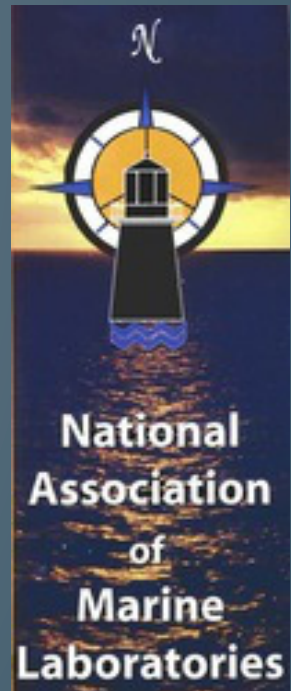


Communicating FSMs' value, impact, and priorities in the 21st century

National Association of Marine Laboratories
Annual Public Policy Meeting
March 2 2015



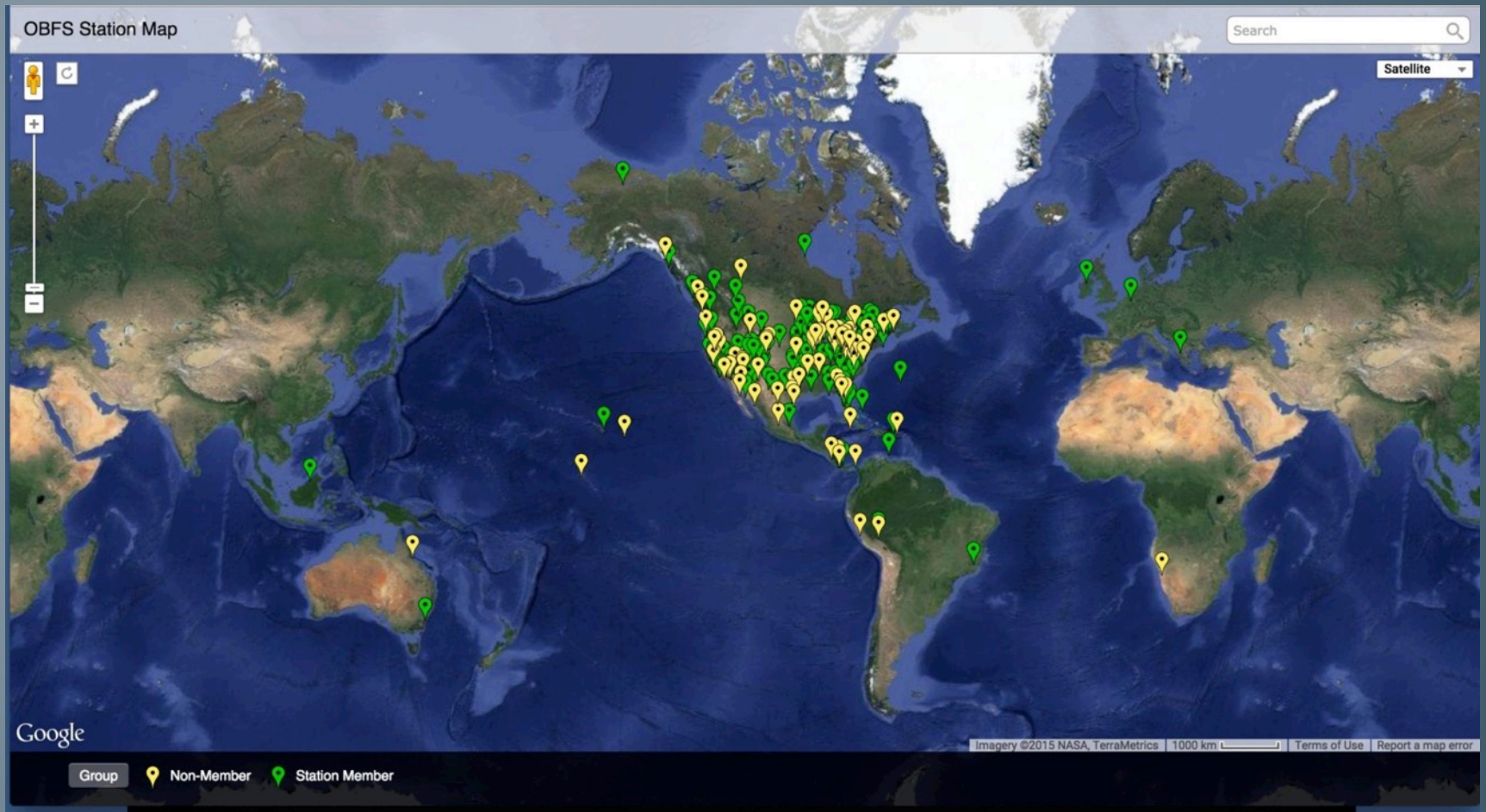
Sarah Oktay, PhD
Director, University of Massachusetts Boston
Nantucket Field Station
President, Organization of Biological Field Stations



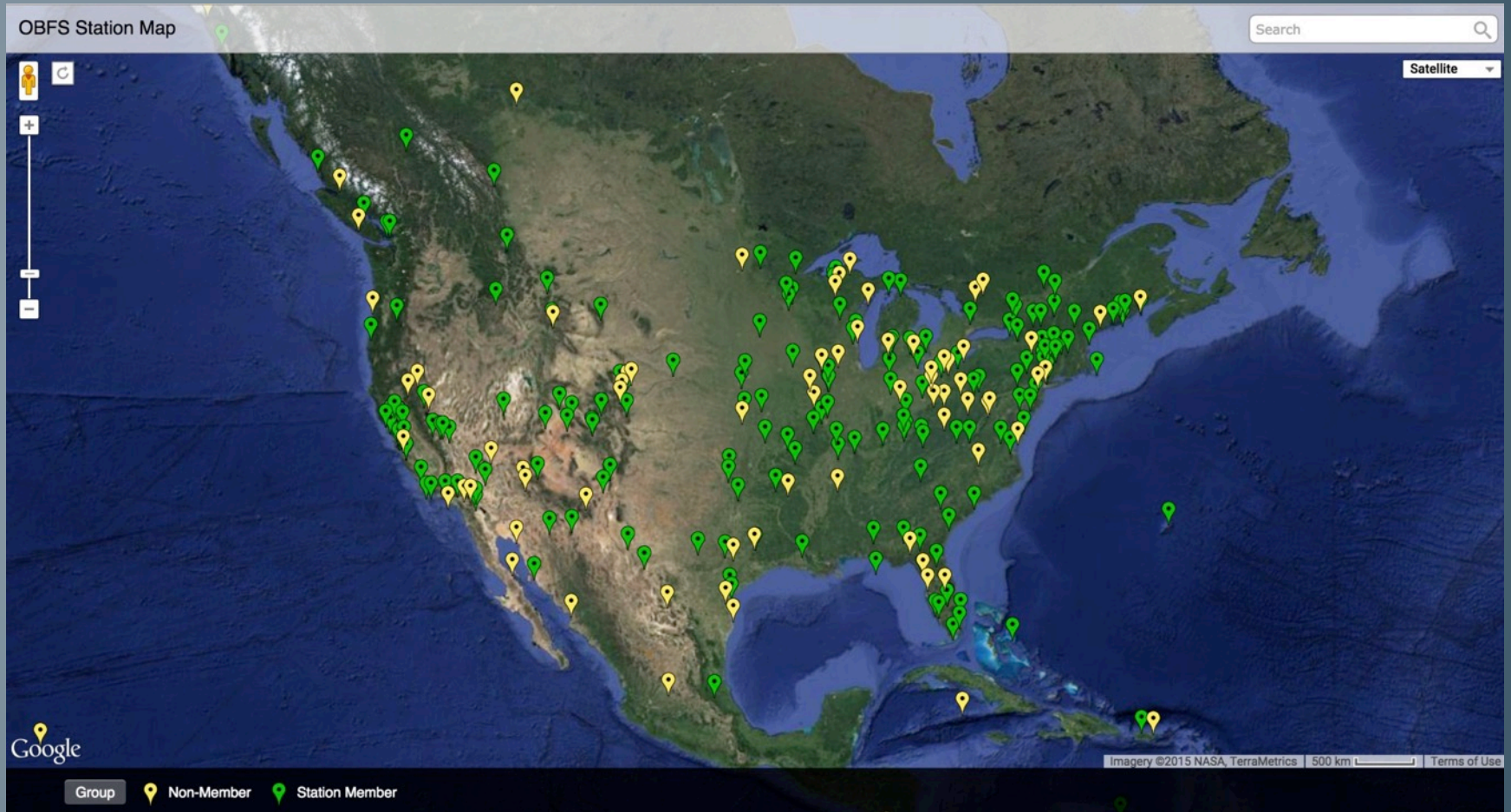
Field Stations and Marine Labs Globally

900+ international field stations

[Interactive Map](#)



Field Stations in the US



Strengthening the OBFS and NAML connection: (2012) Building and Operating the Field Stations and Marine Laboratories of the Future: A Strategic Planning Report

- The report takes advantage of ideas generated through a [national workshop](#) (62 scientists and FSML experts), a [survey of more than 200 FSMLs](#) , and feedback from the larger FSML and scientific community to recommend key investments that would maximize the unique value of field stations and marine labs. Report authors: Ian Billick, Ivar Babb, Brian Kloeppel, Jo-Ann C. Leong, Jan Hodder, James Sanders, and Hilary Swain
- The Strategic Plan was based upon work supported by the National Science Foundation under Grant No. DBI-1126161
- <http://place-based-research.org/tag/nrc/>
- <http://place-based-research.org/2014/01/05/strategic-vision/>

The report identified ten scientific trends with important implications for the operation of FSMs:

- (1) the importance of predicting the future, (2) an interest in long-term processes, (3) a push to work on broader spatial scales, (4) the explosion in automated sensing, (5) the vanishing cost of genetic sequencing, (6) the opportunities presented by Big Data, (7) the increasing ease of working with non-model organisms, (8) the increasing use of individual field studies by multiple scientists, (9) a focus on collaborative research, and (10) the increasing importance of sustainability science.

Goals:

- Increase the value to society of the science done at FMSLs, as well as the understanding of that value.
- Increase the scientific value of FSMLs by increasing their flow of information.
- Enhance the synergies between research and education.
- Ensure appropriate access by scientists and students to land and marine systems.
- Increase the operational effectiveness of FSMLs.

Recommendations:

- accelerating the translation of fundamental knowledge into decision-making,
- broadening and deepening the network of institutions fostering place-based research by creating a **national center** supporting FSMLs,
- identifying and enhancing elements of FSMLs that have significant impacts on STEM training,
- coordinating with federal agencies to ensure continuing access to public lands, and
- developing a program to train key FSML personnel.

National Academy Press:/ National Research Council

Amid rapid environmental change, a strong understanding of the natural world is more important than ever. Field stations and marine laboratories place scientists on the front lines of our changing Earth, helping them gather the data needed to better understand shifting climate and ecosystems and make robust projections of future conditions. But to fulfill their vital role, field stations must evolve. This report explores strategies to harness the power and potential of field stations to address complex challenges in science and society.



Enhancing the Value and Sustainability of Field Stations and Marine Laboratories in the 21st Century



Enhancing the Value and Sustainability of Field Stations and Marine Labs in the 21st Century

Supporting material

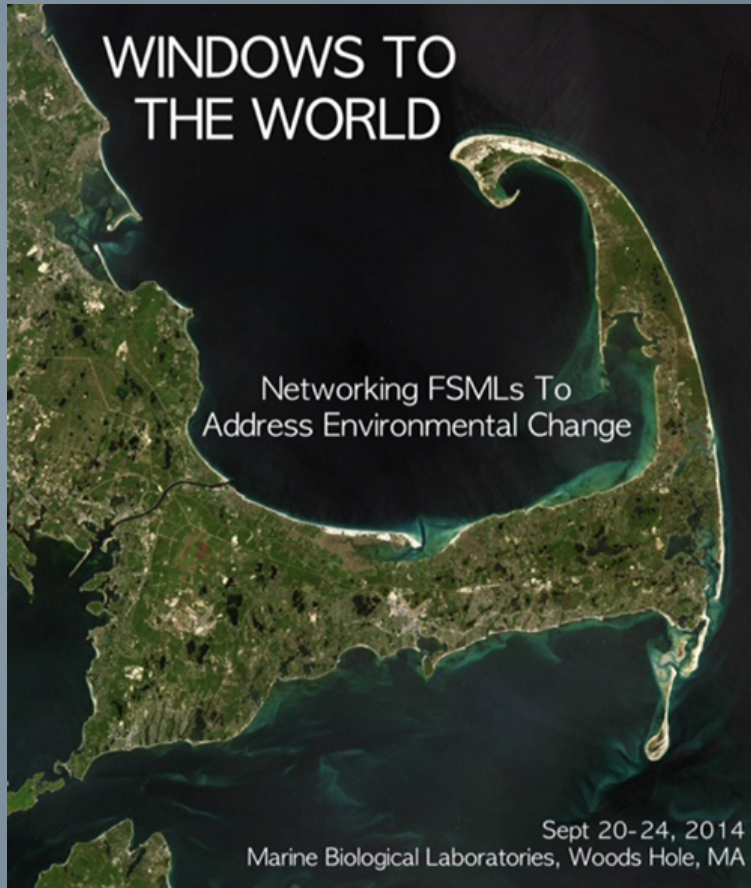
- Excellent Summary at <http://dels.nas.edu/Materials/Report-In-Brief/4252-Field-Stations?bname=>
- Excellent Video: <http://dels.nas.edu/Materials/Videos/Field-Stations?bname=>
- Bioscience article by Beth Baker “The Way Forward for Biological Field Stations”
- Presentation by Jerry Schubel: <http://dels.nas.edu/Materials/Presentations/Field-Stations?bname=>
- Joint OBFS and NAML brochure developed after Sept 2014 meeting

I have copies of many of these with me, first come, first served

NRC report: take home messages

- Capitalize on the natural ability of field stations and marine labs to foster convergence
- Continue and expand STEM education efforts; work on long term impacts and keeping students engaged
- Public engagement; the intrinsic value of FS and ML have to be a universal truth for the public, similar to the value placed on National Parks and protected land
- Networking: between field stations & across research platforms, with people, equipment and ideas to tie together data in easily exchangeable forms
- Infrastructure support
- Regional and climatic questions; directed joint research goals
- Business acumen and entrepreneurial spirit: the skills needed to keep our facilities thriving
- Protection of dark data before it becomes an Antique Roadshow like Sisyphean task

First Joint OBFS/NAML Meeting Sept 2015 @ Marine Biological Lab



ORGANIZATION OF BIOLOGICAL FIELD STATIONS
NATIONAL ASSOCIATION OF MARINE LABORATORIES



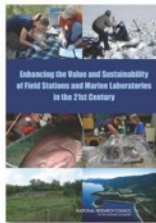
Ways to communicate our message

seeking solutions

At a time when humans are confronted with making difficult decisions, the need for objective field research and public engagement has never been more urgent. Embedded in natural environments that range from remote to densely populated urban locations, field stations are observing and tracking environmental change over time and moving towards solutions by creating broader, more engaged partnerships through which to effect needed change.



To build on the important role that field stations* play in research, education, and stewardship, the 2014 National Academy of Science (NAS) report, *Enhancing the Value and Sustainability of Field Stations and Marine Laboratories in the 21st Century*, provides a blueprint for their future. This brochure is a brief overview of those NAS recommendations.



* For the sake of brevity, this brochure refers to field stations, marine laboratories, and nature reserves all as "field stations."

THE PLACE-BASED KNOWLEDGE THAT FIELD STATIONS PROVIDE MAKES BETTER INFORMED RESOURCE MANAGERS, DECISION-MAKERS, AND CITIZENS

future strategies

The 2014 NAS report suggests the following strategies to meet the future research, education, outreach, infrastructure, funding, and logistical needs of field stations.

- Increase the value, relevance, and sustainability of field stations.
- Seek opportunities to support these strategies through networking.
- Focus on the challenges and opportunities to build and maintain infrastructure.
- Seek visionary leadership and financially sustainable business models.
- Address the need to develop and document the impact of field stations and marine labs.

"EXPANDING SUPPORT FOR FIELD STATIONS IS KEY TO CREATING SOLUTIONS TO REAL WORLD ISSUES"

- National Academy of Sciences

The Organization of Biological Field Stations (OBFS) and the National Association of Marine Laboratories (NAML) are committed to work together to achieve the NAS goals by expanding their collaborative and inclusive approach to effective problem-solving and communication.



Print and electronic copies of *Enhancing the Value and Sustainability of Field Stations and Marine Laboratories in the 21st Century*, 2014 The National Academies Press, can be obtained at <http://j.mp/NAS-FSMLRpt>.

For more information
Organization of Biological Field Stations
www.obfs.org



National Association of Marine Laboratories
www.naml.org



Photo credits
Faerthen Felix/UC Regents/
NAML/Elliott Parsons

Reference
Blick, L., I. Babb, B. Kloepfel, J.C. Leong, J. Hodder, J. Sanders, and H. Swain. 2013. *Field Stations and Marine Laboratories of the Future: A Strategic Vision*. National Association of Marine Laboratories and Organization of Biological Field Stations. Available at www.obfs.org/fsml-future.

ian.umces.edu

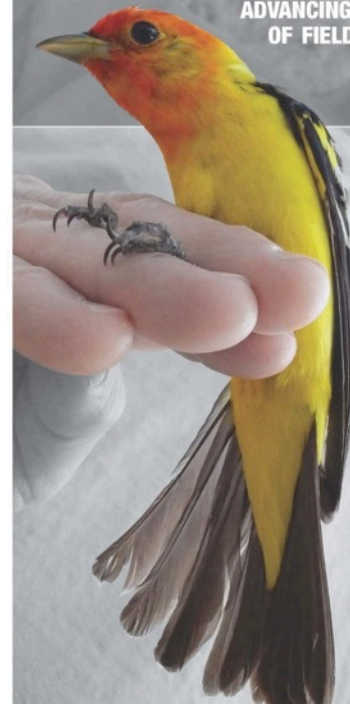


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from Science to Solutions

ADVANCING THE ROLE OF FIELD STATIONS



In 2014, the National Academy of Sciences released a report acknowledging the current value of field stations to science and society, and made the following recommendations to guide their future sustainability.

1. enhance science, education, & public engagement

Develop their unique assets and qualities, prepare the next generation of scientists, and empower the public by

- encouraging multidisciplinary, “convergent” studies,
- expanding opportunities for active learning activities and independent, collaborative research,
- exploring a wide range of approaches to engage the public,
- guiding the development of activities that effectively promote public understanding of science, and,
- engaging with citizen science programs to improve scientific understanding.

2. network for discovery & innovation

Continue to build and further establish networks and partnerships by

- expanding opportunities for networking, and,
- looking to universities, National Science Foundation, and other funding agencies for networking incentives.



3. build & maintain a modern infrastructure

Create modern infrastructures in a networked world by

- evaluating its own infrastructure needs,
- including internet connectivity and cyberinfrastructure in all infrastructure management plans, and,
- converting long-term data sets into digitally accessible formats.

4. strategize for financial sustainability

Seek financial security for a modern infrastructure by

- developing business plans that describe their unique value,
- creating mechanisms to establish reliable base funding,
- diversifying approaches to obtain supplemental funding,
- recruiting station leaders with management and entrepreneurial skills, and,
- asking host institutions to mentor station leaders in management, business planning, and fundraising.

5. develop metrics for demonstrating impact

Measure performance and impact by

- working together to develop common performance and impact metrics,
- encouraging universities, host institutions, and funding organizations to use innovative ways to collect, aggregate, and synthesize performance information to document stations' contributions, and,
- developing new mechanisms and funding to collect performance data and translating them into metrics and information.

FIELD STATIONS  ARE NATIONAL ASSETS THAT NEED YOUR SUPPORT

Pacific Ocean

Atlantic Ocean

Who what where why

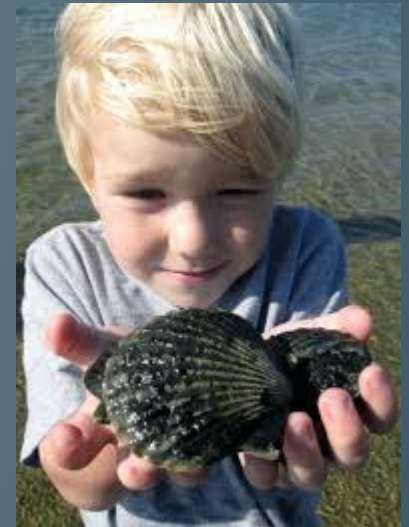
- Need to communicate
 - who we are
 - What we are
 - Where we are
 - Why we matter
- Most people understand what a marine lab is but very few have any idea of what a field station is



Students from UC Berkeley learn field research skills during a visit to Hastings Natural History Reservation.
Image credit: Lobsang Wangdu

Metrics and/or performance standards

- Box 6-2 page 65 “Examples of Metrics to assess Field Station Programs
 - Assessing impact of research:
 - (number of publications and their citation impact factors;
 - number of digital datasets archived, downloaded and cited
 - Number of laws regulations and policies influenced by field station research: Bioscience article: Policy metrics and impact can be evaluated by the amount of policy decision that are effected by a field stations research or input,
 - example: Nantucket Field Station:
 - Nantucket Harbor Plan,
 - Shellfish Management Plan,
 - Coastal Management Plan and several
 - products, bylaws, regulations and education efforts.



- Assessing impact of Education
 - Alumni success stories
 - Long term tracking of field station and marine lab students (graduation and career outcomes)
 - REU and other programs
 - Learning outcomes assessments
- Assessing impact of outreach
 - Number of civic and other organization that visit or interact with field station
 - Citizen science
 - Media reach
- Assessing Field Station Use (most well established; user days/contact hours)
- Assessing Financial Stability
 - Number and size of grants
 - Amount of recovered overhead
 - Revenue income from endowments, gifts, sponsored activities and user charges
 - Operating and maintenance expenses
 - What is the bang for the buck; might be less than the typical chemistry lab

Currently working on:

- prioritizing metrics needed, evaluating good examples out there ready to be used [example from Bioscience article for California DOI/Stromberg]
- Figuring out what type of help do we need and which process should be used to develop these metrics

For this meeting we are soliciting ideas and assistance on developing STEM related education metrics:

- Jan Hodder and Ivar Babb
- Assessing the Impacts of Place-Based Education on STEM Learning: A Joint Initiative of the Organization of Biological Field Stations and National Association of Marine Laboratories

Starting the conversation:
OBFS events in member station cities
goal: building a network office; OBFS Exec. Director



New and Continuing Initiatives

- Art at Field Stations and Marine Labs: new multi station loose consortium: from Artists in residency programs to integrated curricula
- Gulf of Maine consortium: joint regional based field station and marine lab consortium bonded by mutual scientific questions, geography, fisheries, and habitat
- Congressional hearings with AIBS
- Strengthening our connection with NAML; continuing annual meeting, three year cycle?
- Outreach to the public with fundraising/friend-raising events
- “Friend of OBFS” recognition; Faces of Field Stations; more coordinated congressional events
- Increasing coverage in the media: offering science journalism residencies?