



National Association of Marine Laboratories

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Secretary / Treasurer
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**National Association of Marine Laboratories (NAML)
Board of Directors Meeting
Longworth House Conference Bldg.; Room 1539
February 28-29, 2000**

Lavern opened the meeting and welcomed everyone in attendance (Appendix I). The Agenda was distributed and a call for new items to be added was made. Ken Haddad requested that an item be added concerning the NAML Web Page.

NAML Business Meeting: Lavern opened the Business Meeting portion of the meeting with his welcome and hope that the Regional Meeting that in the previous hour were successful.

1. Minutes of the Biennial Meeting: The meeting minutes from the Biennial Meeting held in Milwaukee and hosted by Art Brooks were introduced. They had been distributed earlier by email, and Alan noted that some corrections were made. Limited numbers of the corrected copies were provided. It was moved and seconded (Wise/Michaels respectively) that the Minutes be approved as corrected. The vote was unanimous.

2. Secretary/Treasurer's Report:

a. Alan next distributed the **Treasurer's Report** for 1999. The nature of the two accounts was explained and the spending history quickly reviewed for each. The combined totals were for the end of 1999 and did not reflect the additional revenue added from 1999 capital contributions received in 2000. The total actual spendable funds as of the meeting date, are considerably larger. It was moved, seconded (Brooks/Sage respectively) and unanimously voted that the Treasurer's Report be accepted as presented.

b. Alan then discussed the inquiry he received from the **IRS** regarding the reporting requirement for NAML's annual income for the past three years. It was explained that NAML has not yet exceeded the minimum \$25,000 annual income figure which requires annual reporting to the IRS. Kuzirian explained that he sends the IRS as verification of yearly income, the signed biennial audit reports with an explanatory letter and thus far, the IRS has accepted them. NAML is also required to file with the **Secretary of the Commonwealth of Massachusetts** an annual corporation report listing the current year's officers. The requirements are that no post office boxes can be listed in the officers' addresses. Alan said he needs street addresses for about a dozen labs. He would contact people sometime during the meeting.

c. Membership lists of the **Regional Boards of Directors Lists** were also requested by Alan. SAML has furnished their lists, but a current list for 2000 is needed from WAML. Alan will take care of NEAMGLL.

d. The intricacies of the new MBL server which handles the **_AML reflector lists** were explained by Alan. Principally, the new server is designed to screen out junk-mail or "spam" and has many built-in firewalls to thwart hackers. Alan explained that he is the current list administrator. Some of the peculiarities of the system Alan warned about were: not to include more than 10 names on carbon copy list or the system will consider the message a mass mailing/spam; the email address on the directory/reflector list must be the same as the member's address of their primary computer. The server screens the "from-address" of each incoming message and it will not allow it through if it doesn't match the address on the NAML list server. The server will however send a message to Alan and he can then decide if it should go through or if he needs to contact the sender.

e. A discussion followed about the **NAML Webpage format**. It was suggested that the webpage contain a map showing the placement of the all the member labs. Also requested was a modification to the present appearance to enhance the Regional

format of the association. Dave Remsen will take suggestions. It was also stressed that each member check their individual lab's 2-page description and be sure it includes the name of at least one contact person who can interface with people making inquires.

f. Alan next gave an update on the status of **GLODIR**. After meeting with Peter Pissierssens last fall, we agreed that NAML would serve as the node for the US. UNESCO will put up a small amount of funds to pay for a student to help put together the first registration effort. We reaffirmed to Peter that subscription to the list is totally voluntary. However, we as an association, have pledged to support the effort. Again, we have been assured that the subscription list will not be used for commercial purposes. Peter has sent the template to Art and Alan and we will get it to Dave Remsen. As soon as it is available on the webpage, we will send out a letter on introduction and ask that members encourage their staff to subscribe to the list.

g. Harlyn Halvorson has been actively engaged in forming the **Pan American Marine Biotechnology Association (PAMBA)**. PAMBA is the principal association devoted to promoting marine biotechnology in the Americas and was formed in response to similar global associations already formed: Japanese Society for Marine Biotechnology, the Asian-Pacific Marine Biotechnology Society and the European Society for Marine Biotechnology. The association promotes the networking of researchers, teachers and entrepreneurs in the area of marine biotechnology. Membership in the organization is either individual or corporate. The journal, *Marine Biotechnology*, will serve the association. More information can be obtained from their website: www.pamba.org.

h. Alan also reminded everyone about the upcoming **International Marine Biotechnology Conference (IBMC 2000)** being held in Townsville, Australia, 29 September to 5 October. Yoni Zohar, Center for Marine Biotechnology, U-MD, Baltimore, is head the US effort for this meeting. A multi-agency grant for travel assistance to the meeting was submitted and is currently being reviewed. If approved, it will provide travel support for US attendees who have been selected as participants to attend the meeting.

3. Report of the New President: Introductions of the members present representing the **Organization of Biological Field Station (OBFS)** were requested by Lavern as well as NAML members. Lavern also asked that everyone add their institutional names to their name tags so everyone could see the geographic area being represented.

Lavern said that the meeting with OBFS held the previous evening went well and everyone recommended that both organizations work and meet together next year in February 2001, and possibly again at the Biennial Meeting. It was conceded that Agenda driven meetings on the Hill would be in general the best way to proceed. NSF support for marine and field stations is also an important issue for both organizations to continue to push forward. Lavern recommended that NAML develop Federal Agenda items that each association can promote both as a organizations and as individual labs or field stations. Institutional Animal Care and Use Committee (IACUC) issues are another tact that could be developed. Lavern hoped that a Federal Agenda would come out of this meeting that could carry through to next year as well. Supporting documents are needed that can be left with Congressional representatives or agency leaders. The Oregon State University (OSU) copy of its Federal Agenda would be made available by Lavern as an example. The OSU Agenda is approved all the way through the state institutional hierarchy.

Lavern thanked Art Brooks with his help is setting up this joint meeting. Pam Rogers' (Lavern's Admin. Assist.) and Alan's assistance were also recognized. He also reminded everyone that October, 2001 will be the target date for the Biennial meeting and will include programs for family members to attend. Lynda Shapiro may host a symposium at her institute as part of the meeting on K-12.

Art reminded everyone that we now exist in the “virtual world of the Internet”. He reminded people to respond to emails sent from NAML members and to calls for assistance especially from the Board. It is import for our survival that people actively participate and contribute their efforts and talents to the organization.

4. Regional Reports

WAML: Ray Highsmith reported. -- Tony Michaels was elected to Executive Board for a two year term. WAML produced a Brochure which is now available and for which they are pleased. Their Annual meeting will be held in Homer, AK in August. Ray noted that families welcomed as are all NAML members. Specific Agenda items are being discussed that would include inviting other groups to attend like marine library administrators and facilities directors. A K-12 initiative will also be promoted at the meeting.

SAML: Wes Tunnell gave the report. -- Recent Bylaw changes saw the adoption of two-year terms and one meeting/year. SAML’s Spring Meeting will be held in St. Petersburg, FL; Ken Haddad host. The Agenda will come from items solicited last year and they will celebrate SAML’s 15th Anniversary. It will also include discussions of Summer Courses, programs for visiting scientists, pilot projects for LabNet, and Coastal 2000. Institutional Business Coordinators will be invited back and Education Coordinators will attend as a new initiative. Updating the SAML Brochure and member websites will also be on the Agenda. The topics of SAML/NAML minorities issues in marine science and other Bylaws update may also be covered. An NSF expo program grant was sent in by SAML.

NEAMGLL: Bill Wise was raconteur. -- The Marine Biological Laboratory will host the September 2000 meeting and all were welcomed. At the morning’s meeting, it was decided that NEAMGLL would indeed pursue its planned publishing of topical White-papers that would function for a specific audience like the media, legislative priority issues, coastal management departments, etc. Five topics were chosen and will be drafted and completed at the September meeting. They will include current cross-cutting issues like: media relations and communication with the public; coastal sites as environmental observatories, coastal sprawl, field-based aquaculture, introduced species, climate changes and its impact on the coast, adult education on coastal issues. The “how, when, and why” format will be followed and the white-papers will be posted on the NAML website. They will in essence be Fact Sheets with references. An honorarium to be paid to the authors for the white-papers completed is contemplated.

5. Old Business: Art would like the Agenda and perhaps even Meeting Minutes from each Region be distributed to everyone. His argument was based upon an effort to improve communication for all. The Secretariat could serve as the hub for the information. The material could then be distributed from there or each regional secretary could simply use the NAML mailserv and send them directly.

●**Oceanology Americas:** This organization would be an outgroup of Oceanology International. NAML offered to conduct a satellite meeting with them. Charles Bookman is the major contact person. The organization might be of interest to NAML through LabNet. It has been highly successful in Europe and is sponsored by a group from Great Britain. This is America’s attempt to form a sister organization, and they are looking for US attendees at their upcoming meeting. There were many names recognized on the participant and member list. A professional meeting consultant was helping to organize things. NAML could participate and use their services. Lavern asked for a consensus about joint meeting. People thought we should maintain the status quo. Art Brooks suggested putting up the NAML Poster Board. Lavern agreed to look into it, and check on the costs and conditions. There was a generally negative response to the idea except for poster. Madilyn suggested that NAML attendees might hold a workshop and make NAML known there. NAML’s

visibility should be the aim, but not a specific sponsorship of meeting. Those attending would represent NAML.

● **Biotechnology Discussion:** Peter Anderson lead the discussion as an informational follow up to last Fall's Biennial Meeting. Peter defined biotechnology as the development of goods and services applied to biological processes. It can range from marine aquaculture and genetic manipulation, to development of disease resistance organisms, and hormonal regulation of reproductive cycles. Marine animal health is the significant bottle neck to marine aquaculture. Health issues are important in aquaria conditions and in wild populations as well. Biotechnology contributes solutions to these problems as well as the health industry in general by developing marine natural products, pharmaceuticals, useful bioactive compounds like polyaspartic acid, and studies on biomineralization . Biofilms and adhesives, antifouling technology, bioremediation microbes and hardier plant seedlings are all being enhanced by biotechnology efforts. Biotechnology is also key component of marine biomedical research and biomedical models in used for research in higher vertebrates. It is also important in areas of medical diagnostics and pathogen identification, remediation efforts for environmental . pollutants, cell and molecular biology, clinical chemistry, as well as animal husbandry engineering and microbiology. Who is doing it? Really, the majority of NAML labs said Peter. How do marine labs fit; are we necessary ?— Yes is the answer especially for aquaculture, biomedical research, marine animal health with pathogen transmission, veterinary treatments and microbiology. Marine natural products not necessarily exclusively centered at marine labs, but certainly are important for access to the material. Biomineralization studies are certainly centered around marine labs as are biofilms and bioadhesion research. Bioremediation is and isn't, however diagnostic research in the area of early detection of pollutants is tied to marine labs. In the US, biotechnology is socially acceptable for the most part. However, genetically modified fish and other foods are coming under increasing scrutiny.

There is a developing problem with over-collection pressures on natural populations; pseudoterostins for example come only from sea wisps. Mariculture efforts directed at these biomedically important species will help alleviate the problem. The positive side of biotechnology encompasses the fact that it is a clean industry supporting high paying jobs, offers career opportunities for new graduates, and introduces new commercial products into the economy. It is a multifaceted area of marine science requiring an intense set of disciplines and marine labs are needed to do it well. The dominant positive attributes biotechnology offers and its potential for social acceptability will overcome any negative issues. NAML needs to promote the positive side of this issue.

During the following discussion, it was noted that ocean ranching in Oregon has been deemed unacceptable, so NAML can help educate people on these issues to better inform them about the positive aspects. Sea Grant extension agents help, but marine labs need to get involved also. Pharmaceutical industry researchers need to conduct on-site observations of critical species, and that can only be done in marine labs. Biotechnology is now intercalated into many of the areas marine labs are working in. Funding opportunities are important for marine labs. Sea Grant and NIH are the only few who fund biotechnology. Interdiscipline research areas need to be recognized for funding as well. As an example, Kumar Mahadevan mentioned a marine biotechnology funding bill (\$2-million) through Florida Sea Grant. He shares Madilyn's concern about using "biotechnology" as a buzz-word that is not going to be acceptable in the political arena. Maine has developed institutes for biotechnology especially in the fermentation area. Oregon State University's (ORST) Coastal Experimentation Station runs the whole gambit from aquaculture, ecology, and disease treatments to processing and marketing of aquaculture/biotech products (based on land-based agriculture examples). Texas has a state biotechnology program with a small marine component. Kumar suggests a NAML committee to analyze the issues from the state's perspective and use the information for leverage at the federal level for increased funding and opportunities. International aspects should also be considered with regard to the US position in the global economy.

● **Cooperative Research and Information Institute:** Jay Grimes reported on a new organization which is putting pressure on Congress to add money to increase and expand aquaculture research.

Their mission is purely a lobbying effort, and they hope to form three of them. Senator Trent Lott and Jay are forming one. At a Charleston, SC meeting earlier, ORST was being recruited for a site for an office. Lavern declined because of the conditions and lack of resources. Maryland also declined. NOAA money will be given to run the program. Lobbying efforts will be made to push money into national efforts. NOAA sponsored the workshop, but there was an intermediary agency involved somewhere to lobby.

- **Minority Education Issues at Marine Labs:** Wes Tunnell addressed the group on this topic. SAML has been involved since the late 80's to involve minorities in marine education programs.. Sue Cook and Matt Gilligan put a video together that is well received. NAML assisted with part of the project and helped distribute it. Matt agreed to continue this issue for future recruiting of minorities into technical and other marine related positions. Wes suggested that a panel be formed to discuss the issue at all levels and their recommendations be brought forth at the next NAML Biennial Meeting. NOAA has sponsored a minorities workshop for medical and allied health arena. Bill Wise mentioned junior minority faculty internship positions and programs at Stony Brooks. The fellowships were very successful, but they haven't yet seen a return by increased enrollment of minority students. Wes also has a program that works. NIH sponsored minorities high school students in Milwaukee have been very successful reported Art Brooks. Tony Michaels also has one that functions well and they have found that it diverts students away from medical fields into marine science. There is also money to the Fisheries Services from President Clinton for minority programs. Steve Sulkin has a Shannon Point, Alaskan program that recruits nationally. It has been very successful. OBFS members have similar programs are in place. The K-12 minority programs in OBFS works. It was noted that students often use biology degrees as means to get into medicine. Sometimes it works and sometimes it doesn't. Ken Tenore said that although the first-generation people may not stay in marine sciences, often their children may take it up.

- **Diving Insurance:** Roger Hanlon brought up the subject after his recent experience at the Marine Biological Laboratory. He cautioned everyone that scientific diving, especially for non-profits, may not be covered under their usual institutional insurance program coverage. Roger asked how others present handle the issue. The American Academy for Underwater Sciences (AAUS) is the regulatory program that covers scientific diving and not OSHA. Reasonably priced insurance coverage is the key issue. Tony Michaels said he pays \$10K for a special rider which is more expensive coverage than commercial diving which is covered by OSHA). Kumar said it would be good if AAUS would follow up on this topic. The linking of labs into groups etc. might help get the message to insurance companies to get them to realize that scientific diving is not as dangerous as it seems. Liability coverage for accidents is especially needed by laboratories.

- **Washington, DC Meeting — 2001:** Lavern said the issues in his mind was its effectiveness and cost. He said that OBFS is willing to share in the costs of the Congressional Reception. Are we gaining enough from the effort? Kumar said that planning is the key and individual members need to involve their Congressional delegates. Last time, Senator Pat Stevens came and he controls the money. Lynda Shapiro said that it is not worth doing if not done well because it sends the wrong message. The Marine Caucus in the House should be touted, and we should enlist help from OBFS to recruit AIBS to come also. Ken Tenore said letters on NAML letterhead is not effective. CORE uses an award ceremony to get Congressmen there, and usually in conjunction with the Marine Caucus. Staffer contact is the best means to establish a presence within a congressional office. A distinct NAML Federal Agenda may help. Kumar said that if congressmen come, they can see what their colleagues are also doing if NAML emphasizes the network message; 1/3 of the Congress represented by NAML labs. Lavern indicated that we would vote at end of tomorrow's meeting to see if we proceed with it. Jeff Reutter reiterated that the Federal Agenda is important. Sea Grant, CORE, and others could be collaborated with to increase our visibility on this issue. Piggy-backing the organizational meetings is something to think about. The key is to organize the groups so no conflicts erupt. The identity and constituency of NAML/OBFS is different from CORE, so we

should not over-look it.

Art Brooks reminded everyone about the Congressional Staffer session this afternoon, and that he hoped that it will be well attended. Art would lead the Agenda. LabNet was also to be covered and Ken Tenore would present information on Bermuda. The K-12 education initiative was also to be discussed. Art reminded everyone to please allow questions from staffers and let them relay their issues.

Lunch in the House Office Cafeteria

● **Organization of Biological Field Stations (OBSF):** The afternoon session was opened with an address by Hilary Swain (organizational president) about OBFS. Information about OBSF is available on the web. Mark Stromberg is the webmaster at Hastings Natural History Reserve. Their Annual meetings are usually held in the fall and hosted by field stations that can accommodate 60-80 people. The meetings are informal, half business, half pleasure, and most always include field trips. Some meetings are held in South and Central American field stations. Regional land use issues typically covered. Some OBSF members are private stations with research and teaching like the Rocky Mountain Field Station, Gothic, Colorado. LTER field stations are OBFS members. Oregon Institute of Marine Biology is an example of a marine station. The Institute for Ecosystem Studies (IES) encompasses ecological research centers. The Natural Reserve System is associated with University of CA and has federal funding. California has 21 members, 11 in Illinois, and 13 in NY. These are the big member states. The New England states have the fewest or none. Endangered and exotic species are covered typical research topics. Biogeographically, representation is very broad across the US. Survey data from national compilations (OSTP), indicate that NAML and OBFS are NEVER included on national or other regional lists, either published or on the web; not even the National Ecological Ocean Network. Common links can be helpful to NAML and OBSF. There are K-12 programs at 70% of the field stations and OBFS is well represented at NSF for funded grants. OBSF includes 160 field stations with 40 member organizations; some institutions have multiple stations. Annual dues are \$75.00/station and \$25/individuals who wish to remain affiliated. There are about 25 NAML members that belong to OBFS also. Art McKee offered an invitation to their 15-17 September Meeting at Andrews Field Station, Oregon State University.

● **Congressional Welcome:** Lavern recounted that Oregon Representative, Darlene Hooley was unable to attend this meeting do to her traveling schedule. She sent her regrets for not being able to welcome everyone to DC.

● **Staffer Initiative:** Art Brooks led the session and opened with an introduction to NAML for the staffers. NAML members cover 31 states + Panama, Guam, Puerto Rico, Bermuda, and Antarctica. It is an organization where lab directors can meet to discuss and work on solutions to common problems. Regional meetings are held between NAML meetings, and the BoD has representatives from each. NAML promotes and advances the wise use and conservation of marine and coastal resources. One role of marine labs is to serve as “windows to the sea for research, outreach, public service, and information exchange. NAML’s initiatives include: 1) the Congressional Staffer Initiative to promote an awareness of NAML and its role as an information resource on issues related to freshwater, coastal and marine systems. It can function as a communication line to expertise lying in over 120 member laboratories. 2) LabNet initiative which is now 4-yrs old and serves as a database link to an information network between members, and which is also open for access to anyone needing almost any kind of marine or freshwater data.

● **Labnet:** Ken Tenore presented the discussion and emphasized the geographic location and spatial nature of the labs and encouraged the Staffers to make use of NAML and LabNet. There are LabNet technical and steering Committees that are coordinating the initiative. Ken stressed that LabNet itself is not a database, but serves as a direct link to data that are already collected, stored, and

available at member labs.

Dave Remsen (MBL Information Services Division) presented an update on what the technical committee has been able to do with LabNet. A website is now up and Dave used overheads of key screens to describe LabNet functions and can be used. They are developing a Manual on how to use it and its applications. Again Dave pointed out that the data sources must come from members who keep them under their management and for which they have data documentation. Dave used mammal stranding data used as an example of how the system works to gain access to disperse and disparate databases and to make functional presentations of the data. A Grain-size database from Southern CA is the first official LabNet application. An advantage of the system is that the data can be live with the data actually being collected as you retrieve it.

LabNet came about as a partnering of NAML with NSF, NOAA, NASA, and EPA who all awarded the initial funds. The NOAA group in Charleston, SC provides continuing support to LabNet in terms of hardware and man-hours. The system offers exciting possibilities for teaching, outreach, and collaborations between investigators. Any institution or facility can become a contribution site just by being an FTP site. Through its FTP connection, anyone can access the system. Harmful Algal Blooms in the Gulf of Mexico will be the first real use of a project-driven data set. Specific agency funding will be sought for this effort.

- **K-12⁺ Education Initiative:** This topic is Lavern's project for his term office. It will offer the resources of NAML labs as a hands-on classroom for marine and freshwater education. College courses are now listed in the NAML webpage, but we hope to expand it to include collaborations with National Marine Educators and their resources. The possibilities for its uses are almost infinite. This discussion served as an introduction to the next topic.

- **BATS:** Lavern presented a discussion of this educational website that David Malimquist at the Bermuda Biological Station has developed; the Bermuda Atlantic Times-series Study (BATS). Classroom BATS program was the example given. However, Bermuda also has its own live TV camera on a coral reef which makes available real-time video images.

Classroom BATS is part of the Joint Global Ocean Flux Study (JGOFS) program and is associated with the Hawaiian Ocean Time series (HOT) data collection network. The On-line data was designed for scientists and has been on-line for several years. However it is not available in a form knowledge for K-12. This is where BATS fits in. It is an NSF funded program grant (Dept. of Undergraduate Education). Teacher polled assessments yielded what their needs and interests were for K-12: coral reefs, sharks and mammals. BATS provides the tools for the teaching program, namely a web site which has a oceanography primer. They can add to the site and post profiles of the technicians who are scientists and staff members including technical and mechanical people. They use biology as the hook to the chemistry and physics of oceanography. Crush-a-cup program of styrofoam cups put down at deep depths and then returned to the students to illustrate pressure effects. The Jason project was one of the links that promoted the project. There is a BATS Bowl to foster competition between classrooms to answer marine related questions. BATS make data available through Excel spreadsheets so that the data resides on their computers. The teachers can then handle it there and translate it to the level usable by their students. Currently, they do not know if it has been a successful teaching tool. The second year funding is just ending and they wish to reapply for more to access this point among other such programs. Lessons Plans are provided to teachers after they construct them by filling in the desired information into field boxes. BATS then reconstructs them and puts them up on the web for use by everyone. Teachers are invited onboard a BATS cruise to see how the data is collected. They plan to deploy open-ocean and deep-ocean experiments designed by students and teachers based upon NASA space programs. Their website is: www.cbats.org.

- **Staffer Input:** The main point of the discussion that followed was that our February schedule came at one of their busiest times. Appropriation deadlines are due in early March and everyone is working to provide the budget information for the markups. The Sea Grant fellowship program is centered in Weiden's office while George Miller's office handles the Resources Committee.

NAML BoD Meeting, 29 February 2000
S. Dillion Ripley International Art Center
Smithsonian Institution
Room 3112

● **OBSF Networking Report:** Art McKee, Andrews Experimental Forest, Oregon State University, presented the topic. Art explained that OBFS approached the Long Term Environmental Research (LTER) people to establish a network program with OBFS in Albuquerque, NM. It would offer a 3-yr funding for the PI plus an assistant. It would consist of Data cataloging and directories development. They would start a few simple projects: 1) species list and abundances, and 2) fresh water productivity. Awardees would establish regional teams of representatives who would then assist other OBFS members to get into the network. Art said the person expected to be hired as program head knows of LabNet and BATS and hopes to work them on this project.

● **Reforming Science Education, a National initiative:** Sedra Shapiro, San Diego State University Field Stations Program led the discussion. It is an NSF funded initiative with a rationale based upon a global context; that the public is scientifically illiterate with respect to environmental health. SMET Organ supports the research behind science, math, and engineering technology to facilitate and reform faculty science education. The Ecological Society of America (ESA) and OBFS held a competition between 5 members for participation in grant program. Five regional universities chosen for each participating institution. Community Colleges were targeted for faculty training so that students coming into these universities are not so far behind major institutions. The goals were: Raise faculty standards in science by using field stations for inspiration and participation. Their website is: www.darkwing.uoregon.edu/~jhodder/. Workshops were held to train and reform undergraduate biology curricula and to prepare 5 college faculty teams to teach others and promote collaborations with other teaching institutions. The Assessment of impact on student learning for K-12 ed is yet to be established. Before any assessment can be validly done, Lack of acceptance by the users of the new curricula methods must be overcome before it will be able to demonstrate its effectiveness. Substitute teachers for example needed to be paid for before the teachers would participate in the new program according to Art McKee.

● **Old Business Revisited; Congressional Receptions:** Guests from the agencies were introduced while everyone waited for computer connections to be established. Kumar Mahadevan suggested that we re-address the issue of our Congressional receptions. Lavern stated we will work with subcommittees and OBFS members to develop a Federal Agenda, and with NSF and the Ocean Caucus. Kumar suggested a NAML new committee be set up to develop the legislative initiative. Art Brooks said there already was a Legislative Committee but that it didn't meet and do anything. Ken suggested that we have to identify 1-3 specific issues that NAML will tackle. NSF support for field stations and marine labs was suggested. It was noted that Connie Schneider (RI) got the initial money for marine labs, but no more has ever been added. Working meetings for the NAML Board should be re-instituted. Specific focal points for NAML is the issue. The development of Strategic Plan was suggested by Tom Malone. Everyone agreed that networking with others in DC is crucial to NAML.

I straw vote was taken and the general consensus was that if things are in place then it should be done. Margaret Davidson reminded us that a new administration is coming in and we could miss a good opportunity if we didn't host a reception. K-12 education is the new push in the political arena, and if we link individual lab programs, we can call upon our network and diversity to enhance and not duplicate initiatives. Lavern said it takes hours to find K-12 material even using the web, and LabNet is poised to eliminate that void.

● **LabNet Report:** Ken Tenore made the LabNet presentation for those present. He explained about the initial workshop designed to obtain the basis of the contextual design for the program and then discussed the working committees, the Technical and Steering Committees. Dave Remsen and

Ann Ball were recognized for their efforts as was Margaret Davidson for the funding. A grain-size data effort was done to work out the technical aspects of making the system work. Pilot projects are now ready to be chosen, and grants applied for to accomplish the work. Larry Cooper in LA was thanked for his input on the data.

Dave Remsen went through an actual demonstration of the LabNet network. They are preparing a Manual of Instruction on how to use the programs and then apply the application macros to actually handle, manipulate, and present the data. Metadata nodes are set up for data queries. Servers contact individual lab computers and then retrieve the stored data. The metadata server then takes the data and reformats it to a format that it can use for the applications available. Dave emphasized the flexibility of the system is to handle and display the data easily. MapLab is a very flexible data management system for plotting maps that LabNet interfaces with and can be used to handle data. LabNet's webaddress is: www.naml.mbl.edu/labnet

Tom Malone asked about handling data sets on-line that might be from two sources. Dave said there are several ways to do it including either at the home server or at the LabNet end. The Technical Committee will provide information and instructions on how to use the system depending on a person's needs; this will also include software. It is hoped that the Agencies will continue to fund that effort. It can also come from costs included in the project itself that will use the system. However, base support will be asked for from the founding funding sources (EPA, NOAA, NSF).

Ann Ball stated that they built a tool to enter a metadata to include customizing of fields and specific presentation formats. This will then become available for use on LabNet in the future by others. It will meet the Federal Geographic Data Clearinghouse. (FGDC) requirements for Federal funding applications.

- **Federal Agency Representatives: K-12 and Beyond Program:** Lavern stated that he chose the area of K-12, and public education at marine labs because it was not generally available. LabNet would be an ideal way to link to other education programs for instruction in marine education. Program marketing, availability, and formats standards were not easily available to search engines. CORE was found to have K-12 listings of programs, but are not going to continue to do it. None of those institutions listed were NAML labs. It points to the need for NAML to pick up the slack and fill the void. Ken Tenore suggested K-gray as a better term. Lavern said he doesn't want to develop new material in NAML but rather to serve as a resource distribution center. LabNet would be the key with linking the member labs or education sources. Lavern asked for Federal Agencies to help out in this regard.

- **CORE:** (Sarah Schoedinger) has several ed programs from K-12 to post docs. Sarah described that the K-12, National Ocean Sciences Bowl (3 yrs) is main national annual event for CORE. It has hosted several Information Programs for multiple course listings and opportunities over several years (1996-VIMS online clearing house for marine education) She recommended working with VIMS because they worked out many of the format problems to help eliminate the problems Lavern expressed. As an information outlet, she gave the National Science Teachers Assoc. and National Marine Educators as groups to approach. Madilyn asked if there were any studies conducted to assess the impact of these program and if they work. Sara said they (Lee Larkin, Sea Grant; larkin@vims.edu) might know.

- **NOAA Coastal Services Center:** (Margaret Davidson) NOAA functionality can be added to LabNet to help get to ed programs on the web. NSF has a trans-directorate in an environmental initiative, and NAML might be useful for that effort. Margaret suggested that GOOS information is needed to find out who is doing what and again NAML can help in this and build into filed stations, the appreciation for environmental literacy. Margaret assured everyone that NOAA's Coastal Services Center will support NAML in our efforts

- **National Learning Centers and Aquaria:** (Virginia Tippie). Billy Spitzer from New England Aquarium (NEA) reported about this and other programs. He related that NEA has 30 million

visitors/yr. They have science expertise and the data to build education programs. NEA would feel comfortable making connections to marine labs for additional education experiences. There is an International Association of Aquatic and Marine Science Libraries and Information Centers (IAMSLIC) and Coastal America partnership among all the federal agencies to protect the coast. Aquaria are now making use of this network. A good resource is the American Association of Public Aquaria. They can be contacted for information. In general, cross marketing of lab programs and summer courses are good and NAML should assist to get out the word. NEA has found that often times course participants become volunteers.

Kumar Mahadevan added that aquaria and research labs often work in conjunction and in adjacent facilities. Most often scientists are helpful and willing to assist. Kumar suggested that distance learning is now heavily used to make programs available to schools. Mote has 8, hard-wired systems that are interactive. In that way, scientists can work and the ed department takes care of the material distribution. They also have overnight stays focused on learning about manatees and sharks during the dark of night and they are successful. Mote is also planning a giant squid and mollusc exhibit. The NY Times and their local paper are running a contest to name the giant squid with prizes. Mote has been Jason project center since that program began. Kumar said that their ed program is easily funded and off-sets the cost of more difficult funded research. NAML's efforts into education would help expand their program.

- **NASULGC:** (Kerry Bolognese). NASULGC member institutions do the organization of K-12 education programs. The Board of Oceans and Atmosphere sponsored a workshop and session on earth science. In general, American students lag behind the world in science literacy, but US adults are ahead. Kerry said they received a Kellogg grant for a self-evaluation of their ed programs. The 5 reports including distance learning and community involvement. They concluded that work with K-12 and the community is needed and should be supported. NASULGC is looking forward to helping NAML in its efforts. There is a NOAA-University collaboration for a \$17 million minority initiative in science that has now been suggested to include K-12. LabNet would help to direct students to an education network. This information is difficult to obtain although it is there because it is too scattered and tightly infiltrated within each agency.

Kumar said that satellite data is very expensive, so phone lines are now commonly used. Curricula development is needed and with very regulated for standards. Labs cannot do this by themselves. NAML can help promote its development through LabNet. It will also help eliminate duplication of efforts between labs.

Art McKee wants to work with NAML on K-12 especially with networking. Within OBSF, there is a mixed bag of field stations involved in ed and within LTER sites, there is a big push to develop ed programs that could integrate with NAML.

- **National Estuarine Reserves:** (Linda McGilvray). There are 25 Reserve sites in 21 states, plus one in Puerto Rico. They are NOAA sponsored, but not owned. NAML lab affiliations with the reserves is quite high. Education is integrated within the system, and outreach is a big part as well as. Education programs are directed toward policy and decision making related to coastal resource maintenance and awareness of coastal problems. Their target groups are decision makers: governors, planners, regulators, signers, compliance personnel. The formulae they use for ed are: K-12, univ/college students and teachers; also the general public, visitors, non-profits and private sector donors. NER's hold workshops, training programs, support research fellows (x2), interpretive programs, and hold an annual, estuaries day. Basically they have formal and non-formal public programs.

It was suggested that NAML website linkages is one direct way to collaborate generally and certainly locally at individual labs. Research is also being promoted at the reserves. K-12 curricula sheets are distributed. EstuaryNet is up and available, as are information on water quality issues, tutorials and other data. Reserve data could easily be distributed through LabNet and would be useful. Assistance with K-12 curricula development would also help them.

- **Opportunities on the NSF, "Education National Science Board Review":** (Dave Campbell).

This is Rita Colwell's response to improved science teaching. The Environmental Task Force recommended formal educational efforts be undertaken. Directorates include, GEO, BIO, EHR Ed and Human Resources EISI. REU, RUI programs are for undergraduate institutions; IGERT and CAREER are new award programs. GK1- Graduate teaching fellows in K-12. In this program, graduate students and advanced undergrads help teachers in SMET (science, math, engineering and technology). REU supplements are available that adds students to existing research grants. RUI programs support faculty research involving undergraduate students. The IGERT program is for multi-disciplined graduate research. AGFE are awards to facilitate geoscience education; all are pilot projects designed to integrate education and research. NSF supports course and curricula development as well as lab improvements that have a broader impact for educational equipment. Another program is Advanced Technology Education designed for marine technicians. Here, community colleges are targeted that have centers of excellence to serve as a resource. NSF supports education through informal science education programs like museums, nova films, aquaria, caregivers and nursery school teachers education programs. NSF's Teacher Enhancement Program centers on educational leadership and projects at the professional level. It helps to develop materials, and technology support for professional development (teach teachers to use LABNET). Instructional Materials Development is also included for student development like a lab manual for inverts. COSEE, Centers of Ocean Science Educational Excellence is another NSF educational program as is the Digital Library which promotes ease in going between library searches. A Biocomplexity research initiative for education maybe also be in the future.

- **National Undersea Research Program (NURP):** (Barbara Moore). NURP has no education mission but recognizes the importance of getting the data out to those who might need it. They make connection through their university links. The Jason Project was part of NURP and partly funded by NOAA but has now moved to the Estuaries program. The Environmental literacy of the public needs to be expanded. Ocean Exploration in 2002 will have an educational component built into it from the start. ROVs at NURP centers enhance education at member institutions. NURP is currently conducting a Data Rescue Program is in effect to retrieve old data so it is not lost. Access to this material could easily be put onto LabNet.

- **NOAA Public Affairs:** (Joyce Gross). NOAA Public Affairs office is a constituency affairs office and Joyce has her outlook on teachers especially those belonging to the Nat. Science Teachers Assoc. As well as those in the Nat Marine Educ Assoc. They have separate websites for students, teachers and the general public, Weather, climate and physical aspects of the globe are displayed. LabNet will help them immensely to get their message out.

- **LabNet:** (Dave Remsen). As an Education forum, LabNet can distill material into a format that people can be more easily grasp the importance that material. Certainly graphical representation of complex data aids in its understanding. Cataloging resources available is also needed in the area of marine education. Mammal strandings, WhaleNet etc. sparks get interest by the public. Mystic Aquarium has dolphin rescue stories available on their web. LabNet can act as to funnel national inquiries into local data sources. Dave suggested that a K-12 advisory group (teachers) is needed very soon to fix the proper relationship.

- **Field Stations and Marine Lab Programs:** (Gerald Selzer)Biology Directorate will run Tom Callahan's program this year. Marine education is now accepted in this program. It is not a home for educational efforts except maybe for equipment. REU sites are better places to look for educational funding. Gerald recommended putting together a good argument for funding of marine labs and field station educational programs.

Tony Michaels will participate with his Committee and Lavern to move this initiative forward. Lavern has also enlisted his wife to assist as a teacher and evaluator. Costs are anticipated to be small and perhaps only for Dave Remsen's time. A pilot project is the goal for next year.

The NSF's Field Stations and Marine Lab Program is a Legislative Agenda Item. 275 labs

are eligible for this money. Gerald says the budget is over \$2 million. IN general there is more spent on field stations than marine labs and it is not anticipated for dramatic program funding increases. The RFP will be re-written soon but with no change in priorities seen. Making a compelling case for need is the only thing that might increase its funding. Generally it has focused on research efforts and not education except by way of equipment. A wide variety of users helps to get grant awards. Only in-house users of the facility is not looked upon with great favor. Non-research benefits of an ancillary nature now does fit into the acceptance equation. Co-funding of education and bricks/mortar may be something that can be done sometime in the future. Lab modernization programs are now directed into the Instrumentation Division to be spent on equipment. Ocean Sciences contributes to field stations and marine sciences and are usually underwhelmed with proposals from field stations and marine labs. Cost-share obligation is a big impediment to proposal submittal. The pot of money is too small to make an impact. Supporting or developing a National Resource is the tact Lynda Shapiro uses for her proposals to the directorate. However, that is a negative tact in the eyes of her institution who prefers to look after its own needs. Phil Taylor also spoke to the issue. NSF tends to support proposals for instrumentation/facilities from institutions that have well supported people also by NSF. There is a history of knowledge of the people and this proposal would support them.

The National Environmental Observatory Network program is in the biological sciences directorate. It is not limited to LTER or terrestrial facilities. Maybe field stations and marine labs could or would fit into this program. LabNet might fit into this program to allow comparison data analysis. Land Margin Water Interface LTER program is in place like the MBL's Ecosystem Center's Plum Island program. Margarite Leinen is now the environmental czar and she is actively participating in this program and hoping to expand it. NAML might serve as a Coastal Observing System as a network of labs and observation points.

- **Adjournment:** The meeting adjourned with the unanimous consent of the members.

Respectfully submitted,



Alan M. Kuzirian, PhD
Secretary/Treasurer, NAML

Appendix I
Attendee List: BoD Meeting, 28-29 February 2000

Albert Answini, Marine Science Consortium,
Wallops Island, VA
Simon Beeching, Marine Science Consortium,
Wallops Island, VA
Ivar G. Babb, NURP, U-Conn., Avery Point,
Groton, CT 06340
Robert Boyles, SC Div. Nat. Res., Mar. Res.
Div., Charleston, SC
Stephen Brandt, Great Lakes Environmental
Res. Lab., Ann Arbor, MI
Arthur Brooks, Center Great Lakes Studies,
U-WI-Milwaukee, WI
Michael Dagg, LUMCON, Chauvin, LA
Margaret Davidson, NOAA, Coastal Services
Center, Charleston, SC 29405
Madilyn Fletcher, Baruch Inst., Marine Biol.,
U-SC, Columbia, SC
Fred Grassle, Inst. Marine & Coastal Sci.,
Rutgers, New Brunswick, NJ
Michael Hadfield, Kewlo Marine Lab., Univ.
Hawaii, Honolulu, HI
Roger Hanlon, Marine Biological Laboratory,
Woods Hole, MA
Raymond Highsmith, West Coast NURP, U-
AK, Fairbanks, AK
Stephen Jordan, MD Div. Nat. Resources,
Coop. Oxford Lab., Oxford, MD
Alan M. Kuzirian, Marine Biol. Lab, Woods
Hole, MA
Kumar Mahadevan, Mote Marine Lab,
Sarasota, FL
Thomas Malone, Horn Point Laboratory,
U-Maryland Cntr. Envir. Sci.,
Cambridge, MD
David Malquist, Bermuda Biol. Stat., St.
Georges, Bermuda
John Marr, Perry Inst. Mar. Sci., Caribbean
Mar. Res. Cntr. NURP, Tequesta, FL
Anthony Michaels, Wrigley Inst., USC,
Catalina Island, CA
Timothy Nelson, Blakely Island Field Sta.,
Seattle Pacific U., Seattle WA
Jeffery Reutter, FT Stone Lab., Ohio State
Univ., Put-in-Bay, OH
Sandy Sage, Bigelow Lab for Ocean Sci., W.
Boothbay Harbor, ME
Lynda Shapiro, OIMB, U-Oregon, Charleston,
OR
William Spitzer, New England Aquarium,
Boston, MA
Ken Tenore, CBL, UM Cntr. Envir. Studies,

U-MD, Solomons, MD
Wes Tunnel Cntr-Coastal Studies, TX-AM U.,
Corpus Christi, TX
Robert Van Dolah, Marine Div., SC Dept. Nat.
Resour. Charleston, SC
Lavern J. Weber Hatfield Mar. Sci. Cntr, OR-
State U., Newport, OR
William Wise, SUNY, Stony Brook, Long
Island, NY

Science Community:

Anne Ball, NOAA Coastal Sci. Cntr,
Charleston, SC
Sedra Shapiro, OBFS
Hilary Swain, Org. Biol. Field Stat.
Robert Wicklund, U-NC-Wilmington

Invited Participants/Guests

Alfred Beeton, Chair, NOAA Science Board
Kerry Bolognese, NASULGC
Andrew Burnett, US-EPA
David Campbell, NSF; ESIE
Margaret Davidson, NOAA Coastal Serv. Cntr.
Chuck Fox, US EPA
Joyce Gross, NOAA Public Affairs
Donald Heinrichs, NSF, Ocean Sciences
Laurie McGilvray, Nat. Estuar. Reserves
Arthur McKee, Org. Biol. Field Stat.
Barbara Moore, NURP
Norine Noonan, Assist. Admin., US EPA,
Research & Development
David Remsen, Inform. Syst. Div., Marine
Biological Lab., Woods Hole, MA
Donald Scavia, NOAA, Coastal Ocean
Program
Sara Schoedinger, CORE
Gerald Selzer, NSF-Field Stat./Mar. Lab Prgm
Richard Spinrad, CORE/Technical Director,
Oceanographer of the Navy
Phillip Taylor, NSF-Biol. Oceanogr. Prgm.
Virginia Tippie, Coastal America
Stanley Wilson, NOAA, Office of the Chief
Scientist

Congressional Guests

Adrienne Froelich, Sen. Wyden (D-OR)
Jason Goldberg, Rep. Net Abercrombie
Michael Royal, Rep. Sanford (SC)