propelled habitats, buoys, platforms, and other similar devices or structures, or to the rental

of any research vessel which is used in direct support of activities under any sea grant program or project.

- (3) The total amount which may be obligated for payment pursuant to grants made to, and contracts entered into with, persons under this section within any one State in any fiscal year shall not exceed an amount equal to 15 percent of the total funds appropriated for such year pursuant to section 212 [33 USCS § 1131].
- (4) Any person who receives or utilizes any proceeds of any grant or contract under this section shall keep such records as the Secretary shall by regulation prescribe as being necessary and appropriate to facilitate effective audit and evaluation, including records which fully disclose the amount and disposition by such recipient of such proceeds, the total cost of the program or project in connection with which such proceeds were used, and the amount, if any, of such cost which was provided through other sources. Such records shall be maintained for 3 years after the completion of such a program or project. The Secretary and the Comptroller General of the United States, or any of their duly authorized representatives, shall have access, for the purpose of audit and evaluation, to any books, documents, papers, and records of receipts which, in the opinion of the Secretary or of the Comptroller General, may be related or pertinent to such grants and contracts.

§ 1126. Sea grant colleges and sea grant institutes

(a) Designation.

- (1) A sea grant college or sea grant institute shall meet the following qualifications--
 - (A) have an existing broad base of competence in fields related to ocean, coastal, and Great Lakes resources;
 - (B) make a long-term commitment to the objective in section 202(b) [33 USCS § 1121(b)], as determined by the Secretary;
 - (C) cooperate with other sea grant colleges and institutes and other persons to solve problems or meet needs relating to ocean, coastal, and Great Lakes resources;
 - (D) have received financial assistance under section 205 of this title (33 U.S.C. 1124);

- (E) be recognized for excellence in fields related to ocean, coastal, and Great Lakes resources (including marine resources management and science), as determined by the Secretary; and
 - (F) meet such other qualifications as the Secretary, in consultation with the Board, considers necessary or appropriate.
- (2) The Secretary may designate an institution, or an association or alliance of two or more such institutions, as a sea grant college if the institution, association, or alliance--
 - (A) meets the qualifications in paragraph (1); and
 - (B) maintains a program of research, extension services, training, and education in fields related to ocean, coastal, and Great Lakes resources.
- (3) The Secretary may designate an institution, or an association or alliance of two or more such institutions, as a sea grant institute if the institution, association, or alliance--
 - (A) meets the qualifications in paragraph (1); and
 - (B) maintains a program which includes, at a minimum, research and extension services.
- (b) Existing designees. Any institution, or association or alliance of two or more such institutions, designated as a sea grant college or awarded institutional program status by the Director prior to the date of enactment of the National Sea Grant College Program Reauthorization Act of 1998 [enacted March 6, 1998], shall not have to reapply for designation as a sea grant college or sea grant institute, respectively, after the date of enactment of the National Sea Grant College Program Reauthorization Act of 1998 [enacted March 6, 1998], if the Director determines that the institution, or association or alliance of institutions, meets the qualifications in subsection (a).
- (c) Suspension or termination of designation. The Secretary may, for cause and after an opportunity for hearing, suspend or terminate any designation under subsection (a).
- (d) Duties. Subject to any regulations prescribed or guidelines established by the Secretary, it shall be the responsibility of each sea grant college and sea grant institute--
 - (1) to develop and implement, in consultation with the Secretary and the Board, a program that is consistent with the guidelines and priorities established under section 204(c) [33 USCS § 1123(c)]; and

- (2) to conduct a merit review of all proposals for grants and contracts to be awarded under section 205 [33 USCS § 1124].
- (e) Annual report on progress.
- (1) Report requirement. The Secretary shall report annually to the Committee on Resources and the Committee on Science of the House of Representatives, and to the Committee on Commerce, Science, and Transportation of the Senate, on efforts and progress made by colleges, universities, institutions, associations, and alliances to become designated under this section as sea grant colleges or sea grant institutes, including efforts and progress made by sea grant institutes in being designated as sea grant colleges.
 - (2) Territories and freely associated States. The report shall include description of--
 - (A) efforts made by colleges, universities, associations, institutions, and alliances in United States territories and freely associated States to develop the expertise necessary to be designated as a sea grant institute or sea grant college;
 - (B) the administrative, technical, and financial assistance provided by the Secretary to those entities seeking to be designated; and
 - (C) the additional actions or activities necessary for those entities to meet the qualifications for such designation under subsection (a)(1).

§ 1127. Fellowships

- (a) In general. To carry out the educational and training objectives of this Act, the Secretary shall support a program of fellowships for qualified individuals at the graduate and postgraduate level. The fellowships shall be related to ocean, coastal, and Great Lakes resources and awarded pursuant to guidelines established by the Secretary. The Secretary shall strive to ensure equal access for minority and economically disadvantaged students to the program carried out under this subsection. Every 2 years, the Secretary shall submit a report to the Congress describing the efforts by the Secretary to ensure equal access for minority and economically disadvantaged students to the program carried out under this subsection, and the results of such efforts.
- (b) Dean John A. Knauss Marine Policy Fellowship. The Secretary may award marine policy fellowships to support the placement of individuals at the graduate level of education in fields related to ocean, coastal and Great Lakes resources in positions with the executive

and legislative branches of the United States Government. A fellowship awarded under this subsection shall be for a period of not more than 1 year.

- (c) Restriction on Use of Funds: Amounts available for fellowships under this section, including amounts accepted under section 204(c)(4)(F) or appropriated under section 212 to implement this section, shall be used only for award of such fellowships and administrative costs of implementing this section.

§ 1128. National Sea Grant Advisory Board

- (a) Establishment.- There shall be an independent committee to be known as the National Sea Grant Advisory Board.

- (b) Duties.

- (1) In general. - The Board shall advise the Secretary and the Director concerning—

- (A) strategies for utilizing the sea grant college program to address the Nation's highest priorities regarding the understanding, assessment, development, management, utilization, and conservation of ocean, coastal, and Great Lakes resources;

- (B) the designation of sea grant colleges and sea grant institutes; and

- (C) such other matters as the Secretary refers to the Board for review and advice.

- (2) Biennial Report.- The Board shall report to the Congress every two years on the state of the national sea grant college program. The Board shall indicate in each such report the progress made toward meeting the priorities identified in the strategic plan in effect under section 204 (c). The Secretary shall make available to the Board such information, personnel, and administrative services and assistance as it may reasonably require to carry out its duties under this title. The Secretary shall make available to the Board such information, personnel, and administrative services and assistance as it may reasonably require to carry out its duties.

- (c) Membership, terms, and powers.

- (1) The Board shall consist of 15 voting members who shall be appointed by the Secretary. The Director and a director of a sea grant program who is elected by the various directors of sea grant programs shall serve as nonvoting members of the Board. Not less than 8 of the voting members of the Board shall be individuals

who, by reason of knowledge, experience, or training, are especially qualified in one or more of the disciplines and fields included in marine science. The other voting members shall be individuals who, by reason of knowledge, experience, or training, are especially qualified in, or representative of, education, marine affairs and resource management, coastal management, extension services, State government, industry, economics, planning, or any other activity which is appropriate to, and important for, any effort to enhance the understanding, assessment, development, management, utilization, or conservation of ocean, coastal, and Great Lakes resources. No individual is eligible to be a voting member of the Board if the individual is (A) the director of a sea grant college or sea grant institute; (B) an applicant for, or beneficiary (as determined by the Secretary) of, any grant or contract under section 205 [33 USCS § 1124]; or (C) a full-time officer or employee of the United States.

- (2) The term of office of a voting member of the Board shall be 3 years for a member appointed before the date of enactment of the National Sea Grant College Program Act Amendments of 2002 [enacted Nov. 26, 2002], and 4 years for a member appointed or reappointed after the date of enactment of the National Sea Grant College Program Act Amendments of 2002 [enacted Nov. 26, 2002]. The Director may extend the term of office of a voting member of the Board appointed before the date of enactment of the National Sea Grant College Program Act Amendments of 2002 [enacted Nov. 26, 2002] by up to 1 year. At least once each year, the Secretary shall publish a notice in the Federal Register soliciting nominations for membership on the Board.
- (3) Any individual appointed to a partial or full term may be reappointed for one additional full term. The Director may extend the term of office of a voting member of the Board once by up to 1 year.
- (4) The Board shall select one voting member to serve as the Chairman and another voting member to serve as the Vice Chairman. The Vice Chairman shall act as Chairman in the absence or incapacity of the Chairman.
- (5) Voting members of the Board shall--
 - (A) receive compensation at a rate established by the Secretary, not to exceed the maximum daily rate payable under section 5376 of title 5, United States Code, when actually engaged in the performance of duties for such Board; and
 - (B) be reimbursed for actual and reasonable expenses incurred in the performance of such duties.

- (6) The Board shall meet on a biannual basis and, at any other time, at the call of the Chairman or upon the request of a majority of the voting members or of the Director.
- (7) The Board may exercise such powers as are reasonably necessary in order to carry out its duties under subsection (b).
- (8) The Board may establish such subcommittees as are reasonably necessary to carry out its duties under subsection (b). Such subcommittees may include individuals who are not Board members.

§ 1129. Interagency cooperation

Each department, agency, or other instrumentality of the Federal Government which is engaged in or concerned with, or which has authority over, matters relating to ocean, coastal, and Great Lakes resources--

- (1) may, upon a written request from the Secretary, make available, on a reimbursable basis or otherwise any personnel (with their consent and without prejudice to their position and rating), service, or facility which the Secretary deems necessary to carry out any provision of this title [33 USCS §§ 1121 et seq.];
- (2) shall, upon a written request from the Secretary, furnish any available data or other information which the Secretary deems necessary to carry out any provision of this title [33 USCS §§ 1121 et seq.]; and
- (3) shall cooperate with the Administration and duly authorized officials thereof.

§ 1131. Authorization of appropriations

(a) Authorization.

- (1) In general. There are authorized to be appropriated to the Secretary to carry out this title [33 USCS §§ 1121 et seq.]--
 - (A) \$ 72,000,000 for fiscal year 2009;
 - (B) \$ 75,600,000 for fiscal year 2010;
 - (C) \$ 79,380,000 for fiscal year 2011;
 - (D) \$ 83,350,000 for fiscal year 2012;

(E) \$ 87,520,000 for fiscal year 2013; and

(F) \$ 91,900,000 for fiscal year 2014.

(2) Priority activities. In addition to the amounts authorized under paragraph (1), there are authorized to be appropriated for each of fiscal years 2009 through 2014--

(A) \$ 5,000,000 for competitive grants for university research on the biology, prevention, and control of aquatic nonnative species;

(B) \$ 5,000,000 for competitive grants for university research on oyster diseases, oyster restoration, and oyster-related human health risks;

(C) \$ 5,000,000 for competitive grants for university research on the biology, prevention, and forecasting of harmful algal blooms; and

(D) \$ 3,000,000 for competitive grants for fishery extension activities conducted by sea grant colleges or sea grant institutes to enhance, and not supplant, existing core program funding.

(b) Limitations.

(1) Administration. There may not be used for administration of programs under this title [33 USCS §§ 1121 et seq.] in a fiscal year more than 5 percent of the lesser of--

(A) the amount authorized to be appropriated under this title [33 USCS §§ 1121 et seq.] for the fiscal year; or

(B) the amount appropriated under this title [33 USCS §§ 1121 et seq.] for the fiscal year.

(2) Use for other offices or programs. Sums appropriated under the authority of subsection (a)(2) shall not be available for administration of this title [33 USCS §§ 1121 et seq.] by the National Sea Grant Office, for any other Administration or department program, or for any other administrative expenses.

(c) Distribution of funds. In any fiscal year in which the appropriations made under subsection (a)(1) exceed the amounts appropriated for fiscal year 2003 for the purposes described in such subsection, the Secretary shall distribute any excess amounts (except amounts used for the administration of the sea grant program) to any combination of the following:

(1) sea grant programs, according to their performance assessments;

- (2) regional or national strategic investments authorized under section 204(b)(4) [33 USCS § 1123(b)(4)];
 - (3) a college, university, institution, association, or alliance for activities that are necessary for it to be designated as a sea grant college or sea grant institute; and
 - (4) a sea grant college or sea grant institute designated after the date of enactment of the National Sea Grant College Program Act Amendments of 2002 [enacted Nov. 26, 2002] but not yet evaluated under section 204(d)(3)(A) [33 USCS § 1123(d)(3)(A)].
- (d) Availability of sums. Sums appropriated pursuant to this section shall remain available until expended.
- (e) Reversion of unobligated amounts. The amount of any grant, or portion of a grant, made to a person under any section of this Act that is not obligated by that person during the first fiscal year for which it was authorized to be obligated or during the next fiscal year thereafter shall revert to the Secretary. The Secretary shall add that reverted amount to the funds available for grants under the section for which the reverted amount was originally made available.

I. Big Ideas that need significant new funds

1) (Otwell): National Sea Grant - International Perspectives (IP's) - Sea Grant should initiate structured and assigned International Perspective (IP) programs on specific topics (e.g., Responsible Seafood/ Aquaculture Product Integration in US Commerce; Mutual Climatic Interventions; etc...). The approach should encourage mutual benefits and 'shared' cost with international 'partner' programs.

1 a.) Comparative evaluation of large scale marine algal production.

Farming of seaweeds presents a long term sustainable mechanism to address two compelling environmental issues of the next century with the potential to improve coastal water quality and reduce atmospheric CO₂, while generating employment, and producing food, fiber and food ingredients. A special Sea Grant competitive initiative to conduct a comparative evaluation of large scale seaweed production in different coastal regions of the country could act as a catalyst for a new "green" industry.

Coastal waters throughout the nation are polluted with excessive nutrients from human activities and seaweed culture of appropriate scale could remove a large percentage of these nutrients. Ocean acidification is one of the most alarming aspects of climate change and recently the pH of upwelled waters off the coast of Oregon was found to be close to the threshold at which animals will be unable to sequester calcium carbonate for the creation of shell material. This upwelled water has not been in contact with the atmosphere in 50 years and thus, the impacts of the last 50 years of industrialization have yet to surface, but they are in the pipeline of oceanic circulation. Removal of CO₂ through the culture and harvest of seaweeds could lessen the current impact of industrial practices and help mitigate those of the past. Large scale seaweed production would provide tremendous employment opportunities for displaced fishermen using their vessel handling skills, and for shore based support industries that would be needed for required handling, processing and marketing of products.

Resource economists could be engaged to evaluate the economics of large scale seaweed culture, factoring in the environmental services such activities would generate. A national Sea Grant initiative as described would involve a collaboration between Sea Grant scientists, extension specialists and many constituents in coastal communities throughout the U.S. Noted aquaculture consultant, John Forster, extrapolating from Chinese yields calculated that that by cultivating less than 2% of the oceans' surface, seaweed farms could produce a biomass amount equal to that of all food crops farmed on land. Ancillary benefits would be to lessen future agriculture demands for finite fresh water, reduce conversion of terrestrial wild lands to agriculture, and creation of unique habitat for marine flora and fauna. As Jacques Cousteau said in 1973, "With Earth's burgeoning populations to feed we must turn to the sea with new technology and new understanding. We must farm it as we farm the land."

II. Ideas that could be accomplished with new resources under existing budget

2) (Sylvia): Conduct a national seafood consumer survey every three/five years identifying consumer, needs, behavior, and knowledge. The survey would be valuable for developing a national baseline and benchmarks for measuring changes in consumer knowledge, perceptions and behaviors. Analyze and report on the survey in a special forum. Use the results to develop Sea grant programs and benchmark Sea Grant success.

3) (Sylvia): A national SG and joint USDA Conference on strategic aquaculture economics, policy, and management. In particular focus on the interactions of fisheries and aquaculture given growing overlap in management, policy, production, marketing, biology-ecology. Some dollars could support economic-industry research/surveys with a Conference proceedings/recommendations for improving management and policy. Results could be used to guide regional and state Sea Grant programs.

(4) Sylvia): Research analysis and conference on LAPPS and rights based management. In particular evaluate LAPP's with respect to sustainable seafood through the larger governance context, which is changing and broadening. The project could evaluate LAPPs in terms of their flexibility and adaptability to ecosystem-based fishery management, self governance, ocean zoning and climate change. It could look at the range of LAPP structures, from individual to co-op to communities. Results would be presented in a special conference and outreach materials developed for Sea grant education programs.

5) Sylvia: ecosystem-based fishery management: research, conference, educational programs assisting states, feds, industry, and NGO's on implementing ecosystem management including valuing ecosystem services;

6) Sylvia: fishery-based working waterfronts: research, conference and publication materials on innovative approaches, case studies, and new "tool boxes" for supporting/saving fishery infrastructure and working waterfronts; develop outreach materials and engagement strategies consistent with growing state/national policies

7) (Sylvia): integrative fishery information systems: develop integrative fishery and science information systems using websites, electronic logbooks/dataloggers, and traceability system to integrate/improve science, fishery management/economic performance, and marketing. Conduct pilot projects and support national conference and national outreach education effort.

8) (Otwell): National Sea Grant - Master Core Programs (MC's) - The core of Sea Grant extension expertise or marine advisory components needs to build a network or accompanying cadre of talent to assist our efforts. A proven model is the Master Gardeners Program that has fostered a national following with additional funds and various self-sustaining financial programs. I envision a national collaboration of Sea

Grant expertise developing, maintaining and delivering various 'core' curricula as the educational foundation supported by science, publications, websites, virtual internet communications, etc... to yield a cadre of 'recognized' experts (Masters of Seafood or Masters of Marine Fisheries, etc...) that would assist and complement our Sea Grant programs across regional and national programs.

9) (Morse): Consumer education program - Of the relatively little seafood that US consumers eat, much is chosen on the basis of price: though I don't have specific studies to cite, I think that is a true statement. Yet, we continually hear about poor product quality originating from outside the US (or dangerous product), all the while US capture fisheries and aquaculture producers do their best to adhere to some of the most stringent management and production criteria in the world. Can we create a product/forum/advertising or educational program or some other vehicle to make the case to consumers that when you buy American, not only are you helping domestic entities, you are acting in the best interests of your health?

10) (Smith): Create an independent "Safe, Sustainable Seafood Sea Grant Expert Center". This would be a place (virtual or real, that is at a Sea Grant program) where a group of people (the team or a 'steering committee' subset) would develop a RFP which summarizes the current topics and priorities of the team and solicits say two-year proposals which would regionally deal with a topic. The 'Center' would draft the RFP, circulate it, use a technical review process and select a set of proposals for funding.

11) (Smith): Safe Sustainable Seafood Council Outreach - This is an outreach (communication and education) project which will utilize the expertise and knowledge of the Sea Grant network in seafood and fisheries related work to communicate regularly with the MSFCMA-authorized regional fishery management councils (FMC). This proposal provides a mechanism for current and relevant Sea Grant fisheries research and outreach to be brought before the Council so that they are better informed about topical issues.

12) (DuPaul): Sustenance Fishing (one that sustains life or health; especially, food). Sea Grant may be in a particularly unique position to evaluate the degree and extent of sustenance fishing as it relates to fishery management, the importance of fishery stocks in contributing to another aspect of society that is sometime ignored and to what part of "recreational fishing" is really an effort to feed families and not to recreate. As the economies of the US and world take a bad tumble, is sustenance fishing going to be an issue that needs a better assessment and does it have a legitimate role in setting fishery management objectives.

13) (DuPaul); I still favor some action relating to fishery bycatch, discards, and of course interactions with protected species. Sea Grant does good work here either from the point of gear modifications or developing new management and fishing strategies with the fishing community.

14) (Schmitt): US hosts (Joint SeaGrant and NOAA Fisheries) a international symposium on Safe and Sustainable Fisheries/ ITQ systems/ lessons learned and transferable. It would have some cost; just guessing but a major international symposium with invited speakers would probably run \$150-200K but my recollection on costs is getting dated.

III. Possible Activities 2009*

- 1) Serve as a steering committee for the biennial Sea Grant/NMFS sponsored symposium at the annual meeting of the American Fisheries Society, Sept. 2009.
- 2) Send a dear colleague letter to the Sea Grant networks (SGA, Assembly, educators, communicators, etc.) that describes the proposed activities of the focus team and invites their input and collaboration. Ask if individuals would like to be added to the listserv or have ideas or request for actions by the team.
- 3) Organize and sponsor a national symposium on coping with high energy costs for the fishing and aquaculture industries. The symposium would address innovative harvesting, gear, engine and management approaches to reducing energy costs and would include international participants.
- 4) Collaborate with NMFS and USDA to conduct Sea Grant network inreach (capacity building) training programs in fisheries and aquaculture, and seafood/aquaculture safety.
- 5) When available, mine the ideas and priorities of the regional research and information plans as a needs assessment to help us determine activities and align our plans with the priorities of the regions.
- 6) Organize a meeting of the regional research and information plan PIs and the focus team chairs and vice-chairs to facilitate needed linkages.
- 7) Consider funding a part-time graduate student at LSU to staff our focus team. This graduate student would have responsibility for helping the team write impact and success stories from the annual reports.
- 8) Determine baseline measures (what and how to measure) and translate these measures into practical actions for Sea Grant programs, including conducting initial measurements.
- 9) Through the USDA/CSREES research group known as W1004 "Economics and Marketing of Seafood," partner with USDA on strategic initiatives identified in its

five year plan.

10) Participate in established forums and key organizational meetings with a particular Sea Grant presence to advance and encourage cooperation with the SSST process and concepts.

Healthy Coastal Ecosystems Focus Team: Ideas for new directions

(1) Linking social science to natural science in ecosystem based approaches to management

Two of Sea Grant's three strategic plan Healthy Coastal Ecosystem goals relate not directly to natural ecosystems, but rather to human ecosystem managers. As stated in the Large Marine Ecosystem Governance Handbook (2006),

Efforts to manage resources and the environment in the context of ecosystems are really about managing human behavior and encouraging and inducing behavioral patterns that take into account the operation of the natural world... Ecosystem-based management is not simply about science; successfully effectuating such management requires a very significant shift in human mindsets and behavior ... Management of LMEs [large marine ecosystems] requires not only knowledge of the changing pattern of human use of ecosystems and their ecological impacts but also the effects of change on the availability of socioeconomic benefits to be derived from LMEs.

Sea Grant could and should play a significant role in producing and disseminating the social science necessary to increase understanding of the market and nonmarket value of ecosystem services, improve the effectiveness of the tools used by resource managers to receive, interpret and share societal and environmental information related to ecosystem management, and improve the decision making capacity of all whose behaviors have an effect on the environment.

Some examples of areas where a targeted infusion of social science support could help improve ecosystem management:

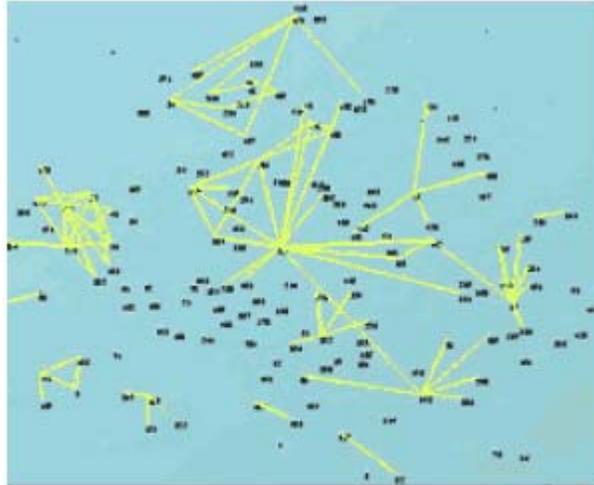
- Valuate ecosystem services. Few would argue that many ecosystem services are being used or degraded in ways that will result in the significant reduction or complete loss of those services in the near future. Commercial fish stocks, accessible fresh water and the temperature-regulating properties of the atmosphere are examples. Sometimes actions to increase one ecosystem service (eg, aquaculture and agriculture to increase the food supply) put other ecosystem services at risk (eg, through overfertilization of land or water or reductions in biodiversity). One reason that such practices are undertaken anyway is that resource management decisions are typically most strongly influenced by ecosystem services entering markets, so that non-marketed benefits, which are often high and sometimes more valuable than the marketed ones, are often underconsidered or lost entirely (Millennium Assessment, "Ecosystems and Human Well-being", 2005). Relevant resource valuation research, properly transitioned, could help assure that ecosystem management decisions and tradeoffs are more likely to result in an overall enhancement of ecosystem benefit.
- Optimize communication networks. Resource managers can make suboptimal decisions simply because they don't have access to the right information or the right stakeholder or partner input when they needed it. A recent NHSG project analyzed the communication networks for projects undertaken by the Atlantic Marine Fisheries Commission, using interviews and surveys to measure communication patterns among individuals within these entities and projects. The frequency and directional flow of information within and between the key individuals, such as project coordinators, scientists and decision-makers, were then represented in a visual network (figure). Analysis could show, and the visual network could help communicate, areas of efficient communication and areas where vital communication was misdirected or vulnerable to disruption. Quantitative measures of communication efficiency could be produced and strategies for improvement could be more effectively planned.

In addition to helping assure resource managers are communicating effectively, this type of communication research could help Sea Grant decide internally how to marshal its own communication resources to most effectively achieve its healthy coastal ecosystem (or any other) goals.

- Improve ecosystem governance models.

Ecosystem governance models are being developed which place considerably more emphasis on constituencies, commitment and infrastructure than have been considered in the past. One such model is described as the "Four Orders of Outcomes" (see Olsen, "Frameworks and indicators for assessing progress in integrated coastal management initiatives", Ocean & Coastal Management, 2003). These models

have as their ultimate goals a societal behavior change resulting in self-sustaining ecosystem management, not just the achievement or restoration of a specific ecosystem service. Continued development of models like these by Sea Grant and transition of their use to coastal managers would allow for broader buy-in of ecosystem management initiatives, a clearer identification of the resource commitment necessary to achieve sustainable results, a recognition of the long-term nature of such an enterprise, and, ultimately, an improved chance of success at achieving a sustainable healthy coastal ecosystem.



Daily communication network map involving herring management, a large regional fisheries case. Approximately eight subgroups or clusters of individuals speak daily, principally organized around stakeholder groups/agencies. Credit: Troy Hartley

Research and outreach of these or other types of social science issues could be in the form of targeted national competitions for individual projects that link social and ecosystem sciences in a way that objectively improves ecosystem management decisions.

It could also take the form of funding directly to Programs, to regional centers of excellence, or to a newly established Sea Grant national center for advancement and use of social science to improve coastal ecosystem management, to develop and execute a long term social science strategy.

Like other initiatives suggested by the HCE focus team, this initiative could easily be modified to advance the goals of the other focus areas as well.

(2) National Sea Grant Initiative on Economic Development

The opening line on the National Sea Grant's website under the section **About Us** reads: "Environmental stewardship, long-term economic development and responsible use of America's coastal, ocean and Great Lakes resources are at the heart of Sea Grant's mission". Clearly a cornerstone of all Sea Grant programs includes economic development, yet a perusal of the grant-funded and extension activities of most state-based Sea Grant programs gives less emphasis to this important facet or "leg" of the Sea Grant platform. During these economic times, a responsible action by Sea Grant would

be to re-invigorate the economic development aspects of its programs through initiatives in both research orientation and outreach. A National Sea Grant Initiative that focuses on economic sustainability and development, especially in the form of job creation, as well as improving transferability of information to improve and relieve current economic conditions would go far with the public, state and federal legislatures as well as the new administration.

This issue could be addressed specifically as it relates to Healthy Coastal Ecosystems, or more broadly. If focused on the HCE area, it could examine how the economic downturn is affecting the ability of coastal communities, businesses and individuals to conduct their livelihoods in environmentally sustainable ways. When times are tough, one of first things to go may be the layers of environmental protection that have been overlaid on industries already operating on narrow margins. As the poor are also particularly vulnerable to effects of losses in ecosystem services, ecosystem degradation is often one of the factors trapping people in cycles of poverty (Millenium Assessment, "Ecosystems and Human Well-being", 2005). With appropriate research, extension and outreach, SG can develop and share ways for public, commercial and private entities to "hunker down" without compromising ecosystem stewardship, and help coastal residents whose livelihoods are threatened by the combination of ecosystem degradation and economic recession to find ways to adapt. In addition, jobs and activities whose primary purpose is to protect the environment may be at risk in a downturn. Commercial recycling concerns and alternative energy startups, for example, are facing financial hardships due to the slowdown.

While easily included under the auspices the Healthy Coastal Ecosystems focus area, a more pragmatic and effective approach would be to re-emphasize the economic development feature of Sea Grant in each of the focus areas by all Sea Grant programs. By combining efforts under each of the focus areas as a way of addressing our national economic crisis, Sea Grant would demonstrate to everyone how an example of federal, state, and citizen partnerships can conscientiously respond in times of national stress. If Sea Grant is to be at the forefront of leadership in the role that cooperative interactions can convene to help solve pressing economic and environmental issues, a highly effective and well publicized effort to combine the efforts between focus areas among all state programs will go far with the public and a new administration that is looking for solutions.

To affect this Initiative, representatives for each Sea Grant program (practically through the pre-existing structure afforded by the focus group organization), in conjunction with the National Sea Grant Office, should meet to determine the quickest and most efficient short-term actions that can be taken by Sea Grant to address the economic issues for which it has expertise. Many of these actions could be in the form of re-orienting current emphases in research and outreach. A second, long-term plan would also be developed that would involve a redirection of activities on a regional basis to address economic development issues. Resources would be needed to help plan and implement the short-term (1-3 year plans) while the long-term plans would be incorporated into the strategic

plans of the national and state programs. The newly adopted National Strategic Plan is sufficiently broad and flexible that it can readily include such an initiative.

(3) Redefining ecosystem restoration

An interesting paper was published last year in *Estuaries and Coasts*: "Return to Neverland: Shifting Baselines Affect Eutrophication Restoration Targets" Some lines from the abstract by Carlos Duarte and his team: "The implicit assumption of many scientific and regulatory frameworks that ecosystems impacted by human pressures may be reverted to their original condition by suppressing the pressure was tested using coastal eutrophication. The response to nutrient abatement of four thoroughly studied coastal ecosystems that received increased nutrient inputs between the 1970s and the 1980s showed that the trajectories of these ecosystems were not directly reversible.... Understanding ecosystem response to multiple shifting baselines is essential to set reliable targets for restoration efforts."

Following up on this beginning research would be quite interesting and helpful to those involved in restoring coastal ecosystems. Many local management programs continue to assume that we can return to past conditions of ecosystem "health" by simply reversing trends/inputs.

A national initiative involving ecosystem research into what restoration is possible, social research into the relative benefits and costs of restoration, and outreach to effectively share this information with managers and users of ecosystems would improve the chances of success of ecosystem restoration.

(4) Inland-coastal collaboration on water quality-related research and extension

The country, and Sea Grant, need to better coordinate the management of ecosystems that affect both inland and coastal areas. Develop a partnership with USDA-Land Grant to work on Water Quality issues on a large-watershed scale, including states inland from the Coast with no current Sea Grant presence. This idea was well received by Mike O'Neill, the national program leader for the CREES Water Resources program, and some of his regional leads. The initiative could take the form of using a current successful collaboration (e.g., in a successful NEMO program) as a model for a more extensive effort. Low level planning is already underway; a possible target is for a collaboration event to occur (or to be planned at, or to be reported at, depending on timing) the February 2010 National Water Conference.

(5) Coastal/offshore energy

At the last SGA meeting, it was discussed that the new administration and Congress are very focused on the Economy, the Environment and Education and that Sea Grant is the 'right tool' to effectively contribute in all three areas. We also discussed a 4th E -- Energy -- an area where there is not as great an investment of Sea Grant resources. With the many options for harnessing energy with coastal or offshore options (wind,

hydrodynamic, oil and gas), Sea Grant could play a major role in assessing potential benefits and impacts for coastal communities and natural ecosystems, because all of those options now on the table have a need for coastal infrastructure and the potential for environmental impacts, as well as jobs and energy production.

(6) What is ecosystem-based management?

There's lots of talk these days about "ecosystem-based management" and Judy Weis is hosting a Sea Grant discussion section on this topic at the May 2009 International Marine Conservation Congress at George Mason University. After polling the Sea Grant network for suggested participants and topics for the session, it was apparent from the great variety of suggestions that came in that we don't have a common understanding what "ecosystem-based management" actually is! It would be worth having a NSI on this topic so that it could be fleshed out and clarified.

(7) Ecosystem effects of climate change

The HRCC focus team's concept of a Center for Coastal Climate Change Engagement included a suggestion for research to "Determine linkages between human actions (e.g., physical alterations to coasts, groundwater depletion) and natural systems that can either increase or compromise ecological integrity and community resiliency to storm events and climate change." This has a clear ecosystem component to it, and the HCE focus team endorses and could participate in this approach.

(8) Involving "citizen-scientists" in HCE research and outreach.

One way to increase the "reach" and expanse of research activities is to involve "citizen-scientists" in research projects. Interested citizens can be involved with collecting samples, making observations, or "spreading the word". Involving citizen-scientists can be a cost effective way of increasing the expanse of field work activity and provides an avenue for outreach and education.

Examples of activities that could be undertaken under this heading may include expanding and/or nationalizing stewardship programs for youth like Coastal Roots, Bay Grasses in Classes and Bayou Side Classroom (water quality) to develop connectivity both regionally and nationally. Sea Grant has historically promoted stewardship and these kinds of activities can make a difference for the long term. They can also expand into citizen scientist and community projects.

(9) Indicators of Ecosystem Health

We need to continue to establish good definitions and aims for what constitutes "ecosystem health" locally, regionally and nationally and get the word out through a variety of outreach and educational programs ranging from the classroom and teacher training to public forums to citizen training so that everyone is on the same page for a suite of variables. Partnering with agencies and universities within each state and region

to establish criteria for ecosystem health, determine indicators, standardize methods, measurement and assessment protocol would be valuable for the long term.

(10) Innovative restoration science and tools

Partner to support comprehensive/multidisciplinary research projects to support research on the ecological success and evolution of functional value of large restoration projects and for innovative restoration techniques. In Louisiana, spray dredging and pipeline slurry are ways to enhance wetlands and for building new wetlands however, the breadth of research documenting functionality of the newly created projects has been limited.

National Sea Grant College Program – Sustainable Coastal Development Focus Team Budget Initiative Proposal

The Sea Grant Sustainable Coastal Development focus team has developed a plan of work designed to implement the 2009-2013 Strategic plan goals and objectives for this focus area. The team carefully considered each goal and objective and asked the question “what administrative action is necessary for this goal to be realized?”. The results of our deliberation appear in Attachment 1 of this document. Throughout this document specific strategic plan goals and their corresponding objectives are referenced in “()”. A (3.1) references goal 3 objective 1.

Most goals and objectives can be implemented with some facilitative action by the focus team. However, **Four key funding initiatives are critical to implement all of the Strategic Plan goals.** Two of these initiatives require modest investments (1-5 million annually). Two initiatives require major investments (>10 million annually).

Sustainable Coastal Development focus area is a relatively new focus for Sea Grant. Our coastal communities are facing unprecedented challenges as they face record development rates, record unemployment, and anticipate rising coastlines and changing storm water flows due to climate change. The sustainability of our nation’s coastal communities will depend on their ability to access the best science and make informed decisions that plan land use change and economic development that only impacts or uses coastal resources, water, energy, air, biodiversity, within sustainable limits. To ensure that communities have the scientific information and technical understanding necessary to make these decisions, the Sea Grant strategic plan calls for a building of internal technical capacity with expertise in new discipline areas (natural resource based planning, economic development, and climate change), conducting new research that integrates natural and social science focused on economic and ecological sustainability issues, and developing the programs and demonstrations necessary to implement concepts of coastal sustainability in our cities and communities.

The specific research, outreach, capacity building, and training activities we propose, fill unique niches necessary to assist coastal communities in achieving sustainability. Sea Grant will partner and coordinate with agencies working on related topics (e.g. National Estuarine Research Reserve System's Coastal Training Program, State Coastal Management Programs, NOAA CSC training programs, Coastal Community Planning and Development training, EPA's Climate Ready Estuaries Program, Cooperative Institute for Coastal and Estuarine Environmental Technology's (CICEET), USDA CSREES, etc.) to leverage the effectiveness of our research and outreach for coastal communities.

The 4 initiatives that follow detail the specific actions and budgets required to fully implement the 2009-2013 Sustainable Coastal development strategic plan.

1. Building capacity within the national Sea Grant network to conduct outreach for sustainable coastal development (1.4, 2.1, 3.2a, 3.2b, 3.3): ***\$3.8 million annually for 5 years***
2. NSI Research Competition: ***\$1-3 million annually***
 - Identify land use indicators and tipping points that threaten coastal, ocean, and great lakes ecosystems and footprints needed to sustain these ecosystems. (2.2): ***\$2 million***
 - Creation of new economic and market research-based decision tools (1.1): ***\$2 million***
 - Identify risks and benefits of renewable energy technologies (2.3): ***\$2 million***
 - Develop decision tools for planning future coastal communities (3.2b): ***\$1 million***
3. NOAA Sea Grant Research and Extension Center of Excellence for Sustainable Coastal Development (2.2): ***\$12.3 million annually***
4. Climate change and sustainable coastal development (2.4): ***\$15 million annually***

INITIATIVE 1: BUILDING CAPACITY WITHIN THE NATIONAL SEA GRANT NETWORK TO CONDUCT OUTREACH FOR SUSTAINABLE COASTAL DEVELOPMENT

Budget Request: \$3.8 million annually for 5 years

The science of assessing and evaluating the impacts of land use practices on sensitive coastal ecosystems has come into its own only in the last ten years. The science of climate change has followed much the same trajectory. As the science has evolved, Sea Grant College programs and their partnering universities have attempted to build the capacity to facilitate coastal communities' efforts to address these issues. While sprawling development patterns overtook coastal landscapes during the last decade, the need for research, education, and outreach on sustainable alternatives continues to grow. Because demand from cities and towns for decision support information, processes, and tools far outstrips the capacity of existing Sea Grant Extension personnel, hiring and training university specialists with academic appointments in appropriate departments to help guide and deliver a sustainable community research and outreach agenda is urgently needed. Enhancing partnerships within NOAA and other federal agencies, as well as across-disciplinary university departments will also be needed to fill this need for service.

Sustainable Coastal Development Extension Enhancement (\$2.5 million annually)

We propose a competition among state Sea Grant programs to support twenty SCD specialists for five years (\$125,000 for each position and corresponding projects). The competition would be modeled after the successful Fisheries Extension Enhancement (FEE) program. Successful applicants would build partnerships with national, state, regional, and local organizations to insure that the work will continue after the initial five-year period. The specialists will focus on:

- Development and implementation of decision-support tools [3.2b]
- Locally responsive research and outreach [3.3]

Sharing Decision-Support Information, Processes, and Tools [3.2b]

Sea Grant programs will build local capacity to evaluate alternative future scenarios for coastal communities. This requires collaborative processes that bring all stakeholders to the table as decisions are being made, and research-based decision tools that can be used to inform decisions about sustainable coastal resources, tradeoffs, and options. Sea Grant staff will provide facilitation and leadership that empowers community leaders to eliminate barriers to participatory decision making and provide training in decision support tools and data to make informed sustainable decisions. Partnerships with the National Estuarine Research Reserve's Coastal Training Program and NOAA Coastal Services Center will be drawn on to expand capacity.

Locally Responsive Research and Outreach [3.3]

Sea Grant programs will conduct locally responsive research and outreach efforts that will lead to innovative development techniques, improved site designs, and best management practices. We envision projects similar to those funded by the EPA/NOAA Coastal Smart Growth Implementation Assistance partnership. Sea Grant programs partnered with coastal communities to facilitate policy analysis (e.g., code reviews, infrastructure siting policies, etc.) and public participatory processes (e.g., visioning, build-out analysis, etc.).

Regional Economic Development Specialists [1.4] (\$1.2 million annually)

Sea Grant will fund six regional specialists (Northeast, Mid Atlantic, South Atlantic, Gulf Coast, Great Lakes, West Coast) affiliated with institutions of higher education that will help build partnerships and foster regional cooperation among local government officials, community stakeholders, and regional planning organizations that help promote sustainable growth plans that balance economic development and protection of coastal resources. Regional specialists will have ties to an academic department and a Sea Grant extension program and will have seed funds to implement projects in conjunction with Sea Grant programs in the region. Partnerships would be encouraged with economic development specialists at the Cooperative Extension Services of the Land Grant Universities and with EDA-funded University Centers in their region.

(6 regional specialists @ \$200,000 each = \$1.2 million total)

Internal Workforce Development and Training [3.2b, 3.2a] (\$100,000 annually)

Currently Sea Grant has a recognized Sustainable Coastal Community Development network populated by agents funded under the Coastal Communities and Economies initiative. These agents have worked at the community level largely focusing on implementing the Nonpoint Education for Municipal Officials (NEMO) program and smart growth principals. To achieve the sustainability principals outlined in the 2009-2013 strategic plan, outreach to communities must go beyond existing programming and include participatory decision-making [3.2b], economic development, [1.4], and training and sharing of decision tools and resources related to Natural Resource Based Planning [3.2a] that help communities achieve economic and ecological sustainability. While enlarging Sea Grant's extension capacity through new hires is critical, there is notable economy and exceptional impact that results from investing in the professional development of the current extension workforce. Existing SCCD personnel are seasoned in the Sea Grant mission, experienced in the range of extension methods, and well connected and respected in their regions. But given the relative newness of the SCD focus area to Sea Grant, some of these veterans lack the advanced content and technical education and training that coastal communities require to inform sustainable development decision-making. To that end, we propose a formal 1-2 day continuing education program conducted at the annual SCCD meeting (held in conjunction with a professional conference) annually with extra web-based or site-based training as required.

INITIATIVE 2: NSI RESEARCH COMPETITION

Budget Request: \$1-3 million annually

Coastal Communities have demonstrated the interest to implement sustainable strategies that has outpaced the science that is available to them. Answers are needed to critical questions in 4 topic areas to assist coastal communities in achieving sustainability. A regular NSI competition is required to engage university-based peer reviewed competitive research in the following 4 topic areas necessary to generate discoveries required by coastal communities to achieve sustainability. Annual NSI's can focus on one or more of the 4 topics described below depending on resources available. When possible, state Sea Grant programs should focus requests for competitive research in these 4 topic areas.

SCD RESEARCH AGENDA -- IDENTIFY LAND USE INDICATORS AND TIPPING POINTS THAT THREATEN COASTAL, OCEAN, AND GREAT LAKES ECOSYSTEMS AND FOOTPRINTS NEEDED TO SUSTAIN THESE ECOSYSTEMS. (2.2) (\$ 2 million)

In order for coastal communities to achieve ecosystem sustainability, they must first understand what land and habitat components (land area, natural vegetation, water quality and quantity) are necessary to sustain these ecosystems. Questions that must be answered include: How much coastal wetland habitat do we need to sustain fish production and where should it be located? How much green infrastructure is needed to regulate storm runoff into coastal ecosystems and where should it be located? How much green infrastructure is needed to regulate nutrient flows into aquatic and coastal ecosystems and where should it be located? What green infrastructure is needed to maintain travel corridors, migrations, and exchange of genetic material between ecosystems and where should it be located? Only when answers to these questions are obtained, can communities enact policies, ordinances and land use plans necessary to maintain the land footprint needed to sustain coastal ecosystems.

Communities are increasingly understanding the relationships between land use changes and impacts these changes have on coastal and aquatic ecosystems. For example, the National NEMO network (which includes many Sea Grant Programs), have been successful in identifying the % of impervious surface cover as a critical tipping point that impacts aquatic ecosystems. Generally, studies have shown that when a watershed's impervious surface cover exceeds 10%, stream ecosystems are impacted (there is a shift from specialists to generalist species and invasive species increase). When the % of impervious surface cover exceeds 25%, streams are degraded (meaning specialist species disappear, and invasive species dominate). This simple indicator of % impervious surface cover has been extremely effective in assisting communities in identifying tipping points (10% impervious cover and 25% impervious cover) that cannot be exceeded without impacting their streams. Sea Grant programs have been successful in working with communities to measure their existing impervious surface cover, and implement land use change policies, ordinances, comprehensive plans, and smart growth strategies necessary to keep a community's impervious surface cover below levels that impact their streams.

We need to build upon this model to develop additional indicators and tipping points communities nationally can use to guide land use change and development decisions that will not negatively impact coastal, ocean and Great Lakes Resources. Questions include: What are the indicators and tipping points that indicate when oyster beds will be impacted? What are the watershed indicators and tipping points that identify when hypoxia will result or increase? What are the land cover or land use indicators and

tipping points that indicate when coastal ecosystems are impacted or degraded (i.e. loosing specialist species and increasing generalist and invasive species)? What are the tipping points for ground water and surface flows needed to sustain stream and coastal ecosystems given climate change and what water withdrawal and storm water input rates are therefore sustainable? Once these new indicators and tipping points are developed, the SCCD extension network can work with their coastal communities to enact policies, ordinances and strategies to ensure that tipping points are not exceeded thus sustaining coastal ecosystems.

SCD RESEARCH AGENDA -- CREATION OF BETTER ECONOMIC AND MARKET RESEARCH-BASED DECISION TOOLS (1.1) (\$ 2 million)

There is a growing realization that society must quickly find ways of integrating critical ecosystem services into regional development plans and the management of urban regions, but the science-based decision support structures and tools that can help urban regions accomplish this are not fully developed. The loss of open land and functioning ecosystems impacted by development is essentially an irreversible process, and little insight is available to those making land-use change decisions as to what tangible and intangible values are being lost. If society is committed to promoting sustainable communities then it must also be willing to preserve natural capital and conserve the region's natural and water resources. Natural capital is broadly defined as the totality of natural systems that provide current and future flows of service, i.e. resources, flora, fauna, and ecosystems that provide human beings with tangible and intangible goods and services that have real use and non-use economic value. It includes the concept of "green infrastructure."

The research proposals to be funded under this objective should address: What is the stock of natural capital within and at the fringe of our metropolitan coastal cities? How can we best assess the value of this stock (e.g., contingent valuation, hedonic land valuation, etc.)? How much of this value is lost when land use change is accomplished in its current fragmented fashion and when undertaken under a "smart growth" model of regional development? How should the use and non-use value of natural capital best be incorporated into market-based strategies developed to preserve, protect, and enhance environmental and ecological resources -- e.g., if differential tax incentives or the transfer of development rights are used to protect ecosystems or natural resources, how should the assessed value of the properties being protected or the value of the rights being transferred also incorporate the value of their natural capital, in addition to the value of their foregone development potential? Finally, can easily- applied and widely-transferable valuation methods or economic models be developed that would enable urban planners, local officials and others without expertise in econometrics to establish the value of the natural capital within their own communities and regions?

Attention must also be paid to helping communities balance their water dependent uses, recreation, and working waterfronts with other types of competing land uses. A variety of sophisticated economic and spatial models can be used to project future land use patterns (see, e.g., Science Applications International Corp. (2000) *Projecting Land-Use Change: A Summary of Models for Assessing the Effects of Community Growth and Change on Land-Use Patterns*. USEPA Office of Research and Development, Report EPA/600/R-00-098) but these models are often expensive to employ, difficult to interpret, need very specialized expertise to run accurately, and require that substantial information be collected as data input and for calibration. Simpler predictive decision tools must be developed that help communities better weigh the economic consequences of the various land use and economic development choices made

by local officials. Better market-based models can assist local officials in zoning or redeveloping their fragile coastal areas in such a way as to maximize economic benefits to the community while addressing the potential environmental impacts and ecological costs of development. Research is needed to develop simple and effective economic tools and predictive models that can help local officials and planners better assess and compare the economic trade-offs of different development or redevelopment alternatives. The use of such models can help coastal communities fashion more cost-effective development plans and policies and more environmentally sound land use controls for their valuable and vulnerable coastal areas.

SCD RESEARCH AGENDA -- RISKS AND BENEFITS OF RENEWABLE ENERGY

TECHNOLOGIES (2.3) (\$2 million) Because many greenhouse gases (GHG) are emitted from the combustion of both fossil and bio-fuels used in energy production, most policies being developed to address mitigating global climate change (or to slow the rate of such change in order to promote societal and ecological adaptation) also address energy conservation and the promotion of renewable energy resources. Climate change is likely to have a significant impact on coastal communities, making the topic one of special concern to Sea Grant. Renewable energy technologies with reduced GHG impacts include solar, hydropower, tidal, geothermal, and wind technologies. Research is needed to determine the extent that these alternate energy technologies can feasibly and cost-effectively contribute to mitigating climate change by supplementing or substituting for conventional energy generation technologies emitting GHGs. Methods for assessing which of these alternate technologies is most cost-effective in different coastal locations, how they can best be accommodated or retrofitted in developed or developing regions, and which programs and policies are most effective in promoting them are all areas of research interest.

The environmental and ecological risks of these renewable technologies, however, remain largely unknown. For example, the U.S. Department of the Interior and the states of California and Oregon have recently reached agreement to remove four dams on the Klamath River, the third most important western river for salmon, even while recent research suggests that the impacts of hydropower dams on migrating young salmon remain uncertain [see, e.g., Gross L (2008) Rethinking Dams: Pacific Salmon Recovery May Rest on Other Factors. *PLoS Biol* 6(10): e279]. Similar ambiguities exist with the environmental impacts of other types of renewable technologies – for instance, although there is concern about the impact of wind generators on migrating birds, there appears to be little impact of wind turbines on the wintering of farmland birds [see, e.g., Devereaux, Denny and Whittingham 2008 *Journal of Applied Ecology*, 45, 1689–1694] while new research suggests that windfarms might also have a deleterious impact on bats [Baerwald et al. (2008) Barotrauma is a significant cause of bat fatalities at wind turbines, *Current Biology*, 18:16, 26 August 2008, Pages R695-R696]. Clearly, further research is required to better understand the ecological impacts of each of these renewable technologies as they become a larger and more common component of the power grid.

SCD RESEARCH AGENDA – DECISION TOOLS FOR FUTURE SCENARIOS FOR COASTAL COMMUNITIES (3.2b) (\$1 million)

A variety of sophisticated software packages and regional development models are widely used in land use, transportation and economic development planning, but are rarely understood by local officials and citizens – they often remain “black boxes” calibrated and used by experts to crank out data at varying spatial resolutions and for varying time horizons with varying margins of error (none of which are usually clearly articulated to the local “users” of the data). In contrast

to employing complex models, municipalities may instead collect data for their periodic comprehensive planning revisions to quantitatively re-assess the impacts of development over time – data that may include traffic counts, census data, water quality monitoring and gauging stations, utility load data, crime data, building permits, etc. – in order to adjust the stringency of development control in response to these trends or, more commonly, simply in reaction to them (generating policies and interventions that are often “too little, too late”). Finally, some communities may choose to rely on focus groups, charettes, surveys, etc. in order to develop more qualitative measures of the impacts of growth on the perceived quality of life of resident and to develop policies and programs to address these impacts (ignoring the perceptions and desires of those citizens who are not engaged in these participatory processes).

Research is needed on the development of more transparent models that can assist local officials in making better and more sustainable decisions about their community’s or region’s growth. Ideally, these projective models should clearly articulate the range of error in projections and their scale and resolutions should vary according to the significance of the resources being (or to be) managed. Moreover, outputs should be graphic and spatial, allowing clear understanding of different development scenarios under different constraints and development policies, so that citizens can comprehend the different ways that their communities or regions can develop in the future based on the policies adopted today. Finally, such models should be adaptive, with the future scenarios and projections able to be modified by changes in data and user preferences.

Research is also needed to develop better ordinances and regulatory standards for development activities which can potentially address the impacts of climate change. These can include more effective on-site storm water management requirements, green roofs and landscaping that can mitigate urban heat island effects, programs and codes that promote energy and resource conservation, and the use of life-cycle costing and construction materials that are carbon neutral in terms of the development or redevelopment of coastal communities. Economic incentives that can be employed to promote these sustainable development objectives can also be developed and evaluated against command-and-control strategies. In many cases, the optimal public policies promoting sustainable growth are likely to be combination of economic and regulatory initiatives and research should be undertaken to better assess what such a mix should include under various spatial, ecological, economic and development conditions.

INITIATIVE 3: NOAA SEA GRANT RESEARCH AND EXTENSION CENTER OF EXCELLENCE FOR SUSTAINABLE COASTAL DEVELOPMENT (2.2)

Budget Request: \$12.3 million annually

By 2050, more than 70 percent of the nation's population and economic growth is expected to take place in 10 mega-regions linked by environmental systems, transportation networks, economies, and culture. 8 of these mega-regions are coastal. Over the next 50 years, the US. Population is expected to grow by ½ of our 2000 population level and much of this growth will occur in coastal areas (www.America2050.org). The sustainability of our coastal, ocean and great lakes resources are inextricably linked to the sustainability of our nation's economy. The revenues and employment generated by coastal resources and coastal dependent industries are a significant component of our Gross Domestic Product (GDP). In Florida alone the ocean and coastal related economy generates 78% of the state's GDP and reaches \$550 billion annually. (http://www.floridaoceanscouncil.org/economies_report.htm).

The water, food, pharmaceutical products, and energy resources provided by our oceans and Great Lakes are instrumental to sustaining human populations. In addition, the recreational opportunities and aesthetics provided by our coastal resources are a fundamental reason our mega-regions continue to grow in coastal areas.

The only way our nation's communities, cities and mega-regions can sustain their human populations, quality of life, and economies is if they sustain the resources on which they depend. In order to achieve sustainability, communities must be able to identify and protect the footprint required to sustain coastal, ocean and Great lakes ecosystems. (For example, an oyster bed does not just depend on the rocks and water in the bay in which they live. Their survivability depends on the quality of the water entering the bay and this water may be affected by land uses in the surrounding watershed. Therefore there is a *footprint* on the landscape that is imperative to sustaining an oyster bed. There is also a *tipping point* beyond which land use changes will negatively impact the oysters in the bay. In order for an oyster bed to be sustainable, the coastal community must understand where the *footprint* is that sustains the oyster's ecosystem that must be maintained and protected when necessary and the *tipping points* for land use within this *footprint* that cannot be exceeded if the oysters are to survive. Until this is understood, communities cannot implement land use policies, or develop comprehensive growth plans that are sustainable.)

In order to achieve sustainability, our nation's planners, community leaders, and scientists must work together. The ***NOAA Sea Grant Research and Extension Center of Excellence for Sustainable Coastal Development*** would provide the structure necessary to engage our nation's best scientists, and institutions in working with coastal community leaders to make new discoveries and test cutting edge ideas and technologies that ensures a sustainable future. This center will engage the existing Sea grant SCCD professionals as a bridge between the research community and coastal communities and as a conduit through which new technologies are transferred and applied.

Center Structure

The center would be designed in a way to engage our nations' best scientists, our Sea Grant institutions, and our network of extension professionals in the Sea Grant Sustainable Coastal Community

Development network. A Sea Grant institution, selected following a national competition, would house and coordinate the Center of Excellence. 32 scientists seeking critical discoveries needed to achieve sustainability would be funded through 3-year competitive fellowships awarded to their home institutions. Three communities across a range of scales would become test beds to apply NOAA Sea Grant Research. Competitive research and outreach projects designed to help achieve sustainable coastal development in 4 critical discovery areas (see below) will engage Sea Grant programs and institutions across the country in working with their communities, cities and mega-regions.

Center Administration (\$1 million annually)

The successful program awarded center administration will:

- facilitate competitions for the fellows and demonstration programs
- administer all subcontracts for the fellows and demonstration programs
- facilitate RFP development and selection process for any NSI's related to sustainable development (see initiative 1 above).
- coordinate work between fellows, NSI researchers and outreach specialists, and demonstration projects to ensure that discoveries are building on one another and getting applied in communities.
- build partnerships and programs to conduct multidisciplinary research and applications
- transfer all discoveries and decision tools developed to the Sea Grant Sustainable Coastal Community development extension network and provide support necessary to get discoveries applied in local cities and communities.
- Assimilate all impacts, perform all reporting requirements and conduct all public information and outreach product development needed for center projects.

Sea Grant Sustainable Coastal Development Fellows (\$4.8 million annually)

A competitive program will be conducted to select 32 national faculty research fellows (8 in each topic area) that receive 3 years of support for \$150,000 annually to conduct research in 4 discovery areas:

1. Identify land use indicators and tipping points that threaten coastal, ocean, and great lakes ecosystems and footprints needed to sustain these ecosystems.
2. Creation of new and improved economic and market research-based decision tools
3. Identify risks and benefits of renewable energy technologies
4. Develop decision tools for planning future coastal communities

(Emphasis will be given to the regional distribution of fellows when possible.)

Demonstrations (\$ 3.5 million annually)

Three communities will be selected through a national competition that will become *Model Sustainable Coastal Communities*. 1 community will be selected at each of 3 scales:

- a mega-region that crosses state boundaries and exceeds 5 million people (\$2million annually)
- a medium (1-5 million people) sized city (\$1 million annually)
- a small (less than 1 million people) community (\$500,000 annually)

Applications must be made in partnership between Sea Grant institutions and appropriate community planning organizations and agencies. Selected communities must apply sustainable cutting edge technologies, strategies, and policies and measure progress toward sustainability metrics.

Competitive Peer-reviewed Research and Outreach through NSI's (\$3.0 million annually)

An NSI competition will be conducted annually through the normal National Sea Grant NSI process.

Research and outreach projects will be solicited in 4 topic areas:

1. Identify land use indicators and tipping points that threaten coastal, ocean, and great lakes ecosystems and footprints needed to sustain these ecosystems.
2. Creation of new and improved economic and market research-based decision tools
3. Identify risks and benefits of renewable energy technologies
4. Develop decision tools for planning future coastal communities

The center administration will work with the National Sea Grant office to identify appropriate experts that can assist with RFP development and project selection.

INITIATIVE 4: SEA GRANT AND COASTAL CLIMATE CHANGE – A CROSS CUTTING INITIATIVE OF SEA GRANT’S FOUR STRATEGIC FOCUS AREAS

Budget Request: \$ 15 million annually

NOAA is currently considering the development of a Climate Service and the National Sea Grant College Program is poised to utilize the strong foundations of its federal-university partnership to serve stakeholder climate needs. Here, we propose an integrated Sea Grant Coastal Climate Program of research, outreach and education to address these needs. Sea Grant will be responsible for administering competitive university-based applied research, leading extension and community engagement programs, and delivering education programs and practices that address climate change issues in coastal communities. Climate change issues are embedded within the national strategic plan for each of the four focus areas of *sustainable coastal development, resilient coastal communities, healthy coastal ecosystems and a safe sustainable seafood supply*, therefore, ***this initiative suggests an integrative approach***. While this effort is proposed by the Sustainable Coastal Development Focus Team, each of the three sub-initiatives below is intended to be inclusive of the other 3 focus areas and serves as a template for how the National Sea Grant College Program can help NOAA and a NOAA Climate Service work with coastal communities to address impacts of climate change.

\$5 M per year for extension capacity-building within National Sea Grant Office and its state programs: Develop a climate extension network comprised of NSGO senior climate specialists, and 15-20 university-based Sea Grant climate extension agents with geographic distribution across NOAA’s coastal and Great Lakes regions. NSGO staff serves as coordinators and liaisons to other NOAA offices, research laboratories and cooperative institutes. Competitively-awarded climate extension projects will hire new climate specialists at state Sea Grant programs, address specific local and regional needs for climate issues, and serve as the point of contact for dissemination of relevant research results. A recent survey by the Sea Grant Extension Network indicated that 86% of the programs are currently involved in addressing climate issues, yet there is no cohesive national effort to provide both consistent “in-reach” training and regional outreach products and services. Among sustainable coastal development issues, climate extension specialists will develop local and regional outreach programs on alternative energy, green infrastructure, carbon trading, carbon neutral designs, carbon sequestration, risks and benefits of alternative energy development, as well as climate effects on onsite storm water management, mitigation of urban heat islands, event frequency, water quality and drinking water quantity issues.

\$5M per year for research to support local and regional coastal issues in the face of changing climate: Work with NOAA’s Climate Program Office to support locally and regionally relevant climate research identified by Sea Grant climate extension-led needs assessments and other outreach efforts. This approach of determining stakeholder driven research needs, coupled with outcome-based planning and implementation applies an approach that has been successful in the Sea Grant network for more than 40 years and will allow NOAA to address key constituent needs for climate change information. Among the sustainable coastal development issues, we expect targeted research aimed at determining how climate change will affect carrying capacity of coastal resources (water, fish, etc) and how to better determine management and planning decisions affected by a changing climate.

\$5 M per year for education on climate and weather literacy that addresses key regional and local issues: Work with NOAA’s Climate Program Office to support development of a climate education network with geographic distribution across NOAA’s coastal and Great Lakes region. This Climate and Weather Education Network will consist of a NSGO Climate Education Specialist and climate educators within each State Sea Grant Program that will develop national, regional, state and local formal educational programs that result in climate literate teachers and students in the nation’s classrooms. A “Climate Literacy: Essential Principles and Fundamental Concepts” Framework for formal education was developed by NOAA’s Climate Program Office in 2008. The Sea Grant Climate and Weather Education network will work to further establish the climate and weather literacy framework that builds on the research, science and technology education benchmarks developed by the American Association for the Advancement of Sciences Project 2061.

ATTACHMENT 1: PLAN OF WORK FOR THE NATIONAL SEA GRANT SUSTAINABLE COASTAL DEVELOPMENT FOCUS TEAM

Funding and support needed from the NSGO	Funding and support needed from NOAA	Sub committees needed (chaired by members of the SCD focus team)	Actions needed by Miller/Hurley, and Leon	Actions needed from SCCD group	Actions needed by individual programs
<p>Start up funds needed to fund white paper development that delineates the SCD research agenda (yr 1 – 25-40k) [3.2B, 2.3, 1.1]</p>	<p>NOAA creates something like a center of excellence for SCD designed to conduct research (internal and rfp) necessary to identify the sustainable ecosystem footprint [2.2]</p>	<p>Develop a SCD white paper and research agenda (Jaffe)</p>	<p>Seek NOAA support for a SCD center of excellence</p>	<p>Work with EPA and NEMO to coordinate actions on LID and Smart Growth (Jacobs, Faulk) [3.1]</p>	<p>Fund SCD research based on research agenda [1.1, 2.3, 3.2B]</p>
<p>Establish an FEE like competition for 5 yr SCD specialists located in programs [2.1] Specialists would have to focus on the following:</p> <ul style="list-style-type: none"> • Decision tool development [3.2b] • Locally responsive research and outreach [3.3] 	<p>NOAA funds regional or program based climate extension specialists [2.4]</p>	<p>Develop a proposal for a national access needs assessment and legal issues (Showalter)[1.2]</p>	<p>Seek support from NOAA to fund climate extension specialists in programs [2.4] (Hurley & Spranger)</p>	<p>Work out optimum relationship with NEMO for training and sharing of tools and resources related to Natural resource</p>	

<p>Begin in yr 1</p>				<p>Based planning [3.2A] (Jacobs, Whiting-Grant, Faulk)</p>	
<p>Hire regional or national Economic Development Specialists (yr 2)[1.4]</p>	<p>NOAA regional teams take leadership in engaging partners necessary to develop and implement regional sustainable growth plans and strategies necessary to protect coastal resources [3.2c]</p>	<p>Work with the SCCD group and national economic development specialist to develop a proposal to develop a tool that balances economic development with other enterprises and conduct the associated training necessary to prepare the SCD network to use it [1.3] (Murray, Jacobs, Whiting-Grant)</p>	<p>Get NOAA support to put regional growth planning to protect coastal resources (sustainable ecosystem footprint) on the agenda of all NOAA regional coordinators [3.2c]</p>	<p>Conduct training for SCCD network on participatory decisionmaking [3.2B] Jacobs, whiting-Grant, Faulk)</p>	
<p>Sponsor an NSI in year 2or3 based on SCD research agenda.</p>			<p>Seek NOAA funding support to enhance SCD NSI [1.1, 2.3, 3.2B]</p>		

<p>Research will focus on:</p> <ul style="list-style-type: none"> • Economic and market research based decision tools [1.1] • Risks and benefits of renewable energy technologies [2.3] • Decision tools for future scenarios for coastal communities [3.2B] 					
<p>Training funds needed to support workforce development of SCCD team (20K annually)c</p>					

[x.x]=Goal and strategy satisfied by the designated activity

National Sea Grant College Program – Sustainable Coastal Development Focus Team Budget Initiative Proposal

The Sea Grant Sustainable Coastal Development focus team has developed a plan of work designed to implement the 2009-2013 Strategic plan goals and objectives for this focus area. The team carefully considered each goal and objective and asked the question “what administrative action is necessary for this goal to be realized?”. The results of our deliberation appear in Attachment 1 of this document. Throughout this document specific strategic plan goals and their corresponding objectives are referenced in “()”. A (3.1) references goal 3 objective 1.

Most goals and objectives can be implemented with some facilitative action by the focus team. However, **Four key funding initiatives are critical to implement all of the Strategic Plan goals.** Two of these initiatives require modest investments (1-5 million annually). Two initiatives require major investments (>10 million annually).

Sustainable Coastal Development focus area is a relatively new focus for Sea Grant. Our coastal communities are facing unprecedented challenges as they face record development rates, record unemployment, and anticipate rising coastlines and changing storm water flows due to climate change. The sustainability of our nation’s coastal communities will depend on their ability to access the best science and make informed decisions that plan land use change and economic development that only impacts or uses coastal resources, water, energy, air, biodiversity, within sustainable limits. To ensure that communities have the scientific information and technical understanding necessary to make these decisions, the Sea Grant strategic plan calls for a building of internal technical capacity with expertise in new discipline areas (natural resource based planning, economic development, and climate change), conducting new research that integrates natural and social science focused on economic and ecological sustainability issues, and developing the programs and demonstrations necessary to implement concepts of coastal sustainability in our cities and communities.

The specific research, outreach, capacity building, and training activities we propose, fill unique niches necessary to assist coastal communities in achieving sustainability. Sea Grant will partner and coordinate with agencies working on related topics (e.g. National Estuarine Research Reserve System's Coastal Training Program, State Coastal Management Programs, NOAA CSC training programs, Coastal Community Planning and Development training, EPA's Climate Ready Estuaries Program, Cooperative Institute for Coastal and Estuarine Environmental Technology's (CICEET), USDA CSREES, etc.) to leverage the effectiveness of our research and outreach for coastal communities.

The 4 initiatives that follow detail the specific actions and budgets required to fully implement the 2009-2013 Sustainable Coastal development strategic plan.

1. Building capacity within the national Sea Grant network to conduct outreach for sustainable coastal development (1.4, 2.1, 3.2a, 3.2b, 3.3): ***\$3.8 million annually for 5 years***
2. NSI Research Competition: ***\$1-3 million annually***
 - Identify land use indicators and tipping points that threaten coastal, ocean, and great lakes ecosystems and footprints needed to sustain these ecosystems. (2.2): ***\$2 million***
 - Creation of new economic and market research-based decision tools (1.1): ***\$2 million***
 - Identify risks and benefits of renewable energy technologies (2.3): ***\$2 million***
 - Develop decision tools for planning future coastal communities (3.2b): ***\$1 million***
3. NOAA Sea Grant Research and Extension Center of Excellence for Sustainable Coastal Development (2.2): ***\$12.3 million annually***
4. Climate change and sustainable coastal development (2.4): ***\$15 million annually***

INITIATIVE 1: BUILDING CAPACITY WITHIN THE NATIONAL SEA GRANT NETWORK TO CONDUCT OUTREACH FOR SUSTAINABLE COASTAL DEVELOPMENT

Budget Request: \$3.8 million annually for 5 years

The science of assessing and evaluating the impacts of land use practices on sensitive coastal ecosystems has come into its own only in the last ten years. The science of climate change has followed much the same trajectory. As the science has evolved, Sea Grant College programs and their partnering universities have attempted to build the capacity to facilitate coastal communities' efforts to address these issues. While sprawling development patterns overtook coastal landscapes during the last decade, the need for research, education, and outreach on sustainable alternatives continues to grow. Because demand from cities and towns for decision support information, processes, and tools far outstrips the capacity of existing Sea Grant Extension personnel, hiring and training university specialists with academic appointments in appropriate departments to help guide and deliver a sustainable community research and outreach agenda is urgently needed. Enhancing partnerships within NOAA and other federal agencies, as well as across-disciplinary university departments will also be needed to fill this need for service.

Sustainable Coastal Development Extension Enhancement (\$2.5 million annually)

We propose a competition among state Sea Grant programs to support twenty SCD specialists for five years (\$125,000 for each position and corresponding projects). The competition would be modeled after the successful Fisheries Extension Enhancement (FEE) program. Successful applicants would build partnerships with national, state, regional, and local organizations to insure that the work will continue after the initial five-year period. The specialists will focus on:

- Development and implementation of decision-support tools [3.2b]
- Locally responsive research and outreach [3.3]

Sharing Decision-Support Information, Processes, and Tools [3.2b]

Sea Grant programs will build local capacity to evaluate alternative future scenarios for coastal communities. This requires collaborative processes that bring all stakeholders to the table as decisions are being made, and research-based decision tools that can be used to inform decisions about sustainable coastal resources, tradeoffs, and options. Sea Grant staff will provide facilitation and leadership that empowers community leaders to eliminate barriers to participatory decision making and provide training in decision support tools and data to make informed sustainable decisions. Partnerships with the National Estuarine Research Reserve's Coastal Training Program and NOAA Coastal Services Center will be drawn on to expand capacity.

Locally Responsive Research and Outreach [3.3]

Sea Grant programs will conduct locally responsive research and outreach efforts that will lead to innovative development techniques, improved site designs, and best management practices. We envision projects similar to those funded by the EPA/NOAA Coastal Smart Growth Implementation Assistance partnership. Sea Grant programs partnered with coastal communities to facilitate policy analysis (e.g., code reviews, infrastructure siting policies, etc.) and public participatory processes (e.g., visioning, build-out analysis, etc.).

Regional Economic Development Specialists [1.4] (\$1.2 million annually)

Sea Grant will fund six regional specialists (Northeast, Mid Atlantic, South Atlantic, Gulf Coast, Great Lakes, West Coast) affiliated with institutions of higher education that will help build partnerships and foster regional cooperation among local government officials, community stakeholders, and regional planning organizations that help promote sustainable growth plans that balance economic development and protection of coastal resources. Regional specialists will have ties to an academic department and a Sea Grant extension program and will have seed funds to implement projects in conjunction with Sea Grant programs in the region. Partnerships would be encouraged with economic development specialists at the Cooperative Extension Services of the Land Grant Universities and with EDA-funded University Centers in their region.

(6 regional specialists @ \$200,000 each = \$1.2 million total)

Internal Workforce Development and Training [3.2b, 3.2a] (\$100,000 annually)

Currently Sea Grant has a recognized Sustainable Coastal Community Development network populated by agents funded under the Coastal Communities and Economies initiative. These agents have worked at the community level largely focusing on implementing the Nonpoint Education for Municipal Officials (NEMO) program and smart growth principals. To achieve the sustainability principals outlined in the 2009-2013 strategic plan, outreach to communities must go beyond existing programming and include participatory decision-making [3.2b], economic development, [1.4], and training and sharing of decision tools and resources related to Natural Resource Based Planning [3.2a] that help communities achieve economic and ecological sustainability. While enlarging Sea Grant's extension capacity through new hires is critical, there is notable economy and exceptional impact that results from investing in the professional development of the current extension workforce. Existing SCCD personnel are seasoned in the Sea Grant mission, experienced in the range of extension methods, and well connected and respected in their regions. But given the relative newness of the SCD focus area to Sea Grant, some of these veterans lack the advanced content and technical education and training that coastal communities require to inform sustainable development decision-making. To that end, we propose a formal 1-2 day continuing education program conducted at the annual SCCD meeting (held in conjunction with a professional conference) annually with extra web-based or site-based training as required.

INITIATIVE 2: NSI RESEARCH COMPETITION

Budget Request: \$1-3 million annually

Coastal Communities have demonstrated the interest to implement sustainable strategies that has outpaced the science that is available to them. Answers are needed to critical questions in 4 topic areas to assist coastal communities in achieving sustainability. A regular NSI competition is required to engage university-based peer reviewed competitive research in the following 4 topic areas necessary to generate discoveries required by coastal communities to achieve sustainability. Annual NSI's can focus on one or more of the 4 topics described below depending on resources available. When possible, state Sea Grant programs should focus requests for competitive research in these 4 topic areas.

SCD RESEARCH AGENDA -- IDENTIFY LAND USE INDICATORS AND TIPPING POINTS THAT THREATEN COASTAL, OCEAN, AND GREAT LAKES ECOSYSTEMS AND FOOTPRINTS NEEDED TO SUSTAIN THESE ECOSYSTEMS. (2.2) (\$ 2 million)

In order for coastal communities to achieve ecosystem sustainability, they must first understand what land and habitat components (land area, natural vegetation, water quality and quantity) are necessary to sustain these ecosystems. Questions that must be answered include: How much coastal wetland habitat do we need to sustain fish production and where should it be located? How much green infrastructure is needed to regulate storm runoff into coastal ecosystems and where should it be located? How much green infrastructure is needed to regulate nutrient flows into aquatic and coastal ecosystems and where should it be located? What green infrastructure is needed to maintain travel corridors, migrations, and exchange of genetic material between ecosystems and where should it be located? Only when answers to these questions are obtained, can communities enact policies, ordinances and land use plans necessary to maintain the land footprint needed to sustain coastal ecosystems.

Communities are increasingly understanding the relationships between land use changes and impacts these changes have on coastal and aquatic ecosystems. For example, the National NEMO network (which includes many Sea Grant Programs), have been successful in identifying the % of impervious surface cover as a critical tipping point that impacts aquatic ecosystems. Generally, studies have shown that when a watershed's impervious surface cover exceeds 10%, stream ecosystems are impacted (there is a shift from specialists to generalist species and invasive species increase). When the % of impervious surface cover exceeds 25%, streams are degraded (meaning specialist species disappear, and invasive species dominate). This simple indicator of % impervious surface cover has been extremely effective in assisting communities in identifying tipping points (10% impervious cover and 25% impervious cover) that cannot be exceeded without impacting their streams. Sea Grant programs have been successful in working with communities to measure their existing impervious surface cover, and implement land use change policies, ordinances, comprehensive plans, and smart growth strategies necessary to keep a community's impervious surface cover below levels that impact their streams.

We need to build upon this model to develop additional indicators and tipping points communities nationally can use to guide land use change and development decisions that will not negatively impact coastal, ocean and Great Lakes Resources. Questions include: What are the indicators and tipping points that indicate when oyster beds will be impacted? What are the watershed indicators and tipping points that identify when hypoxia will result or increase? What are the land cover or land use indicators and

tipping points that indicate when coastal ecosystems are impacted or degraded (i.e. loosing specialist species and increasing generalist and invasive species)? What are the tipping points for ground water and surface flows needed to sustain stream and coastal ecosystems given climate change and what water withdrawal and storm water input rates are therefore sustainable? Once these new indicators and tipping points are developed, the SCCD extension network can work with their coastal communities to enact policies, ordinances and strategies to ensure that tipping points are not exceeded thus sustaining coastal ecosystems.

SCD RESEARCH AGENDA -- CREATION OF BETTER ECONOMIC AND MARKET RESEARCH-BASED DECISION TOOLS (1.1) (\$ 2 million)

There is a growing realization that society must quickly find ways of integrating critical ecosystem services into regional development plans and the management of urban regions, but the science-based decision support structures and tools that can help urban regions accomplish this are not fully developed. The loss of open land and functioning ecosystems impacted by development is essentially an irreversible process, and little insight is available to those making land-use change decisions as to what tangible and intangible values are being lost. If society is committed to promoting sustainable communities then it must also be willing to preserve natural capital and conserve the region's natural and water resources. Natural capital is broadly defined as the totality of natural systems that provide current and future flows of service, i.e. resources, flora, fauna, and ecosystems that provide human beings with tangible and intangible goods and services that have real use and non-use economic value. It includes the concept of "green infrastructure."

The research proposals to be funded under this objective should address: What is the stock of natural capital within and at the fringe of our metropolitan coastal cities? How can we best assess the value of this stock (e.g., contingent valuation, hedonic land valuation, etc.)? How much of this value is lost when land use change is accomplished in its current fragmented fashion and when undertaken under a "smart growth" model of regional development? How should the use and non-use value of natural capital best be incorporated into market-based strategies developed to preserve, protect, and enhance environmental and ecological resources -- e.g., if differential tax incentives or the transfer of development rights are used to protect ecosystems or natural resources, how should the assessed value of the properties being protected or the value of the rights being transferred also incorporate the value of their natural capital, in addition to the value of their foregone development potential? Finally, can easily- applied and widely-transferable valuation methods or economic models be developed that would enable urban planners, local officials and others without expertise in econometrics to establish the value of the natural capital within their own communities and regions?

Attention must also be paid to helping communities balance their water dependent uses, recreation, and working waterfronts with other types of competing land uses. A variety of sophisticated economic and spatial models can be used to project future land use patterns (see, e.g., Science Applications International Corp. (2000) *Projecting Land-Use Change: A Summary of Models for Assessing the Effects of Community Growth and Change on Land-Use Patterns*. USEPA Office of Research and Development, Report EPA/600/R-00-098) but these models are often expensive to employ, difficult to interpret, need very specialized expertise to run accurately, and require that substantial information be collected as data input and for calibration. Simpler predictive decision tools must be developed that help communities better weigh the economic consequences of the various land use and economic development choices made

by local officials. Better market-based models can assist local officials in zoning or redeveloping their fragile coastal areas in such a way as to maximize economic benefits to the community while addressing the potential environmental impacts and ecological costs of development. Research is needed to develop simple and effective economic tools and predictive models that can help local officials and planners better assess and compare the economic trade-offs of different development or redevelopment alternatives. The use of such models can help coastal communities fashion more cost-effective development plans and policies and more environmentally sound land use controls for their valuable and vulnerable coastal areas.

SCD RESEARCH AGENDA -- RISKS AND BENEFITS OF RENEWABLE ENERGY

TECHNOLOGIES (2.3) (\$2 million) Because many greenhouse gases (GHG) are emitted from the combustion of both fossil and bio-fuels used in energy production, most policies being developed to address mitigating global climate change (or to slow the rate of such change in order to promote societal and ecological adaptation) also address energy conservation and the promotion of renewable energy resources. Climate change is likely to have a significant impact on coastal communities, making the topic one of special concern to Sea Grant. Renewable energy technologies with reduced GHG impacts include solar, hydropower, tidal, geothermal, and wind technologies. Research is needed to determine the extent that these alternate energy technologies can feasibly and cost-effectively contribute to mitigating climate change by supplementing or substituting for conventional energy generation technologies emitting GHGs. Methods for assessing which of these alternate technologies is most cost-effective in different coastal locations, how they can best be accommodated or retrofitted in developed or developing regions, and which programs and policies are most effective in promoting them are all areas of research interest.

The environmental and ecological risks of these renewable technologies, however, remain largely unknown. For example, the U.S. Department of the Interior and the states of California and Oregon have recently reached agreement to remove four dams on the Klamath River, the third most important western river for salmon, even while recent research suggests that the impacts of hydropower dams on migrating young salmon remain uncertain [see, e.g., Gross L (2008) Rethinking Dams: Pacific Salmon Recovery May Rest on Other Factors. *PLoS Biol* 6(10): e279]. Similar ambiguities exist with the environmental impacts of other types of renewable technologies – for instance, although there is concern about the impact of wind generators on migrating birds, there appears to be little impact of wind turbines on the wintering of farmland birds [see, e.g., Devereaux, Denny and Whittingham 2008 *Journal of Applied Ecology*, 45, 1689–1694] while new research suggests that windfarms might also have a deleterious impact on bats [Baerwald et al. (2008) Barotrauma is a significant cause of bat fatalities at wind turbines, *Current Biology*, 18:16, 26 August 2008, Pages R695-R696]. Clearly, further research is required to better understand the ecological impacts of each of these renewable technologies as they become a larger and more common component of the power grid.

SCD RESEARCH AGENDA – DECISION TOOLS FOR FUTURE SCENARIOS FOR COASTAL COMMUNITIES (3.2b) (\$1 million)

A variety of sophisticated software packages and regional development models are widely used in land use, transportation and economic development planning, but are rarely understood by local officials and citizens – they often remain “black boxes” calibrated and used by experts to crank out data at varying spatial resolutions and for varying time horizons with varying margins of error (none of which are usually clearly articulated to the local “users” of the data). In contrast

to employing complex models, municipalities may instead collect data for their periodic comprehensive planning revisions to quantitatively re-assess the impacts of development over time – data that may include traffic counts, census data, water quality monitoring and gauging stations, utility load data, crime data, building permits, etc. – in order to adjust the stringency of development control in response to these trends or, more commonly, simply in reaction to them (generating policies and interventions that are often “too little, too late”). Finally, some communities may choose to rely on focus groups, charettes, surveys, etc. in order to develop more qualitative measures of the impacts of growth on the perceived quality of life of resident and to develop policies and programs to address these impacts (ignoring the perceptions and desires of those citizens who are not engaged in these participatory processes).

Research is needed on the development of more transparent models that can assist local officials in making better and more sustainable decisions about their community’s or region’s growth. Ideally, these projective models should clearly articulate the range of error in projections and their scale and resolutions should vary according to the significance of the resources being (or to be) managed. Moreover, outputs should be graphic and spatial, allowing clear understanding of different development scenarios under different constraints and development policies, so that citizens can comprehend the different ways that their communities or regions can develop in the future based on the policies adopted today. Finally, such models should be adaptive, with the future scenarios and projections able to be modified by changes in data and user preferences.

Research is also needed to develop better ordinances and regulatory standards for development activities which can potentially address the impacts of climate change. These can include more effective on-site storm water management requirements, green roofs and landscaping that can mitigate urban heat island effects, programs and codes that promote energy and resource conservation, and the use of life-cycle costing and construction materials that are carbon neutral in terms of the development or redevelopment of coastal communities. Economic incentives that can be employed to promote these sustainable development objectives can also be developed and evaluated against command-and-control strategies. In many cases, the optimal public policies promoting sustainable growth are likely to be combination of economic and regulatory initiatives and research should be undertaken to better assess what such a mix should include under various spatial, ecological, economic and development conditions.

INITIATIVE 3: NOAA SEA GRANT RESEARCH AND EXTENSION CENTER OF EXCELLENCE FOR SUSTAINABLE COASTAL DEVELOPMENT (2.2)

Budget Request: \$12.3 million annually

By 2050, more than 70 percent of the nation's population and economic growth is expected to take place in 10 mega-regions linked by environmental systems, transportation networks, economies, and culture. 8 of these mega-regions are coastal. Over the next 50 years, the US. Population is expected to grow by ½ of our 2000 population level and much of this growth will occur in coastal areas (www.America2050.org). The sustainability of our coastal, ocean and great lakes resources are inextricably linked to the sustainability of our nation's economy. The revenues and employment generated by coastal resources and coastal dependent industries are a significant component of our Gross Domestic Product (GDP). In Florida alone the ocean and coastal related economy generates 78% of the state's GDP and reaches \$550 billion annually. (http://www.floridaoceanscouncil.org/economies_report.htm).

The water, food, pharmaceutical products, and energy resources provided by our oceans and Great Lakes are instrumental to sustaining human populations. In addition, the recreational opportunities and aesthetics provided by our coastal resources are a fundamental reason our mega-regions continue to grow in coastal areas.

The only way our nation's communities, cities and mega-regions can sustain their human populations, quality of life, and economies is if they sustain the resources on which they depend. In order to achieve sustainability, communities must be able to identify and protect the footprint required to sustain coastal, ocean and Great lakes ecosystems. (For example, an oyster bed does not just depend on the rocks and water in the bay in which they live. Their survivability depends on the quality of the water entering the bay and this water may be affected by land uses in the surrounding watershed. Therefore there is a *footprint* on the landscape that is imperative to sustaining an oyster bed. There is also a *tipping point* beyond which land use changes will negatively impact the oysters in the bay. In order for an oyster bed to be sustainable, the coastal community must understand where the *footprint* is that sustains the oyster's ecosystem that must be maintained and protected when necessary and the *tipping points* for land use within this *footprint* that cannot be exceeded if the oysters are to survive. Until this is understood, communities cannot implement land use policies, or develop comprehensive growth plans that are sustainable.)

In order to achieve sustainability, our nation's planners, community leaders, and scientists must work together. The ***NOAA Sea Grant Research and Extension Center of Excellence for Sustainable Coastal Development*** would provide the structure necessary to engage our nation's best scientists, and institutions in working with coastal community leaders to make new discoveries and test cutting edge ideas and technologies that ensures a sustainable future. This center will engage the existing Sea grant SCCD professionals as a bridge between the research community and coastal communities and as a conduit through which new technologies are transferred and applied.

Center Structure

The center would be designed in a way to engage our nations' best scientists, our Sea Grant institutions, and our network of extension professionals in the Sea Grant Sustainable Coastal Community

Development network. A Sea Grant institution, selected following a national competition, would house and coordinate the Center of Excellence. 32 scientists seeking critical discoveries needed to achieve sustainability would be funded through 3-year competitive fellowships awarded to their home institutions. Three communities across a range of scales would become test beds to apply NOAA Sea Grant Research. Competitive research and outreach projects designed to help achieve sustainable coastal development in 4 critical discovery areas (see below) will engage Sea Grant programs and institutions across the country in working with their communities, cities and mega-regions.

Center Administration (\$1 million annually)

The successful program awarded center administration will:

- facilitate competitions for the fellows and demonstration programs
- administer all subcontracts for the fellows and demonstration programs
- facilitate RFP development and selection process for any NSI's related to sustainable development (see initiative 1 above).
- coordinate work between fellows, NSI researchers and outreach specialists, and demonstration projects to ensure that discoveries are building on one another and getting applied in communities.
- build partnerships and programs to conduct multidisciplinary research and applications
- transfer all discoveries and decision tools developed to the Sea Grant Sustainable Coastal Community development extension network and provide support necessary to get discoveries applied in local cities and communities.
- Assimilate all impacts, perform all reporting requirements and conduct all public information and outreach product development needed for center projects.

Sea Grant Sustainable Coastal Development Fellows (\$4.8 million annually)

A competitive program will be conducted to select 32 national faculty research fellows (8 in each topic area) that receive 3 years of support for \$150,000 annually to conduct research in 4 discovery areas:

1. Identify land use indicators and tipping points that threaten coastal, ocean, and great lakes ecosystems and footprints needed to sustain these ecosystems.
2. Creation of new and improved economic and market research-based decision tools
3. Identify risks and benefits of renewable energy technologies
4. Develop decision tools for planning future coastal communities

(Emphasis will be given to the regional distribution of fellows when possible.)

Demonstrations (\$ 3.5 million annually)

Three communities will be selected through a national competition that will become *Model Sustainable Coastal Communities*. 1 community will be selected at each of 3 scales:

- a mega-region that crosses state boundaries and exceeds 5 million people (\$2million annually)
- a medium (1-5 million people) sized city (\$1 million annually)
- a small (less than 1 million people) community (\$500,000 annually)

Applications must be made in partnership between Sea Grant institutions and appropriate community planning organizations and agencies. Selected communities must apply sustainable cutting edge technologies, strategies, and policies and measure progress toward sustainability metrics.

Competitive Peer-reviewed Research and Outreach through NSI's (\$3.0 million annually)

An NSI competition will be conducted annually through the normal National Sea Grant NSI process.

Research and outreach projects will be solicited in 4 topic areas:

1. Identify land use indicators and tipping points that threaten coastal, ocean, and great lakes ecosystems and footprints needed to sustain these ecosystems.
2. Creation of new and improved economic and market research-based decision tools
3. Identify risks and benefits of renewable energy technologies
4. Develop decision tools for planning future coastal communities

The center administration will work with the National Sea Grant office to identify appropriate experts that can assist with RFP development and project selection.

INITIATIVE 4: SEA GRANT AND COASTAL CLIMATE CHANGE – A CROSS CUTTING INITIATIVE OF SEA GRANT’S FOUR STRATEGIC FOCUS AREAS

Budget Request: \$ 15 million annually

NOAA is currently considering the development of a Climate Service and the National Sea Grant College Program is poised to utilize the strong foundations of its federal-university partnership to serve stakeholder climate needs. Here, we propose an integrated Sea Grant Coastal Climate Program of research, outreach and education to address these needs. Sea Grant will be responsible for administering competitive university-based applied research, leading extension and community engagement programs, and delivering education programs and practices that address climate change issues in coastal communities. Climate change issues are embedded within the national strategic plan for each of the four focus areas of *sustainable coastal development, resilient coastal communities, healthy coastal ecosystems and a safe sustainable seafood supply*, therefore, ***this initiative suggests an integrative approach***. While this effort is proposed by the Sustainable Coastal Development Focus Team, each of the three sub-initiatives below is intended to be inclusive of the other 3 focus areas and serves as a template for how the National Sea Grant College Program can help NOAA and a NOAA Climate Service work with coastal communities to address impacts of climate change.

\$5 M per year for extension capacity-building within National Sea Grant Office and its state programs: Develop a climate extension network comprised of NSGO senior climate specialists, and 15-20 university-based Sea Grant climate extension agents with geographic distribution across NOAA’s coastal and Great Lakes regions. NSGO staff serves as coordinators and liaisons to other NOAA offices, research laboratories and cooperative institutes. Competitively-awarded climate extension projects will hire new climate specialists at state Sea Grant programs, address specific local and regional needs for climate issues, and serve as the point of contact for dissemination of relevant research results. A recent survey by the Sea Grant Extension Network indicated that 86% of the programs are currently involved in addressing climate issues, yet there is no cohesive national effort to provide both consistent “in-reach” training and regional outreach products and services. Among sustainable coastal development issues, climate extension specialists will develop local and regional outreach programs on alternative energy, green infrastructure, carbon trading, carbon neutral designs, carbon sequestration, risks and benefits of alternative energy development, as well as climate effects on onsite storm water management, mitigation of urban heat islands, event frequency, water quality and drinking water quantity issues.

\$5M per year for research to support local and regional coastal issues in the face of changing climate: Work with NOAA’s Climate Program Office to support locally and regionally relevant climate research identified by Sea Grant climate extension-led needs assessments and other outreach efforts. This approach of determining stakeholder driven research needs, coupled with outcome-based planning and implementation applies an approach that has been successful in the Sea Grant network for more than 40 years and will allow NOAA to address key constituent needs for climate change information. Among the sustainable coastal development issues, we expect targeted research aimed at determining how climate change will affect carrying capacity of coastal resources (water, fish, etc) and how to better determine management and planning decisions affected by a changing climate.

\$5 M per year for education on climate and weather literacy that addresses key regional and local issues: Work with NOAA’s Climate Program Office to support development of a climate education network with geographic distribution across NOAA’s coastal and Great Lakes region. This Climate and Weather Education Network will consist of a NSGO Climate Education Specialist and climate educators within each State Sea Grant Program that will develop national, regional, state and local formal educational programs that result in climate literate teachers and students in the nation’s classrooms. A “Climate Literacy: Essential Principles and Fundamental Concepts” Framework for formal education was developed by NOAA’s Climate Program Office in 2008. The Sea Grant Climate and Weather Education network will work to further establish the climate and weather literacy framework that builds on the research, science and technology education benchmarks developed by the American Association for the Advancement of Sciences Project 2061.

ATTACHMENT 1: PLAN OF WORK FOR THE NATIONAL SEA GRANT SUSTAINABLE COASTAL DEVELOPMENT FOCUS TEAM

Funding and support needed from the NSGO	Funding and support needed from NOAA	Sub committees needed (chaired by members of the SCD focus team)	Actions needed by Miller/Hurley, and Leon	Actions needed from SCCD group	Actions needed by individual programs
Start up funds needed to fund white paper development that delineates the SCD research agenda (yr 1 – 25-40k) [3.2B, 2.3, 1.1]	NOAA creates something like a center of excellence for SCD designed to conduct research (internal and rfp) necessary to identify the sustainable ecosystem footprint [2.2]	Develop a SCD white paper and research agenda (Jaffe)	Seek NOAA support for a SCD center of excellence	Work with EPA and NEMO to coordinate actions on LID and Smart Growth (Jacobs, Faulk) [3.1]	Fund SCD research based on research agenda [1.1, 2.3, 3.2B]
Establish an FEE like competition for 5 yr SCD specialists located in programs [2.1] Specialists would have to focus on the following: <ul style="list-style-type: none"> • Decision tool development [3.2b] • Locally responsive research and outreach [3.3] 	NOAA funds regional or program based climate extension specialists [2.4]	Develop a proposal for a national access needs assessment and legal issues (Showalter)[1.2]	Seek support from NOAA to fund climate extension specialists in programs [2.4] (Hurley & Spranger)	Work out optimum relationship with NEMO for training and sharing of tools and resources related to Natural resource	

<p>Begin in yr 1</p>				<p>Based planning [3.2A] (Jacobs, Whiting-Grant, Faulk)</p>	
<p>Hire regional or national Economic Development Specialists (yr 2)[1.4]</p>	<p>NOAA regional teams take leadership in engaging partners necessary to develop and implement regional sustainable growth plans and strategies necessary to protect coastal resources [3.2c]</p>	<p>Work with the SCCD group and national economic development specialist to develop a proposal to develop a tool that balances economic development with other enterprises and conduct the associated training necessary to prepare the SCD network to use it [1.3] (Murray, Jacobs, Whiting-Grant)</p>	<p>Get NOAA support to put regional growth planning to protect coastal resources (sustainable ecosystem footprint) on the agenda of all NOAA regional coordinators [3.2c]</p>	<p>Conduct training for SCCD network on participatory decisionmaking [3.2B] Jacobs, whiting-Grant, Faulk)</p>	
<p>Sponsor an NSI in year 2or3 based on SCD research agenda.</p>			<p>Seek NOAA funding support to enhance SCD NSI [1.1, 2.3, 3.2B]</p>		

<p>Research will focus on:</p> <ul style="list-style-type: none"> • Economic and market research based decision tools [1.1] • Risks and benefits of renewable energy technologies [2.3] • Decision tools for future scenarios for coastal communities [3.2B] 					
<p>Training funds needed to support workforce development of SCCD team (20K annually)c</p>					

[x.x]=Goal and strategy satisfied by the designated activity

Committee Charge, Communications/Engagement Committee

The Communications/Engagement Committee, a “Board initiated Task Committee”, of the NSGAP, was established by the Board at its fall 2008 meeting. Membership includes, Frank Kudrna, chairman, Dick West, John Woeste, Jeff Stephan and Nancy Rabalais.

The committee is charged with reviewing and utilizing previous reports, including, but not limited to: the Byrne Report, the Alden Report, the SAB EOE Report, the Steve Whitman Report, and the communications engagement portions of the Duce Report.

The Committee will make short term recommendations based on currently available resources, and also long term recommendations based on future potential resources. The Committee will have two to four conference calls and two face to face meetings, and then provide a final report to the full NSGAP for adoption at their Aug/sept meeting in Seattle.

The report will answer these questions:

Q. What recommendations from previous reports are still appropriate and unmet?

Q. How can Sea Grant become fully engaged within NOAA?

Q. What specific steps should Sea Grant take to implement the SAB Extension/Outreach/Education report within Sea Grants current budget? What additional steps could be taken if new resources become available?

Q. How should Sea Grant at its current budget level invest in Communications and Engagement?

Q. At future increased levels of funding, how should Sea Grant expand Communications and Engagement activities, and what are the priorities?

January 20th, NSGO distributes to committee referenced reports, (electronic), and arranges conference call for January 28, 29 or 30.

January 28, 29 or 30. The committee will discuss charge, reports, and identify individuals that we want to interview during the February 11 and 12 meeting in DC. The NSGO will arrange these interviews.

February 11 and 12 meeting in DC. Conduct interviews, discuss short and long term recommendations, and assign draft section writing assignments.

April/May conference calls, discuss draft assignments, items for June face to face meeting.

June. Face to face meeting, assemble draft report.

July NSGO provides professional editing, committee approves final document during conference call.

August/September. Committee presents report to NSGAP at Seattle meeting for adoption.

National Sea Grant Advisory Board Futures Committee

Formation

The Futures Committee of the National Sea Grant Advisory Board was established by Board action at its November meeting in Baton Rouge, Louisiana. Mayor Jeremy Harris was selected by the Board to serve as Chairman. The Committee was formed as a Committee of the Whole and, as such, all Board members are on the Committee. The first meeting of the Futures Committee is on January 20 & 21, 2009 at the Sea Grant Office at the University of Hawaii.

Task

The National Sea Grant College Program was established by Congress in 1966. Since that time the program has produced an admirable record of accomplishment in marine research, education and extension services. Despite this fact, the program has failed to grow to realize its full potential.

The task of the Futures Committee is to examine why this has occurred, to assess the successes and failures of the program and to help chart a new course of growth for the program at this time of transition for our country.

The Committee will examine Sea Grant's relationship with NOAA and the Department of Commerce and make recommendations to the Board about Sea Grant's future position and role in the Federal government.

The Futures Committee will also explore Sea Grant's image and brand and make recommendations to the Board on how these important assets can be enhanced.

Finally, the Committee will examine opportunities for Sea Grant to be immediately responsive to the severe environmental and economic challenges that confront our nation by developing initiatives that fully utilize its superb nationwide research and extension talents.

The Committee will also assume any other responsibilities assigned by the Board.

Tenure

The Futures Committee will deliver a preliminary report to the Board at its February meeting and complete all its work by January 2010.

Charge to the NSGRP Research Committee

- 1) What are the long-term implications of the decrease in Sea Grant research funding? Has the decline been across the board, or has it affected some programs or some programmatic areas more than others?**
- 2) What are the reasons for this decline? What is the perceived impact and value of Sea Grant research relative to research in other NOAA programs, and what effect has this had on the decline in Sea Grant Research funding? In what way should the Sea Grant research portfolio complement, and be distinguished from, NOAA's portfolio, and with the portfolios of other coastal and marine funding agencies?**
- 3) What can Programs do to maximize the value of their research effort and support the best university scientists? What can Directors do to engage the best talent? Is there a role for the National Office in this effort? What are the manpower implications of actually managing an effective research effort, both for the Programs, and for the National Office?**
- 4) Is the continuation of the percentage guidelines for funding devoted to research still warranted? If so, should the percentage directed toward research vary between large or small Programs? What is the appropriate balance between research and outreach?**
- 5) On what basis should research performance within the Sea Grant Program be evaluated and measured in the future? Should state and other research support for individual Sea Grant Programs be considered when evaluating the overall research effort?**
- 6) Can the decline in research funding be reversed? If so, how? What pathways can be explored to expand a Program's research portfolio?**

Subject: Biennial report discussion

From: Jim D Murray <Jim.D.Murray@noaa.gov>

Date: Tue, 13 Jan 2009 16:34:06 -0500

To: Dick West <wwwest@cox.net>, John Woeste <jandmwoeste@juno.com>

CC: Amy Painter <Amy.Painter@noaa.gov>, Melissa Pearson <Melissa.Pearson@noaa.gov>, "cammen >> Leon Cammen" <Leon.Cammen@noaa.gov>, Sami Grimes <sami.grimes@noaa.gov>

Dick/John:

Thanks for your time today. Attached are some notes from the call which we may want to distribute to the Board ahead of time in the briefing book.

Sea Grant Advisory Board Call: State of Sea Grant (Biennial Report)

Date: Tuesday, January 13, 2009

Participants: Richard West, John Woeste (Advisory Board); Jim Murray, Melissa Pearson, Amy Painter (NSGO)

Time: 11:30-12:30

Legislative language - Biennial Report - The Board shall report to the Congress every two years on the state of the national sea grant college program. The Board shall indicate in each such report the progress made toward meeting the priorities identified in the strategic plan in effect under section 204 (c). The Secretary shall make available to the Board such information, personnel, and administrative services and assistance as it may reasonably require to carry out its duties under this title. The Secretary shall make available to the Board such information, personnel, and administrative services and assistance as it may reasonably require to carry out its duties.

1. State of Sea Grant (Biennial) Report Content

The report will include:

- re-enforcing the positioning of Sea Grant as a national program
- progress in reaching strategic plan priorities
- impacts/accomplishments by focus areas, synthesized by the Focus Teams and NSGO Knauss Fellows (National story)
- a summary of the new Planning, Implementation and Evaluation (PIE) system (including a summary of the evaluation process and progress to date)
- Advisory Board activities and outlook, (including an outlook/preliminary reports from the Research, Futures and Communications/Outreach Committees)

2. Process to develop Report

- West and Murray will develop a memo with an outline for the report that includes the timeline to notify the OAR Front Office (in preparation for the clearance process)
- Board to appoint a Biennial Report Sub-committee to develop report. Members to include: West, Woeste, Byrne (pending acceptance), Murray, Pearson and Painter
- April: Biennial Sub-committee members will convene in mid-to-late April to review state program strategic plans; AND, to visit Congressional offices to ask representatives and staffers what kind of report they need/would like from Sea Grant. By assessing Congressional priorities and concerns, the Board will help frame the content (and determine the proper format/context) for the report.

3. To Do:

- Memo to OAR Front Office (see #2, above) & NSGO to prepare for clearance process (Murray, West after Feb. Board meeting)
 - Schedule State Strategic Plan Review (Sami Grimes): I just talked to Sami and her schedule for the state strategic plan review is mid-May not late April as we discussed. Check with Byrne re. April (now May). (Murray, Grimes)
 - Preparation for Board February meeting - I assume that Dick and John will be giving the report, but let me know if you need anything from NSGO, e. g., a Power Point slide
 - Work with OAR CARD and NOAA Leg. Affairs to schedule Board visits to Congress in April
- Let me know if we got any of this wrong.
Jim

National Sea Grant Advisory Board

A Federal Advisory Committee

MONTHLY NEWSLETTER

December
2008 Issue 5

Current Activities

Administration Transition

- See Chairman's Comments.

November Board Meeting Items

- The Procedures Manual is under review by the NSGO in order to ensure compliance with the Board charter and the current legislation.
- Chairman West met with the NSGO regarding the Board's budget - see Chairman's Comments for details.
- West, Woeste and Murray will coordinate a future visit to Senator Shelby, date TBD.
- West, Woeste and Murray will hold a call in January 2009 to discuss plans for addressing the biennial report.
- The NSGO request for Board advice on the climate services program remains open.
- Two new Board committees (Communications and Futures) were formed, see below for details on upcoming events for these committees.

Future Activities

Upcoming Board Meetings

- The next **Full Advisory Board** meeting is scheduled for February 11-12 in Washington, DC.
 - The meeting will be held in Conference room ABC at the CORE offices, 1201 New York Avenue, NW.
 - Please plan to attend the Knauss celebration at the United States Botanic Garden on the evening of Tuesday, February 10.
 - Lodging for this meeting will be at the Four Points Sheraton, 1201 K Street NW, Washington, DC. To make your reservation, call 1-888-627-8681 and ask for a room from the 'National Sea Grant' block. You will need to reserve the room on your personal credit card and submit the receipt for reimbursement.
 - Please make your hotel reservations **before January 15th**, as the rooms will be released after this date.
- The **Research Committee** will meet in Honolulu, HI on January 19-21, 2009.

- This committee is composed of Duce (*Chair*), Stubblefield, Weis and Rabalais. Gordon Grau (Hawaii Sea Grant) and Scott Nixon (University of Rhode Island) will also participate.
 - *Location TBD.*
- The **Futures Committee** will also meet in Honolulu, HI on January 19-21, 2009.
 - This committee is composed of Stubblefield, Heath, and Weis. This meeting will also be attended by nominated members Harris (*Chair*), Vortmann and Simmons, and by Gordon Grau (Hawaii Sea Grant.)
 - *Location TBD.*
- The **Communications / Outreach Committee** will meet on February 9-10, 2009 in Washington, DC, immediately preceding the Spring 2009 Board Meeting.
 - This committee consists of Kudrna, West, Stephan, Woeste, Rabalais
 - This meeting will be held in the Atlantic Conference Room at CORE, 1201 New York Avenue, NW.
- The Fall 2009 meeting is currently in the planning stages, but will likely be held on the west coast in either August or September. We are presently investigating options in Seattle, WA.

Arranging Meeting Travel

- To set your travel for these meetings, please follow the standard travel procedures to make your arrangements through AdTrav. Should you have any questions, please contact Gina Barrera (301-734-1077, gina.barrera@noaa.gov)

Status of Board Membership

- There is a strong probability that Simmons and Vortmann will be appointed to the Board by the February meeting. The nominations of Harris and Orbach may not be completed by that date, however they are all invited to participate in the February meeting
- NSGO Director Cammen is preparing a letter to provide one year extensions of service through September 2009 for those members who have completed two full four year terms.
- DFO Murray is putting out an annual request for new nominations to the Advisory Board. As discussed at the Baton Rouge meeting, your support of this effort is appreciated.
- Robin Alden resigned her position on the Advisory Board.
- Rollie Schmitten volunteered to participate on the Safe Sustainable Seafood focus team.
- Harris and Simmons volunteered to participate on the Sustainable Coastal Development team.

Completed Activities

- Nothing to Report

Chairman's Comments

- Jim and I reviewed the Research and Futures committees meetings in Hawaii and decided they should proceed as planned. We do have a limited budget and we want to make sure we meet our priority commitments for FY'09. Conducting three Board meetings in this fiscal year and the federal continuing resolution with an uncertain '09 budget adds to our caution. Right now we are short on funds for our Aug/Sep '09 meeting. We will work with the NSGO to identify funds for this important meeting but we have to take some measures to conserve funds. On an interim basis, we will require expenditure of Board funds to be approved by Jim and I and we will suspend paying members a days pay for official conference calls. We will review our budget during the closed session of our Feb '09 meeting.
- Leon is drafting a letter extending, for one year till Sep '09, those members who have already served two tours on the Board. This is based on the new reauthorization language and as we discussed in Baton Rouge.
- President-elect Obama has moved out on his selection of leaders in his administration. I'm sure most of you have been following his nominations. Key to our role with Commerce/NOAA is the nomination of New Mexico Governor Bill Richardson as Secretary of Commerce. There are several names bouncing around the rumor mill on the next NOAA Administrator. With the nomination of Nobel prize-winning physicist Steven Chu as Sec of Energy, ex-EPA Administrator Carol Browner as White House Advisor on energy, environment and climate, Lisa Jackson former head of the New Jersey Dept of Environmental Protection as the Head of EPA and Nancy Sutley deputy Mayor of LA for energy and environment as the Chair for the White House Council on Environmental Quality, many in DC are saying that these nominations indicate Pres-elect Obama's desire to address the challenges of climate change and alternative energy innovations. These national issues should be addressed by our 'Futures' Committee as we look at the future role of Sea Grant.
- A federal advisory committee should be an 'independent' entity advising the respective federal agency. I discussed tasking of our Board with Leon and we agreed that he and/or anyone in NOAA/Commerce and Congress can task our Board. We also can identify tasks pertinent to our mission and forward this self-identified action to the NSGD for review and comment. We agreed that the two new committees we established in Baton Rouge, 'Futures' and Outreach, were Board initiated and will require us to define the task.
- What does everyone think about a Board dinner Wednesday evening, 11 Feb? We may have to add a few bucks over the per diem rate but it might be a nice social event. Let Jim and Melissa know your interest. If possible, plan your travel to attend the Knauss celebration the evening of 10 Feb.

Happy Holidays to All

Calendar of Events

December 2008

7-12 2009 John A. Knauss Fellowship Placement Week - *Washington, DC*
Senior Research Council Meeting (Kudrna) - *Washington, DC*

January 2009

19-21 Research Committee meeting - *Honolulu, HI*
19-21 Futures Committee meeting - *Honolulu, HI*

February

10 SGA Meeting - *Washington, DC*
10 Knauss 30th Anniversary Celebration - *Washington, DC*
10 Communications / Outreach Committee meeting - *Washington, DC*
11-12 Spring Advisory Board Meeting - *Washington, DC*

April

Review Program Strategic Plans - *Washington, DC*

August or September

Fall Advisory Board Meeting - *West Coast*

National Sea Grant Advisory Board

A Federal Advisory Committee

MONTHLY NEWSLETTER

January
2009 Issue 1

Current Activities

Administration Transition

- Governor Richardson has withdrawn his name for the appointment as Secretary of Commerce. It is not known when a new appointment selection will be made.
- Dr. Jane Lubchenko nominated as NOAA Administrator for the new administration.

November Board Meeting Items - Follow Up

- Jim Murray has reviewed the Procedures Manual for compliance with the Board charter and the current legislation, and his revisions have been sent back to Jeff Stephan and Peter Bell.

Future Activities

National Sea Grant Advisory Board [NSGAB] Meetings

- The next **NSGAB** meeting is scheduled for February 11-12 in Washington, DC.
 - **Detailed meeting information is available on the Members Only site.**
 - The meeting will be held in Conference room ABC at the OceanLeadership offices, 1201 New York Avenue, NW.
 - Please plan to attend the Knauss celebration at the United States Botanic Garden on the evening of Tuesday, February 10.
 - Lodging for this meeting will be at the Four Points Sheraton, 1201 K Street NW, Washington, DC. To make your reservation, call 1-888-627-8681 and ask for a room from the 'National Sea Grant' block. You will need to reserve the room on your personal credit card and submit the receipt for reimbursement.
 - Please make your hotel reservations ****before January 15th****, as the rooms will be released after this date.
 - Please note the **date change for the SGA meeting** - this meeting will now be held from February 10-11 (as opposed to February 9-10).
- The Fall 2009 meeting is currently in the planning stages, but will likely be held on the west coast in either August or September. We are presently investigating options in Seattle, WA.

Subcommittee Meetings

- The **Research Committee** and **Futures Committee** will meet in Honolulu, HI on January 19-21, 2009.
 - These meetings will be held at the Sea Grant Offices at the University of Hawaii.
 - The Research committee is composed of Duce (*Chair*), Stubblefield, Weis and Rabalais. Gordon Grau (Hawaii Sea Grant) and Scott Nixon (University of Rhode Island) will also participate.
 - The Futures committee is composed of Stubblefield, Heath, and Weis. This meeting will also be attended by nominated members Harris (*Chair*) and Simmons, and by Gordon Grau (President, SGA.)
- The **Communications / Outreach Committee** will meet on February 9-10, 2009 in Washington, DC.
 - This committee consists of Kudrna (*Chair*), West, Stephan, Woeste, Rabalais
 - This meeting will be held in the Atlantic Conference Room at the OceanLeadership offices, 1201 New York Avenue, NW.

Logistics

- **Additions to Panel Website**
If you would like information posted to the Panel website, please contact Melissa (melissa.pearson@noaa.gov) with your request. Items can be posted to the existing page, or new pages can be created. For example, working Subcommittees could have a page to post documents and other information.
- **Arranging Meeting Travel.**
To set your travel for these meetings, please follow the standard travel procedures to make your arrangements through AdTrav. Should you have any questions, please contact Gina Barrera (301-734-1077, gina.barrera@noaa.gov)

Status of Board Membership

- The nominations of Simmons and Vortmann are currently going through the final stages of clearance and should be complete in time for the February meeting. The nominations of Harris and Orbach may not be complete by our Feb meeting, however they have been invited to and will attend the meeting.'
- A reminder tha the National Sea Grant Office is **seeking nominations** for the National Sea Grant Advisory Board (Board), with a particular interest in nominees who represent our stakeholders in the private sector and are familiar with the Sea Grant community since several current Board members who represent these groups have terms that are scheduled to expire. In addition, we are mindful of the need to maintain Board diversity and we encourage you to give special consideration to nominees who represent gender, racial, ethnic and geographic diversity.
- Please send nomination suggestions to Jim Murray by January 20, 2009. The NSGO will begin reviewing the nominations on January 21, but nominations after that date will also be considered until the selection of candidates is completed.

- Along with the name of the nominee, please provide a description (vita or short bio will suffice) of the nominee's qualifications for the Board. Also, please affirm whether or not you have some indication as to the potential nominee's willingness to serve if asked, e. g., if you have had a discussion with the nominee about their interest and willingness to serve on the Board.

Completed Activities

- Nothing to Report

Chairman's Comments

- Our February Board meeting is shaping up nicely. We will have a full Board attending 11/12 February with a separate 'communications/outreach' committee meeting during the week. We will take advantage of the DC location to schedule speakers involved with NOAA, Sea Grant and the federal ocean investment process. It will be a full two days.
- The SGA has rescheduled its meeting from 9/10 to 10/11 February. Most of you have indicated you will attend the Knauss celebration the evening of the 10th, as well as a Board dinner the evening of the 11th. For the dinner we are looking at restaurants close by the meeting location, and we will probably have working lunches each day.
- Please keep in mind our tight budget, and if you need to plan a meeting or travel that would be funded from the NSGAB pot, please run it by Jim and me.

Happy New Year, and I look forward to seeing you in DC at an interesting and historic time for our country.

Calendar of Events

December 2008

7-12 2009 John A. Knauss Fellowship Placement Week - *Washington, DC*
 Senior Research Council Meeting (Kudrna) - *Washington, DC*

January 2009

19-21 Research Committee meeting - *Honolulu, HI*
 19-21 Futures Committee meeting - *Honolulu, HI*

February

- 10 Knauss 30th Anniversary Celebration - *Washington, DC*
- 10 Communications / Outreach Committee meeting - *Washington, DC*
- 10-11 SGA Meeting - *Washington, DC*
- 11-12 Spring Advisory Board Meeting - *Washington, DC*

April

- Review Program Strategic Plans - *Washington, DC*

August or September

- Fall Advisory Board Meeting - *West Coast*

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New Nominations

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Harry Simmons, Jr.

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Dr. Michael K. Orbach

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Sea Grant Advisory Board Members

Peter M. Bell (Past Chair)

Galesville, Maryland

Dr. Peter M. Bell is a consultant in the fields of geophysics and material science and is adjunct senior research scientist at the Carnegie Institution of Washington's Geophysical Laboratory. In addition, he serves on the Advisory Board of the Materials Processing Center of the Massachusetts Institute of Technology. Before his retirement, Dr. Bell was the vice president and chief scientist of St. Gobain Corporation and Norton Company. He has served on the Board of Directors of Cerbec Corporation and KuriNorton Company. Dr. Bell has taught at Harvard, Johns Hopkins, the California Institute of Technology and the State University of New York. Dr. Bell was awarded the Medal for Exceptional Scientific Achievement by the National Aeronautics and Space Administration in 1976, the Guggenheim Foundation Fellowship in 1981, and the Guinness Foundation Award in 1981. He was named the Fairchild Distinguished Scholar by the California Institute of Technology in 1983. Dr. Bell received his Ph.D. in geophysics at Harvard University.

John V. Byrne

Corvallis, Oregon

Dr. John V. Byrne is President Emeritus of Oregon State University (OSU), where he served as president for eleven years (1984 - 1995). During his 35 year tenure at OSU, Byrne served for sixteen years in OSU's Oceanography program as faculty member, department chair, and dean. Subsequently he was OSU's Dean of Research, Graduate Dean, and Vice President for Research and Graduate Studies. He has also served the United States government in Washington, D.C. as a program director for oceanography at the National Science Foundation, Administrator of the National Oceanic and Atmospheric Administration (NOAA) in the Department of Commerce, and as the United States commissioner to the International Whaling Commission. Since retiring from OSU's presidency, Dr. Byrne has served as Executive Director of the Kellogg Commission on the Future of State and Land-Grant Universities, as a consultant on various aspects of higher education to more than a dozen major public universities, and has assisted university governing boards with board-president relations, presidential assessments, and presidential searches. He currently serves as an advisor to K-12 education in the state of Oregon, and has served on several corporate and non-profit boards as well. Dr. Byrne received his Ph.D. in Geology at the University of Southern California.

Robert Duce

College Station, Texas

Dr. Robert Duce is currently Distinguished Professor of Oceanography and Distinguished Professor of Atmospheric Sciences at Texas A&M University (TAMU) and a former Dean of the College of Geosciences and Maritime Studies at TAMU. From 1987-1991, Dr. Duce served as Dean of the Graduate School of Oceanography and Vice Provost for Marine Affairs at the University of Rhode

Island where he was a member of the oceanography faculty since 1970. His many professional achievements include past President of the Oceanography Society and the International Association of Meteorology and Atmospheric Sciences, and recipient of the Rosenstiel Award in marine and atmospheric chemistry. He is a fellow of the American Geophysical Union, The Oceanography Society, the American Association for the Advancement of Science, and the American Meteorological Society. He recently completed his term as the President of Scientific Committee on Oceanic Research (SCOR) and is currently a Member of the National Research Council's Ocean Studies Board. Dr. Duce has over 270 scientific publications in journals, books, and proceedings. He received his Ph.D. in inorganic and nuclear chemistry from the Massachusetts Institute of Technology.

Jeremy Harris
Honolulu, Hawaii

Jeremy Harris served as Mayor of Honolulu from 1994 to 2004. A biologist by training, Harris started his political career as a delegate to the 1978 Hawai'i State Constitutional Convention. As chief executive of the City & County of Honolulu, the city was named "America's Greatest City" by the official American governance journal, *Governing Magazine*. Harris is the founder of the China-U.S. Conference of Mayors and Business Leaders and Japan-American Conference of Mayors and Chamber of Commerce Presidents. He is married to Ramona Sachiko Akui Harris and lives in Kalihi Valley on the Island of O'ahu. Early in his career, Harris served as a Sea Grant Extension agent for Hawaii Sea Grant.

G. Ross Heath
Seattle, Washington

Dr. G. Ross Heath is Dean Emeritus of the College of the Ocean and Fishery Sciences and Professor of Oceanography at the University of Washington. His research in marine geology has focused on deep-sea manganese nodules, the disposal of high-level radioactive waste, and paleoceanography, resulting in more than a hundred publications. He has served on numerous panels and committees of the National Academy of Sciences, NASULGC, JOI, and CORE. He is a Fellow of the American Geophysical Union and the American Association for the Advancement of Science. In 1993 he served as an environmental analyst for KIRO TV (the CBS affiliate in Seattle). He is a member of the National Sea Grant Review Panel. He grew up in Adelaide, Australia where he earned his bachelors degree and worked as a geologist for several years before moving to the U.S. In 1993 he came to the Scripps Institution of Oceanography to study for a Ph.D. in Oceanography, which he obtained in 1968. His subsequent career has included faculty appointments at Oregon State University (including Dean of Oceanography from 1978 to 1984), the University of Rhode Island, and the University of Washington (including dean from 1984 to 1996) as well as two years as president and CEO of MBARI, prior to his present position.

Frank Kudrna, Jr. (Past Chair)
Clarendon Hills, Illinois

Dr. Frank Kudrna is the chief executive officer of Kudrna & Associates, Ltd., a Chicago civil engineering consulting firm. Formerly he was president of Epstein Civil Engineering Company, and prior to that, he was director of the Illinois Division of Water Resources and supervising engineer of flood control and planning with the Metropolitan Water Reclamation District of Greater Chicago. Dr. Kudrna has served for over 25 years on the Great Lakes Commission. He is former vice-chairman of the Upper Mississippi River Basin Commission and the Ohio River Basin Commission. Dr. Kudrna holds a Ph.D. from the Illinois Institute of Technology and an MBA from the University of Chicago. During 2000, Dr. Kudrna served on the eight-member team that conducted an intensive review of the National Sea Grant College Program's extension efforts that resulted in the report [A Mandate to Engage Coastal Users](#).

Dr. Michel Orbach
North Carolina

Dr. Michel Orbach is a Professor of the Practice of Marine Affairs and Policy in the Division of Marine Science Conservation at the Nicholas School of the Environment at Duke University. He has performed research and has been involved in coastal and marine policy on all coasts of the U.S. and in Mexico, Central America, the Caribbean, Alaska and the Pacific, and has published widely on social science and policy in coastal and marine environments. He has worked as a Cultural Anthropologist with the National Oceanic and Atmospheric Administration, and has held several Governor's appointments to environmental Boards and Commissions as well as appointments to National Academy of Sciences Boards and Committees. He has been the President of The Coastal Society, and Chairman of the Board of Directors of the Surfrider Foundation.

Nancy Rabalais
Chauvin, Louisiana

Nancy Rabalais is a Professor at the Louisiana Universities Marine Consortium. Dr. Rabalais' research interests include the dynamics of hypoxic environments, interactions of large rivers with the coastal ocean, estuarine and coastal eutrophication, benthic ecology, and environmental effects of habitat alterations and contaminants. Dr. Rabalais is an AAAS Fellow, an Aldo Leopold Leadership Program Fellow, a Past President of the Estuarine Research Federation, a National Associate of the National Academies of Science, a member of the Scientific Steering Committee of LOICZ/IGBP, and currently is Chair of the Ocean Studies Board of the National Research Council, National Academy of Science. She received the 2002 Bostwick H. Ketchum Award for coastal research from the Woods Hole Oceanographic Institution and was the Ian Morris Scholar in Residence at the University of Maryland Center for Environmental Studies in 2004. Her work on the causes and consequences of Gulf hypoxia have garnered several citations—the Blasker award shared with R.E. Turner, and a NOAA Environmental Hero, Clean Water Act Hero, and Gulf Guardian award. She earned a Ph.D. in Zoology from the University of Texas at Austin in 1983, and her B.S and M.S. in Biology from Texas A&I University, Kingsville.

Rolland A. (Rollie) Schmitten
Leavenworth, Washington

Rolland A. (Rollie) Schmitten has been a natural resources manager for the past 38 years; focusing on marine fish and mammals for the last 25 years. He has served as the Washington State Director of Fisheries. The federal (National Marine Fisheries Service) West Coast Regional Director of 6 states; the National Director of Marine Fisheries; the US Department of Commerce Deputy Assistant Secretary for International Affairs (NOAA), and the National Director of Marine Habitat Conservation. During his career he served 4 presidents with Presidential appointments as the: US Tuna Commissioner, US Atlantic Salmon Commissioner, and served 10 years as the US International Whaling Commissioner. Among his many awards and recognitions include: Presidential Merit Award, Trout Unlimited Washington Sportsman of the Year, Presidential award for outstanding achievement of a Vietnam veteran, and the Department of Transportation (USCG) Commandant's Award for Meritorious Public Service. In 2005, Mr. Schmitten retired and moved back to Sockeye Point Lodge in Washington State where he continues to work on marine and fresh water resource issues.

Mayor Harry Simmons
North Carolina

Mayor Harry Simmons is in his 8th year as Mayor of the Town of Caswell Beach, North Carolina, and in 2007 was named "Elected Official of the Year" by Cape Fear Council of Government. He currently serves as a member of North Carolina's Coastal Resources Advisory Council, chairman of the Brunswick Beaches Consortium, as executive director of North Carolina Beach, Inlet & Waterway Association, as President of the American Shore & Beach Preservation Association, and was recently elected to the Board of Directors of the Atlantic Intracoastal Waterway Association. Previously, Mayor Simmons also served on the Board of Directors for the NC League of Municipalities, and on the National League of Cities Energy, Environment and Natural Resources Policy Committee. Prior to working on coastal policy issues, Harry Simmons owned a music management firm and was primarily involved with managing the careers of record producers. He is a member of the National Academy of Recording Arts & sciences which gives him a vote for the Grammy Awards each year.

Jeffrey R. Stephan
Kodiak, Alaska

Mr. Jeffrey Stephan is manager of the United Fishermen's Marketing Association, Inc., (UFMA) in Kodiak, Alaska. UFMA is a multi-species, multi-gear-type commercial fishermen's organization whose members conduct fishing operations throughout the Gulf of Alaska and the Bering Sea/Aleutian Islands. A former member of the Kodiak City Council, Mr. Stephan has served on the Department of Commerce North Pacific Fishery Management Council and its Marine Fisheries Advisory Committee. In addition, he has served as vice-chairman of the Board of Directors of the Alaska Seafood Marketing Institute (ASMI). Presently, Mr. Stephan is a member of the Board of Education of the Kodiak Island Borough School District, the Board of Directors of the Kodiak Regional Aquaculture Association, and the Policy Committee of the Fishery Industrial Technology Center of the University of Alaska/Fairbanks. A founding member of the Oil/Fisheries Group of Alaska, Mr. Stephan graduated with a B.A. in economics from the State University of New York at Plattsburg. After graduation, he worked for Eastman Kodiak Company in sales and marketing and, prior to taking his current position, worked as a commercial fisherman.

William L. Stubblefield (Member-At-Large)
Martinsburg, West Virginia

In 1999 Rear Admiral Stubblefield retired from his position as the Director of the Office of NOAA Corps Operations. Prior positions include Executive Director of NOAA's Office of Oceanic and Atmospheric Research; Special Assistant, Office of the Chief Scientist, where he received the Department of Commerce Silver Medal; Commanding Officer of the NOAA Ship SURVEYOR; Chief Scientist for NOAA's Undersea Research Program; Program Monitor within the Office of Sea Grant; Deputy Director for Marine Geology and Geophysics Laboratory of the Atlantic Oceanographic and Meteorological Laboratory (AOML); research oceanographer in coastal processes at AOML; and 5 years of active service in the U.S. Navy. Rear Admiral Stubblefield has served as an advisor to the Department of Geology, University of Iowa, and is/was a member of the Society of Economic Paleontologists and Mineralogists, the American Association of Petroleum Geologists, the American Association for Advancement of Science, and the Geological Society of Washington. Rear Admiral Stubblefield is currently a member of the Board of Directors of Military Officers Association of America; Chairman of the Board of Directors for the Public Service Commission Water District, Berkeley County, West Virginia; co-chair for Berkeley County's Source Water Protection Study; member of Virginia-West Virginia Regional Water Policy Committee; Chairman of the Berkeley County Comprehensive Plan, and founder and President of Berkeley Community Pride (a county beautification non-profit organization). He is a candidate for the Berkeley County Commission. Rear Admiral Stubblefield received his Ph.D. from Texas A&M University in geology.

Richard H. Vortmann

La Jolla, California

Richard H. Vortmann recently retired after a 30 year career with National Steel and Shipbuilding Company (NASSCO) based in San Diego, California where he served as President for 22 years. He also retired after six years as Vice President of General Dynamics (GD). He most recently completed an assignment as Interim President and CEO of the San Diego Regional Chamber of Commerce. He is currently Chairman of Scripps Health, a \$1.8 billion San Diego hospital system; Vice Chairman of the National Academies of Science Marine Board and a member of Council, American Bureau of Shipping.

Judith Weis

Newark, New Jersey

Dr. Judith Weis is a Professor of Biological Sciences at Rutgers University where her research focuses on estuarine ecology and ecotoxicology and where she has served as Associate Dean for Academic Affairs. During 2001, Dr. Weis served as the President of the American Institute of Biological Sciences. She has been elected a fellow of the American Association for the Advancement of Science (AAAS), served as chair of its biology section, and held an AAAS/American Society of Zoologists Congressional Science Fellowship with the Senate Environment and Public Works Committee. Dr. Weis has been a program director at the National Science Foundation, a visiting scientist at the U.S. Environmental Protection Agency, and a research scientist at Operation Wallacea in Indonesia. She has served as a member of the Marine Board of the National Research Council, on the board of directors of the Society of Environmental Toxicology and Chemistry, and the Board of Directors of the Association of Women in Science (AWIS). The author of about 170 refereed papers, Dr. Weis received her B.A. from Cornell University and Ph.D. from New York University.

Richard D. West (Chairman)

Washington, DC

Rear Admiral West comes to CORE from the Department of the Navy where he served as Oceanographer and Navigator of the Navy where he managed a \$400 million program providing oceanographic, meteorological, geospatial information and navigation support to the US Navy. Prior to serving as Oceanographer, he was the Deputy Director for the Ballistic Missile Defense Organization. Other shore assignments include Director, Surface Combat Systems Division on the CNO's Staff, Deputy Chief of Staff for Operations CINCSOUTH Naples Italy and on the staff of the Commander, Operational Test and Evaluation Force. From 1992-1993, as Commanding Officer of the Surface Warfare Officers School, he directed an advanced studies academic institution, which provides a continuum of professional education and training to prepare naval officers to serve at sea. Admiral West served in Vietnam with the riverine forces and commanded ships during hostilities in the Arabian Gulf. He has commanded three ships, USS OPPORTUNE (ARS-41), USS MCINERNEY (FFG-8), and USS LEAHY (CG-16). A native of the Finger Lakes region of New York State, West has been awarded the Defense Distinguished Service Medal, the Defense Superior Service Medal (two awards), Legion of

Merit (three awards), Meritorious Service Medal, NOAA Administrator's Award Medal, Navy Commendation Medal and various service and campaign medals. West graduated from the University of Rochester, receiving his commission through the ROTC program. He holds Master's degrees in management and national security.

John T. Woeste (Vice Chairman)

Gainesville, Florida

Dr. John T. Woeste is professor emeritus and retired Dean of the University of Florida's Institute of Food and Agriculture Sciences. From 1976 to 1995 he served as Director of Extension and the Florida Sea Grant Marine Extension Program. He was frequently recognized for his leadership of both agriculture and marine resource extension programs. In 1987 he received the USDA "Unit Award for Distinguished Service". In 1992, Dr. Woeste won the Mary Nell Greenwood Award from the American Evaluation Association for his sustained commitment to public accountability. In 1997, he was inducted into the International Adult and Continuing Education Hall of Fame and in 2002 was elected to the Florida 4-H Hall of Fame. He was recognized by the National FFA with an "Honorary American FFA Degree" and the Alpha Gamma Rho fraternity with a "Brother of Distinction" award. Woeste has served on boards for the Southern region aquaculture center and the Sustainable agriculture program. He chaired the national Extension Committee on Policy (ECOP), and Co-chaired the Legislative committee for the Agriculture division of the Land Grant University Association while a member of the board of Directors. His international experience includes advisory visits and consulting trips to Ecuador, Cameroon and Israel addressing agriculture education and technology transfer. Currently, he is president of the Florida Rural Rehabilitation Corp, Inc., Director of the National NARRC, President of the Alpha Gamma AGR educational foundation, and a member of the SHARE-UF Foundation board executive committee. He is a retiring director and past president of the International Adult and Continuing Education Hall of Fame. In 2002 he was appointed to the National Sea Grant Review panel.

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