
A Review of the Joint Institute for Marine and Atmospheric Research (JIMAR)

A Report to the NOAA Science Advisory Board

by

The JIMAR Review Team

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July 17, 2004



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Science Advisory Board
Executive Director's Office
Silver Spring, MD 20910

September 24, 2002

Dr. Richard D. Rosen
Assistant Administrator for
Oceanic and Atmospheric Research
1315 East West Hwy.
SSMC3, Rm. 11627
Silver Spring, MD 20910-3282

Dear Dr. Rosen,

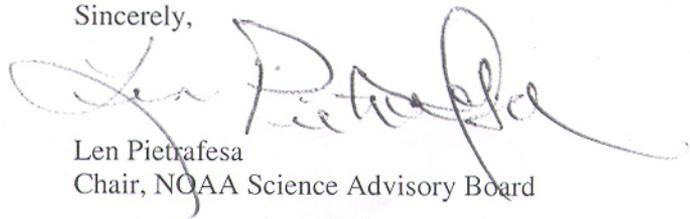
At the July 13, 2004 Science Advisory Board meeting in Arlington, Virginia, the SAB received, discussed and acted upon the final report of the external review of the Joint Institute for Marine and Atmospheric Research (JIMAR). Dr. Andrew Moore, the panel chair, presented the report.

Following Dr. Moore's presentation and the SAB discussion, the Board unanimously passed a motion to accept the review panel's recommendations regarding the scientific programs of JIMAR. The SAB requests that NOAA Research report back by letter to the SAB by November 30, 2004 regarding their response to the panel recommendations.

The final report of the external review panel is attached. The final report will be posted on the SAB Web site as part of the public record of the meeting.

The SAB appreciates the opportunity to participate in the joint institute reviews and looks forward to further participation in the reviews of the other NOAA research laboratories and joint institutes.

Sincerely,



Len Pietrafesa
Chair, NOAA Science Advisory Board

cc: VADM Conrad C. Lautenbacher, USN (Ret.)
Tom Schroeder JIMAR
Eddie Bernard R/PMEL
John Cortinas R/OAR
Michael Uhart R/SAB
Terry Schaefer R/OAR

Bcc: DCO



Report to the NOAA Science Advisory Board on the Joint Institute for Marine and Atmospheric Research

An external panel comprised of five scientists appointed by the National Oceanic and Atmospheric Administration (NOAA) Science Advisory Board (SAB) performed a review of the Joint Institute for Marine and Atmospheric Research (JIMAR) at the University of Hawai'i (UH) at Manoa, Honolulu, March 4-5, 2004. The panel met with scientists and administrators from JIMAR, UH and other collaborating laboratories to review the research, education, public outreach and management structures of the Institute. The members of the review panel were:

Mr. Paul Dalzell, Western Pacific Fishery Management Council, Honolulu, HI.

Dr. Tom Johengen (ex-officio), Director, Cooperative Institute for Limnology and Ecosystems Research, University of Michigan, Ann Arbor, MI.

Dr. Phillip Logan, Chief, Social Sciences Branch, National Marine Fisheries Service, Woods Hole, MA.

Dr. Andrew Moore (Chair), Cooperative Institute for Research in Environmental Sciences, University of Colorado at Boulder, CO.

Dr. David Secor, Center for Environmental and Estuarine Studies, Chesapeake Biological Laboratory, University of Maryland, MD.

Overview of JIMAR

JIMAR was established in 1977 as a joint institute between NOAA and UH. JIMAR is also part of the UH School of Ocean and Earth Science and Technology (SOEST). In addition, the JIMAR maintains close relationships with the Pacific Marine Environmental Laboratory (PMEL) (their "host") in Seattle, the Atlantic Ocean Marine Laboratory (AOML) and Hurricane Research Division (HRD) in Miami, and the Forecast Systems Laboratory (FSL). JIMAR also works closely with the Pacific Islands Regional Office (PIRO) of the National Marine Fisheries Service (NMFS), and maintains a collaborative agreement with the Pacific Fisheries Environmental Laboratory in Pacific Grove. Collaborations are also fostered in meteorology and climate with the Honolulu Office of the National Weather Service (NWS).

PART I

In this section we present the review panel's executive summary, and a list of recommendations for both JIMAR and NOAA that were identified as a result of the review process.

Executive Summary

The review panel is impressed with the expertise and integrated knowledge made available to scientific pursuits through JIMAR; with the productivity demonstrated over the history of the program; and with the synergy evidenced in recent research. JIMAR

provides an effective, flexible coordinating and funding vehicle which makes available opportunities for innovative research, which exploit the natural advantages of the University's setting and human resources and those of its other research partners. We recognize programmatic excellence, the potential for Pacific outreach and JIMAR's unique opportunity to explore ecosystems research and management issues.

The review panel notes the transition in funding emphasis over time and the now very significant role of the Pelagic Fisheries Research Program (PFRP) in JIMAR activities. These programs present both opportunities and problems which require attention if JIMAR is to sustain its leadership role in research as it has in the past. The roles of the PIRO, Pacific Islands Fisheries Science Center (PIFSC) and JIMAR should be clarified with respect to 1) sources of continued funding and personnel support for routine data collection (fisheries and social science); 2) applied research in support of stock assessments and social and economic analyses; and 3) applied research in support of ecosystems management, ecosystems research and other innovative multi-disciplinary work evidenced during this review.

The review panel notes deficiencies in JIMAR's understatement of its vision and its modest articulation (e.g. with respect to public relations) of central missions.

Recommendations for JIMAR

In view of its findings, the review panel recommends that the following actions should be taken by JIMAR and that any issues identified below should be addressed:

- (1) The JIMAR mission statement is vague and should be rewritten to reflect, in particular, the interests of the Indo-Pacific region and the NOAA mission. The panel recognized clear areas of excellence and success in applied marine, atmospheric, and climate research, but felt that the supporting review documents did not convey a clear sense of JIMAR's vision or where it sees itself in the future. JIMAR should develop a statement of vision.
- (2) PFRP's funding may be vulnerable to NMFS's Pacific reorganization and to changes in representation from the State of Hawai'i and other U.S. flag Pacific Islands. PFRP should actively explore alternate and additional sources of funding, and continue collaboration with scientists outside of JIMAR to protect this very valuable component of the Institute.
- (3) The PFRP is unique nationwide in its pursuit of fundamental research in support of pelagic ocean fisheries. NOAA also recognizes the important influence that PFRP research activities have on current and future fisheries assessments. To foster continued excellence in this mission, the PFRP should preserve its focus on the science that advances the quality and effectiveness of such assessments. As such the PFRP should avoid

becoming too directly involved in routine data collection and assessment at the expense of diminished scientific activities.

- (4) The review panel endorses the development of the Coastal and Marine Resources Program, initiated within JIMAR's new Coastal Research theme, as a critical component of integration between JIMAR and UH. The panel recommends that economics and other social sciences should also be focal disciplines within this Program.
- (5) Education and outreach activities should be broadened by capitalizing on local resources. In particular the panel view NOAA Hawai'i SEA GRANT as a valuable local resource. Using the NWS Pacific international training desk as a model, JIMAR should explore opportunities for outreach in fisheries assessment and social sciences.
- (6) The impression of the panel is that the process by which JIMAR identifies new intellectual opportunities and science themes is somewhat informal. This approach has clearly been effective for JIMAR, but as JIMAR grows and diversifies, a more formal process, such as a JIMAR retreat, might be more appropriate. JIMAR should give some thought to a more rigorous strategic planning process.
- (7) The lack of female representation on the Council and roster of Senior Fellows is disturbing. JIMAR should examine their Senior Fellow appointment process to see if this issue can be resolved.
- (8) The current composition of Senior Fellows does not appear to reflect the level of activity within the current research themes of the Institute. New appointments should aim to correct this imbalance and the Senior Fellows should represent past, current and future scientific directions of JIMAR.
- (9) Annual meetings of the Administrative Board should be resumed as per the MOU.

Recommendations for NOAA

In addition, the review panel recommends that the following issues should be addressed by NOAA.

- (1) The panel recognizes JIMAR's concern that base funds for Task I activities have not been sufficient to sustain a visiting scientist and post-doctoral program that would serve the needs of JIMAR science themes. These programs are considered to be important for maintaining and advancing the intellectual well being of the Joint Institutes, and the panel recommends that NOAA should address this long standing issue and allocate additional funding for these activities.
- (2) While education and outreach are recognized by NOAA as cross-cutting priorities in their strategic plan, NOAA provides little in the way of resources to support these activities. NOAA should allocate more resources for these activities.

- (3) This panel recognizes that communication between JIMAR and the NOAA Office of Oceanic and Atmospheric Research (OAR) has been inadequate in the past. Recent significant improvements were noted during the review, and NOAA should continue to improve channels of communication with the Joint Institutes.
- (4) NOAA should solicit more input to the NOAA strategic plan from its Joint and Cooperative Institutes.

PART II

In this section we present, as a useful point of reference, the NOAA Vision and Mission statements, the NOAA Strategic Plan, and the JIMAR Memorandum of Understanding with NOAA.

NOAA's Vision

To move NOAA into the 21st century scientifically and operationally, in the same inter-related manner as the environment that we observe and forecast, while recognizing the link between the global economy and our planet's environment.

NOAA's Mission

To understand and predict changes in the Earth's environment and conserve and manage coastal and marine resources to meet our Nation's economic, social, and environmental needs.

The NOAA Strategic Plan

The following are excerpts from the "NOAA's Strategic Plan for 2003-2008 and Beyond."

NOAA's Mission Goals:

- (1) Protect, restore and manage the use of coastal and ocean resources through ecosystem-based management.
- (2) Understand climate variability and change to enhance society's ability to plan and respond.
- (3) Serve society's needs for weather and water information.
- (4) Support the Nation's commerce with information for safe, efficient, and environmentally sound transportation.

NOAA's Cross-Cutting Priorities:

- Integrated global environmental observation and data management system.
- Environmental literacy, outreach and education.
- Sound, reliable state-of-the-art research.

- International cooperation and collaboration.
- Homeland security.
- Organizational excellence: Leadership, human capital, facilities, information technology and administrative products and services.

The JIMAR Memorandum of Understanding with NOAA

The JIMAR Memorandum of Understanding (MOU) with NOAA will also serve as a useful point of reference. As stated in the 1977 MOU, “it is the **purpose** of JIMAR:

- (1) To increase the effectiveness of oceanic, atmospheric, and geophysical research of mutual interest to the ERL (Environmental Research Laboratory) (in particular, but not limited to, Pacific Marine Environmental Laboratory) and the University of Hawaii by promoting close multi-disciplinary collaboration among scientists and technologists associated with these two institutions and visiting scientists and technologists.
- (2) To provide a center at which scientists and technologists working on problems of mutual interest may come together.
- (3) To stimulate the training of scientists and technologists in the many disciplines involved in oceanic, atmospheric and geophysical sciences.
- (4) To provide advice concerning the application of new knowledge to the various areas of special interest to both NOAA and the State of Hawai'i (e.g. the Tsunami Warning System).”

The **scope** of JIMAR:

“The general areas of collaborative interest will include those aspects of oceanic, atmospheric and geophysical sciences which are of mutual interest to the ERL and the University. In view of the purpose of this memorandum, participation in this program need not be limited by organizational affiliation of individual scientists but will be determined by their ability to contribute to the mutual objectives of the participating organizations. Collaboration will provide a means for identification and definition of new research projects and a focus for a continuing program of research and education.

Although the areas of interest of JIMAR extend to the limits of oceanic, atmospheric and geophysical sciences, the research activities of the Institute will be focused on a few themes. The choice of research themes will be subject to approval by an Administrative Board that is to be appointed by the parent organizations. New themes may be initiated internally or by request from either parent organization. The initial theme will be tsunamis and other long period ocean waves.”

These statements of JIMAR’s purpose are well matched to the NOAA mission goals and cross-cutting priorities despite the obvious difference in the timing of when these documents were created. The statement of scope defines a key strategy that has allowed JIMAR to create such respected research programs: “...participation ...need not be

limited by organizational affiliation...but will be determined by their ability to contribute to mutual objectives...”

The full list of current JIMAR themes is discussed in section E of the Science Plan in Part III.

PART III

In this section we summarize each section of the JIMAR briefing booklet provided to the review panel, and discuss the relevant issues that lead to the subsequent recommendations in Part I.

JIMAR Review Sections

Science Plan

A. Scientific Vision

The review panel feels that the current “vision” statement is more of a description of JIMAR and its association with UH and NOAA rather than a true statement of “vision.”

B. Science Plan and Relationship to NOAA Strategic Plan

JIMAR activities and science themes are fully relevant to the NOAA Mission goals (1), (2) and (3) as stated in Part II, and directly address some of NOAA’s cross-cutting priorities including integrated environment observing and management systems; environmental outreach, education and training; and international cooperation and collaboration. JIMAR’s activities and themes are clearly in step with the NOAA mission.

C. Goals and Objectives

JIMAR goals and objectives are intimately linked to NOAA’s strategic plan, mission goals and cross-cutting priorities. The outreach component is mostly aimed at the tertiary education level.

D. Criteria used to Measure Progress in Accomplishing Goals and Objectives

Some additional thought should be given to developing metrics to gauge the success of JIMAR in accomplishing its goal and objectives. Some simple metrics that are currently used for the progress of Task 3 individual research projects include peer-reviewed publications, presentations at meetings, grants awarded, etc.

In the case of the PFRP, some thought should be given to conducting a citation analysis of how the various projects are used in fishery management documents

published by NOAA-Fisheries and the Western Pacific Regional Fishery Management Council, such as Environmental Impact Statements and fishery management plan amendments. This analysis should also include the incorporation of the results of PFRP projects into stock assessments for Pacific pelagic stocks conducted by the Inter-American Tropical Tuna Commission (Eastern Pacific), the Standing Committee on Tuna and Billfish (Central-West Pacific) and the Interim Scientific Committee for Tuna and Tuna like Species (North Pacific).

Individual PFRP projects on protected species, resulting from interactions with pelagic fisheries, are unlikely to lead directly to species recovery or delisting from the endangered species list. However, a metric of their success could include the use of PFRP sponsored population models to assess impacts of fishery management measures, incorporation of PFRP project results into recovery plans for population rebuilding, and citation of PFRP projects in biological opinions published by NOAA and the US Fish & Wildlife Service.

With regard to JIMAR climate-related services and programs, the associated accomplishments are deemed successful and the goals met if and when such programs become operational within NOAA.

E. Major Science Themes

The current major science themes at JIMAR are:

1. Tsunamis and other long-period ocean waves
2. Equatorial oceanography
3. Climate
4. Fisheries oceanography
5. Tropical meteorology
6. Coastal research

Theme 1 is the original and oldest of the JIMAR themes. It is clearly of relevance to the State of Hawai'i and the Pacific Rim at large, and JIMAR is a recognized world leader in tsunami research.

Themes 2 and 3 are almost inseparable, and also have a long history at JIMAR. The unique location of Hawai'i at the northern edge of the tropical Pacific belt means that it is ideally suited for making direct observations of the region in support of climate monitoring, in particular El Nino, and for responding to new observation opportunities as they may arise. The UH Sea Level Center is particularly noteworthy. In addition, JIMAR possesses a distinguished group of equatorial ocean and coupled ocean-atmosphere dynamicists who have made many significant and outstanding contributions to the field. The quality and caliber of the research is extremely high.

Theme 4 on fisheries oceanography is diverse including initiatives on remote sensing applications, fisheries assessment, data collection and archiving, and protected species. The largest part of this theme is funded through the PFRP, which funds

science in support of sustainable oceanic fisheries through a rigorous proposal selection process. PFRP supports state-of-the-art research on highly migratory species, including electronic tagging, models of fish migration and distribution, trophic ecology, multi-species interactions, fisheries oceanography, and assessment methodologies. Through its competitive proposal process, leadership in organizing workshops and hosting outside scientific experts, PFRP has evolved into a unique research program worldwide. Research on pelagic migratory fishes is particularly challenging because population dynamics and fisheries occur over large spatial scales. The PFRP through long term and substantive NOAA Fisheries support is uniquely poised to provide national scientific leadership on highly migratory species.

Theme 5, tropical meteorology, is also supported by world leaders in the field, and the focus areas of research are clearly relevant to needs of the State and Pacific region. Included in this theme is the new and rapidly emerging technique of using GPS ground stations to determine the column integrated liquid water content of the atmosphere. This has enormous implications for tropical weather prediction.

Theme 6, coastal research, is the newest theme for JIMAR. The U.S. Flag Pacific Islands have limited coastal margins and lack the extensive shelves of the continental USA, however, most of the human populations in the Pacific Islands live adjacent to the coast and have an increasing impact on the nearshore terrestrial and marine environments. The coastal zones, though limited, are important economically, especially for tourism, and for recreational and commercial fishing. The volume of fish caught in the coastal zones of Pacific Islands, in terms of numbers, may equal or exceed the volume of fish caught on the open ocean, and is indicative of the increasing need for fishery management in the coastal zone, including preservation of nearshore essential fish habitat. The development of a fisheries management and aquaculture program in JIMAR is a critical first step in strengthening the capabilities of the US islands in managing their coastal fisheries resources.

Given JIMAR's geographical location, and the social and economic needs and vulnerability of the State of Hawai'i, all of the current JIMAR themes appear appropriate, and all of the current science themes clearly support NOAA's mission and goals.

Emerging themes are identified as: ecosystem approaches to fisheries and integrated observations; integrated climate and coastal observing systems; and efforts to establish a NSF Science and Technology Center.

F. Scientific Partnerships

The review panel recognizes the value of the collaborations outlined in the "Overview of JIMAR" and views the diversity resulting from these partnerships as a great strength of the Institute.

The review panel noted that the number of Council Members and Senior Fellows who are associated with Fisheries seems small (~5) compared to the Institute's level of activity in this area. The majority of Council Members and Senior Fellows appear to be meteorologists and oceanographers, with disproportionately few fisheries oceanographers.

The review panel also noted that JIMAR clearly enjoys and significantly benefits from close relationships with UH, the International Pacific Research Center (IPRC), and SOEST.

New collaborations are being fostered or planned between JIMAR and: the Coastal Services Office (in support of Theme 6); NOAA-NESDIS in support of the IPRC Asia-Pacific Data Research Center. These collaborations should be actively encouraged.

On the basis of a round table discussion with the JIMAR Senior Fellows, the review panel notes that morale amongst the Senior Fellows appears to be high. The Fellows noted that JIMAR creates for them unique opportunities that would otherwise not exist. For example, JIMAR provides access to NOAA research facilities (such as aircraft), and the Cooperative Agreement can be used to leverage funds from other sources. In addition, JIMAR is strategically placed with respect to deep ocean research. It was also noted that JIMAR not only raises awareness and the visibility of the UH, SOEST and individual PI research projects, but also fosters stimulating scientific interactions that provide the seeds for new activities. Lastly, the Fellows spoke very highly of the administrative capabilities of JIMAR and their exemplary handling of their joint research projects and grants.

Science Review

A. Recent Scientific Achievements and Accomplishments

The range of scientific research within JIMAR is very broad as evidenced by its most recent annual report. It is clearly beyond the scope of the review panel to describe all facets of JIMAR research. Instead we focus on a few of the projects that were presented at a well-organized poster session.

Post release survival from longline fishing continues to be a major research topic area in the PFRP, both for protected species such as turtles and for pelagic fish such as marlins. Results from work on turtle post release survivorship have begun to be incorporated by NMFS into assessment of longline fishery impacts on turtle populations. Monitoring the post release mortality of recreationally caught marlins is providing information on the effectiveness of catch and release programs for conservation. Tagging investigations on tuna aggregations around Hawaii have illustrated the degree to which high seas and nearshore fisheries for yellowfin and bigeye may interact. Other important research recently accomplished by PFRP

includes the modeling of landings of blue marlin using complementary logbook and observer records, and descriptions of the biology of opah and monchong, important but little studied components of pelagic longline catches.

The UH Sea Level Center is a valuable resource at JIMAR, and a number of projects were showcased that demonstrate the range of applications of the observation timeseries. These range from exploring interdecadal variations in Pacific sea level, to internal tide generation at the Hawaiian Ridge. Several projects are also underway with the aim of exploring the dominant modes of variability in the Asia-Australian monsoon region, as well as the predictability of monsoon circulations. Other research projects aimed at understanding the genesis of subtropical cyclones and typhoon tracks are also noteworthy, especially given the vulnerability of Hawai'i to these phenomena.

The Pacific ENSO Applications Center was also showcased and caught the attention of the review panel. The quarterly newsletter that they produce for the Pacific island region, and the website they maintain is a valuable public resource and outreach activity. The sociological baseline of Hawaii's longline industry is also to be commended.

Education and Outreach

A. Educational Activities and Opportunities

JIMAR's educational activities currently take the form of support for the development of formal programs within UH, and assistance to both graduate and undergraduate students across the spectrum of JIMAR research with approximately 40 students currently receiving funding.

Two education programs are identified:

- (i) A Masters level program in Fisheries and Aquaculture at UH continues to be developed despite funding problems;
- (ii) A graduate certificate program within the School of Social Sciences in Disaster Management and Humanitarian Assistance is under development with JIMAR assistance.

A successful NWS program, the Pacific international training desk, trains meteorologists from WMO RA5, and utilizes JIMAR funds.

The majority of JIMAR's education activities appear to be in the form of undergraduate and graduate education. These apparently wide-ranging activities are in the form of assistantships within the JIMAR-wide structure.

Limited state funding, currently applied in the form of indirect cost recovery from research grants, is the reason why there are few targeted educational programs.

The review panel felt that social sciences should be an integral part of the training offered under the graduate program in Fisheries and Aquaculture and any other fisheries management training initiative.

B. Current and Planned Outreach Activities

Current outreach activities include:

- (i) The Pacific ENSO Applications Center (PEAC) provides a newsletter, maintains a web page, and runs training sessions related to ENSO education and mitigation of Pacific basin ENSO impacts.
- (ii) The PFRP produces a newsletter, maintains a website and JIMAR scientists participate in regular fisheries meetings, including interactions with the local fishing community.
- (iii) Public awareness activities (e.g. radio and television interviews).
- (iv) A SOEST biennial open house for K-12 students and the public.

The review panel felt that outreach activities could perhaps be broadened by capitalizing on local resources such as the NOAA Hawai'i SEA GRANT.

The review panel felt that more of JIMAR's accumulated information and expertise could be put to use in education/outreach programs outside the formal UH degree-granting mechanisms. JIMAR should look to the previous NWS Pacific international training desk as a model for other education/outreach activities once the lines between UH's broader Pacific mandate and NOAA's areas of concern are clarified. The extension of fisheries and social science training to, at a minimum, the U.S. flag Pacific Islands could generate Strategic Plan benefits accompanying statistics, economics, information technology and biological outreach.

Science Management Plan

A. Identification of New Intellectual Opportunities

New opportunities and themes are identified and developed by consultation with the Senior Fellows, local NOAA offices and SOEST. Some are identified by the Director and JIMAR scientists as opportunities arise. All new themes are vetted by the JIMAR Administrative Board. The review panel's impression is that the overall process by which new themes are identified is somewhat informal. While this process has served JIMAR well in the past, it is felt that as the Institute continues to grow, some thought should be given to formalizing this process, such as by way of a JIMAR retreat.

In addition, it appears that the Administrative Board does not meet regularly as mandated in the MOU. This is a point of some concern for JIMAR management, and the review panel feels that the original terms of the MOU should be honored in this regard.

B. Recent Examples of Intellectual Opportunities

Examples given are:

- (i) A regional coastal observing system.
- (ii) Interactions of JIMAR with the UH International Center for Climate and Society.
- (iii) JIMAR involvement in IPRC.
- (iv) Coastal mapping – JIMAR, NMFS, SOEST.

C. Strategy for New Starts

New intellectual activities are developed partly through interaction of JIMAR scientists and external scientists via the Visiting Scientist program, which also supports visits by JIMAR and UH scientists to collaborating institutions (PMEL, AOML) and conferences. The Visiting Scientist program is also meant to support post-doctoral research but it appears this has dwindled over the years due to insufficient funds. By all accounts, the Visiting Scientist program has been very successful and effective at broadening JIMAR's scientific outlook, and promoting new research directions by fostering collaborations, both at the national and international level. JIMAR is encouraged to continue, and if possible, expand this program, and rejuvenate the post-doctoral program.

D. Institute Resources for New Opportunities

The Visiting Scientist program and indirect cost recovery account for 6% of the total cash flow of JIMAR. However, after all necessary expenses (communication charges, Director's discretionary fund, etc), only 2% is actually available as seed money. The relative lack of funds for exploring new opportunities is also due to an apparent stagnation of NOAA base funds to the Institute. This appears to be an across the board issue for Joint and Cooperative Institutes, and the review panel felt that NOAA should make serious efforts to tackle this issue which may be hindering progress at some Institutes.

E. Demographic Structure and Institute Employees

From a gender point of view, JIMAR appears well balanced. However, there are no women on the Council or enrolled as Senior Fellows. Even the recent Visiting Senior Fellows are all male. The review panel found this somewhat surprising and disturbing. This, however, appears to be the norm for JIMAR, and the review panel was of the opinion that this is a recruiting issue that should be seriously addressed.

Caucasians are the dominant race and the percentage is out of balance with Hawaii's local demographics.

F. Human Resource Development

JIMAR employees reside in two personnel systems: the Research Corporation of UH (RCUH) (the majority of JIMAR appointments), and State of Hawai'i/UH. Employees within the two systems are evaluated, rewarded and promoted according to different criteria and pay scales. Such differences in the personnel and human resource structure within Institutes can be problematic and may lead to tension and a general level of dissatisfaction amongst Institute employees.

There is apparently continual tension between the RCUH and UH personnel systems, as well as workers union pressures. In addition, the UH Board of Regents decision to try and limit RCUH employees to one year appointments is problematic for JIMAR since the RCUH employment system is essential to the way JIMAR conducts business.

The review panel expressed concern about the potential negative impacts on JIMAR of the existing conflicts between the UH and RCUH personnel systems, and encourages the Institute and the University to continue negotiations to resolve these issues or at least reach a working compromise.

All JIMAR employees may enroll in UH classes at no charge. This is applauded and is an employee benefit that should be protected.

All JIMAR employees are recognized for their service and contributions to the Institute through awards. NOAA participates in this also. This is an important component of human resource management since it boosts morale, and employee well being.

G. Financial Health of the Institute

Funds available from the Cooperative Agreement are ear-marked according to "budget tasks." Three budget task categories are identified in the latest Cooperative Agreement:

- (1) Task I provides support for the visiting scientist and post-doc program of JIMAR, and administrative support. Projected 5-year budget: \$5.3M.
- (2) Task II provides support for specific individuals and facilities required by the visiting scientists. Computer programmer and computing costs are included here. Projected 5-year budget: \$9.7M.
- (3) Task III supports specific research programs conducted under the auspices of NOAA within JIMAR. These are competitive funds in that JIMAR scientists submit individual proposals to appropriate NOAA program offices. Projected 5-year budget: \$37.3M.

The review panel concludes that while Tasks II and III appear to be in a state of relatively good financial health, Task I would benefit from an increase in NOAA base funds.

H. Accomplishing Financial Goals

Three areas are identified in which JIMAR is working towards accomplishing its financial goals:

- (1) Continued discussion and negotiation with NOAA OAR to increase the level of base funding that JIMAR receives.
- (2) Indirect cost recovery to individual investigators.
- (3) The PFRP has received stable funding at appropriate level since its inception. Still in future, the program could be vulnerable to NMFS budget cuts or changes in political representation from Hawaii.

Furthermore, base funds have not kept pace with the increased cost of doing research or the increasing size of Institutes. JIMAR would like to reintroduce the highly successful post-doctoral program, but is unable because of lack of funds.

I. Issues Interacting with NOAA

Concerns are raised about the following:

- (1) A lack communication between OAR and the Institute Director, leading to untimely or forced decisions by the latter.
- (2) A lack of regular interaction between OAR and its University partners. The JIMAR Administrative Board has only met twice in the last 5 years, the last time being 2001. The UH-NOAA MOU specifies annual meetings. It is the joint responsibility of OAR and the UH President to rectify this problem.
- (3) Federal source fund restrictions preclude JIMAR paying for visits of scientists from its host laboratory, PMEL, or in fact from any other NOAA laboratory. This is viewed as very restrictive and as having a negative impact on the Institute because of its remote location.
- (4) Frustration is apparent over the stagnation of base funds made available to the Institutes, with the effect that the “hallmark” post-doctoral program of the Joint Institutes has very nearly disappeared.

These issues can all be addressed via increased dialogue between JIMAR and NOAA. Such discussions should be strongly encouraged. However, in recent months, there have been significant improvements due to changes in OAR staff. NOAA should continue to improve the channels of communications with the Joint Institutes.

J. Issues Interacting with the University

Recent bureaucratic/hierarchical changes at UH have led to concerns about primacy over matters relating to JIMAR. At the present time, these matters are dealt with first by the Chancellor, and then passed to the UH President, while in actual fact it is the President who presides as Chair of the JIMAR Administrative Board.

Issues relating to potential conflicts between the UH and RCUH personnel systems and the impact on JIMAR are noted in section F.

PART IV

A List of Acronyms and Abbreviations

AOML – Atlantic Ocean Marine Laboratory
ERL – Environmental Research Laboratory
FSL – Forecast System Laboratory
HRD – Hurricane Research Division
IPRC – International Pacific Research Center
JIMAR – Joint Institute for Marine and Atmospheric Research
MOU – Memorandum of Understanding
NESDIS – National Environmental Satellite, Data, and Information Service
NMFS – National Marine Fisheries Service
NOAA – National Oceanic and Atmospheric Administration
NWS – National Weather Service
OAR – Office of Oceanic and Atmospheric Research
PEAC – Pacific ENSO Applications Center
PFRP – Pelagic Fisheries Research Program
PIFSC – Pacific Islands Fisheries Science Center
PIRO – Pacific Islands Regional Office
PMEL – Pacific Environmental Marine Laboratory
RCUH – Research Cooperation of University of Hawai'i
SAB – Science Advisory Board
SOEST – School of Ocean and Earth Science and Technology
UH – University of Hawai'i

PART V

Review Panel Biographical Information

Dr. Andrew Moore

Dr. Andrew Moore is currently an Associate Professor in the Program of Atmospheric and Oceanic Sciences (PAOS) at the University of Colorado at Boulder, where he has also served as Associate Director of the Program. Dr. Moore is also a Fellow of the Cooperative Institute for Research in Environmental Sciences (CIRES), and has worked in the field of

ocean sciences for almost 20 years. He has a wide and varied research background, and has held previous appointments at the University of NSW, Harvard University, the Australian Commonwealth Scientific and Industrial Research Organization's (CSIRO) Division of Atmospheric Science, and the Australian Bureau of Meteorology Research Centre. Dr. Moore's areas of interest and expertise include tropical air-sea interaction, predictability of the ocean and atmosphere, stability theory, stochastic systems, numerical modeling and data assimilation.

Mr. Paul Dalzell

Paul Dalzell joined the Western Pacific Regional Fishery Management Council in 1996 as the Pelagic Fisheries Coordinator. Subsequently, in 2000, he was also appointed as the Council's Senior Scientist. Dalzell has been active in the field of fishery research and management in the Asia-Pacific region for the past 27 years. He has lived and worked in a variety of countries, including Papua New Guinea, the Philippines and New Caledonia. In the mid-1980s he led a World-Bank funded project in the Philippines on small pelagic fisheries assessment and management. During the 1990s, prior to working for the Western Pacific Council, Dalzell worked for the Secretariat of the Pacific Community, advising the fisheries administrations of the Pacific Islands on coastal fishery research and management. During this period he completed and published a definitive review of coastal fisheries of the insular tropical Pacific. His main areas of expertise include stock assessment and management of small pelagic fishes, and the dynamics of coral reef fisheries. Although currently responsible for management policy for tuna fisheries within the U.S. EEZ and on the high seas in the Pacific, Dalzell continues to maintain an interest in the regions small scale coastal fisheries.

Dr. Tom Johengen

Dr. Johengen was appointed Director of the Cooperative Institute for Limnology and Ecosystems Research (CILER), a NOAA Office of Oceanic and Atmospheric Research joint institute located the University of Michigan in 2000. He received his M.S. in Biological Oceanography from Florida State University in 1986 and his Ph.D. in Oceanic Science at the University of Michigan in 1991. Dr. Johengen's also holds an Assistant Research Scientist position in the School of Natural Resource and Environment at the University of Michigan where his research interests are focused on nutrient biogeochemistry, lower-food web dynamics, and control and impacts of exotic species in the Great Lakes. He currently serves on several advisory boards and panels including the International Association for Great Lakes Research Board, the Great Lakes Aquatic Nuisance Species Panel, and the State of Michigan's Aquatic Nuisance Species Council.

Dr. Phillip Logan

Dr. Philip Logan has been Chief of the Northeast Fisheries Science Center's fifteen member Social Sciences Branch since 1996. He has been at the Center's Lab in Woods Hole for twenty years. The Branch conducts applied research and analysis on its own and in collaboration with academia, and provides models, information and data to fishery regulatory bodies. His international experience includes fishery statistics and development advice to Oman, Costa Rica, FAO and the SPC. He previously served as the South Pacific Regional Program officer for the US Peace Corps based in Fiji and as a volunteer in Tanzania.

Dr. David H. Secor

Dr. David Secor is a fisheries ecologist and Associate Professor at University of Maryland Center for Environmental Science (UMCES), Chesapeake Biological Laboratory (faculty appointment in 1994). Dr. Secor's research activities focus on migration and habitat use behaviors, which control and regulate population dynamics of marine and estuarine fishes. Recent research includes bluefin tuna stock structure, contingent structure and dynamics of estuarine fishes, blue crab and American eel demographics, pollution ecology of striped bass, and bioenergetic habitat models. Dr. Secor serves as Chair of the Bluefin Tuna Working Group and advisor to the U.S. Delegation Int'l Comm. Conservation of Atlantic Tunas and as Co-Chair of the Atl. States Marine Fisheries Comm. Atlantic Sturgeon Technical Comm. He serves on the American Fisheries Society's Best Science Committee, Chesapeake Bay Program's Dissolved Oxygen Criteria Team, NOAA's DelMarVa Coastal Bay Scientific Advisory Committee, and drafted a major section of the NOAA Chesapeake Bay Fisheries Ecosystem Plan. Dr. Secor is on faculty senate at UMCES and serves as co-chair for the University's graduate fisheries program.