



**National Association of Marine Laboratories  
Biennial Meeting  
Elks Lodge, Honolulu, HI  
29-31 October 2013**

Jo-Ann Leong, President of NAML, opened the meeting with a Hawaiian, Aloha! Everyone was in agreement that the lunch preceding the meeting was fantastic as was the setting of the dining room. Jo-Ann introduced Judy Rubano, her friend and Elks member. Meetings logistics were discussed. Brian Taylor, Vice-Chancellor for Research, University of Hawaii, was scheduled to officially welcome us, but unfortunately he was ill with the flu, so he could not attend and sent his regrets. As there were several new members present, Jo-Ann asked for introductions around the room.

Jo-Ann recognized Ray Highsmith who died in July, and also Kumar Mahadevan for their long and outstanding contributions to NAML as founding members.

**National Perspective Update: Appropriations and Legislative Status -- Joel Widder, Oldaker Group:**

For FY-2013, the "sequester" cut from 5-8% from domestic and defense spending. NOAA absorbed the shortfall to their budget by taking money away from extramural programs. He noted the NSF's FSML funding actually increased from \$2M to \$4.5M. The program is now being reviewed by a National Research Council committee. The NOAA supplemental allotment incorporated as part of the hurricane SANDY relief package got large increases related to it. NSF protected its ongoing activities and Senator McClusky got additional monies added the NSF budget, so the sequester impact was reduced for this year. Discretionary spending programs were the most affected, DOD, and non-active military programs were impacted relatively hard.

FY-2014 Budget has an \$8.4M increase to NSF, plus other increases for NOAA, DOE, and NASA. Joel related that the NIH budget remains in committee. The Senate version is slated to spend \$91M more than the House. However, the House has set the budget cap that must be figured into the negotiations. The sequester funds are part of this difference. Joel said that a 20% reduction in discretionary spending has already occurred from the initial mandated sequester. Post-sequester funding levels will reduce it even further. Joel related that a Conference Committee is to set the top line budget numbers by 15 December as dictated by the latest Congressional vote on the budget and debt ceiling. Conferees are now working out those numbers. The Continuing Resolution (CR) will expire on 15 January 2014, so the budget cap numbers must be set by then. Congress is looking to fund a full budget, not another CR. A NAML letter to Conferees has gone out in support of filing a full budget, so we will be part of the process. The question to be answered, "where will the budget figures settle out?"

The next topic discussed was NOAA's Intra- versus Extra-mural R&D expenditures. Joel said that there has been a 40% reduction in NOAA's extramural funding levels. It was noted that the Executive Branch supports R&D, and Congress as a whole still recognizes the importance of R&D to the national economy. Joel said that about \$140B will end up there if it goes well, from the roughly \$1T proposed for overall discretionary spending. How it will be divided up is the big question, and that is the important part of the discretionary apportionments process. NAML needs to find a way to stay relevant in this apportionment

process.

**Discussion:** Jan Hodder asked about STEM funding. Currently, the science and education community is still pushing not to consolidate the separate funding programs. We were told that there is some bipartisan support against consolidation as well. OMB is driving the consolidation efforts after a review of all the STEM programs because there was a lot of overlap between the various funding agencies. Jim Sanders cautioned that history dictates, if the money is removed, it will never be returned. The threat to eliminate the Knauss Fellowships has galvanized numerous groups to come and support its continued funding. NASA's STEM education is also being supported. Roberta Marinelli asked if some education programs could be brokered abroad and thus could be supported and funded. Basically, she asked, "What are the alternatives we could propose to overcome STEM cuts?" Joel said that well-supported education programs could be taken to OMB as long as they can be highly justified and do not overlap with already funded ones. Joel stated that OMB has to be the target for these arguments.

**NAML-Public Policy Committee Updates:** -- Joel and Jo-Ann filled in for chairperson, Nancy Rabalais who was recovering from surgery. Mike DeLuca, soon to be incoming, President-Elect, was asked to continue the tradition of the monthly PPC teleconference. Joel suggested that he get an assistant to take Minutes and assist him during the phone calls. Subjects under consideration were discussed. They include:

Extramural funding levels from federal agencies, NOAA's Advisory Board membership, network formations between individual NAML labs, and an emphasis to form national partnerships with NOAA to co-locate federal scientists at NAML labs to carry out their research projects in collaboration and not competition.

Joel recommended that we write a single, broad cover letter stressing NAML's major goals emphases, and generate additional, stand-alone pages. The broad cover letter would go attached with *all* NAML communications, but the following pages will be specifically targeted to the specific request or appropriate agency. The idea was opened for general discussion. Ivar agreed that our current document is long for general purposes, and should be updated. He also suggested it needs to stress what NAML has done in the areas being considered. The letter also needs to be written in layman's language for everyone to understand at all levels. Jo-Ann said that would be the principal purpose of the cover letter. The following pages would be more specific and directed. Ivar's suggestion was to include some targeting in the cover letter. Mike DeLuca recommended encourage other science organizations to join us in networking and thus strengthening the request. STEM education is a good example of how that actually happened, said Joel. Joel suggested we should do that. Jim recommended the important emphasis should be to restrict the cover letter to one page and that it be a high level definition of what NAML supports. Everyone agreed that it should be done, and we should draft it out ASAP.

**OBFS –NAML Update:** Ian Billick and Ivar Babb -- Ivar reported on the history of the OBSF-NAML working association and stated its genesis began at the Catalina Biennial Meeting (2006) with Tony Michaels. The involvement and request of the NAS to generate a NRC evaluation of the impact of field stations and marine labs stems from our OBFS/NAML final Report written under a joint NSF grant aimed at describing the value of field stations and marine labs. The report included the research and education survey compiled from member labs and stations. The report emphasized that field stations and marine labs are one of the few "place-based" research and education centers that offer decreased-cost but very strong networking that facilitates science and education.

Key findings of the Report include the following advantages offered by field stations and marine labs: 1) provide place-based research as a way to study using sustained efforts centered in dispersed places to accurately measure environmental parameters by multiple groups; 2) provide access to diverse and geographically dispersed environments that include logistical support, accumulated knowledge, and community of scholars all located in one place; 3) advantage of large, existing investment in land, buildings, expertise, and equipment that collectively totals billions of dollars derived from state governments,

foundations, federal agencies, and NGOs; 4) foster synergies and increased knowledge that immerse from multiple research projects within geographically defined areas; 5) execute a major role in education and public outreach through training programs that include STEM, as well as providing a "window to the natural world" for the public; 6) provide a portfolio of assets supporting field research, with a set of unique characteristics that complement other federally funded programs; and 7) provide a legacy of archival data that is not present in other federal programs because of the corporate spatial coverage that is significantly greater than any other environmental observing program including NEON, LTERs, etc.

Key recommendations of the Report included: 1) the need to initiate programs to increase awareness and funding for field stations and marine labs (FSML) based upon the premise that they provide a source of expertise for establishing programs that complement, but not interfere or overlap with other federal programs; 2) the need to develop databases and sharing across participating sites; 3) disseminate information documenting the disproportionately positive impact FSMLs have on education; and 4) the need to promote FSMLs networking abilities that facilitates strategic planning to incorporate and integrate into their research programs, even with international groups, national goals for science and education.

The Report also contains organization suggestions to include using the Caroline Wagner (2007) Model; i.e., OBSF & NAML should use a bottom up approach that utilizes nested groups and members producing the results. This Network will grow quickly and efficiently because the members are already in place, and simply need to be organized into units through data sharing, collaborative interactions and sharing of collected information.

The next steps to be undertaken will involve participation in a joint NAML/OBFS meeting to be held 20-24 September-2014, at the Marine Biological Laboratory, Woods Hole, MA. We must move to organize the research coordination groups [Network Centers] by holding a workshop to draft with other NRGs, another grant to submit to NSF or another foundation to move the efforts forward. The OBFS-NAML Report is done, and it is being followed up with the NRC's review that is currently underway. The result is an anticipated stronger support to move forward.

Ivar related that the NRC panel has asked lots of questions about our Report, especially concerning the survey and whether it reached sufficient numbers of players. Ivar suggested that Nature Reserves should be added to the group and process. NAS was looking for outside people to comment on our report. Steve Palumbi suggested that some of the suggested collaborative interactions are very diverse and maybe cannot be lumped into a single unit. However, he related that their inclusion can still occur if they are recognized as separate entities. Roberta Marinelli asked what will happen after the NRC report comes out. It is currently unclear what will be generated, answered Ian. Ian hoped that others will take advantages of what field stations and marine labs can offer, and continue to promote the model. Graham Shimmiel asked about whether the networks could be formed first as a means to strengthen the initial grant requests. Ian said there was some NSF money left to create the organizational chart. The chart will be important as observation platforms go up, but the infrastructure for the costs of those observation programs are unfortunately being cut.

**Joint NAML/OBFS Meeting:** Ivar Babb clarified that the joint meeting will occur 20-24 September 2014, and the business meeting will occur 22-24 September. Ivar and Alan Kuzirian attended the annual OBFS meeting in Portal AZ, where meeting committee members were established. Ian Billick will be co-chair for OBFS, and one person needs to be appointed from NAML [subsequently identified as Ivar Babb]. Meeting Committees include: Logistics, Pre-meeting Activities, Program, and Auction. Finances will be handled through Ian for both organizations. NAML members will remit funds directly to OBFS. Corporate sponsorship for the meeting will be sought. Themes for the Meeting may include; sustained research in place-based geographies, cooperative research, as well as lab networking and data sharing. The latter topic might include database search engines, NEON, OOI, other observing programs, etc. A session will center on how to form and integrate Network Centers. Education program discussion will include ways to link FSML education programs, undergraduate and graduate level programs, and educational exchanges between labs. Discussion of the National Academy's Strategic Vision document and what it will be used for will take place.

We are planning to offer training sessions for Congressional presentations and how to conduct successful visits to get into federal offices and to get your points across. Current issues under discussion or consideration in the Washington at the time of the meeting that will affect our groups will be added. It was suggested that Ed Maibach be an invited speaker to talk about communicating science and its importance.

Jan Hodder related that there are fundamental differences between the two groups that should be considered at the meeting: NAML is composed lab directors, while OBFS is much broader and includes scientists. We will need to incorporate that challenge into the meeting. Ian suggested concurrent session that will support the separate interests both groups. There are also differences in numbers of members who will attend. Jan reminded everyone however, there are common concerns and they are always the unifying thread.

Mike Crosby inquired about what is the larger expected question to be answered coming out of this effort. Ivar said a lot will depend on the NAS report, but one major goal is to forge new collaborations. Jan suggested we might be able to get an NAS member from the committee to attend the 2014 meeting and give us a synopsis of what they have concluded. Ian said the goal of their review is to increase the weight and impact of the message concerning the importance of FSMLs and to increase the visibility of what science is produced for the overall public good. Mike emphasized the need at the meeting to form a strategy between the two organizations to address science funding and moving forward; the usefulness and importance of the three-legged stool, research, education, and outreach programs. Encouraging a national investment in science funding is the overall motivation said Jo-Ann, in all aspects including what comes from it for the common good. She asked if there was a specific agency that we could target to can carry this effort. Ian thought it really is NSF and its priorities right now. Environmental challenges are the driving force for doing this, and specific things must be done to ameliorate detrimental events that are currently accumulating nation- and world-wide. Mike asked, "is it better to fund individual scientists or do large programs like NEON?" It was agreed that establishing a network of marine labs and field stations would allow this national infrastructure to be formed. The goal is to enumerate how should research money be spent; the infrastructure as a whole, not type of lab, is the important question, Jim Sanders agreed that which funding agency to be targeted as the priority funding source is the over-arching question, and that question should be asked on a larger group than just NAML. Graham Shimmiel suggested that the Commerce Department would a better choice rather than the NSF that funds individual science. Roberta agreed with that suggestion stating that it is a broader problem. Mike DeLuca suggested cross-agency participation in funding these infrastructure programs. The discussion continued the next day.

**Burk Associates Inc. Update (BAI):** Jo-Ann related that Bret Burk and Associates was chosen to help manage NAML. Heide Rohland will handle data entry and membership and will attend the regular conference calls with all parties. NAML Website development is separate and at an additional cost. Website maintenance to include updating material periodically, however, is covered in the contract.

Ivar brought up the fact that BAI will assist with the winter meeting only, not others and so the question is will they do it and what will be the costs. Website development was discussed by Ivar. He said their web designer is very good and responsive. Aspects of the design need to be finalized; there are questions about open access versus members only. "What is the look?" was asked, so they looked at OBFS' and liked it. Modifications will be done to fit our needs. Topics include: About us; Members; Public Policy; NAML Meetings; Education; Jobs; Courses. A "Map of NAML Labs" showing locations and overall geographic distribution will be included and displayed as Regional maps. When asked about maintenance of the site by Alan regarding membership and their institution information, Ivar said that he expects that BAI will be responsible to conduct semi-yearly inquiries of all labs addressing that subject. He also said in response to Brian Melzian's question that there will be 2-3 people from each Region who will supervise the site to be sure everything is in place. Jyokita Virmani asked about expansion of the site and can it be searchable for what research is being done. Jim also asked and suggested that the committee actually pose the question about expansion during development of the site.

**Ocean Scientist Meeting:** Jyotika Virmani suggested that NAML do a poster at the 2014 Meeting explaining what NAML is and what we are doing. Abstract is due this Friday. Volunteers were asked for to assist Jyotika. The following volunteers were obtained: Mike Crosby, Val Klump, and Neal Davies.

### **Business Meeting:**

#### **NAML Business Meeting**

A motion to approve the minutes of the March 2013 winter Public Policy meeting was made by Mike Crosby and seconded by Roberta Marinelli. The motion passed unanimously. Brian Melzian added a note to the minutes' importance in recording the activities of NAML and how he distributes them within US-EPA with the caveat of showing their relevance to his participation.

#### **Regional Reports**

**SAML:** Aswani Voley reported that the spring SAML meeting would be held in the Florida Keys in May. Federal budget discussions and the role of SAML labs will be discussed. Also included on the agenda will be the joint meeting with OBSF.

**NEAMGLL:** Val Klump reported that there would be an August meeting of NEAMGLL in Milwaukee. It would be used as part of a recruiting effort of Great Lakes labs. Graham Shimmield will be the new NEAMGLL president and will host the next meeting tentatively set for 24-25 June 2014. The website is under construction for NEAMGLL. Chris Dematos will resolve some of the issues.

**WAML:** Steve Palumbi reported on the previous day's WAML meeting: topics included steps to coordinate research and education, networking, and creating a short-term website. Collective research, teaching, and coastal in-shore monitoring were chosen as priority topics to address. They also proposed to submit a grant proposal to CARR for collecting and compiling coastal observational data. WAML wants to begin participating in genomics for biodiversity records, with hopes of expanding their initial regional efforts to NAML labs to broaden the networking and impact.

#### **Trip to Coconut Island**

Jo-Ann asked everyone to meet at 12:45 PM tomorrow in front of New Otani Hotel for the trip to HIMB on Coconut Island. During the snorkeling expedition to the coral reef, she warned everyone that there are many sea turtles and that all snorkelers will need to be careful and travel in one direction so as not to disturb the turtles.

### **Biennial Meeting, Day-2: 30 October 2013**

**Peter McCartney, NSF-FSML Program Director:** Peter teleconferenced in via an amplified cell phone in the meeting room so everyone could hear. Recent FSML-funded improvements included Communication Upgrades and Facilities Improvements at both field station and marine labs as well as several planning grants. The awards ranged for infrastructure support from \$25K up to \$350K. Cross-directorate activities were incorporated into the awards: Bio-side, Peter McCartney, Geo-side Kandace Binkley, and HER, Dave Campbell. This effort was part of a multi-scale portfolio of NSF support for observational and experimental research. For FY-13, greater than \$5M was budgeted and spent for the program. That amount is up from years previous to 2011. 2012 was the largest sum dispersed with over \$6M awarded; an actual increase over what was originally budgeted. The money was spent on a wide variety of items from equipment and instrumentation, to facilities, and planning workshops.

New procedures impacting facilities awards now included in the National Environmental Policy Act that requires permits, signed MOUs, and detailed maps of impact areas. Environmental assessments are required

along with EPA, SHPO, and Fish & Wildlife surveys and approvals. Project Management & Oversight plans are required that must include project execution plans, budget cost confirmations, work scheduling detail, project staffing, and risk assessments during construction. Also needed in the application is a Data Management Plan for the research results produced so that it can be shared and used by others.

Peter went on to discuss the "top 10" weaknesses found in submitted proposals: 10) no or only incremental advancement to science; 9) limited benefit to other NSF funded basic research; 8) declining trends in visiting users; 7) limited research productivity; 6) requests that primarily serves the PI's research or teaching, but not others; 5) limited institutional support (not a requirement for strict cost-share, but no intra-institutional support given to the project); 4) limited impacts to education and outreach; 3) budget does not follow GPG or solicitation guidelines; 2) weak data management plan; and 1) it's a shopping list only!

Discussion: Roberta Marinelli asked about group collaborative efforts and would it be possible to get support for a multi-institutional initiative? Peter said it would and there are examples of how this has been done by a few groups including international collaborations. He mentioned that field station groups have been funded on a regional level, and yes, FSML is interested in funding planning grants for these types of collaborations. Roberta continued asked about the timing of the formation of the group as some members would be ahead of others in the planning process. Peter said that would not be a problem if the place-based facilities have the right research in mind. Jim Sanders stated that NAML has worked with GEO on this topic, but asked how we can get them to understand how important this program is to NAML members. The National Academy of Science study on field stations and marine labs now being done was brought up and it is hoped that the study will add to the push for infrastructure support. The conclusion stressed was that communication is the key effort that brings the positive arguments forward. Peter noted that his program no longer supports building buildings even if cost-sharing is included. That scale is too large for the program. However, he emphasized that outfitting the building is appropriate, especially for marine labs. Field stations sometimes need assistance with building construction, but it is not possible through FSML. Ivar mentioned the joint OBFS-NAML meeting in the fall and asked if we might be able to get insight in the NAS's timeline. Peter said that NAS is fast-tracking the report, and they are aware of the joint meeting with hopes of considering the possibilities of being able to share the results. Peter said he would relay that we asked him about this possibility. Jo-Ann thanked Peter for all of his efforts on all aspects related to our needs. She invited him to the Washington Winter meeting.

**Steve Palumbi, WAML President, Hopkins Marine Station:** Steve discussed the partnerships within WAML and their potential expansion to NAML. He mentioned COMPASS ([www.compassonline.org](http://www.compassonline.org)), a group dedicated to providing training and opportunities for scientists to effectively communicate science to society in general and importantly to policy makers. Steve had given a presentation at the US House briefing on ocean acidification and made the following points: 1) atmospheric CO<sub>2</sub> dissolves in oceans and causes acidification that impairs shell formation; once species reach their limit, they will be lost. Shellfish top the list of impacted species. Abalone genomics show detectable changes in low pH areas that affect shell growth. Pulses of local CO<sub>2</sub> levels are synergistic with atmospheric levels and thus the impact is greater. Solutions include determining the CO<sub>2</sub> levels, reduce local OA pulses; determine where the crucial tipping points are.

WAML discussed local near-shore measurements of CO<sub>2</sub> based upon our geographic spread. WAML is planning to start an observation network and submit a proposal to Peter McCartney to fund it. The system is already in place, just needs to be coalesced into a functional collection network and database. Steve said there is a potential to expand the network into all of NAML.

Discussion: Mike Crosby asked if they would consider collaborating with other networks already in place and that he would furnish contact names. Steve was pleased with the help. Jo-Ann asked about the range of scale for the sensors used and their costs. Steve said the basic unit would be about \$5K, but that there are systems that cost ten times more. Peter McCartney said the down-side is that WAML might exceed the NSF budget limits. Comments by others suggested that they look for the greatest chance of success. Brian

Melzian brought into play the EPA outlook that should be included perhaps in the collaboration formations. That would especially apply to those associated with the Office of Water. Even though they deal principally with permitting, there is additional information that might prove useful. It was also mentioned that NERR sites also are repositories of these data. Brain said that the EPA is looking to narrow the acceptable range of pH in aquatic habitats.

**Steve Weisberg, Southern California Coastal Water Resource Project:** Steve gave a presentation centered on the question "Why are we here, and what can we do positively for the environment?" Discussion centered on what WAML can do collectively as a network on the topics of ocean acidification and genomics as a measure of biodiversity. Genomics can be used to measure acidification effects by species declination, as well as revealing what species are in the water column or area. Steve emphasized that genetic barcoding and genomic library formations being done at some NAML labs. WAML wants to organize the effort.

**Neal Davies, UC-Berkeley, Gump Station, Moorea:** Neal spoke about genomic observatories and the Ocean Sampling Day (OSD). NAML is a collection of "place-based" labs and its members are ideal to participate in biodiversity studies and collections. Neal related that DNA barcoding all species on Moorea has been done. CN-1 gene was used to inventory the species. The goal of Genomic Observatories is to establish legacy data over time. The Ocean Portal team is headed by Chris Meyer, Smithsonian Museum of Natural History. He is in charge of everything from calibrating instrumentation to forming biodiversity data. They are also working to establish webs of species interactions derived from a species presence to detailed gut analyses to establish food webs. Additionally, these biological data can be correlated to physical (water quality) data. Genomic Observatories are being established into global networks like GEO BON, Genomic Standards consortium (GSC), and Group on Earth Observations (GEO); a global organization of governments. Context is critical for understanding system interactions: what, where, when, and how. Consolidation of place-based data at data hubs is better because there, everything can be correlated on-site, not just between unrelated sites. Change of custody of the sample from collection to DNA extraction must be preserved and proper credit given to participating individuals along the chain. Neil noted that Jon Geller, Moss Landing Marine Lab, thinks that Genomic Observatories should be embedded within other networks capable of long-term scientific research of ecosystems. The scale can range from microbes to multicellular organisms, with research platforms being buoys to individual sampling site collections. Jon is doing extensive sampling of the Monterey-San Francisco Bay area.

**Ocean Sampling Day (OSD):** The event has EU funding ([www.oceansamplingday.org](http://www.oceansamplingday.org)). It will be global in scope, use standardized methods, and will be orchestrated on 21 June 2014. Current data indicates that species richness peaks in December, and troughs in June. Preliminary indications are that there are now 50 sampling sites participating in OSD.

WAML wants to go in this direction and wants to participate in OSD, and Steve Weisberg asked, "Does NAML wish to participate?" Our geospatial potential is huge. Participation in OSD is a start in forming a network collecting group. Graham Shimmield said there is a debate in his lab about how this should be done and the technology being used. Neil said that there are many techniques, but if one is acceptable to a large portion of the community, it can serve as a starting place that can be refined over time. How do you link the data back to the biology is the question Ruth Gates posed because that is one of the necessary goals and uses of the data. Steve Palumbi stated that he wants to get WAML participation into this sampling effort and whether we can use the data for something bigger for NAML. Questions were asked about what other physical data should also be collected. The consensus on the answer was to keep it simple for this first snap-shot. The effort can be expanded at any time in the future. **Action item:** It was decided that an answer to OSD participation would be determined tomorrow before people leave.

### **Biennial Meeting, Day-3: 31 October 2013**

Steve Weisberg began with a review of the topics discussed yesterday centering on NAML as a collecting and data network. He suggested submitting a NAML grant to fill out the network and make it a reality.

**Ocean Sampling Day:** Neil Davies directed the discussion and gave the website address to sign up and obtain directions on how to participate ([//www.oceansamplingday.org](http://www.oceansamplingday.org)). There is also a River Sampling Day if people wish to participate. Neil will send an email to NAML with those directions. It was proposed that the data would be collected and used as part of the joint OBFS/NAML meeting in September 2014. The data are shared with everyone. Samples are processed at the Argonne Lab, Univ. of Chicago.

**Monterey Bay settling plate data:** Neil Davies presented data from Jon Geller. Jon places settling plates in Monterey Bay area waters. These plates are sampled temporally for genomics, including bar coding of all species using the CO-1 gene. Jon is especially looking to find and document invasive species. Studies are being replicated across sites in the Pacific and Caribbean with NSF and other funding. It is called the Autonomous Reef Monitoring Structures Program (ARMS). They are proposing to form a WAML ARMS initiative that can be expanded to NAML GEO network. ARMS is not really amenable to 'citizens' participation project. However, Ocean Sampling Day is simple because it is only a replicate water sample that is sent out for processing.

### **Programs to build a network across NAML: a signature project.**

**Mary Hagedorn, Smithsonian Institution, & Hawaiian Institute of Marine Biology:** Mary talked about Marine-GEO (Marine Global Earth Observatory). She related that the Smithsonian Tropical Research Center in Panama started the program with terrestrial ecosystems and trees, Forest GEO, which eventually led to the Tennenbaum Marine Observatories Network (TMON), the first network of marine observatories focused on global-scale, long-term ecological studies. Currently they are looking at coastal health from 5 sites along East coast with some ARMS as offshoots.

Objectives: To standardize long-term observations and network experiments to look at ecological change. It provides environmental data, on-line meteorology, and water quality information. Habitat, biodiversity, ecosystem processes are also included. It is managed by the Smithsonian Institution, and its partners who coordinate data, conduct training and teaching, as well as creating a genomic database. In Hawaii, the program involves NOAA, the Nature Conservancy, and Bishop Museum. Hawaii is the node for the Pacific. Program costs will be assumed from a Tennenbaum \$10M gift to the Smithsonian. There is a need for additional partners to join in. NAML's collaboration would be a welcomed addition.

**NERRs Sentinel Site Initiative, Mike DeLuca, Rutgers University:** There are presently, 28 NERR sites with the possibility of Hawaii joining soon. Data Loggers of the water quality including sea level rise are incorporated into their programs. Sea level rise data are translated to coastal communities to assist in providing information leading to adaptations strategies. Mike centered on the J Cousteau National Estuarine Research Reserve in NJ. This site centers on understanding the impacts of sea level rise by expanding their existing monitoring capacity to gather data and to educate those who might be impacted. There are currently eight sites fully operational, with the remaining sites being phased in as money allows. They sponsor Reserve System Workshops to integrate scientific communities into a coastal sentinel site network (Aug-2012). Specific areas funded and expanding under this program include ocean acidification, shoreline management, sea level rise, larval fish sampling (Ken Able's program) and citizen group sampling. A central data management office will handle the data produced.

Discussion: Steve Palumbi asked, "how could these sampling programs fit within NAML?" Mike suggested integrating it through the NERR system and NOAA. Mike Crosby inquired if NAML could act as the data site for others. NAML participation would greatly expand the geography of the system. He

suggested it could be a NAML action item to set up the network.

**Gene Sequence Analysis, Graham Shimmeild, Bigelow Marine Laboratory:** The Bigelow lab provides services for genomics. It is a NEACCOOS site. It is also served as the Core Service Center for the marine algae microbiota collection (NCMA), for 35 years. There are 39 classes of living algal strains being kept in culture. A website search is available for all species being kept as well as a "Tree of Life" diagram for each. Income generated by the Center goes mostly to support staff but some is targeted to research. They store metagenomic data relying on a data library they are producing.

The Single cell Genomics Center uses flow cytometry to isolate individual cells that are processed for single cell genomics and subsequent library data storage. Sampling at sea consists of cell sampling/sorting, forwarding to the genomic center for analysis and archiving. The cost per sample averages \$8K. Graham mentioned the International Union for Conservation of Nature (IUCN) Information Papers. He suggested that NAML should participate in these. NAML can use their services, but also NAML should look at the techniques and marry the data bases.

**Big Data Management, Gwen Jacobs, Univ. of Hawaii, Data System Manager:** Gwen informed that group that at the U-HI, her data management system is based upon community driven science. For big data management systems, the science drives the cyber infrastructure framework for the community. It must handle collaborative research data provided from cross disciplines and over large spatial distances. Users need access to software, tools for analyses, visualization, and data discovery portals. iPlant Collaborative tools for plant biologists is an example of a system used for analyses and computational tools. Providing all tools in one place is expensive, but its use is expanding. PRAGA – Pacific Rim Application & Grid middleware Assembly; and Global Lake Ecological Observation Network uses it. DataOne is another program with specific nodes with search engines to locate specific data. DataUp is the second half of that package for data upload and handling. Neuroscience Information Framework contains all things neuroscience. It contains resources and data bases including neuropathology. They have a portal to all resources that can be logged into and contains complete datasets that can be searched and used. Another database system is Protein Data Bank for protein structures (UCSD, Rutgers). It has multiagency support: NSF, DOE, NIGMS, NIND, NCI, and NIDDK. CASP, Critical Assessment of protein Structure Prediction, is another database program. Also, Alzheimer's Disease Neuroimaging Initiative database is open and searchable and available. NEON is another example of Citizen Science, and there is CREON for coral reefs. Gwen suggested using these models as potential sources for developing a NAML database network rather than starting from scratch.

**Remote Site Data Portals, Mike Kido, Intelisense:** Mike related that he works with U- HI and assists in sensor development and related equipment. He noted that freshwater research is his specialty. Weather, water quality, animal vector tracking, air quality sensors, and video monitoring are all components that they work with and provide. They can build complete systems from initial capture, and data streaming, to data storage, computing, and final display. Their equipment are RF data systems so must be "line of sight". However, relay systems can be combined to offset difficulties with obstructions. Their basic nodule is \$2K, with additional modules available that plug into the base. New systems available use WIFI and cell phone technology for data acquisition.

Discussion: During the discussion that followed, it was obvious to everyone that NAML, as an interconnected network of place-based marine labs, is a potential resource that is in place, but not yet used. NAML can and should use its network as a Resource. As a first step, the following should occur: 1) Ocean Sampling Day participation by NAML members; 2) WAML will engage in an ocean acidification program, and will share it with all NAML members when developed by the next meeting in 2014.

**NAML Education, Janet Hodder et al.:** Education & Diversity Committee will be resurrected by Jan,

Ivar Babb, and Judy Lemus. Past committee chairs included Matt Gilligan, Kelly Clark, and now Jan to head it. An invitation is open to all to become members of the committee. From the OBFS-NAML Survey it was determined that 70% of the membership is interested in education. Development of new educational programs is also high.

**Judy Lemus, U-HI:** Judy reported on effort to redevelop COSEE (now called, Consortium for Ocean Science Exploration and Environment). The organization model proposed will look like NAML with institutional memberships. It will be unveiled at the Ocean Sciences meeting in February, 2014. A Joint membership in both is being considered (NAML/COSEE). Consortium on Ocean Leadership (COL) members are the primary audience. The program will provide resources and programs for K-16 education. It will be a means of speaking with a collective voice for increasing participation in underserved groups. Services directed at the ocean science community will be a major focus. There is a meeting of the "old" COSEE members coming up where this will all be discussed and in some form established.

The objectives of the program would include, using the NAML model to offer networking, partnerships, to obtain and share advice from/to others, institute multi-institutional programs, and generate new educational opportunities like courses tailored for the outreach and the general public. The next generation Science Standards is being implemented, and ocean sciences is now included in developing these standards. The new Assessment Standards will have three focal points: science practices, disciplinary core ideas, and cross-cutting concepts. Louis Stokes Alliances for Minority Participation Program (LSAMP) is a potential partner to join with. COSEE is working to compile curricula to meet these new standard needs.

Jan mentioned she is working with developing the new NAML website that will include marine education. The Ed Committee will do the maintenance of that portion of the site. Also the Committee will work with Joel on the PPC's education component. They will emphasize 'place-based' science and how it integrates with STEM and its proposed consolidation. Joel added the term, "Marine-STEM" as a subdivision of the argument. Steve Palumbi added more discussion to STEM consolidation and what can be done.

Jan asked for others to join the committee especially those who are more involved with education than she. Those with PI status on education grants would be ideal to add legitimacy to NAML's program. That sentiment was seconded by Ivar. Mike Crosby cautioned that COSEE was terminated by NSF for a reason, so be careful how you approach the issue. Ivar added that he thinks the tactic will work and that funding will come in some form or another from the agencies.

**Election of Officers:** Jo-Anne reviewed the procedure for the election of the new President-Elect. The position will be filled by a candidate put forth by NEAMGLL. The Regional membership has proposed Dr. Mike Deluca, Rutgers University. All salient materials were distributed to the membership as appropriate. Mike was unanimously elected into office, and welcomed heartedly.

**Audit Committee Report:** Val Klump presided over the audit and its committee members were Jim Harvey and Jim Sanders. Val acknowledged that the financial materials presented were in good order and recommended that the Financial Records be approved. The motion to approve was passed unanimously.

Discussion: Val Klump gave a general review of NAML's finances based upon the figures presented during the audit. He indicated that a general financial shortfall will occur with the engagement of the Management firm, Burk and Associates, Inc. (BAI). Jim Sanders affirmed that there is about a 1.5 year cushion to handle those expenses, but NAML will need to address this deficit for the long-term continuation of the practice. Paying membership has decreased especially in SAML. Fortunately, NEAMGLL has added more members from the Great Lakes thanks to recruiting efforts of Val Klump. Nancy Rabalais will have to address the finance issue during her term of office. Roberta Marinelli said that Wrigley would consider providing Management Services if it does not work with BAI.

**Nomination of Kumar Mahadevan for Emeritus Member of NAML.** SAML submitted a letter on March 16, 2013 for NAML to consider Kumar Mahadevan, Emeritus Director of Mote Marine Laboratory, for

Emeritus Member status in the National Association of Marine Laboratories. He has been an active member of the boards of both NAML and SAML, has served as Treasurer of SAML for what seems to be forever, and is an unbelievable treasury of the history of NAML and the regional associations. The SAML nomination to bestow on Kumar the NAML Emeritus Member status carried unanimously.

**Winter BoD Meeting:** The exact dates of the Winter Meeting in March 2014 were in question. It was recommended that they be determined and relayed to the membership by the Executive Committee.

**NAML Poster, Ocean Sciences Meeting:** It was decided that NAML will present a poster at the winter Ocean Sciences Meeting, 2014. Jyotika Virmani will be the point person for this endeavor, and she will compose and distribute the abstract for review. Mike DeLuca, Val Klump, Neal Davies and Jo-Ann Delong will assist.

**OBFS/NAML Joint Meeting:** A quick status report was presented by Ivar Babb with assistance from Jan Hodder and Alan Kuzirian. The planning committees were established at the annual OBFS meeting held in Portal, AZ. Both Ivar and Alan attended the meeting to represent NAML. The following are NAML's contributors to the meeting:

Program committee: Graham Shmield, Ivar Babb, Aswani Voleti, Jan Hodder, Neal Davies, and Brian Melzian

It was strongly suggested that Jerry Schubel be included on the program as head the NRC Report on marine labs and field stations currently under way.

Meeting Co-chair: Mike DeLuca will co-chair the meeting with Ian Billick from OBFS,

Logistics committee – Alan Kuzirian, and Ivar Babb

Pre-meeting Activities Committee: Alan Kuzirian and Sarah Oktay, U-Mass, Boston for OBFS.

Auction Committee – Peter Connors from OBFS is chair – NAML volunteers are needed.

**Meeting Closure:** Accolades were given to Jo-Ann for a wonderful meeting and amenities. Jo-Ann recognized the assistance of Alan for jobs well done during her tenure in office.

Jo-Ann thanked everyone who contributed to all her joys of being president. She emphasized Joel's work with the PPC and his efforts that raised NAML's recognition to the national level.

The meeting Adjourned!

Respectfully submitted,



Alan M. Kuzirian  
NAML Secretary/Treasurer

Minutes edited by Nancy Rabalais, President NAML  
Approved as edited on 3 March 2014, NAML Winter Meeting

## Participants List – Biennial Meeting 2013

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