



# National Academy of Sciences--Committee to Review NOAA Education Programs

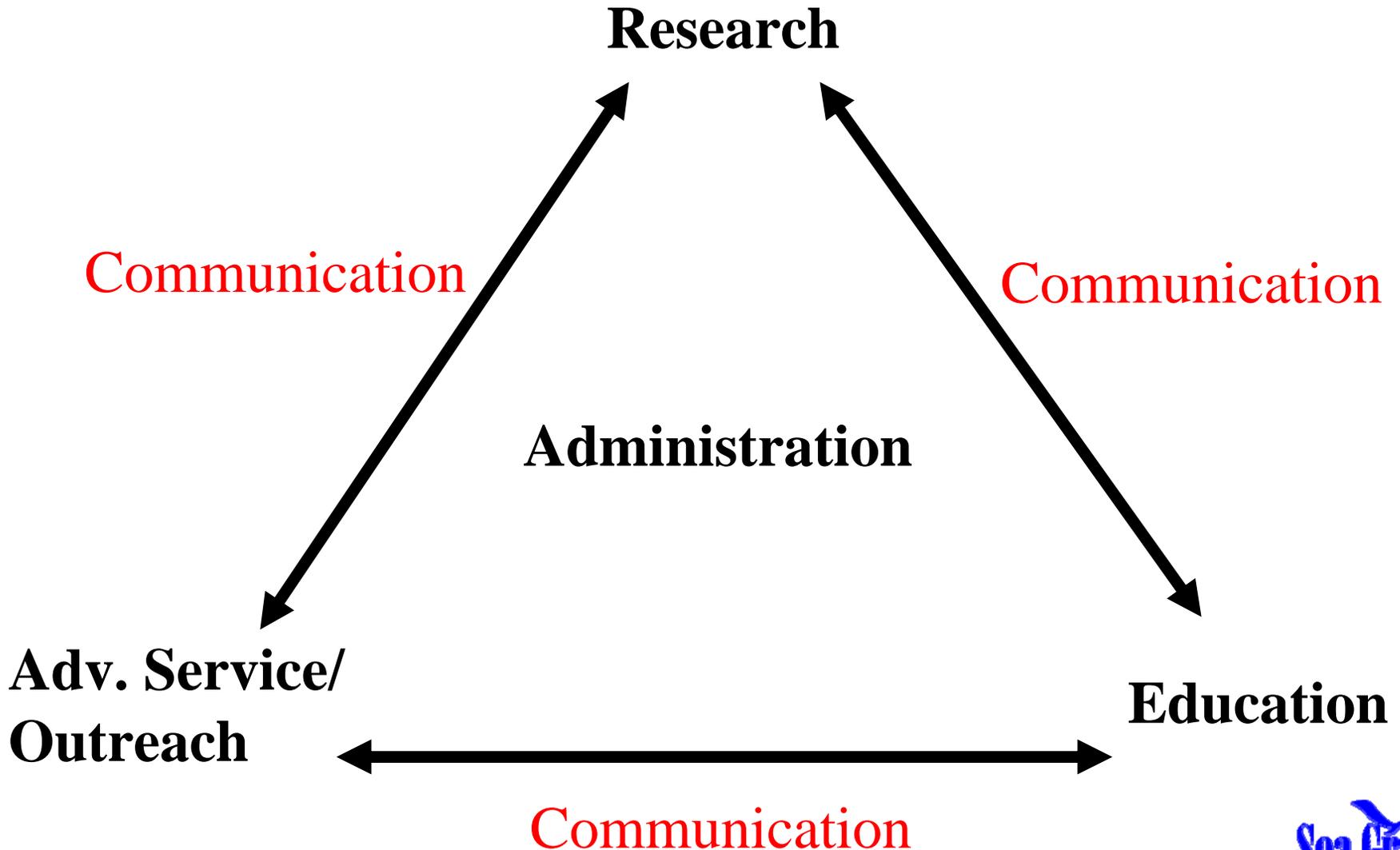
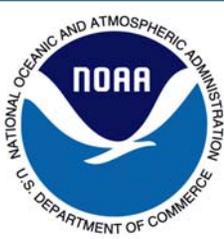


MS/AL-SG

**Sharon H. Walker, Ph.D.**  
**Location: NAS – Washington D.C. – May 20, 2008**



# 1966 Legislature Mandates

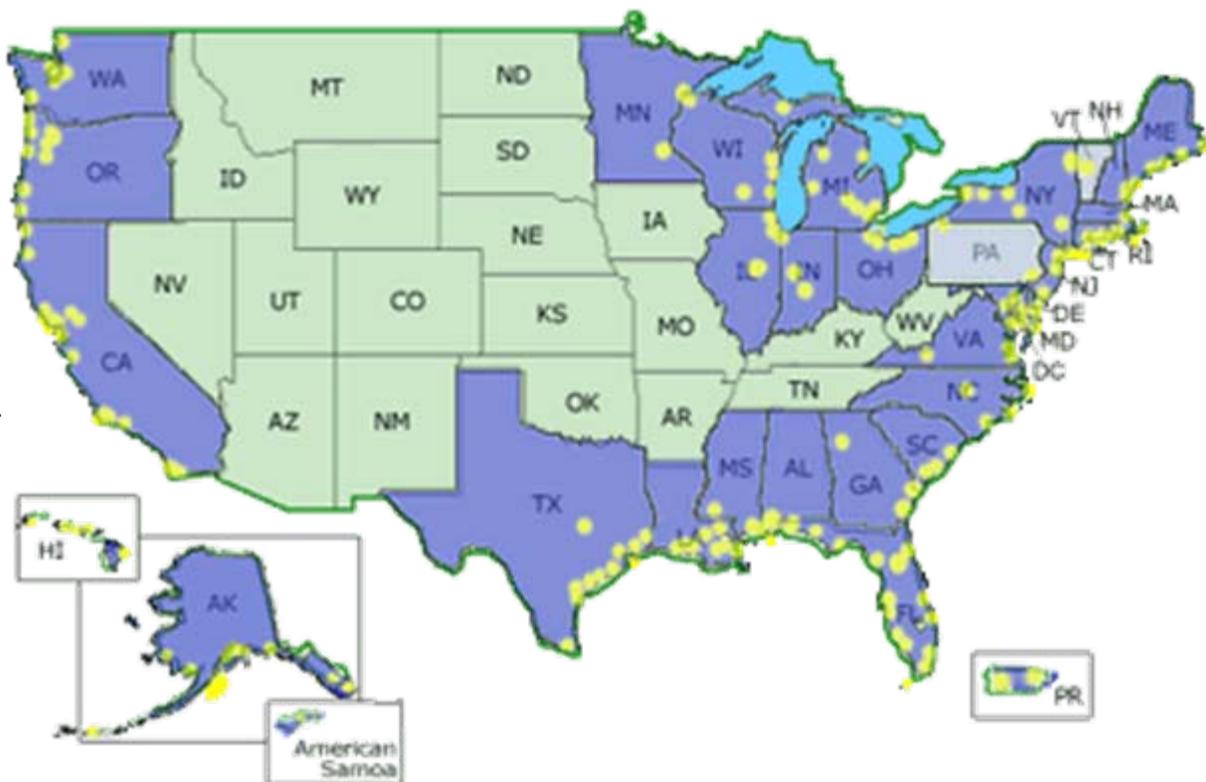




# *Program Overview*

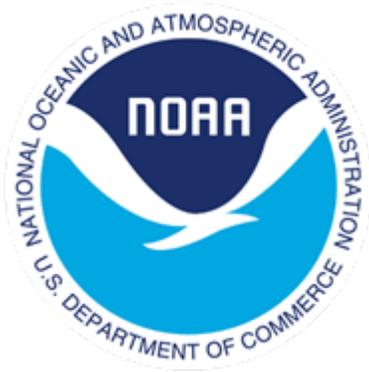
## *NOAA Sea Grant Infrastructure*

- **Modeled after the Land Grant system**
- **In partnership with universities**
- **Performance-based evaluation process**
- **Regional networks**
- **Locally-based infrastructure**





# NOAA Sea Grant: A Partnership Program



**Sea Grant**  
National Sea Grant College Program

States

Industry

300 partner  
Institutions

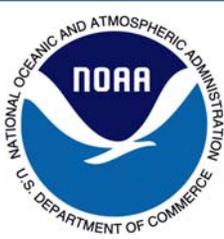
31 University-  
based programs

National  
Sea Grant  
Review  
Panel



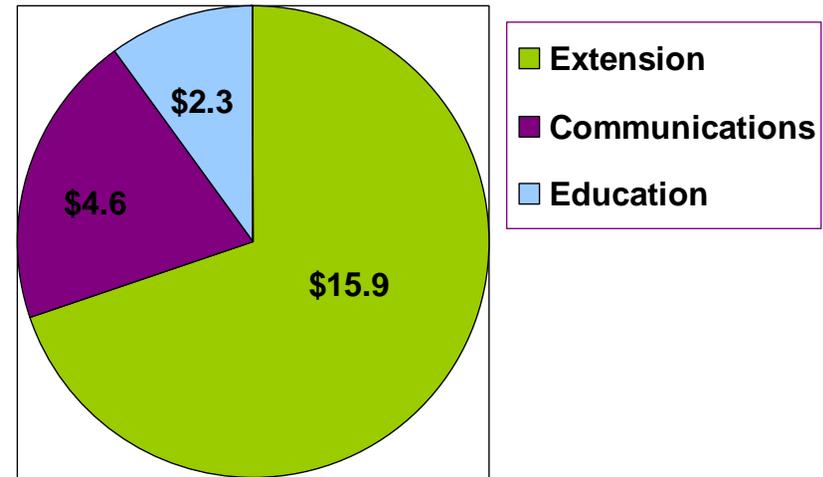
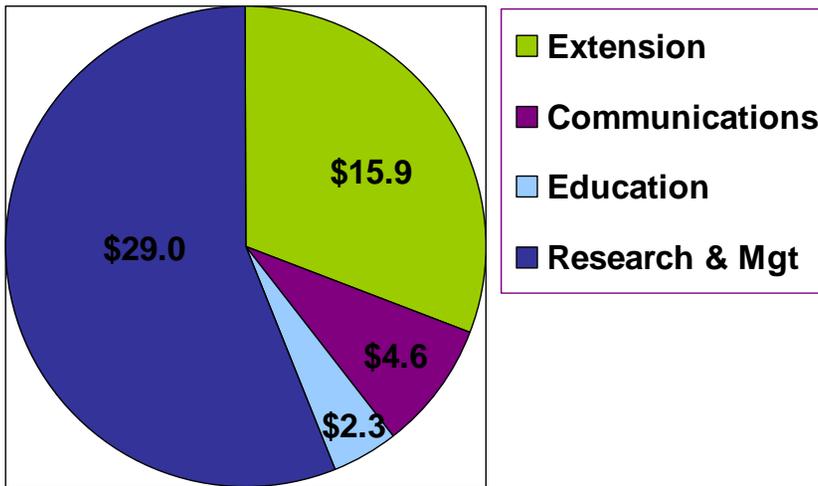


# Sea Grant Budget Overview



**2007 NOAA Sea Grant Awards**  
**Total: \$53.5M**

**2007 Sea Grant Outreach Budget**  
**Total: \$22.8M (~43% of total)**





# *The National Sea Grant Strategic Plan states...*



**“Educating the 21<sup>st</sup> Century workforce in marine and aquatic sciences is integral to both the educational and scientific missions.” Sea Grant’s multifaceted education efforts “contribute to improving marine and aquatic literacy by facilitating the delivery of science-based information, programming, and resources to formal and informal education communities.”**



# The Sea Grant Educational Network (SGEN)



**The SGEN is a group of 28 professionals, a significant number of whom do not represent 100% educational FTEs. The SGEN is the oldest network of coastal and marine educators in the country. Expertise within our ranks may be equaled by a few groups but surpassed by no one. In addition to leading a wide range of local activities, many individuals in the SGEN are regularly sought—as highly respected leaders in the marine and aquatic science education—to participate in activities that have a broader, national impact.**



# NOAA Sea Grant Education Philosophy



**“Tell me, I forget,  
Show me, I remember,  
Involve me, I understand”**

-Ben Franklin



**NSGO**



**NSGO**



**NSGO**



**NSGO**



# Overarching Goal:



**The SGEN enhances the awareness & understanding of marine and aquatic environments by developing & implementing multidisciplinary instruction & learning among audiences ranging from children to adults. Educational delivery focuses on science-based content which is reinforced through hands-on activities.**



# SGEN Benchmarks:

- *The Glenn Report, Before It's Too Late (2000);*
- *NOAA's Strategic Vision (2003);*
- *ORRAP's Education Strategy (2003);*
- *Pew Oceans Commission Report, America's Living Oceans: Charting a Course for Sea Change (2003);*
- *U.S. Commission on Ocean Policy Final Report, An Ocean Blueprint for the 21<sup>st</sup> Century (2004);*
- *U.S. Ocean Action Plan (2004);*



# SGEN Benchmarks:

- *NOAA's Education Strategic Plan (2004);*
- *The Essential Principles and Fundamental Concepts of Ocean Literacy (2005);*
- *The COSEE Business Plan (2005);*
- *Marine Technology Society Journal (Vol.39, No. 4, 2005/2006);*
- *Joint Ocean Commission Initiative-Report Cards (2006 and 2007); and*
- *The America COMPETES Act (2007).*



# NOAA Office of Education Draft Strategic Plan Goals, 2009-2014



- **An environmentally literate public developed through improved lifelong education in “NOAA-related” fields.**
- **A future science, technology, engineering, & math workforce, particularly from underrepresented groups, in disciplines critical to NOAA’s mission.**





# Projects Supported by the SGEN:



- **PD programs for formal and informal educators**
- **Curricular development, based on sound science**
- **Scholarships/fellowships for undergrad. & graduate students**
- **Educational collaborations involving partners with similar missions**





# Projects Supported by the SGEN:



- **Implementation of evaluation & assessment metrics**
- **Exhibitry in informal centers and participation in festivals/events for the general public**
- **Advancements in technology, e.g., ocean observing systems**
- **Increasing the number & diversity of individuals entering the workforce**





# Audiences Served by SGEN:



- K-12
- Undergraduate and graduate students
- General public
- Formal and informal educators
- Underserved & underrepresented populations





# Services Received by SGEN Audiences



- Educational credibility developed over the last 40+ years
- Enhanced ocean & watershed content knowledge, based on accurate interpretations of scientific data
- Increased instructional skills (pedagogy) for formal and informal educators





# Services Received by SGEN Audiences



- Assistance in aligning curricula with *State Science Stds., National Science Education Stds., & the Essential Principles and Fundamental Concepts of Ocean Literacy*
- Serving as mentors for many volunteer/docent programs
- Programmatic flexibility and balance based on level of understanding by various audiences





# SGEN Goals and 2007 Outcomes:

- **Goal: Provide professional development programs for formal (K-12 teachers) and informal educators**
- **Outcome:**
  - a) **2,726 K-12 teachers involved (757 elem.; 1,263 middle; & 706 high school) in PD programs**
  - b) **1,516 informal educators involved in PD programs**
  - c) **71 courses taught for college credit, involving 1,705 participants**





# SGEN Goals and 2007 Outcomes:

- **Goal: Increase ocean literacy of K-12 audiences and the general public**
- **Outcomes:**
  - a) **1,793 camps, programs, activities, & clubs involving 153,146 children & families**
  - b) **1,446 class field trips involving 139,259 students taught by Sea Grant Educators**





# SGEN Goals and 2007 Outcomes:



- **Goal: Develop and/or revise curricula based on sound science**
- **Outcomes:**
  - a) **125 curricula developed (66 elem.; 45 middle; and 14 high school)**
  - b) **269 consultations concerning *State Science Stds., National Science Education Stds., & the EP& FC of Ocean Literacy***

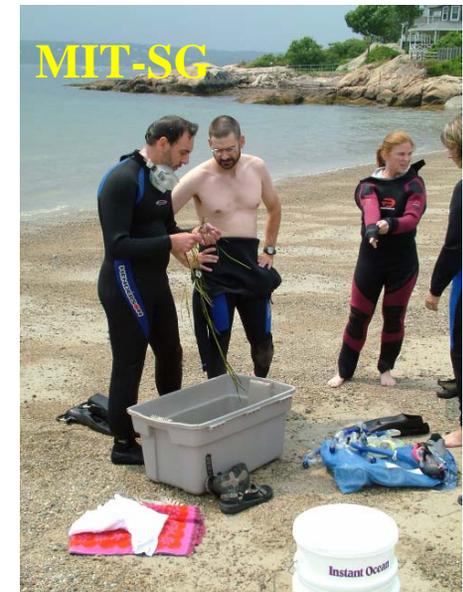




# SGEN Goals and 2007 Outcomes:



- **Goal: Increase research and education opportunities for undergraduate and graduate students**
- **Outcomes: 1,738 undergraduate & graduate students, to include fellows/fellowships**
  - a) 933 students supported (undergrad = 397; MS/MA = 204; Ph.D. = 88; fellows = 75; and other = 169)**
  - b) 570 continuing students**
  - c) 235 degrees awarded**





# SGEN Goals and Outcomes:

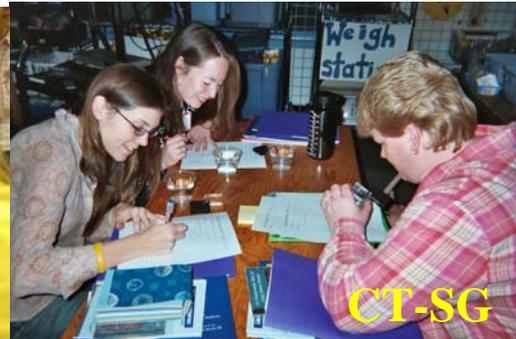
- **Goal:** Continue to serve as national leaders in technology based, marine & aquatic science education
- **Outcomes:**
  - a) **The Bridge**, collection of the best available ocean education resources on line [www.marine-ed.org](http://www.marine-ed.org)
  - b) *Marine Science Careers*, career options available in the marine sciences [www.marinecareers.net](http://www.marinecareers.net)
  - c) *Water on the Web*, real time, remote sensing water quality curriculum [www.waterontheweb.org](http://www.waterontheweb.org)
  - d) *Extreme Expeditions*, multimedia program to explore hydrothermal vents [www.ocean.udel.edu/expeditions](http://www.ocean.udel.edu/expeditions)





# SGEN Goals and Outcomes:

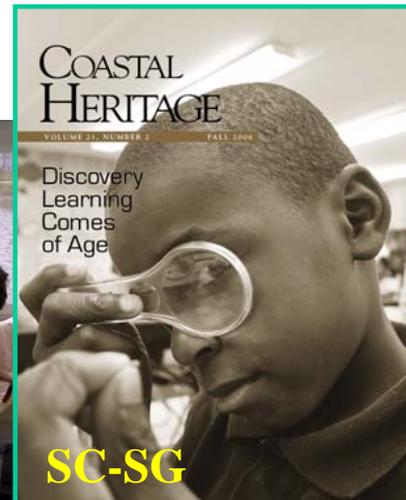
- **Goal: Build assessment and evaluation expertise and initiate projects that develop/refine assessment and evaluation strategies and practices within projects/programs implemented by the SGEN**
- **Outcomes:**
  - a) **significance in cognitive achievement**
  - b) **positive responses in attitudinal achievement**
  - c) **longitudinal evaluations conducted over time**
  - d) **use of logic models is being initiated**





# SGEN Goals and Outcomes:

- **Goal: Increase the delivery of programs to underserved/ underrepresented (us/ur) groups**
- **Outcomes:**
  - a) **scholarship opportunities are being offered to us/ur students but not as many as desired are being accepted**
  - b) **greater efforts must be made in successfully recruiting us/ur students**





# SGEN Goals and Outcomes:

- **Goal: Coordinate and increase collaborations and partnerships**
- **Outcomes involving Sea Grant:**
  - a) **10 of 12 COSEE**
  - b) **18 of 24 NOSB Regionals**
  - c) **many Coastal Ecosystem Learning Centers (CELCs)**
  - d) **other regional associations, e.g. GOMA, OOS, and Fisheries Councils**





# SGEN Recommendations:



- **Increase fiscal resources in education (at a minimum, each SG Program must have 1.0 FTE dedicated to formal education);**
- **Hire a full-time, NSGO Ed. Dir., currently 0.25 FTE;**
- **Implement a coordinated public awareness campaign;**
- **Increase use of marine and aquatic sciences within the *National Science Education Standards*;**
- **Include ocean & coastal literacy as a SG focus area; &**
- **Mandate research proposals include broader societal impacts.**



# Future Priorities/Actions

**(with increased & sustained educational funding...)**

- **Increase coordination and promote collaboration;**
- **Ensure a public awareness campaign through coordinated education and outreach messages;**
- **Ensure scientific data (OOS) are translated into useable forms for teachers, students and the general public; and**
- **Assess the current and future ocean workforce.**

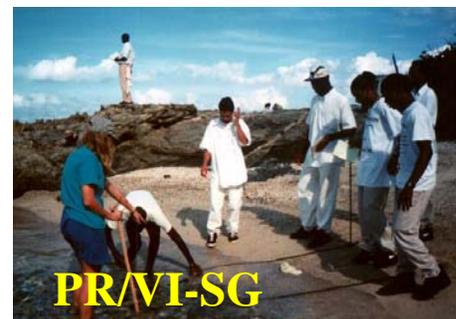




# Conclusion



**The SGEN is cognizant of the fact there are no singular, simplistic solutions for enhancing ocean and aquatic literacy within this country. Only carefully considered multiple, proactive education and outreach strategies will lead to an enhanced awareness and understanding of the relevance of the world's ocean and its watersheds to our everyday lives.**



**PR/VI-SG**



**LA-SG**



**WI-SG**



**WA-SG**



## Contact Information:

# Questions?

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# Backup Slide

- **Formal Education:** Learning that takes place within a structured educational system in which children or adults are required to demonstrate proficiency, i.e., tested and graded, in the process of reaching a certain level of achievement, degree, certification, continuing education credits, or similar goal.
- **Informal Education:** Learning outside the established formal system that meets clearly defined objectives through organized educational activities. This mode of education may be voluntary, self-directed (e.g., a museum or aquarium exhibit), or systematic and guided (e.g., a field trip).
- **Outreach:** Opportunities designed to build awareness, develop relationships, and inspire action (e.g., pursuit of further learning opportunities, behavioral change). Involves information exchange between provider and target audience. Frequently designed to reach diverse audiences, but can be personal and interactive, designed to identify and appeal to an individual's personal interest or motivation for information.