

History of the  
Oregon State University's  
Hatfield Marine Science Center  
  
Volume II  
  
1988-2001

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## **I. A Brief Historical Review of the Hatfield Marine Science Center 1965-1988**

### **Founding of the Marine Science Center**

The MSC was created through the impetus of three needs. Wayne Burt of the newly formed Oceanography Department needed dock and ship support facilities for his NSF-funded research vessel on the coast. Roland Dimick of the Fisheries and Wildlife Department needed to expand his small bay research lab located at Sally's Bend on the Yaquina Bay. Thirdly, concerned citizens and legislators were searching for a way to revive the sagging coastal economy. All three came together when an opportunity arose to obtain a grant from the federal Area Redevelopment Administration.

Out of four sites investigated for the creation of a modern marine laboratory, the current one was chosen because of its proximity to the ocean and the availability of sufficient land for a major marine science complex. The ARA provided a \$959,590 grant for the buildings and docks, augmented by \$23,500 from the state to complete the service building, and by \$75,000 from the National Science Foundation to equip the east wing of the building. The Port of Newport gave OSU the land on a 99-year lease, and OSU agreed to administer the facility. A key component of the plan was the public aquarium facility, which was intended to increase tourism. The Center was officially dedicated in June 1965 with an open house.

### **Early Programs and Directors**

Originally the Center was administered by a Director (Wayne Burt) and Co-Director (Thomas Scott) residing in Corvallis, with resident directors for the east wing (Yaquina Biological Laboratory - Joel Hedgepeth) and west wing (Pacific Fisheries Laboratory - William McNeil) of the building. In 1970 the Oregon Fish and Game Commissions merged into the Oregon Fish and Wildlife Department and constructed their own facility adjacent to the original building. In 1972 events transpired which resulted in a change in the administration of the Center; an Acting Director (John Byrne) and an Acting Co-Director (Charles Warren) were appointed. The positions of Co-Resident Directors were abolished and a manager (David Zopf) was assigned to manage the business affairs of the entire Center. A committee assigned to study alternatives to this administrative structure of the Marine Science Center reported in March 1976:

"In the absence of progressive leadership which might be provided by a resident director, research activities are still managed on an individual by individual basis. A resident director could devote energies to exploring the possibilities of and developing large-scale integrated research programs, which would be beneficial to a number of the investigators presently in residence at the Marine Science Center. The lack of a single well-coordinated instructional program, and of an integrated research program as well as the absence of other innovative educational activities leads us to judge the present operation to be less successful than it would be under the direction of a single administrator in residence at the Center."

## **Resident Director**

As a result of this report, approval was given to establish a full-time resident director for the entire facility. (See job description in Appendix 1). In 1977 Dr. Lavern Weber became the first resident director of the MSC. He was provided with the first Center-wide operating budget and was charged with developing and fostering research and educational programs. These programs were to build upon existing research efforts in fisheries, aquaculture, zoology, oceanography, botany and microbiology and existing public education, and spring and summer academic marine science courses.

The new resident Director reported to the Vice Provost for Research, though he had a joint academic appointment in both Pharmacy and Fisheries. The Center was created as a facility to support programs that had basic needs: nearness to the ocean and access to seawater. As part of OSU, it was also to support the three-fold mission of the University: education, research and extension.

## **Growth of Educational Offerings**

In 1967 William Wick was chosen as the first Sea Grant Extension marine educator and charged with developing a public education program at the Center. In 1968 Don Giles and in 1971 Vicki Osis joined him and began creating programs for visiting school groups, teacher education, and the summer education short courses that became Seatauqua.

The academic offerings had grown to the point of requiring trailers to be used as temporary classrooms in 1973, highlighting the need for more classroom and lab space at the Center. The first steps in creating student and scientist housing were taken with the construction of the Li House, four four-person apartments under one roof, in 1972, and followed by the construction of the Bunkhouse and the Dining Hall in 1975. This housing was needed to attract students and researchers to utilize the Center in an otherwise expensive resort community.

In 1980 the College of Science established the spring term 16-credit Marine Biology class at the Center, coordinated through the Biology Program. The winter term had been developing as the fisheries term and when the Department made a term at the MSC mandatory in 1981, the education program took on a solid consistent footing. In 1985 Dr. Robert Olson was named as the Associate Director for Education, a part-time position serving as educational coordinator. This position has been important in coordinating between on-campus departments and faculty and students resident at the HMSC, as well as serving as an advocate for developing new programs, such as the Master of Science Education, with an emphasis in marine science.

## **Growth of Physical Plant Leads to Increased Research and Education**

Dr. Weber's first official duty was to plan the dedication of the just completed Education Building at the Center in 1977. The second floor housed the small but growing specialized library collection, operated by the Center's first resident, full-time librarian, Marilyn Guin, hired in 1976. He also worked on the two NOAA buildings proposed for the Center, the Newport Aquaculture Lab (30,000 sq. ft) or NAL building and the Research Support Facility (33,000 sq.ft) or RSF building. The former was completed in 1978 and the latter in 1980, providing space for expanding research and updating research facilities. The NAL building contained a specialized isolation wing for the Fish Diagnostic Laboratory and the RSF building a marine mammal necropsy room for the marine mammalogy group. This additional space was to prove invaluable for attracting a critical mass of researchers and new cooperating agencies.

Dr. Weber was able to get NSF funding for the Marine and Freshwater Biomedical Center to be located at Newport in 1978, which brought in several graduate students and post-doctoral researchers. The MFB attracted other neuroscience investigators beginning in 1983, when Dr. George Mpitsos brought his funding to work on the neurophysiology of learning. It grew as Dr. Thomas Murray came from the main campus to work on nicotinic receptors in 1984 and in 1985 Dr. Donald Campbell from the University of Iowa to work on sodium channels. The neuroscience group added a new dimension to the research mix at the Center.

Since the opening of the Center in 1965, the Public Health Service's Federal Water Pollution Control Administration had had a small contingent at the Center. In 1970 that group was subsumed into the new Environmental Protection Agency. When the NAL building was completed and OSU fisheries faculty moved into it, this freed up a large amount of space in the west wing of the original building. Taking advantage of this, the EPA transferred a number of its researchers from the Corvallis EPA Lab to the Center as its coastal ecology branch in 1980.

In 1982 the National Oceanic and Atmospheric Administration (NOAA) and OSU entered into a joint agreement to establish the Cooperative Institute for Marine Resources Studies (CIMRS) to foster collaboration between the federal agency and the university. Dr. William Percy was the first CIMRS Director, followed by Dr. William McNeil in 1985. In 1983 the National Marine Fisheries Service Alaska Fisheries Science Center placed the Fisheries Behavioral Ecology group in the RSF building under the auspices of CIMRS. Similarly, the NOAA Hydrothermal Vents Program (Marine Resources Research Division) was established as a branch of the Seattle Pacific Marine Environment Laboratory in 1984. These research programs added depth and complexity to the mixture of OSU research already underway at the Center.

In 1983 the name of the Center was officially changed to the Mark O. Hatfield Marine Science Center by order of the Oregon State System of Higher Education in honor of the man who had been governor of Oregon at the time of its establishment and who has worked continually to support and improve the Center and its programs.

National recognition again came to the Center with the establishment of the National Coastal Resources Research and Development Institute (NCRI) at the Center in 1984. The NCRI was a granting institute, given the mandate of using federal funds to increase research in coastal research on perceived needs.

Officer Larry Hilton of the NMFS Enforcement Division came to the Center in 1985, so there were three "divisions" of NOAA/NMFS here. The last piece of the federal puzzle was added in 1985 when biologist Roy Lowe of the U.S. Fish and Wildlife Service Coastal Wildlife Refuges was stationed in an office in the RSF building. By 1985 all of the current state and federal agencies were represented at the Center, at least in embryonic form.

The addition of all these researchers created more demands on the facilities and steps were taken to meet these demands. The seawater system especially was being stretched, as larger and larger storage tanks had been constructed to meet the increasing need for quality seawater. Under the supervision of Parker Henschman, Physical Plant Manager, the seawater system was improved and plans were made for increased storage and pumping capacity, computer monitoring and backup systems. The addition of the twelve Winton Housing units in 1985 relieved the growing pressure for student housing that had come about because of the expanding education programs.

## **II. Overview of 1988-2002**

In 1988 the Hatfield Marine Science Center had been in operation for twenty-three years and had grown from one main building and one ship operations building to a complex housing 180 individuals with a budget of \$10 million. A number of cooperating agencies had been at the Center since the beginning, with several others joining in the early 1980s with the construction of the Newport Aquaculture Lab (NAL) and the Research Support Facility (RSF) buildings. There was a flourishing public outreach and informal education program through Oregon Sea Grant Extension, undergraduate and graduate courses three terms of the year, and a wide variety of research efforts. On the horizon were two promising developments: the addition of the College of Forestry cooperative Coastal Oregon Productivity Enhancement Program (COPE), and the imminent construction of a 41,000 square foot Environmental Protection Agency Laboratory and a 20,000 square foot library.

Some of the developments that will be explored in this history are developing additional housing and courses to draw undergraduates and graduates from several OSU Colleges, increasing the value of the Guin Library both for OSU and world researchers, reworking the commitment of Extension and Sea Grant Extension with the Visitor Center, leveraging grants, donations and interest into larger programs that attract more support, expanding the Cooperative Institute of Marine Resources Studies (CIMRS), and establishing the Coastal Oregon Marine Experiment Station (COMES).

Before examining each of these connections, a brief overview of the changing roles of the Director will illustrate the complexity of his responsibilities and their impact on the Center.

### **Administrative Structural Changes**

The Director's 1977 position description spelled out the following responsibilities:



- Serve as both leader and manager, and be responsible for assigning space
- Promote the use of the Center for educational and research purposes; be responsible for development and coordination of instructional programs; promote the development and use of the MSC facilities for research, instruction and public service
- Maintain his own research program at the Center
- Oversee the use of the public museum and aquaria and assist in development of public education programs
- Serve as spokesman for the Center in the local community

For the first decade of his service, Dr. Weber maintained a very active research program, obtaining a large grant for the Marine and Freshwater Biomedical Center from 1978-1982 to bring in funds, additional scientists and graduate students. Added to his research was responsibility for the physical upkeep of the Center, including the all-important seawater system. One of his top priorities for his first years here was the improvement and expansion of the seawater system, enabling more scientists to do work, and to work with marine as well as estuarine species. To put the undergraduate and graduate courses offered at the Center on a more solid foundation required building more on-site housing, which led the Director into the areas of fund raising, grant writing and donor cultivation. He also had to strengthen ties with the local community and fishing and natural resource industries through personal involvement with service clubs and community development.

The Public Wing is physically part of the original main building was administered by Sea Grant Extension and required the Director's collaboration to facilitate smooth interaction with the rest of the groups at the Center. Becoming a known and valued entity to local and national legislators and funding agencies was another essential task, and one that has borne much fruit at the Center. Lacking sufficient state funding, the Director needed to work collaboratively with different state and federal agencies, carefully nurturing awareness of the mutual interdependence of the agencies and the Center through the use of common facilities and creating a climate of trust and cooperation. Overcoming parochialism has been a major continuing challenge. Further detail will be given in the respective sections, but a brief overview will clarify the changing nature of these responsibilities.

For the period 1988 through 1997, Dr. Weber was given responsibility for operating the Public Wing, while Extension reduced its staff and scope at the Center. During this time period Dr. Weber submitted a \$500,000 planning grant to National Aeronautics and Space Administration to prepare for a complete overhaul of the Public Wing along a totally different theme line. It was funded and the subsequent plan was submitted to U.S. Department of Housing and Urban Development for an economic development grant. This was also successful and the \$4.5 million paid for the new Visitor Center organized around the theme *Searching for Patterns in a Complex World*. After the grand opening in 1997, Sea Grant took over responsibility for the operation of the Visitor Center through a Memorandum of Understanding between Oregon Sea Grant and the Research Office that has administrative oversight of the HMSC.

Working with the community and fishing and natural resource industry leaders, the Oregon legislature provided OSU's Agricultural Experiment Station

funds in 1989 to create the Coastal Oregon Marine Experiment Station (COMES). This was to be located at the Center and included the Astoria Seafood Laboratory. In 1989 Dr. Weber was chosen as the first Superintendent of COMES and under his direction new faculty were hired, a new building built for the Astoria Seafood Laboratory, along with the Duncan Law Seafood Consumer Education Center, and research directions laid out in conjunction with community and industry priorities. Dr. Weber continued in this position until 1997, when he was chosen to serve half-time as an Associate Dean of the College of Agricultural Sciences and Associate Director of the Agricultural Experiment Stations. Gilbert Sylvia became the second COMES Superintendent in 1998.

In 1991 Dr. Weber took on yet another directorship, this time as head of the Cooperative Institute of Marine Resources Studies (CIMRS), upon the retirement of William McNeil from this position. He remained Director until the end of 1999, when Clare Reimers was chosen as the next Director, with a joint appointment with the College of Oceanic and Atmospheric Sciences. She began her tenure in 2000.

Thus, for a number of years, Dr. Weber was actually serving in four positions: head of the Public Wing, Superintendent of COMES, Director of CIMRS, and Director of the HMSC. He used all these positions to build links with campus, the community, the legislature, the donors and the cooperating agencies.

For a brief time Dr. Weber created an Associate Director for Administration which was filled by Marilyn Guin, the HMSC librarian. Marilyn worked largely on raising funds and overseeing the creation and construction of the new HMSC library. Unfortunately, she died just before the dedication of the Guin Library in July 1990, and the position was never refilled. The Associate Director for Education, a position created in 1985 and filled by Dr. Robert Olson, was responsible for coordinating the operation and development of undergraduate and graduate courses at the Center. Dr. Olson played a key role as liaison between campus colleges and departments, the Center and the students. Upon his retirement in 1998, this position was not refilled. The campus departments (Zoology, Biology Program, Fisheries & Wildlife) were required to pick up this coordination responsibility, with more or less success. With the growth in the number of Fisheries faculty stationed at the Center, different faculty members have worked to encourage the development of new courses offered at the Center.

### **HMSC Development Officer**

Up until 1993 the OSU Foundation was directly responsible for any development/fund raising activities for the HMSC. The HMSC Director did interact extensively with community and industry representatives and cultivated these relationships. A number of individuals had made donations earmarked for the Center, but campaigns and organized development efforts were handled by the Foundation. The major example of this was the establishment of the Marine Mammal Program Endowment.

This attractive mechanism for providing a steady and solid source of research and education funds was also attempted for a Marine Fisheries Research Program, but this did not generate the needed support and the effort was

dropped for a more opportune time. This experience, however, convinced Dr. Weber that the HMSC needed its own dedicated development officer to spearhead capital campaigns for two pressing issues: additional on-site student housing and the renovation of the thirty-year old Visitor Center exhibits, as well as assist the Marine Mammal Endowment. The Research Office agreed to provide support for two years and, after a national search, Thomas Chandler was hired as the development officer in 1991.

Chandler began immediately to work with Bruce Mate on the Marine Mammal Endowment and developed several newsletters, case books and events. He spearheaded the planning efforts for drawing up architectural plans and a campaign for an International Living Center. This would have been a major expansion of the existing student housing and added an on-site cafeteria and gathering place for the Center. Several years of effort culminated in only enough money to purchase two double-wide modular housing units that met the immediate need for handicapped accessible housing at the Center. Chandler also initiated the annual joint HMSC-College of Oceanic and Atmospheric Sciences Mamie Markham Research Symposium in 1992. At this symposium all the students who were recipients of these HMSC and COAS awards present the results of their research to donors, faculty and students.

Budget constraints and the end of the Research Office's underwriting of the position meant that the development officer position was discontinued and the remaining projects turned back to OSU Foundation efforts once again in 1995.

Construction funds have always been easier to obtain than operating funds and it was no exception for the Visitor Center. The original exhibits had remained mostly as they were designed in 1965 due to a lack of funds to update and upgrade them. Dr. Weber worked with the OSU Foundation to develop a case book to present to potential donors to create funds for renewing and improving exhibits in the future. Jeannette Hennings, originally a board member of the Oregon Coast Aquarium, became a supporter of the HMSC and, upon her untimely death, her husband contributed funds for the Jeannette Berteau Hennings Auditorium that paid for a complete upgrade of the electronics and projection equipment. The Wiancko Family Trust has contributed money to support interpretive interns who work in the Visitor Center and for special teacher education workshops. Capt. and Mrs. Barry Fisher have made numerous donations to different aspects of the Center, including the Guin Library, where the Barry Fisher Room has been named in his honor.

A major donation of \$350,000 was made by the Winton family and funded construction of the twelve four-person Winton apartments. The money was donated in honor of John Winton, father of Dr. James Winton who formerly worked at the Center in the fish disease wing and husband of Mrs. Harriet Winton of Ashland, Oregon. This donation tripled the number of apartments at the HMSC and made it possible to increase student enrollment and provide interim housing for seasonal workers and temporary housing for new faculty.

### **History of External Reviews**

In the 1970s there was an Inter-Institutional Marine Science Commission established by the Oregon State System of Higher Education (OSSHE) to study the roles of the University of Oregon's Institute of Marine Biology (OIMB) in



Charleston and the Oregon State University's Marine Science Center (MSC) in Newport. OSSHE wanted to ensure that there was no unnecessary duplication of programs and the Commission visited both institutions. Their findings were that OIMB was focused on lower division and undergraduate education with some research and the MSC was focused on upper division and graduate education and extensive research. Both institutions did public outreach, though the MSC had a larger facility (the Public Wing) for this purpose. Both facilities have become members of the National Association of Marine Laboratories and the regional division (Western Association of Marine Laboratories) and have worked together well over the years, given their different emphases.

In April 2000 the first Five-Year External Review was done for the Hatfield Marine Science Center. The panel included Dr. Russel Meints, Director of the Center for Gene Research and Biotechnology at Oregon State University; Dr. Lynda Shapiro, Director of the Oregon Institute of Marine Biology, University of Oregon; Dr. A. O. Dennis Willows, Director of the Friday Harbor Laboratories, University of Washington; and Dr. James Winton, Chief of the Fish Health Section, Western Fisheries Research Center. The upcoming retirement of Dr. Weber led the panel to provide a number of insights into the Center and recommendations for improvement. The full list of recommendations is located in Appendix II.

### **III. Undergraduate and Graduate Education after 1988**

#### **Further Class Development**

As discussed earlier, courses had been offered from the earliest days of the Center, with the Marine Biology class being established in 1980 and the mandatory Fisheries term in 1981. After 1998 the Fisheries term was moved from the winter quarter to the fall quarter to take advantage of better weather and fisheries curriculum changes. David Sampson was the first faculty member to use the new distance education technology and has for several years been using the PictureTel videoconferencing equipment to conduct his fisheries classes simultaneously on the main campus and in Newport. His classes are held in Education 34, the broadcast studio development for the Oregon Ed-Net satellite system and features three camera, two monitors, and an instructor-operated control system. Dr. Sampson has office hours both on the main campus and at the HMSC to meet with students.

With the arrival of Michael Banks and Ian Fleming at the Center and Selina and Scott Heppell on the main campus, there has been increasing interest in expanding and improving F&W course offerings at the Center. Dan Edge, long a proponent of distance education, is the new F&W department head and has been working with HMSC faculty on better publicizing the existing courses and working on creating new ones. This renewed interest is important because with the 1998 retirement of Robert Olson, the Associate Director for Education, his position has not been refilled. Other faculty members are working together to compensate for this.

Dr. Jim Good, coordinator of the Marine Resource Management Program in the College of Oceanic and Atmospheric Sciences, has developed a MRM 525 Special Topics course that meets for three weekends winter term at HMSC. The

topics vary; in 2000 it was "Estuarine Science and Management" and in 2001 it was "Marine Reserves".

Another undergraduate program has also had to make adjustments with the loss of Dr. Olson to retirement. The spring term Marine Biology class is administered through the Biology Program and under the leadership of the Zoology Department. Because of great demand for the class, a limit of 24 students has been placed and the Biology Program screens interested applicants and prepares a list of approved students. When the College of Science first implemented this course in 1980, Dr. Weber contributed funds for the two Motor Pool vans to help start the pilot program, provided the lab and classroom space, and asked Dr. Olson to serve as the on-site coordinator. After twenty years, the Zoology Department has taken over most aspects of the course under the leadership of Bruce Menge.

### **Summer Short Courses**

In 1986 Dr. Weber and Dr. Olson began exploring the possibilities for offering short courses during the summer at the Center, as had been done in the very beginning years of the Center. In meeting with the faculty, a number of options were presented for the summer of 1987: Marine Fish Larvae, Wetland Science and Management, Mariculture of Molluscs, Aquacultural Engineering, Salmon Culture, Foundations of Marine Natural Resource Policy, Advances in Fish Disease Control and Aquatic Toxicology. These were offered in the summer of 1987, although not all were taught. The more practical courses were in greater demand and the following summer of 1988 the number of courses offered was dropped to four: Aquatic Toxicology, Salmonid Disease, Microencapsulation Techniques, and Fish Genetics. Salmonid Disease was the most successful, but it was decided that the demand would only support the workshop if offered every two years. The workshop has now been offered every other year since 1990. With the creation of the Master's of Science in Science Education emphasis in marine science, most of the summer courses have been designed for that program.

### **Masters of Science in Science Education**

After fifteen years of offering marine science workshops to Northwest science teachers, Marine Education Specialist Vicki Osis decided to expand the program to provide in-depth training in marine sciences. The earlier workshops had been successful in stimulating teachers to develop units or short courses in marine science for their students and by 1987 there were very few school districts in Oregon that were not offering marine science in their curriculum. In 1987 Osis met with Dr. Weber and Dr. Tom Evans, Head of Math and Science Education at OSU to propose courses that would lead to a master's degree in marine science. Both were supportive of the idea and the Master's in Science Education seemed to have the flexibility to offer the marine science emphasis she proposed.

In the summer of 1988 the first classes were offered to eight Oregon science teachers. The program offers marine science graduate courses at the Center. Thirty credits of graduate science courses and seventeen credits of required Science Education courses are provided in a four-summer rotating

series of courses. The course work consisted of existing course numbers, such as FW 597 Aquaculture, and special topics courses approved by the departments. The bulk of the courses are offered through the Fisheries and Wildlife Department, supplemented with courses from the College of Oceanic and Atmospheric Sciences.

The unique setting of the Center with its location near or adjacent to major marine habitat areas, and the fact that the teachers live on campus and take courses at a research facility has made the program attractive enough to draw international and out-of-state teachers to the Center. Since that first summer, the program has grown, with the help of extensive advertising. Ads in *The International Educator* tapped into a great demand by teachers at international schools. Each year at least one or two teachers from international schools have participated. All have stayed with the program and completed their degrees. In the summer of 2002, there are teachers from Uganda and Myanmar. In addition, teachers from ten different states have earned their degrees through the program. The small size of the classes (average ten students) is desirable for the field and lab work emphasized in the courses.

### Distance Education

In 1989 the Oregon legislature established a statewide public satellite network, to be called Oregon Ed-Net. In most counties, the original Ed-Net sites were located in high schools or community colleges, but because the Oregon Coast Community College had no space for a satellite dish and because Dr. Weber felt it was a valuable tool, he made the investments necessary to locate the Lincoln County broadcast site at the HMSC. There were two portions of the original Ed-Net: Net I, a one-way video, two-way audio high quality broadcast system, with only a few originating sites and many receive sites; and Net II, a two-way video, two-way audio system. The Net II was compressed video and therefore choppy and not suitable for much besides talking heads and still graphics, but it did allow more sites to originate programs and not just receive them.

Parker Henschman, HMSC physical plant manager, worked extensively with the Oregon Ed-Net technicians to set up the broadcast control room (converted from an office upstairs in the old library) and the satellite classroom (Ed 34) right below it. The down-link (receive) portion became operational in April 1991 and the broadcast (up-link) later in the fall. Fees for originating and receiving Ed-Net broadcasts were established on the same fees schedule as on the main OSU campus and these funds were used to support a part-time A/V technician and equipment needs.

From the beginning, state agencies were the most consistent users of the Ed-Net system, with the non-profit sector following. Under a new program by Oregon Health Sciences University, the second two years of the Bachelor of Nursing was offered at several rural sites around Oregon, including Newport. Students who had already received their Associates degree in nursing could take several classes a term via Net II at the Center and then do their practicum in the coastal community. Later, Oregon State University began a similar program for the Bachelors in Liberal Studies, although not all classes needed for this degree

could be taken by satellite. Weekend courses at the main campus were also necessary, but it was a viable option to the daily commute to the main campus.

Having this new distance learning equipment led to a special cooperative pilot project between the Oregon Department of Education and the HMSC. State Superintendent Norma Paulus and her staff worked with Dr. Weber to submit a proposal. *Earth and Sea Investigators*, as it came to be called, was funded to tap the riches of scientific research at the HMSC and OSU and demonstrate to school children around Oregon the scientific method in action. Dr. Kathleen Heide, formerly the public educator for the HMSC, was hired to lead this project. A number of researchers at the Center cooperated with this venture, were videotaped in the field doing their research, and appeared in a live interactive segment responding to questions called into them from Oregon schools.

Another pilot project initiated at the Center was a quarter term marine biology course taught via satellite in 1991. With \$50,000 from the Chancellor's Office, Vicki Osis, Sea Grant Marine Education Extension Specialist, prepared a syllabus for the class and hired Al Heide, a high school teacher from Springfield, to be the on-camera instructor. The grant covered his part-time salary and broadcast expenses. Because the HMSC lacked the capability of broadcasting on Net I, Heide conducted the class from the OSU broadcast studio to 85 students in 12 schools. Part of the class was a three-day field trip to the coast at Newport where they used the Center's labs and explored the tidepools and beaches.

The number of individuals using these distance education options remained small, usually less than ten per class per term, and after several years the OHSU nursing program was discontinued in Newport and the OSU classes dwindled until they are no longer being done by satellite at the Center.

The first-generation statewide interactive system suffered from the high cost of satellite time, the lack of sites that had the equipment, personnel and money to produce high-quality programs, and covering the high costs with small numbers of students. The equipment was upgraded to digital. The Oregon Ed-Net system did not renew the satellite contract for Net I and by 1999 the whole satellite component was dropped. The second-generation of the interactive system has gone to multiple technologies, the main one being videoconferencing over via IP and high speed ISDN lines. A PictureTel videoconferencing unit was purchased for the Center and subsequently upgraded. In the summer of 2001 the classroom studio had the cameras and control desk equipment upgraded at great expense.

### Research Fellowships

A number of donors have made a series of research fellowships available to students in residence at the HMSC. Mamie Markham, whose son John is a marine biologist and courtesy faculty with the OSU College of Oceanic and Atmospheric Sciences, began giving small donations in 1986. Over the years, her interest in and relationship with the Center grew, with ever-increasing annual donations for student research and library support. In 1991 a Scholarship and Awards Day symposium was started to bring donors and the students they supported together to learn about the students' research. In 1995 Mrs. Markham donated \$500,000 to establish the Mamie Markham Endowed HMSC Director's Chair. By using the language "endowed chair" the interest earnings of this



endowment are matched by the Oregon University System. However, the charter document for this fund specifies that "The director of the HMSC will use the endowment fund earnings to help OSU scientists associated with the Center initiate or continue research projects, and to invest in other projects, programs or equipment which will further develop the Center and its resource base such that scientific research programs are strengthened. The director will have the full authority to determine how and when the endowment fund earnings are to be appropriated to meet the purposes of the fund as identified by Mamie Markham and stated in this paragraph." In her honor, the Awards Day was renamed the Mamie Markham Research Symposium. In recent years the fund has enabled between seven and ten \$10,000 research awards to graduate students and their faculty advisors.

Other research awards are the Joan Crebbin Memorial Fellowship, the Walter G. Jones Fisheries Development Award, the Holt Marine Education Fund, the Reynolds Scholarship, the Anja Robinson Aquaculture Fellowship, the Wiancko Family Scholarships, and the Bill Wick Marine Fisheries Award. In addition, the Director has made up to \$250 available for graduate student travel to conferences to present a paper. There have been other awards in the past, but they have been one-time awards, or the funds were used up or, in the case of the Barbara Schawantes Award, were made regional instead of local.

### **Lavern Weber Visiting Scientist Fellowship**

In late 2001 friends and family of Lavern Weber established the Lavern Weber Visiting Scientist Fellowship in honor and recognition of Lavern's many years of dedication and service to the HMSC. The purpose of the fellowship is to attract and allow scientists, marine biologists and others involved in marine natural resources and environmental research in locations outside of Newport, Oregon, to spend time at the HMSC. The fellowship requires that upon reward the scientist must be resident at the HMSC for a minimum of three months. The intent is to bring other perspectives to the HMSC through the scientist's participation in courses or seminars and through research involvement.

Applicants for this fellowship must meet the following criteria:

- Commit to residence in the Newport area and conduct research at the HMSC for a minimum of three months
- Be scientists in a field of research that is being conducted at the Center
- Have a current appointment at another research facility and have an active research program
- Research must be related to marine science, marine resources and/or the environment

The amount of the award will be determined on an annual basis by the Lavern Weber Fellowship Committee, and will depend on the earnings available and the number of researchers to be invited during each academic year. A committee from the faculty permanently located at the HMSC will be identified to do the screening and selecting of the interested applicants.

### **Seminar Series and Distinguished Marine Scientist Symposium**

For a number of years there has been a regular weekly HMSC seminar series. The coordination for the series is rotated among the different agencies and departments at the Center by term. Usually the fall term is headed up by an COMES faculty member. The series in the fall term is designed to serve as FW 407/507 for one credit and speakers focus on fisheries-related topics. Other terms are more open and speakers usually reflect the interests of the group coordinating them.

Bori Olla of the National Marine Fisheries Service, Alaska Fisheries Science Center, Behavioral Ecology Group approached Dr. Weber in 2000 with the idea of an annual series of seminars and forums by leading marine scientists. This would be in addition to the regular HMSC seminar series, bringing in five to seven well-known, top caliber scientists a year from around the country. They would give a seminar and then participate in a discussion forum. Dr. Weber committed the original funding needed to bring in the speakers, but in 2001 the Cooperative Institute of Marine Resources Studies agreed to fund the series on a continuing basis. The Symposia stimulates discussion and the exchange of cutting-edge research and enables the guest speakers to become more aware of work and researchers at the Center.

## **The Library**

Over the past twelve years, the Guin Library has undergone both tremendous physical and technological changes. In 1988, the library was housed on the second floor of the Education Building, cramming 25,000 volumes including over 300 current journals into 7,000 square feet. The staff consisted of the librarian, Marilyn Guin, and one full-time library technician, Susan Gilmont. Cutting edge technology at this time was the CD-Rom reader and the facsimile machine. The library purchased the first fax machine at the HMSC in 1988, located it in the librarian's office and everyone used it. The library, partly for the convenience of the technology and partly for the space savings purchased the first copy of Science Citation Index on CD west of the Mississippi.

Space or the lack of it was a serious problem for the library in the late 1980s. With the EPA's plans to build its own building and improve the seawater system at the Center, enough Congressional support was raised to also construct a library building. The new building would be seven times larger than the old, a total of 21,000 square feet. It would accommodate a new telecommunications switch room for the fiber optics connection, be fully wired with voice/data networks, expand the stack space, provide plenty of reading and study space, and allow the library staff to work in better conditions. The EPA would provide the \$1.4 million for the building, but no funds for its furnishings or equipment. Consequently, Ms Guin was appointed as the half-time Associate Director for Administration of the Center. One of her first tasks was establish the Friends of the HMSC Library and spearhead a \$250,000 fundraising drive for the furnishing. To fill in for her library duties, Janet Webster was hired in 1989 as the .5FTE assistant librarian.

Groundbreaking for the new library was in April 1989 and construction progressed smoothly. In the midst of construction, everyone was saddened by Ms Guin's death in December 1989. Without her leadership, others picked up the fundraising and successfully raised the needed \$250,000. Of this \$200,000

was spent on new furnishings and equipment; the rest was the foundation for a endowment fund that reached \$150,000 in 2001. On June 1 1990, volunteers from every group at the HMSC pitched in to move the books and journals from the old library to the new. An act of Congress changed the name to the Marilyn Potts Guin Library and it was so dedicated on July 4, 1990. Her mother and sister represented the family at the dedication, which was attended by Senator Mark Hatfield, Captain Barry Fisher, OSU President John Byrne and many others.

As the library building was constructed with federal funds, the EPA technically owned it and the underlying property. The university was always responsible for maintaining, operating and insuring the facility. In 1992, the EPA relinquished the library building to Oregon State University. Once the library was officially state property, the covered walkway between it and the Education Building was built completing all construction.

Ms Webster officially succeeded Ms Guin the librarian in August of 1990 and has subsequently led the library into the next millennium. One of her tasks when initially hired was to bar code the library collection so all could be integrated into OSU's new online catalog, OASIS. The old manual card catalog was discontinued and set aside. With the ability to put library holdings on-line, all the gems that had been somewhat hidden became more evident and more accessible to all. The new building and the improved access to the collection increased demand for services both within the Center and without. By 1991 the Guin Library had gone from being a net borrowing library to a net lending library: lending more books and journals out than borrowed. The growing controversy over salmon and other natural resource issues also encouraged other individuals, not just scientific researchers, to make use of the extensive collection at Newport. A .5 FTE library technician position was moved from the main library to Newport in 1994 to help handle the workload.

The library continued to be a center of activity throughout the 1990s, and the librarian often took on responsibility for developing or overseeing new services. For example, library needed a regular courier service between Corvallis and Newport to replace the irregular shuttle provided by whomever was going to the main campus. So, Ms Webster has negotiated various iterations of a courier service. The most recent one makes the Guin Library a drop site for all library materials coming and going to other libraries in Lincoln and Tillamook Counties. Another example is the development of the HMSC web site. Ms Webster commissioned a graduate student to set up the first HMSC web site including the pages for the library. Other students have worked in the library to prepare various databases for use through the Web such as the Yaquina Bay Bibliography and the Seafood Wastewater Bibliography. The seawater data on salinity and temperature, archived since 1989, became available on the web and weather data collected for years by Clay Creech was also organized for access. In fact, the weather station at HMSC is housed within the library with the instrumentation on the roof.

A number of trends have affected the direction of the library's development in recent years. Budget cuts and the ever-increasing costs of scientific journals have spurred the use of information technology to counterbalance collection limitations. In a research library, journals are their lifeblood because that is the venue for new research findings. The OSU Libraries are adding electronic access to currently owned journals and limiting

print subscriptions, partly for space, partly for money and partly for improved access for all users at OSU. Electronic access means library users at HMSC have access to many more journals than are collected locally. Articles from those journals not available electronically can be requested from the Valley Library or elsewhere, scanned and sent via the Internet or by fax with rapid turnaround time. In 1999, OSU Libraries joined ORBIS, a consortium of academic libraries in the Pacific Northwest, thereby expanding borrowing opportunities for books. Even with the addition of electronic resources, the print collection remains important at the Guin Library. Yet, a decreasing budget forces the staff to look critically at all subscriptions. Over the decade of the 1990s, several budget cuts has focused the collection on marine fisheries, aquaculture and marine biology, paring out duplicate subscriptions in tangential fields such as microbiology, neurosciences, genetics, and pharmacy. This limits users ability to browse print journals; however, it has made the collection tighter, more comprehensive in selective areas. As the Guin Library serves researchers, students, marine educators, fishery and marine resource managers, and the environmentally active public, the staff must keep different voices in the collection as well as collect the core literature of science.

The trend towards digital publishing of the "gray literature" poses collection challenges. In general, "gray literature" is non-conventional, fugitive, poorly distributed, and sometimes, ephemeral. They may include, but are not limited to reports, theses, conference proceedings, technical specifications and standards, non-commercial translations, bibliographies, technical and commercial documentation, and official documents not published commercially. Ms Webster and her staff collect information pertinent to marine and estuarine issues of the northeast Pacific much of this is now published digitally. This means searching out agency reports in both print and digital formats, and then cataloging and making them accessible. Non-digital "gray literature" can also be difficult to identify, collect and then manage. An excellent example of this in the Guin Library is the massive collection of documents submitted to the National Marine Fisheries Service as Pacific salmon endangered and threatened species petitions.

A third major trend has been toward library user autonomy. Patrons are now able to do more themselves, searching on-line catalogs and requesting books and journal articles. Librarians are shifting from "Let me do that for you" to concentrating on helping people find what resources are out there, assisting them with evaluating the reliability of information, and helping them keep up with change. Consequently library staff has been offering more classes on how to use ORBIS or JSTOR as well as one-on-one "did you know you could find that using this technology?" Ms Webster provides class-specific instruction and works with the other faculty to develop students' use of the library.

Even with the growth of digital information, reliance on electronic resources and the empowerment of users, the Guin Library remains a vital physical place at HMSC providing needed services and housing a strong print collection. Electronic resources make the collection richer and improve users' ability to get the information they need. The physical space is conducive to group study, individual reflection as well as agency meetings and research seminars. The print collection continues to be enhanced with regular purchases as well as outstanding gifts such as the 1993 gift of the Cutress collection on sea



anonymous and 1990 gift of the Phinney phycology collection. <sup>g</sup>The Ms Webster and the library staff are committed to continuing to build the collection and provide excellent service in the years to come.

### **Associate of Applied Science Degree in Aquarium Technology and Marine Interpretation - Oregon Coast Community College**

The American Zoo and Aquarium Association (AZA) is the trade and accrediting organization for aquariums in the United States. The number of AZA member aquariums grew from 17 to 30 between 1989 and 1998. During that time the attendance at these facilities increased from 23 million to 36.6 million a year. An additional eleven non-AZA aquariums opened between 1992 and 1998. Over the past five years, the growth in the number of aquariums has increased even more dramatically. Ten new aquariums have opened at a combined construction cost of over \$1.3 billion. Twelve aquariums are in the process of remodeling and expanding for a total cost of \$532 million. The growth in the number and complexity of aquarium has not ended. Interest in the aquatic environment is high, and soon 80% of Americans will live within 50 miles of an ocean or Great Lakes shore.

In 2002 the Oregon Coast Community College (OCCC) received an National Science Foundation grant to develop a two-year program in Aquarium Technology and Marine Interpretation. Individuals trained in this program will be prepared for employment in aquatic animal husbandry, aquatic life support, and interpretive positions in aquariums, interpretive centers, and nature-based educational enterprises throughout the country. This has been a joint development project with OCCC, the HMSC, the Oregon Coast Aquarium and other local interpretation sites, and will complement the HMSC's offerings of upper division and graduate courses.

The growth in the number of aquariums and a similar growth in nature-based tourist attractions and interpretive centers has created a strong demand for individuals with the technical skills to operate the aquariums, collect and care for the animals, design and construct the changing exhibits, and present the scientific information to the public in an engaging, accurate, informal and informative manner. Currently there are no two-year or four-year undergraduate programs in the U.S. that train individuals to work in an aquarium setting.

Both Oregon State University and local employers will provide internship opportunities and training facilities for students. OCCC students and faculty will have access to the specialized marine library and laboratories at the HMSC. OSU has agreed to work toward articulation agreements that would facilitate student entry into OSU course programs and curricula. This is a continuation of the history of working together with the Community College, as the College has been using laboratory classroom facilities for their science classes and has even hired some HMSC people as instructors.

### **IV. Public Education/Outreach**

Since 1988, the HMSC public wing has undergone several major changes: transfer of administrative oversight from Extension Sea Grant to HMSC

administration and then back again, and renovation of the facility and exhibits around an entirely new theme. Older programs were discontinued or passed on to other agencies to make way for new ones.

### **Transfer of Control in 1988**

In 1988 expected cutbacks in federal Sea Grant and Extension funds put continuing outreach programs in jeopardy. In traditional Extension format, programs are expected to be created to meet a need and then either phased out when the need has been satisfied or passed on to a new entity or cooperating agency to maintain. The public wing had continued largely unchanged for over ten years, except for the development of Whale Watch. In June of that year O.E. Smith, the Director of Extension, asked Dr. Weber to become the on-site supervisor of public wing education programs and the bookstore, with the ESG program leader to be responsible for program content. Long-time public education specialist Don Giles was nearing retirement and was moved to a 1.0 FTE position in coastal tourism. The cutback turned out to be less than half of what was expected, and the public education specialist position was saved.

In 1991, the coastal tourism extension specialist position was cut when Don Giles retired. In addition, Sea Grant funding for the public education specialist dropped from 1.0 FTE to .25 FTE and the position was changed from a specialist to an educator. In 1993 the current marine educator, Bill Hanshumaker, was hired to work with two support staff members, Craig Toll and Terri Nogler, who were totally supported by Extension. Seventy-five percent of Bill's FTE comes from the HMSC administration funds. The other staff to run the aquaria in the public wing are two part-time graduate students funded from HMSC administration funds as teaching assistants.

### **Whale Watch Program**

OSU Extension Sea Grant closely studied the Whale Watch and Seatauqua programs and was forced to conclude that both programs were maintenance programs and would need to be passed on to others. Whale Watch volunteers had been stationed at numerous State Parks along the Oregon coast and several Park Rangers had taken the training. It was a natural fit for the State Parks to take over the program in several steps, beginning in 1992. Mike Rivers at the Waldport State Park office was a major player during the transition as was Bev Lund of ESG who had served as the unofficial registrar and coordinator for the program under Don Giles for many years. Dr. Bruce Mate, marine mammalogist, continued to do the one-day training, but volunteer recruitment and logistics were taken over by the State Parks completely in November 1993.

### **Seatauqua**

Seatauqua, which had a history going back to 1973, was a very successful informal public education program that had had a significant impact on coastal tourism and public education. It consisted of one- and two-day workshops, van trips, dock walks and films and had originally been offered only in the summer. In recent years, however, other agencies, such as the Lincoln County Historical

Society, had cooperated with the HMSC in offering some of the classes and trips. Originally it had been hoped that Seatauqua could be run cooperatively by all the groups involved, with minimal ESG support. No other group was able to pick up the program and OSU was also reluctant to lose such a popular and well-received program.

A small grant was made available by ESG to fund a graduate student (Christy Sallee) to work with the various participants and try to get Seatauqua on a self-supporting basis. Her work led to a thesis on how best to handle Seatauqua, but funding was still required to pay for the coordinator of the program. A shift to year-round Seatauqua offerings was tried, but this effort has not succeeded in making it completely self-supporting. Although OSU has decided to keep control of the Seatauqua name, the program is currently not operating.

### **Renovation of Public Wing**

Beginning in 1965, the popularity of the HMSC' public wing grew steadily. By 1988 it had peaked at 425,000 visitors per year, with the majority of them coming in the summer months. Having 3,000 visitors a day in the 10,000 square feet of public space made the visitor's experience less than optimum. The exhibits, many of them still the original ones, were looking threadbare and dated. The HMSC administration began looking for ways to either reduce the number of visitors to a manageable level or to expand and renew the facility.

Complicating this scenario was the 1992 Peat-Marwick Report, commissioned by OSU President John Byrne, to take a comprehensive look at OSU and determine what areas could be most logical to cut in a time of budget crisis. One of the Report's recommendations was that the HMSC should be closed or outsourced as non-essential to the OSU mission.

Dr. Weber had been working with other community leaders since the early 1980s to develop a sister aquarium to be located adjacent to the HMSC. This new facility, to be called the Oregon Coast Aquarium, would be a not-for-profit stand-alone entity in the traditional line of aquariums, although on the cutting edge of design. When sufficient funding had been raised and the Oregon Coast Aquarium was under construction, it would only be a matter of time until the pressure on the public wing would be lessened enough to allow a major renovation of the HMSC facility.

Working in conjunction with Senator Hatfield's office, the HMSC applied for a planning grant to NASA. NASA was looking for public outreach and education opportunities to demonstrate how remote sensing is used to benefit everyone, not just scientists and astronauts. The \$500,000 planning grant was received in 1993 and a request for proposal was prepared to find a design firm to assist the Center. Aldrich/Pears of Vancouver, British Columbia, and gLAS of Eugene won the bid. That year a comprehensive approach was mapped out to determine, first and foremost, how the new public wing could best bring out to the public the types of research ongoing at OSU and the HMSC and the benefits accruing to the public from the research. Meetings were held with resident scientists from the Center and from the main campus for input.

Dr. Jan Auyong was hired as the project director to oversee the design process. An executive team was created to pull all the different ideas and

approaches to science together: Members were Lavern Weber, George Mpitsos, Bill Hanshumaker, Janet Webster, Jerry Watson, Jim Lewis and Jan Auyong. After exhaustive consultation and individual interviews with scientists as well as the public meetings, a theme was decided upon: *Searching for Patterns in a Complex World*. Investigators look for patterns on four scales: global, bird's eye, eye-level and microscopic. The new visitor center would be organized around this theme with the four scales being the four major core exhibits around which the different investigations ongoing at OSU would be presented. Introducing the theme would be the pattern garden with the favorite octopus tank and touch pool. The auditorium would remain the same except for updated audiovisual technology. The bookstore would be enlarged and remodeled and a personal action space would be created to allow visitors to take the next step in their own explorations using computers set to particular agency web sites.

One of the major issues to be resolved was whether the new public wing would charge admission for the first time in its history. As part of the planning grant, Harrison Price did a feasibility study and suggested that charging admission would necessitate a number of additional staff (cashiers, marketing staff, etc.) They also expressed concern that the amount of space in the new public wing would make it very difficult to run the numbers of people through to recover expenses. Community sentiment was also against charging, although they were sympathetic to the need to support the Center.

A Strategic Transition Team was created to look at this issue as well as to prepare a business plan for the operation of the new public wing. Headed by OSU business professor Thomas Dowling, the team consisted of Gil Sylvia, George Mpitsos, Bill Hanshumaker, Jan Auyong, Janet Webster, Lavern Weber and Luke McIlvenny. An OSU marketing class prepared a suggested marketing plan and another marketing intern, Sarah Morse, prepared plans for the grand opening. The materials prepared by the group were used in a presentation to OSU administration and convinced them that, at least in the short run, it would be better to keep the visitor center free. Donations were to be actively encouraged at a suggested rate and a two-year probation period was granted. If the donations were sufficient to operate the public wing, then it would remain free with suggested donations. The value of using the Center as a way to market research in general and OSU in particular was another major consideration in this decision. Equal access was an important consideration as well.

With the completed design in hand, the Center applied for a construction grant of \$4.5 million from the Federal Housing and Urban Development Administration. (It is interesting to note that the original center was also built with area redevelopment funds to combat the economic recession along the coast in the 1960s.) The funds were received in 1995 and the long process of going out to bid was begun. Complicating the process was the unique nature of this project within the university and state system. Delays due to contract negotiations prevented actual construction beginning until January 1996 when Dale Ramsey Construction tore down the old public wing (except for the auditorium).

In the interim between actual closing of the public wing on May 31, 1995, to demolition on January 10, 1996, all of the old exhibits were removed and loaned out to different interpretive centers around Oregon. A few of the oldest flat exhibits were scraped, but most of the others have gone on to new homes.



The marine organisms were relocated to the open bay section of the west wing and the octopus released back to the wild. The bookstore and related offices from the old Extension section of the public wing moved to offices in the west wing as well. The bookstore staff was laid off. Most volunteers, no longer needed to interact with the public, moved over to the Oregon Coast Aquarium volunteer corps or took a well-deserved break. The interpretive staff continued with the hands-on laboratories for school groups because these had always been run out of the education building. The Seatauqua program continued, except for the auditorium talks. The hardest part was waiting for something to happen as the front wing stood closed and empty, but undisturbed by construction for eight months.

The entire flat-roofed section of the public wing was completely demolished and reconstruction began from the ground up. New plumbing and wiring had to be installed, as the old tanks had been set in concrete around the outside walls of the auditorium. The aquarium seawater system had been located in a small room behind one bank of tanks and this was completely removed. The west wing of the main building lost several offices as the new electrical and mechanical rooms were created in those areas.

The long delay in the bid process ate away at the money available for completing all the exhibits and facilities as designed. Several of the items had to be put on an optional list and efforts were made to raise additional funds through donations. This effort was handicapped by the loss of the HMSC Director of Development in 1995. The OSU Development Office stepped in to help create a casebook for presentation to major donors. It was hoped that an endowment could be created which would allow for the modification and creation of new exhibits as the research changes with time.

In mid 1996, Jay Ramussen was hired as Associate Director and Extension Sea Grant Program Leader. At that time the program office was relocated from the main campus to HMSC. This was a strong show of support for the coastal Extension agents, who deliver advice, assistance and information/education to coastal people, businesses and communities, as agents are located in the coastal communities (specialists are on the main campus). Encouraged by this action, Dr. Weber increased his efforts to encourage Sea Grant to resume responsibility for the Public Wing and use the new facility as a campus-wide showcase.

Originally the new public wing was scheduled to be opened in the summer of 1996, but all the contract and construction delays led to the grand opening being held May 17, 1997. Once the renovation was complete and the Center up and running once again, negotiations began in earnest to hammer out a memorandum of understanding between the HMSC and Sea Grant. Signed in October of 1997, the MOU's preamble stated that "The Public Wing will continue to provide accurate and quality programs for public education, research opportunities on educational delivery, exhibitry and educational programs that tap the research and outreach resources of the HMSC and the University. The HMSC and OSG will ensure that the Wing has the financial resources to allow it to achieve its full potential. It is mutually agreed that OSG will consult with the HMSC in the operation of the Public Wing but full authority on management and operation of the Wing resides with OSG. Every effort will be made by both parties to ensure that recognition and credit for accomplishments of the Public Wing reference both OSG and the HMSC."

After the Center was reopened in 1997, Gil Sylvia and his graduate student Laura Anderson did a detailed study of what kinds of signage, requested donation amount, and staffing had on the giving level. Results from this study were used to set up the most rewarding procedures.

In November 1997 OSG assumed programmatic responsibilities for the Public Wing, including marketing, operations and staffing; would hire a Public Wing coordinator; provide 10% of gross donation box receipts to the HMSC (bookstore receipts would be dedicated to the operation of the bookstore and Public Wing educational programs); and explore additional options for development, construction and operation of exhibitry and attractions. The HMSC agreed to continue to provide access and use of all existing indoor and outdoor facilities associated directly and indirectly with the Public Wing; continue to provide at no cost to OSG quality seawater and utilities, janitorial services, facilities maintenance and basic operational needs (e.g. parking); provide .75 FTE for the marine educator and two .5 FTE GTA serving as aquarists; business office support; office space and aquaria; and use of boat and other collection equipment to maintain the exhibits.

With the reopening of the Visitor Center, the existing Sea Grant staff, headed by Bill Hanshumaker, had to rebuild the Center's programming, work the bugs and leaks out of the new exhibits, publicize the Center's new theme and direction; and rebuild the crucial volunteer corps. Long-term planning looked three years into the future to coordinate exhibit development and other educational programming in order to coordinate with local events and scientific expeditions. For example, the Visitor Center, working in concert with NOAA's Vents Program "New Millennium Observatory" provided visitors with the opportunity to connect with scientists while at sea. Through auditorium presentations, the Web and email, interested individuals experienced the excitement of scientific discovery in a near-real time interaction.

Much effort was put into the admission-by-donation system, including extensive testing of signage, front desk staffing and suggested donation prices by graduate student Laura Anderson. This was one of the first examples of how the new Center could serve as a laboratory for testing the effectiveness of public education materials and techniques. Another example was the statistical analysis done to determine preference for different exhibits by various demographic groups.

Another effort that bore fruit was Vicki Osis' drive to get the HMSC recognized as a Coastal Ecosystem Learning Center through Coastal America. Coastal America was established in 1992 to integrate federal capabilities and resources with state, local, and non-governmental efforts to address collaboratively, environmental problems along our nation's coasts. The partnership includes the Departments of Agriculture, Air Force, Army, Commerce, Defense, Energy, Housing and Urban Development, Interior, Navy, Transportation; the Environmental Protection Agency; and the Executive Office of the President. Through Coastal America, these federal agencies have formed a series of partnerships with state and local governments, the private sector, public interest groups, and community organizations to restore and protect coastal ecosystems.

On May 8, 1998, OSU President Risser signed the Memorandum of Understanding with Coastal America in a dedication ceremony at the Center.

The MOU provides a framework for cooperation between the parties to share coastal ecosystem information and produce and disseminate mutually acceptable, appropriate learning materials and resources. The HMSC is now one of eleven such centers. One outcome of this partnership has been Jon Luke's efforts to create a wetland mitigation project at the Center, in cooperation with the U.S. Army Corps of Engineers.

## V. Physical Plant and Residency Changes

In the decade since the original HMSC history was written, there have been many physical changes at the Center, as well as changes in groups, faculty and agencies resident here. Instead of simply serving as a "landlord" for processing tenants, Dr. Weber has worked to create links within the Center between the diversified groups. He has striven to create a sense of being HMSC and not simply EPA or NMFS or OSU. Cooperation in graduate education, seawater utilization, library expansion, Center-wide potlucks and projects, and sharing research with the public in the Visitor Center were all part of his community-building efforts. Joining the constituencies of the various entities at the HMSC multiplies the voice and impact of the entire Center. It requires conscious and continuous attention to this to counteract the increasing centrifugal force as the number of buildings and agencies expand at the site.

Several new buildings have been built: EPA (40,000 square feet) and the 800,000 gallon seawater storage tank in 1990, the Guin Library (21,000 square feet) in 1990, the U.S. Fish and Wildlife Service Building (8,200 square feet) in 1995, two modular housing units in 1996, the second Ship Operations building (5,184 square feet and dock staging building (1,728 square feet), the dock expanded from 120 feet x 24 feet to 320 feet x 60 feet in 1997, the complete renovation of the Visitor Center in 1997, and the small boat storage building in 1999. (See complete list of building changes in Appendix III.)

There has been change in the composition of the cooperating agencies at the Center. The Bureau of Land Manager's Yaquina Head Outstanding Natural Area supervisor was located at the HMSC in 1988 pending construction of the new facilities there. They were able to move into the beautiful new complex north of town in 1993. The National Coastal Research Institute (NCRI) was established at the Center in 1985 and relocated to Portland in 1992. The College of Forestry's Coastal Oregon Productivity Enhancement (COPE) Program ended its ten-year life span in 1999. The Area Health Educational Consortium moved into the main building in 1996 and then moved out to the Corvallis campus in 1999.

NOAA/NMFS established a new Central Oregon Coast office at the Center for the fish and wildlife agent responsible for enforcing federal fish and wildlife laws from Lincoln City to Florence. Larry Hilton opened the office in the just completed RSF building in November 1981. He remained at the Center until 1991, when his responsibilities were split between a traveling NMFS agent and the Oregon State Police under Officer Jim Hatch and later Officer Todd Thompson. In July of 1997, this office was moved to the new OSP office in the north of Newport.

The U.S. Fish and Wildlife Coastal Refuge Office has become a separate entity and increased their personnel from one and a seasonal to six. The largest

increase, however, has been with the addition of the National Marine Fisheries Service Northwest Science Center's three divisions to the Center, beginning in 1995. The personnel have now grown from the original four to nearly 50. This has precipitated a cascade of space assignment changes, including the scheduled construction of another NOAA office building adjacent to the NAL and the seawater storage tank. In September of 2001 construction began on the new Barry Fisher NOAA building, situated east the NAL building and north of the EPA building. The two open seawater basins were demolished to make space for the new building.

After a number of years of work in assessing the growing needs of the EPA division in Newport, a decision was made to build a replacement laboratory facility in Newport. The EPA had been using rooms and labs in the west wing of the main building since the Center opened in 1965 (Public Health Service's Water Quality Group until 1971) and the program was outgrowing the space. Supplemental appropriations bills in fiscal years 1984 and 1985 provided \$665,000 to design and plan the new laboratory. The lengthy process of taking it from idea to actual occupancy began.

The federal government required that the new 40,000 square foot building with its seawater improvements be built on land owned by the government. This necessitated negotiations with the Port of Newport because the HMSC is located on Port land under a 99-year lease. The increased seawater demands necessitated the construction of an 800,000-gallon seawater storage tank and improvements in the piping and pumping system. Because the seawater system is crucial to all the various entities at the Center, EPA agreed to have OSU operate and maintain the seawater system for the benefit of all. Another common need for researchers at the Center was an enlarged and updated library, which was designed by Moreland Unruh of Eugene. Again, OSU would operate and maintain the library at its own expense. Any interior furnishings and shelving would have to come out of OSU funds.

The buildings were completed by July 1990 by Robinson Construction of Tigard. While construction was underway, the HMSC had a small fund raising drive to furnish the library. Mrs. Harriet Winton and Barry and Carol Fisher were major donors to this effort. The furnishings were selected by Marilyn Guin, who had been intimately involved with the whole library design project. Unfortunately, she did not live to see the library finished. At the grand opening of the new library on July 4, 1990, a plaque was uncovered by her mother and sister, naming the library The Marilyn Guin Library in her honor. Marilyn had been the first full-time librarian at the Center, beginning in 1976, and it was under her forward-looking direction that the library became one of the most technologically advanced facilities in any marine laboratory.

On November 20, 1992, in consideration of the premises and allowing EPA full use and enjoyment of the land donated without any cost or expense, EPA quit-deeded the Guin Library to OSU. It is now officially part of the OSU campus and a branch of the Valley Library

## **VI. University Research**

There is a constant interplay between the physical facility and the needs of different agencies and programs that use the Center. In these next two sections



the different groups and agencies in residence during the 1988-2001 period are reviewed. Some had major impact on the types of research facilities and brought about physical modifications and others had little impact on the facilities but drew in new areas of research and collaborative ties. Others, of course, did both. The Director had to build on the common needs of this diverse group, while mediating between different demands on the facilities. He went beyond simply providing a facility, however, reaching out to new constituencies and connections with broader groups.

### **Coastal Oregon Productivity Enhancement Program (COPE)**

Initiated in 1986, the Coastal Oregon Productivity Enhancement Program was a cooperative effort among the College of Forestry at OSU, the USDA Forest Service Pacific Northwest Research Station, the USGS Biological Resources Division and the Bureau of Land Management, other federal and state agencies, forest industry, county and city governments, the Clatsop Small Woodlands Association and the Confederated Tribes of the Grande Ronde. The intent of the program was to provide resource managers and the public with information on the management of fish, timber, water, wildlife and other resources of the Oregon Coast Range. The Adaptive COPE researchers were stationed at the HMSC due to the proximity to the Coast Range.

Some of the research areas were: the application of commercial thinning to increase structural diversity in young Douglas-fir stands; fertilization of thinned and pruned Douglas-fir stands; the influence of commercial thinning on stand structure and wildlife habitat in managed forests; habitat relationships and riparian zone associations of bats in managed forests; establishment and growth of conifers under existing riparian vegetation; the effect of woody debris piece size and orientation on fish habitat; release of conifers in alder-dominated riparian zones; integrated response of multiple forest resources to active management in riparian zones; and habitat selection by cavity-nesting birds in young thinned and unthinned Douglas-fir forests of western Oregon..

In addition to research, the popularity of continuing education workshops and field tours attested to the usefulness of the information to natural resource managers on topics such as riparian area ecology and management; stream habitat; long rotation and uneven-aged management approaches; and thinning in westside forests.

At its peak time, COPE had approximately twelve researchers stationed at the Center. As the ten-year funding for this project came to an end, different researchers were pulled to the main campus and the program officially closed out in January 1999 with a major symposium in Corvallis.

### **Coastal Oregon Marine Experiment Station (COMES)**

In 1985, at a community meeting in Newport attended by OSU Vice-Provost George Keller and HMSC Director Lavern Weber, there was discussion about coastal research needs and how they might best be addressed. One idea that surfaced was a marine experiment station, patterned after the agricultural experiment stations throughout the state. State Representative John Brenneman picked up the idea and, after consultation with industry, the community and the

University, prepared a Senate bill to establish a marine experiment station. In an August 5, 1985, letter to Dr. Weber, Senator Brenneeman said that his "goals were to increase the economic utilization of the state's marine resources through applied research; promote scientific investigations of our coastal resources; and work for the cooperation of federal, state, local government and private marine resource research and development programs." It took several tries and four years before the Coastal Oregon Marine Experiment Station (COMES) became reality. Effective January 1, 1989, the first marine experiment station was established by the Oregon Legislature.

When asked why it took so long for the idea of a marine experiment station to germinate, Dr. Weber said the various players—the fishing industry, state government, and the University—needed time to sort out their goals. OSU had not neglected fisheries and marine research, but efforts were scattered among departments and colleges on campus. The new branch station brought these research activities together with solid hard dollars. As a result, Weber expected the research to be better coordinated and more responsive to problems facing the state and industry. Having the branch station researchers physically housed on the coast would be a key advantage, and would enhance cooperation and coordination between OSU and the seafood industry (Interview with Tom Gentle, June 1990).

COMES initially had six faculty positions divided between Newport and Astoria: two in seafood processing (Crawford and Lampila), one in seafood marketing (Sylvia), one in marine fisheries (Sampson), one in fish genetics, and one in shellfish nutrition (Langdon), in addition to funds for a half-time superintendent. Dr. Weber was asked to fill this half-time superintendent position in addition to his responsibilities as director of the HMSC..

Even before the COMES bill was passed, the fishing industry, spearheaded by Barry Fisher and Terry Thompson, had been lobbying the University for some time to increase research into marine fisheries, both management and marketing issues. American fishermen had worked out a joint whiting (Pacific hake) fisheries with Russian floating processing ships being supplied by American fishing vessels. Whiting was abundant and easy to harvest, but the market for a bony fish that had soft mushy flesh was negligible. The fishermen wanted to find a way to make this abundant resource profitable. A position was created for a seafood economist with expertise in marketing, even before the COMES bill was passed, and Gilbert Sylvia was hired in 1988 to fill that position. He plunged immediately into a international search for whiting and other fish product markets, using surveys, taste tests and visits to surimi manufacturers.

The seafood economist/marketing position is a reflection of the increasing move toward value-added productions, niche marketing and custom-designed foods. Instead of selling whole fish, it would be much more beneficial to cut them into fillets, vacuum-pack them, or go even further and create complete fish entrees. Why sell a whole fish for 32¢ a pound when you could process it and sell the prepared components for \$3.20 a package? With the burgeoning food processing industry, one could even take former "waste products" and turn them into high-value commodities: turning whiting into surimi was far more valuable than turning it into fish meal. With fewer fish to be harvested, every bit that could be used would make it go much farther.

While his work was progressing, the Astoria Seafood Laboratory was searching for three new researchers to deal with the processing problems of whiting and other value-added products. Michael Morrissey was hired in 1990 to move into the Director position at the Seafood Lab with the imminent retirement of David Crawford. His position would be responsible for administration of the Seafood Lab as well as research. The other two positions were in seafood processing, post-catch and post-process biochemistry and microbiology. In 1991 Haejung An was brought on board, followed in 1992 by Jae Park, who had experience in the surimi industry. The team approach was to prove very valuable in tackling the different facets of the whiting problem. They were able to identify the enzyme that was breaking down the flesh into a mushy consistency and developed techniques to minimize its impact, while at the same time producing a high quality surimi gel. Refinements were developed to reduce the amount of protein products lost in the processing water and increase the yield. Additional work was done in finding uses for processing by-products, including Asian fish sauce. (For a full history of the Astoria Seafood Lab, see *Astoria Seafoods Laboratory: The First 60 Years 1938-1998*.)

At the same time the Astoria Seafood Lab was getting a new lease on life and tackling the whiting industry, the Newport branch of COMES was being organized and expanded. Chris Langdon had been hired in 1985 to replace the retiring Willie Breese as the OSU molluscan aquaculture specialist. His position was transferred to COMES, as was Bruce Mate, the marine mammalogist, and Bob Olson, fish disease. The fisheries population dynamics position, left vacant with the departure of Ellen Pikitch in 198X, was filled by David Sampson in 1990. This position continued to be .5 FTE OSU and .5 FTE ODFW. Dick Tubb, head of Fisheries and Wildlife, gave support to the fledgling COMES by transferring F&W's share of this salary money to COMES, while F&W remained their academic home. Paul Reno, fish disease microbiologist, was also hired in 1990 to join Bob Olson, returning the fish disease unit to two principle investigators.

The aquaculture program under Langdon focused on nutrition and genetics. To develop cheap and reliable artificial diets for oysters and clams, he evaluated techniques for the encapsulation and delivery of water-soluble nutrients for fish and shellfish. He also worked on the use of red macroalgae as a food for red abalone. This particular project has developed well and the microalgae is now being used in abalone mariculture farms in Hawaii. Other graduate students have evaluated spray-dried, heterotrophically-cultured algae as a complete replacement or supplement for living algae in diets for Manila clams and microparticulate feeds for marine fish larvae.

The second focus has been on improving the performance and quality of oysters and other shellfish through genetic manipulation and selection procedures. In 1995 the Molluscan Broodstock Program (MBP) was funded through a USDA grant. The program involves researchers from several different institutions in the U.S and the West coast oyster industry. This required construction of new culture systems in 1995 for simultaneously rearing 50 separate families of oysters, including a 24' by 72' greenhouse for growing up to 12,000 gallons of algae as food for spat production. By 2000 about 400 families of Pacific oysters had been produced and planted in commercial test sites along the West Coast, from Prince William Sound, Alaska, to Tomales Bay, California. The performance of the second MBP generation, compared to that of offspring from

non-selected oysters, indicates that oyster yield is a strongly heritable trait and that MBP's approach should lead to significant improvements through genetic selection.

Additional aquaculture work has been done by Anja Robinson on developing a pure Kumamoto oyster broodstock, helping restore depleted populations of the native oyster (*Ostrea lurida*) in Oregon estuaries, and evaluating the potential of Alsea Bay for shellfish culture. Another graduate student is working studying the feeding physiology of mud shrimp. Mud shrimp are very abundant in Oregon's estuaries and may have a major impact of phytoplankton concentrations due to their suspension-feeding activities. Their burrowing activities are also responsible for huge losses of shellfish habitat in Oregon's estuaries as mud shrimp soften the substrate, burying oysters and clams.

Over time the COMES fish disease research has focused on a number of the same diseases, but with a widening and deepening understanding of factors that lead to outbreaks. A prime example is the discovery of a new genus and species of microsporidian parasite, a study that began with a single diseased Dungeness crab brought in about 1987. Investigators Robert Olson and Paul Reno described the new parasite (*Nadelspora canceri*), identified its modes of transmission, life cycle, course of infection and prevalence in different estuaries. All of this information is necessary to determine the seriousness of the situation for human and shellfish health and how best to deal with it.

Other diseases and parasites that have been studied in great depth are infectious pancreatic necrosis virus, bacterial kidney disease, salmonid rickettsial disease, infectious hematopoietic virus, hemorrhagic septicemia virus, disseminated neoplasia of bivalves, *Dermocystidium* (a fungal pathogen), and a number of fish pathogenic trematodes. They have investigated virulence, the effects of the pathogens on fish upon transfer to seawater, transmission, minimum densities to initiate disease, and development of monoclonal antibodies to detect the presence of a particular disease.

Recently work has begun on computer modeling to determine the pattern of pathogen distribution in wild and cultured salmonids in the western United States, specifically whirling disease. Data is being analyzed to determine whether the presence of pathogens in hatchery fish is correlated with development of disease in wild fish in areas where cultured and wild fish coexist and where infected stocks may have been planted in waters where pathogens were not present. This could lead to risk assessment models to help determine when and where to release hatchery fish.

In conjunction with the Astoria Seafood Laboratory, work has been done to remove human shellfish poisoning (*Vibrio parahaemolyticus*) from oysters by means of high hydrostatic pressure. This appears to be a very promising mechanism for increasing the safety of the food supply.

Although the Sea Grant-sponsored Fish Diagnostic Service is no longer officially in operation (1973-1993), which identified pathogens and certified the health of fish stocks for aquaculture operators, researchers still perform diagnostic work for public aquaria, such as the Oregon Coast Aquarium and the Portland Zoo.

Fish population dynamics and fisheries management strategies have been a research priority for many years at the HMSC, dating back long before the



creation of COMES. Al Tyler, Dave Bernard and Ellen Pikitch (1983-1987) filled the OSU-ODFW jointly-funded position before COMES was established. Pikitch worked on the role of gear selectivity as a management tool, flatfish reproduction studies, stock assessment methodologies, such as the effectiveness of single species management in a mixed-species fishery, and the enhancement of Oregon shrimp and groundfish yield estimates. She also investigated building sociological and economic factors into a model to account for fishing activities that might be detrimental to fish populations. This position requires a good working relationship with fishermen and Capt. Barry Fisher gave her a vote of confidence by contributing \$10,000 toward her research.

After Pikitch left for a position with the University of Washington, the population dynamics position remained open until filled by David Sampson in 1990, due to priority staffing within the College of Agricultural Sciences. The OSU Department of Fisheries & Wildlife, under the leadership of Dr. Richard Tubb, transferred their .1 FTE for this position to COMES as a gesture of support.

When Sampson came on board in August 1990, he had two foci for his research: stock assessment and fisheries management issues, and fishermen's behavior, particularly fishing strategies and the choice of fishing locations. He began the first of a number of stock assessments for groundfish, eventually including English sole, canary rockfish, petrale sole and Dover sole. Sampson has been an active member of the Scientific and Statistical Committee of the Pacific Fishery Management Council, recently serving on a STAR panel review for the widow rockfish and lingcod stock assessments.

Another major research project was the analysis of trawl logbook data for California, Oregon and Washington, to produce quantitative measures of fishing strategy. Additional research topics by Sampson's graduate students included oceanographic influences on survival of Columbia River salmon, rockfish food habits and feeding ecology, theoretical basis for marine fish refuges as a fishery management device, risk aversion by Oregon trawl fishermen, a multi-species model for fish communities off the Pacific coast, and the dynamics of anchovy and sardine populations.

Bruce Mate, Extension Marine Mammal Specialist, has been at the Center since 1973, first as a faculty member of the College of Oceanic and Atmospheric Sciences and since 1990, as a faculty member of the Department of Fisheries and Wildlife, joining COMES the same year. With his .25 FTE in Extension, Mate interacts a great deal with the public and has been the instructor for the Whale Watch training since it began. His appointment is 50% extension and 50% research. Mate's key interest is in the tracking of many species of whales by satellite-monitored radio tags. Public interest in his research has been highlighted by the appearance of his research on the Discovery Channel and National Geographic specials.

When the Marine Mammal Program Endowment was voted as a university-wide priority in 1990, Mate was actively involved in fund-raising through whale watching trips to Baja. By 2001 the amount raised for the Endowment was over \$5 million (original goal of \$7 million). The Director of this Program carried the title "Marine Mammal Professor" and was to serve in terms of five years, with re-appointment a possibility. Dr. Mate was selected as Director and has continued to serve in that position since 1990. Foundation-

sponsored boat trips to whale habitats such as Scammons' Lagoon in Baja California have been a mainstay of the fundraising efforts.

The objectives of the Program are:

- *Research:* To understand the life cycle and identify habitats of marine mammals and why certain aspects of their physiology, behavior and habitats are important to their existence. To determine how human activities in the area of the habitats can be made compatible with the mammals' use of the areas.
- *Public Education:* To carry out the University's extension and extended education missions and off-campus education programs that focus on marine mammals and related management/environmental issues. To provide displays, educational programs, and information about marine mammals to the public, agencies and affected commercial concerns.
- *Applied Technology:* To develop tools to measure marine mammals' movements, behaviors, physiology, variables in their environment and life history (migration routes, daily activities, feeding habits, etc.)
- *Graduate Education:* To provide funds for graduate students, interns and support volunteers with stipends, tuition, field experiences and computer analysis of raw data.

In the past ten years Mate has tagged blue whales off southern California, gray whales in Baja California, humpback whales off the coast of Hawaii and Alaska, right whales in the Gulf of Fundy, fin whales in the Sea of Cortez and bowhead whales off the coast of Alaska. He and his staff have made some exciting discoveries about the migratory pathways, critical habitats, and behaviors of endangered great whales. In 2001 one of the tags placed on a blue whale transmitted for ten months, a record for any tagged whale. Part of his research has enabled Dr. Mate's team to send near real time locations to the Early Warning System on the East Coast, which alerts shipping traffic to right whales in the shipping lanes. (Boat collisions account for nearly half of all injuries and deaths of this most endangered of all whales.)

His graduate students have worked on determining the seasonal occurrence of blue whales throughout the Pacific Basin using acoustic information, how oceanography affects the distribution and abundance of marine mammals in the Eastern Tropical Pacific, right whales dive depths and prey associations, sea turtles in the Eastern Tropical Pacific, dive habits of Arctic bowhead whales, and dive habits of North Pacific blue whales.

From January 1993 to early 2002 Steven Berkeley was a member of the research and graduate faculty in the Department of Fisheries and Wildlife. His position involved development of research programs from extramural funding sources and supervising graduate students. He completed two studies evaluating the feasibility of gear modifications to reduce the bycatch of billfish, undersize swordfish, and bluefin tuna in longline fisheries using differences in feeding patterns and dynamics between target and bycatch species. He is currently conducting research projects on several diverse fisheries issues including: a study of the effects of fishing-induced age truncation on recruitment

and reproductive potential in black rockfish, a very important recreational species in the Pacific Northwest; a pre-recruit survey of West Coast sablefish that will predict incoming year class size and improve the accuracy of stock assessments; a retrospective study of growth and recruitment patterns in sablefish relative to climate change and oceanographic variables; the use of gear modifications to reduce the bycatch mortality in pelagic longline fisheries; and a study of the effects of maternal age on offspring growth and survival in black rockfish.

In 2000 Susan Hanna, with the Department of Agricultural and Resource Economics, joined the COMES faculty. Her area of expertise is marine fisheries management and policy. She has been concentrating on developing incentives for improving the performance of fishery management, understanding economic aspects of institutional design for fisheries, clarifying the economic history of fisheries, and integrating economics and biology in performance indicators for fishery management.

Also that year Yi-Cheng Su was hired to fill the vacancy left by Haejung An at the Astoria Seafood Lab. Dr. Su will focus on seafood protein biochemistry and seafood safety. A search is underway for a seafood microbiologist as well.

### **Cooperative Institute for Marine Resources Studies (CIMRS)**

In 1982 the National Oceanic and Atmospheric Administration, National Marine Fisheries Service, and Oregon State University officially signed the memorandum of agreement establishing the Cooperative Institute for Marine Resource Studies (CIMRS). The purpose of the Institute was to foster collaborative research among NOAA, NMFS, and OSU in aquaculture, fisheries, oceanography, and other marine-related fields. As part of this agreement, NMFS was responsible for assigning personnel to CIMRS at the Marine Science Center where appropriate and possible. The first small steps were taken in the ensuing years and have led to the largest contingent of federal cooperating agencies at the Center.

CIMRS has been located at the HMSC since it became active in July 1983. In his first annual report of CIMRS activities (July 1984), the first Director, Dr. William Percy, Professor in the College of Oceanography, reported that CIMRS had sponsored an international workshop on salmonid oceanography, had a seminar series with NMFS, and was involved in collaborative research in the field of marine fisheries and marine geology. In June of 1984, there was a workshop of biologists from the Pacific Northwest to help coordinate NOAA-PMEL research on hydrothermal vents. Research in fisheries included projects on the ocean biology of salmon, assessment of squid and other underutilized species and food web relationships; and geological research including projects on the effects of mining manganese nodules and geological and chemical studies of subduction and accretion along the Oregon-Washington continental margins.

In 1983, a fish behavioral specialist, Bori Olla, was assigned to the Center under the auspices of the NMFS Alaska Fisheries Science Center. Through CIMRS he hired a young researcher named Michael Davis in 1984 to begin the build-up of the fisheries behavior ecology group and the construction of the specialized facilities for this research in the RSF building. Clifford Ryer joined the staff as a post-doc in 1987 and Susan Sogard in 1991, both of them moving to

regular NMFS status after a few years. The group is currently assisted by three technicians and supplemented during the summer by interns. In 1999, Bori Olla stepped down as the Program Manager and Allan Stoner became the new leader of the group.

In 1984 the NOAA Pacific Marine Environmental Laboratory in Seattle assigned two geophysicists, Stephen Hammond and Robert Embley, and two support staff to the Center to work on a hydrothermal research program. They were joined by a third principal investigator (PI), Christopher Fox, in 1985. John Lupton joined as their fourth PI in 1992. There are now thirteen CIMRS research associates, technicians and support staff working with the NOAA investigators.

The CIMRS Executive Board met in February 1985 to discuss changes and recommended that the Advisory Council be convened to make recommendations to the Board on memberships in the Advisory Council in view of the active participation of PMEL in CIMRS; possible changes in CIMRS administration, as Percy was at the Center only one day a week; and future needs to bolster cooperation between OSU and NMFS, including new personnel and/or research directions. The Advisory Council came to the unanimous consensus that "Bill Percy has done a commendable job under difficult circumstances in getting CIMRS off to a good start. On the other hand, at the time the Institute was formed there was a consensus that the Director should be in residence at the HMSC. The Council has reaffirmed this consensus. Because HMSC residence has not worked out for Bill, corrective action is necessary if CIMRS is to continue to develop" (Summary of Council Meeting, March 12, 1985). In addition, Dr. Percy forwarded a plea from the Advisory Council to OSU President John Byrne. After listing reasons why the HMSC should have strong programs in marine fisheries, he explained that OSU had lost two marine fishery biologists in recent years, leaving only one faculty member pursuing marine fishery research on a full-time basis and two on campus engaged in this area on a part-time basis. "We need more faculty in marine fishery biology/oceanography to help solve problems confronting the fishing industries of Oregon, the Pacific Northwest and the nation...Incidentally, this need for additional research in marine fisheries is also recognized by the community of Newport and the Yaquina Bay Economic Development Foundation, and was the impetus behind Senate Bill 680 to establish a Marine Experiment Station at the Hatfield Marine Science Center." (September 3, 1985, memo to John Byrne)

Dr. William McNeil, Professor of Fisheries, was chosen to succeed Dr. Percy, taking office in November 1985. The growing importance of aquaculture research influenced the direction of CIMRS over the next few years. In a statement of mission and goals written in June of 1986, McNeil reported that the Institute had active cooperative agreements with two NOAA laboratories, Northwest and Alaska Fisheries Center of the National Marine Fisheries Service, and the Pacific Marine Environmental Laboratory of the Environmental Research Laboratories. Several seminars and workshop on a variety of marine resource topics were held in Newport, Corvallis, Seattle, La Jolla and elsewhere. "Active planning is currently targeted on anadromous and marine fisheries resources. By 1991, we expect to have substantial cooperative research and development programs on salmon and groundfishes..."

An update in June of 1989 stated that "initiatives are currently focusing on multidisciplinary research in oceanography, marine fisheries, and aquaculture.



Projects which are active or in advanced planning are targeting on marine polyculture, utilization of waste from marine fish processing, environmental impacts from petroleum offshore drilling and transport, undersea volcanic and tectonic processes, fish behavior, and estuarine restoration and enhancement. Marine regions of interest extend from the Alaskan Peninsula into northern California."

The January 1990 meeting of the CIMRS Advisory Council emphasized future directions for CIMRS. "It was generally agreed that program development should remain oriented toward support of missions of client institutions in addition to a broadening of research and development opportunities for OSU faculty, staff and students. CIMRS is positioned to catalyze productive research initiatives by complementing efforts of cooperating institutions. No increases in the support infrastructure of CIMRS are recommended." (Minutes by Bill McNeil). At the October 1990 Executive Board meeting, a decision was made to change the administration of CIMRS effective July 1, 1991. At that time Lavern Weber would become director and assume administrative responsibility for CIMRS. To support this responsibility, he would receive the administrative monies from NOAA in connection with Hammond's and Olla's projects. Under this arrangement, ongoing NOAA projects (i.e. Steve Hammond's) and NMFS projects (i.e. Bori Olla's) will continue to operate at the HMSC. At that time the OSU Research Office would discontinue financial support of CIMRS. (Memo, Richard Scanlan 10/25/90)

During Dr. Weber's tenure the largest current NMFS group arrived at the Center and has undergone tremendous growth. In the spring of 1995, four researchers arrived from Seattle to begin applying their efforts toward salmon issues in estuaries and coastal areas of Oregon and Washington (Salmonid Ecosystem Analysis Program). A second division, the Fisheries Analysis and Monitoring Division, followed in mid-summer. In October 1997 NMFS NWFSC underwent an organizational restructuring, creating a new division, called the Fish Ecology Division, and reassigning some personnel from one division to another. This resulted in three divisions represented in Newport: Fish Ecology, Fishery Resource Analysis and Monitoring Division, and Environmental Conservation Division. From the original four employees in 1995, NMFS NW has expanded to about 40 employees. This has necessitated massive space reassignments and remodeling in both the NAL and RSF buildings. Fortunately, the OSU College of Forestry's Coastal Oregon Productivity Enhancement Program (COPE) completed its ten-year existence and vacated many offices in the NAL in 1996. The Fish Disease group under Paul Reno, and the Molluscan Broodstock and Aquaculture group under Chris Langdon still have space in the NAL building. Under space pressures, the grad loft (upstairs in the NAL building) has had a major facelift with new cubicles being installed, which will be shared by grad students and CIMRS staff. In the RSF building, the old physical plant workshop has been remodeled into office suites and the new workshop is now in the former boat garage area in the west wing of the main building. Only the OSU Marine Mammal Group has kept space in the RSF, the rest of the building being shared by the NMFS AFSC, NWFSC and the NOAA VENTS programs.

A new Joint Project Agreement between NOAA NMFS and OSU was hammered out and signed in December of 1997. The purposes of the agreement

were to strengthen the basis for the CIMRS Program, with each party to bear its own costs associated with the resulting program; and to establish general space agreements for continued sharing the Newport Field Station at the HMSC by NMFS and OSU. OSU provides library, mail, safety inspection, video conferencing, use of meeting rooms, parking lots and maintenance of access roads; high quality flow-through seawater; space in the Visitor Center for exhibits displaying NOAA's research activities; low-cost short-term housing for scientists on site; laboratory and office facilities for CIMRS employees; use of the boat dock and ship operations facilities; organize joint scientific seminars and classes; and courtesy faculty positions at OSU for qualified NMFS scientists. In return, NMFS will provide suitable space and use of its physical facilities at the HMSC for CIMRS investigators, plus funds for maintenance and utilities.

This group continues to expand and has been working for several years on the design and preparation of a two-story office building across the street from the NAL building, where the old open seawater storage tanks used to be. (Interview McCain to get more info) Funding for this project (\$400,000) was one of the last efforts of Senator Mark Hatfield before his retirement.

On January 1, 2000, Dr. Clare Reimers assumed responsibilities as the fourth Director of CIMRS and as a Professor in the College of Oceanic and Atmospheric Sciences. Building on the JPA, Reimers met with several PMEL and NWFSC leaders in February 2000 to discuss new directions for CIMRS and to begin a process of better coordination between the Institute partners. One of her first goals was the revitalization of the Executive Board and Advisory Council. The Executive Board consists of the Directors of the NMFS and PMEL, Vice-Provost for Research, Deans or their representatives from the Colleges of Science, Agricultural Sciences, and COAS, and the Directors of Oregon Sea Grant and CIMRS (ex officio). The Science Advisory Council includes investigators from NMFS, CIMRS, Microbiology, PMEL, Zoology, COMES, and COAS.

In February 2000 a research plan for West Coast groundfish was drafted by the NMFS in response to the current crisis in West Coast groundfish stocks. The research goals identified as key elements for restoring stocks, protecting the marine environment and evaluating the socioeconomic consequences are: status of stocks, socioeconomic database on groundfish harvesting, ecological impacts of fishing, ecosystem and climate, technological innovations and management support. In response to this, CIMRS issued a request for proposals from OSU faculty for cooperative and interdisciplinary fisheries research to expand understanding of Pacific Northwest groundfish stocks, their habitats and environs, and the impact fishing and other human activities have on habitat areas utilized by groundfish throughout their life stages. Another primary goal was support for the research and education of graduate students who may pursue careers as natural resource scientists.

## **VII. Cooperating Agencies**

### **Area Health Education Consortium (AHEC)**

In 1989, the Oregon Legislature responded to a collaborative grassroots effort involving local Oregon communities and the Oregon Health Sciences University by approving a legislative package to address the acute and chronic

shortage of health care professionals in rural Oregon. Included in the package were funding and support for a Statewide Area Health Education Centers Program. The goal of AHEC was to make primary health care more accessible to all Oregonians by improving the training and distribution of health professionals throughout the state.

The Oregon Pacific Area Health Education Center was moved to the HMSC in 1996 from an office in downtown Newport. It had a three-pronged approach to improving access to health care. They worked with health care providers before, during and after their professional training to encourage them to practice, or continue practicing, in medically under-served areas. The "before" efforts consisted of exposing young people to health career possibilities with a summer camp, teacher inservice training, and health career program development awards for public high schools. "During" activities involved providing rural training and education opportunities for individuals currently studying to become health care professionals. These included clerkships for students and rural rotations for resident physicians. In the "after" phase, Oregon Pacific AHED helped practicing professionals keep their skills and knowledge up-to-date through accessible continuing education in rural areas, particularly through the Oregon Ed-Net system. . Under a new director, AHEC relocated to the main Corvallis campus in 1999.

### **Environmental Protection Agency**

The Environmental Protection Agency has had individuals at the HMSC since the very beginning. Although EPA was not created until 1970, workers under the U.S. Public Health Service Water Quality Unit were stationed at the Center in the 1960s. The EPA presence remained fairly small until 1980, when a division was transferred to Newport from the Corvallis EPA laboratory, under Donald Baumgartner. Originally in the west wing of the main building, the division moved into their own building in 1991.

In 1993 the single largest study by the Newport laboratory, an ecological risk assessment of DDT and dieldrin contaminated sediments at a Superfund site in San Francisco Bay, was completed. This study measured contaminant levels in Bay water, sediments, water in the sediments, fish, mussels, and infaunal organisms. The study also measured the toxicity of sediments to amphipods and the effects on benthic community structure. Models were then developed to predict from various sediment contamination levels the resultant water concentrations; tissue residues in benthic and water-column organisms; the dietary dose for brown pelicans; the safe levels for amphipods; and the impact on 13 different measures of benthic community health. This information formed the basis for determining the appropriate sediment clean-up level at the site.

A reorganization occurred in early 1994, with consolidation of the Branch into two teams, Contaminated Sediments and Coastal Ecosystems. The Sediments team continued to conduct research related to the development of marine sediment quality criteria. The new Coastal Ecosystem team was to develop a broad research program focusing on effects of multiple stresses, including upland watershed activities, on estuarine ecosystems of the Pacific Northwest. Work included modeling of estuarine hydrology, sedimentation,

habitat loss and alteration, introduced species, chemical contamination, temperature, and primary and secondary productivity.

Further changes came about in 1995, with the Newport and Corvallis laboratories combining to become the Western Ecology Division. Two programs reaching completion were the complex effluent program, which developed methods to test the toxicity of industrial effluents, and the plume modeling, which developed an innovative model predicting dilution of sewage discharges. The estuarine ecosystem program initiated a case study in Willapa Bay as well as Yaquina Bay. By 1997 the Contaminated Sediments team completed their work, making the research mission solely to develop procedures to assess the cumulative and interactive effects of human activities on the ecological resources of coastal watersheds, particularly estuaries, of the Pacific Northwest.

By 1999 the research staff had grown to 16 federal employees, 3 postdoctoral fellows, and 16 technical and clerical contract support staff. Research activities included large-scale (within and among estuaries) field studies and laboratory investigations of relationships between stressors and effects. The Coastal Ecology Branch co-hosted the Pacific Northwest Estuaries Conference which was held at the Center in April of 1999. The conference attracted papers from throughout the region and provided an assessment of the current status of research on outer coast estuaries of the Pacific Northwest.

During 2000, the Branch assumed responsibility for administration of the Environmental Monitoring and Assessment Program Western Coastal Pilot research program. The pilot program is a five-year research effort to determine the condition of estuarine and near coastal resources of Washington, Oregon and California, with preliminary efforts on two-year duration in Alaska and Hawaii.

### **National Marine Fisheries Service, Alaska Fisheries Science Center**

With the construction of the two NOAA buildings, the NAL (1979) and the RSF (1981), and the subsequent creation of the Cooperative Institute for Marine Resources Studies to provide links between the University and governmental researchers, the NOAA presence at the HMSC began. In 1983, a fish behavioral specialist, Bori Olla, was assigned to the Center under the auspices of the NMFS Alaska Fisheries Science Center. Through CIMRS he hired a young researcher named Michael Davis in 1984 to begin the build-up of the fisheries behavioral ecology group and the construction of the specialized facilities for this research in the RSF building. Davis soon became a regular NMFS employee. Clifford Ryer joined the staff as a post-doc in 1987 and Susan Sogard in 1991, both of them moving to regular NMFS status after a few years.

A continuing theme of the program is to define the interrelationships between key environmental factors and behavioral responses of larval and juvenile stages of commercially important marine fish species. Their studies reveal the importance of behavioral responses in determining spatial distribution in the sea and indicate the value of understanding the role of environmental factors in eliciting different behaviors. Different aspects have been studied over time, largely dependent upon NMFS need for accurate information to manage the fisheries resource.

In 1995-96 their experimental facilities underwent a major expansion to accommodate a new research initiative on bycatch that focused on the



development of post-capture survival indices for important species of north Pacific fish. Installation of a series of large thermally-controlled experimental tanks and a specifically designed apparatus permitted fish to be exposed to simulated trawling under controlled laboratory conditions. An additional expansion in 1997-98 created new experimental infrared monitoring systems to allow the study of fish under extremely low visible light levels. Tanks specially designed to mimic trawling conditions were also created to determine survival rates under different conditions. This group is one of the smaller groups at the Center (7 full-time researchers), but is probably the second biggest user of wet lab space and seawater because of all their large and complex experimental tanks.

In 1999, Bori Olla stepped down as Program Manager and Allan Stoner became the new leader of the group. In 2002 Thomas Hurst replaced Sogard when she left for another position in California.

### **National Marine Fisheries Service, Northwest Fisheries Science Center**

The newest and largest group to arrive at the Center is the NMFS Northwest Fisheries Science Center divisions. Arriving in 1994 with four staff members, this agency now has three divisions with staff split between Newport and Seattle. It was established to provide scientific advice on the management of West Coast groundfish, improving understanding of them and their ecosystem, and to utilize this knowledge to provide technical support for assessment and management of West Coast fisheries. Their original areas of emphasis were:

- improved fishery assessment methods, including analysis on interactions between species
- enhanced fishery monitoring, particularly through at-sea observations
- survival of discarded bycatch, in collaboration with NMFS AK

Since that time, there have been several reorganizations and increasing number of staff and specific research areas. In 1995 the Salmonid Ecosystem Analysis Program was initiated, the objective being to increase understanding of the natural and anthropogenic factors in estuaries and nearshore ocean that may influence the health, growth and survival of juvenile Pacific salmon. In 1997 a reorganization split this into the Environmental Conservation Division and the Fish Ecology Division.

In 1996 ocean variability studies were added to the renamed Fisheries Resource Assessment and Monitoring Division, which included the Groundfish Analysis and Salmon Analysis Program. GLOBEC funding for sampling zooplankton began in 1998 in collaboration with oceanographers from OSU that were investigating physical oceanography and phytoplankton dynamics along the same transects. It was part of the Long-Term Observations Program of U.S. GLOBEC and was designed to describe ocean conditions in the waters north and south of Cape Blanco as an aid to understanding factors affecting growth and survival of juvenile chinook and coho salmon.

Since OSU researchers had been using almost all of the NAL building and a good portion of the RSF, the expansion of NMFS NW forced a shuffling of offices, labs and work spaces. In 1998 a joint project agreement was signed between OSU and NMFS to support the long-term commitment of both to conduct collaborative research and provided formal arrangements to share space

and other facilities. The long process of getting a new building constructed continued to move slowly through federal channels.

In 1999 NMFS developed a draft comprehensive plan to guide research on West Coast groundfish for the next three to five years. The plan was designed to identify the scientific information and approaches needed to achieve NMFS stewardship objectives. It recommended a high priority on conducting baseline assessments for all groundfish species, improving certainty in current assessments, and improving socioeconomic analyses. In addition to conducting critical stock assessments, program scientists provided review and oversight for assessments carried out at other West Coast labs. FRAMD scientists coordinated the establishment of stock assessment teams from scientists from among state, federal, tribal and academic entities and constituent groups.

Reviewing the discussion of the state of the fishing industry and fisheries resources under the Oregon Department of Fish and Wildlife, one can see that the development of NMFS research is directly related to the current situation and climate.

Because of the very rapid deployment of researchers to the Newport station, NMFS NW has outgrown its space in NAL and RSF. In 2000 a temporary modular unit was placed between the main building and the NAL building to hold the overflow until completion of the Barry Fisher Building in the fall of 2002. The new building will also necessitate modifications, improvement and expansion of the seawater system and its holding capacity.

## **Oregon Department of Fish and Wildlife**

From the very early days of the Center, there were members of the Oregon Fish Commission here. In 1970 the State merged the Fish Commission and the Game Commission into the Department of Fish and Wildlife. The ODFW built their office, the first building to be added to the original facility, in 1970. Staff members of the ODFW Marine Region are located in the Newport headquarters office and Astoria and Charleston field offices. The Marine Region was home to Ocean Salmon, Marine Finfish, Shellfish and Marine Habitat, Marine Mammal/Wildlife Diversity, and Administrative units, and is part of a larger Marine Resources Program that includes a Columbia River Program unit.

In 1976, the United States Congress responded to increased foreign fishing activities in its waters by passing the Magnuson Fishery Conservation and Management Act. The act regulated foreign fishing activities within the newly formed 200 miles Exclusive Economic Zone and created eight Regional Fishery Management Councils. These councils developed Fishery Management Plans to manage each fishery within their jurisdiction.

ODFW became the home of the Developmental Fisheries Program the established during the 1993-95 legislative session and in 1997 dive clam fisheries were added to the program. A dive and intertidal survey of clams, shrimp and other benthic invertebrates was done as part of the Tillamook Bay National Estuary Project was completed in 1997. Additional developmental fisheries research included surveys of spot prawn and fishing gear. A cooperative study with the Oregon Trawl Commission documented the retention and non-retention of fish caught in deep-water trawl fisheries. In 1995 the legislature established a

Bycatch Project for the 1995-97 biennium, both in groundfish and shrimp trawl fisheries.

In 1996, the Magnuson Act was amended to include strict new mandates to stop overfishing, rebuild depleted stocks, minimize bycatch and protect essential fish habitats. This amended legislation, known as the Sustainable Fisheries Act, called on the Regional Fishery Management Councils to rewrite existing fisheries management plans and prepared additional ones (where necessary) to meet these new requirements.

In 1997, the Oregon legislature established the Oregon Plan and provided funding for two years. The legislation created a seven-member Joint Legislative Committee on Salmon and Stream Enhancement to review the activities of agencies and individuals engaged in implementing the plan and development of supplements to it. The legislation also established an Independent Multidisciplinary Science Team to serve as a scientific peer review panel, the Healthy Streams Partnership to focus on water quality plans statewide, and the Salmon Production Restoration Task Force to focus on salmon plan implementation.

The Coastal Salmon Restoration Initiative, initiated two years ago, represents a substantial commitment of Oregonians to improve salmon habitat on the coast. The initiative has as its base Oregon's strong land use and environmental laws. In addition to careful implementation of these laws, state, federal and local governments, community groups, industry and others have all promised to undertake specific, voluntary restoration activities to ensure recovery of salmon populations on the coast. Federal land management agencies are basing their commitments to the coho initiative on the aquatic conservation strategy associated with the Northwest Forest Plan.

In April of 1997, the National Marine Fisheries Service entered into an agreement with the state of Oregon to implement and strengthen the plan. Coho from Cape Blanco north to the Columbia River were not designated as "threatened" or "endangered" species because of improved coho numbers in recent years and because the Oregon Plan contains important harvest and hatchery conservation actions that benefit coho. This is a landmark achievement for Oregonians. With the April decision, Oregon became the first state to gain federal approval of a locally-driven restoration effort.

Reorganization and reduction in workforce resulted in change of the program structure in 1997. The Ocean Salmon, Marine Finfish and Shellfish and Marine Habitat units made up the Marine Program headquartered in Newport. Columbia River investigations and Marine Mammal/Wildlife Diversity units were realigned with other agency programs. A new Interjurisdictional Fisheries Unit was created and located in Portland.

The fishing industry and the Department grappled with a growing array of West Coast groundfish issues. The Pacific Fishery Management Council recommended significant reductions in harvest of several important species of groundfish based on updated stock assessments. Emerging strategies included consideration of an industry sponsored buy-back program to remove excess effort, allocation between groups, and more conservative measures for protecting salmon and groundfish species and their habitats.

A federally funded project administered through the Pacific States Marine Fisheries Commission was initiated in 1997 to look at the biology of Pacific

mackerel and sardines. Coastal states participating in the program are also conducting food habit studies of Pacific mackerel. The Shellfish and Marine Habitat Program worked with the Ocean Policy Advisory Council and the public to develop proposals for new Marine Gardens. The Commission adopted rules creating three new Marine Gardens located at Cape Kiwanda, Yachats, and Harris Beach. The Cooperative Reef Ecosystem study focused on estimating kelp biomass and conducting fish videos on various nearshore reef habitats. They also did mapping and biological sampling of key reef areas in addition to sampling the sport and commercial fisheries that depend on them.

Another reorganization occurred in July 1999 that dropped species lines and consolidated into three major program units: Resource Assessment and Analysis, Resource Monitoring and Sampling, and a Data Services unit.

The changes in the Pacific Coast groundfish fishery management coupled with a strong El Niño precipitated a crisis in the groundfish industry. Ginny Goblirsch, Sea Grant Extension, explained the impact of the groundfish "disaster" on the local fishing industry: "The term groundfish refers to a group of some 80 species of fish that live on or near the ocean floor. Starting about 1995, stringent quotas on allowable catch for some groundfish species were imposed so that the harvest of these species would remain at sustainable levels. The increasingly stringent quotas were necessitated because of the lack of scientific data (research) on what is necessary to maintain healthy stock levels and, in some cases, data which showed declining stock abundance. For some species, the allowable catch was reduced by 80-90%. Obviously cuts of this magnitude have serious, direct impacts on the folks who rely on groundfish as their main fishery. A federal fishery disaster in groundfish was declared in January of 2000.

"The changes and downsizing now occurring in our groundfish fishery are serious and long lasting. Effects are being felt all over--from the boats and crew and fishing families to marine support services, banks, car lots, and so on. Since groundfish is a fishery that has traditionally operated year around, it has become more of a challenge for our seafood processing plants to remain viable and keep employees. The fishing industry is going through a transition period and with change comes uncertainty, anger, frustration and loss of confidence."

The Pacific Fishery Management Council recommended significant reductions in harvest of several important species of groundfish based on updated stock assessments. Staff also began a new cooperative Port Interview Project with the National Marine Fisheries Service and select members of the fishing industry. Port biologists interviewed trawl skippers to gather information about environmental changes, changes in fishing practices, and other events that might have influenced catch rates and species composition. The rapid development of a live fish and fresh fish markets led to a dramatically increased fishing effort under groundfish open access (non-limited entry hook and line) fishery. Concerns were raised over the potential for local depletion of fish resources, size and maturity of fish caught in the nearshore.

In 2000, the PFMC continued to recommend additional restrictions on groundfish species on ESA listed salmonid stocks. Canary rockfish and lingcod were determined to be overfished. In response the MRP stepped up monitoring of groundfish stocks and conducted at-sea research. Research projects were focused on improving stock assessments and are balanced between nearshore and offshore resources and issues. The Ocean Sampling Project (formerly Ocean



Salmon) continued to monitor and sample the recreational ocean boat fishery and the commercial troll salmon fishery. The project expanded to cover more ports and time periods for the recreational ocean fishery, and worked to integrate with the marine recreational non-salmonid finfish project to meet coastwide biological sampling objectives for lingcod, black rockfish and a variety of other species. A coastal chinook field studies coordinator was hired to do sampling design and technical analysis. He works with ODFW staff to evaluate spawning escapement, stock recruitment and assessment tools for Pacific Salmon Treaty stocks affected by treaty area fisheries.

Major on-going issues include Pacific whiting allocation and management, including salmon bycatch; stock assessment, resource surveys, and industry participation in data collection; trip-limit management and enforcement; management of the fixed gear sablefish fishery; effort reduction (vessel buyback); a comprehensive groundfish data gathering plan; and refinement of the license-limitation program (such as allowing use of more than one permit per vessel).

There is cooperative work with OSU and UO graduate students and staff to assist in studies of ecology and population dynamics of finfish and invertebrates, and fisheries economics. These projects are funded by Sea Grant and orchestrated through OSU's COMES unit. Another project on the effects of handling on stress and mortality of lingcod began in May 2000. This project is in cooperation with OSU's Cooperative Fisheries Research Unit and the National Marine Fisheries Service. Other cooperative projects with NMFS included a depth specific sampling project and work associated with the Cooperative Aging Unit. A collaborative industry, ODFW, and Oregon Trawl Commission project, The Oregon Enhanced Data Collection Project, neared completion in 1999. The study was designed to look at the impacts of regulations on discard of groundfish species in the trawl industry.

### **Pacific Marine Environmental Laboratory, VENTS Program**

With the completion of the RSF building in 1981 and the establishment of the Cooperative Institute for Marine Resources Studies, the NOAA Pacific Environmental Laboratory opened a branch in Newport in 1983. This VENTS Program focuses on determining the oceanic impacts and consequences of submarine hydrothermal venting. It directs most of its efforts toward achieving an understanding of the chemical and thermal effects of venting along the northeast Pacific seafloor spreading centers on the North Pacific Ocean. The original two principal investigators, Stephen Hammond and Robert Embley, were joined by a third PI, Chris Fox, in 1985, and a fourth, John Lupton, in 1992. They were supported with a number of CIMRS scientists: Robert Dziak arriving in 1988, William Chadwick in 1989, and Haru Matsumoto in 1991.

In their initial efforts, the group used side-scan sonar to map the ridge area and they discovered the Axial Volcano, which they have used as a research site since its discovery. In 1991, NOAA/PMEL initiated a joint agreement with the U.S. Navy to exploit the Navy's existing underwater listening arrays for environmental research. The use of SOSUS (Sound SURveillance System) has allowed OERD to monitor the low-level seismicity of the Northeast Pacific and the very low-level volcanic seismicity of the northeast Pacific spreading center.

The highlight of 1993 was the first-ever detection, verification, and investigation of a volcanic eruption on a mid-ocean ridge. Four days after the Real-Time T-phase system was activated, several swarms of T-phase events were detected on the Juan de Fuca Ridge. A striking and consistent observation over the past years of the VENTS Program observations of both continuous and episodic venting is that volcanic and hydrothermal activity in the deep ocean is much more widespread and vigorous than previous imagined. It is well established that submarine volcanism has, over long periods of time, profoundly affected the ocean and even climate. One important goal of the VENTS Program is to determine if present-day volcanism and hydrothermal activity can significantly impact the ocean over shorter intervals ranging from months to centuries. More specifically, the goals of VENTS research are to determine (1) the magnitude of ongoing volcanically produced chemical and thermal oceanic inputs and (2) the amount of time that it takes for hydrothermal variability to be reflected by changes in the ocean's chemical and thermal conditions.

In 1995 the group began to concentrate on developing a wide variety of in situ technologies that are capable of long-term, multi-scale temporal and spatial chemical, thermal, and geophysical ocean observations. A variety of state-of-the-art instrument systems, designed to acquire year-long records of various physical and chemical data, were placed at key locations along northeast Pacific spreading centers. In addition to the primary focus on seismic processes, an ambitious study of marine mammal acoustics was undertaken in FY 95. Also, collaborations continued with microbiologists at the University of Washington in examining the interplay of fluid chemistry with microbial processes.

A new area came into being with the discovery of the new hyperthermophilic bacteria. Hyperthermophiles are of particular interest for their potential biotechnical and pharmaceutical applications. Within the ocean environment itself, thermophilic microbes appear to have a large-scale influence on the chemistry of global hydrothermal emissions, including mediation of ocean nutrient budgets and cycles. In 1997 they developed a two-year Sea Grant and VENTS microbial biosphere effort as a pilot project for NOAA's microbial initiative. Many of the microorganisms which live in this deep, hot biosphere also have closer genetic affinities to humans than do bacteria in normal human environments and because they are so distinct from everyday bacteria, they have been assigned to a new phylogenetic kingdom, *Archaea*.

Also that year the Center for the Tsunami Inundation Mapping Effort was created in Newport to assist Pacific states prepare for such an event by developing maps of tsunami flooding. The Tsunami Project network of observational stations was expanded, along with implementation and testing of tsunami numerical models for the Pacific Disaster Center. However, by 1999 funding was ended for this and the Oregon Department of Geology and Mining Industries took over leadership for this.

In September, 1998, VENTS scientists, in partnership with NSF, Sea Grant and NURP, began the establishment of a long-term seafloor observatory (the New Millennium Observatory or NeMO). The NeMO site includes the entire summit caldera of Axial Volcano, including the area of the eruptions. A multitude of wide-ranging instruments were deployed at the eruption site to continuously monitor geological, chemical and biological changes resulting from the eruption cycle. NeMO appears to contain an especially high concentration of

hyperthermophilic bacteria, bacteria that live at temperatures sometimes exceeding 100 degrees Centigrade.

A survey of Heceta Bank using a multibeam sonar system was conducted in May, 1998. The purpose of the survey was to investigate the geology of groundfish habitats off the Oregon Coast and was conducted in conjunction with the NMFS and OSU Sea Grant. The data revealed rich details of the geological structures that form the bank which forms a diverse structural habitat for local groundfish populations. These data were expected to be the first collected in what was envisioned as a major new research collaboration between NMFS and OA focused on critical fish habitat.

In another development in 2001, there were two cruises supported by the new NOAA Ocean Exploration Program. These cruises, one focused on an interdisciplinary exploration of the Astoria Canyon off the mouth of the Columbia River and the other to continue a collaborative investigation with scientists from NMFS NW on the Heceta Bank, marked the first expeditions supported by the Ocean Exploration Program. The Astoria Canyon cruise investigated the geology, oceanography, and biology of the canyon--which has not been studied for more than 30 years. The groundfish study integrated the expertise of seafloor geologists with fisheries biologists in order to discover relationships between the character of the seafloor and the year-to-year varying abundance of commercially important species.

The VENTS Program's most recent accomplishments are the deployment of a state-of-the-art deep ocean sensor package that included several temperature probes and a camera in the NeMO. NeMO Net features the capability of providing near-real time data that is acoustically transmitted from the bottom-mounted sensors to a surface buoy. A transmitter on board the buoy, in turn, sends the data through several satellite systems to PMEL where it is made accessible to anyone via the Internet.

### **U.S. Fish and Wildlife Service, Oregon Coastal Refuges**

Although the oldest U.S. Wildlife Refuge west of the Mississippi was Three Arch Rocks, there was no one in Oregon to manage it, so it was attached to the Willapa Bay Refuge in Washington. In the 1960s, the Willamette Valley refuges were established and at that time responsibility for Arch Rocks was transferred to the William Finley Wildlife Refuge. Additional coastal areas were added to Finley's domain, but it wasn't until James Watt became Secretary of the Interior that money was finally allocated to establish a refuge biologist on the coast. In 1985 Roy Lowe was selected as the first coastal agent and was stationed at the Center. Oregon Coastal Refuges Office now manages six National Wildlife Refuges along the Oregon coastline. They are Bandon Marsh, Cape Meares, Nestucca Bay, Oregon Islands, Siletz Bay, and Three Arch Rocks. Their current mission breaks down into five areas: 1) land acquisition, 2) habitat management and restoration, 3) biological surveys, 4) monitoring, and 5) interpretation and outreach.

Lowe labored alone, except for volunteer and seasonal help until Nancy Morrissey became the second Coastal Refuge permanent employee in 1991. In 1994 bids were solicited for construction of the new Oregon Coastal Refuge Ecosystem Office here at the Center and construction was completed in

September 1995. It was officially dedicated in honor of former Senator Mark Hatfield, on May 17, 1997.

With the completion of the new USFWS building, there was room available for a second division of the Service, the Ecological Services branch, to locate an employee on the coast. Carrie Phillips joined the team in 1995. Ecological Services is responsible for interagency coordination, protection and management mandates associated with threatened and endangered species, wetlands and forest habitats and administration of the President's Forest Plan. The Ecological Services staff work on western snowy plover recovery, restoring water quality and habitat functions in coastal watersheds, recovery of late successional forest species, and conservation and restoration of sensitive habitats such as estuaries, coastal strand, and wetlands.

A major effort over time has been land acquisition, with 27 acres added to Siletz Bay NWF in 1995, mostly intertidal salt marsh and mud flats. Fifty seven acres of tidal salt marsh was added to Nestucca Bay in 1996. An additional 126 acres was added to the Siletz Bay. In 1997 the Watson Tract (23.6 acres) and the Shaffer Tract (26 acres) were added to the Siletz Bay Refuge. A conservation easement on 56.5 acres of the Erickson Trust parcel allowed restoration of the lowland to wetland habitat, while the uplands easement protects forested habitat.

In January 2000 the Service acquired a 407-acre farm along the Coquille River in the lower estuary and expanded the existing 304-acre Bandon Marsh. The approximately 400 acres of lowland pasture will be restored to tidal salt marsh, the largest such restoration in the Pacific Northwest. Environmental review process started to acquired 320 acres at Neskowin Marsh. This unique wetland contains a variety of freshwater wetland types such as bogs and fens, some of which are exceedingly rare on the Oregon Coast.

Another key coastal acquisition was made by the Service in May 2000, when Crook Point in Curry County. The 134-acre headland area provides further protection for the adjacent Mack Reef Unit of Oregon Islands, as well as unique and rare plants and habitats that occur on the mainland. The offshore rocks, reefs and islands adjacent to Crook point support the second largest concentration of nesting seabirds in Oregon, with over 200,000 birds from March through October including a breeding colony of Leach's storm petrels consisting of 87,000 birds.

In 1998 a recreational planner was added to the complex and by 2002 the lone biologist in one small office had grown to a building with six permanent staff and a number of Americorps aides.

Another major step was taken in November of 1999, when the Oregon Coast National Wildlife Refuge Complex was formally separated from Finley Refuge in Corvallis. This new autonomy greatly improved the Service's ability to manage the coastal refuges. The complex is now completely filled with staff and equipment and yet there is still a great demand for office space by other related agencies.

## Conclusion

Looking backward at the history of the HMSC since 1965, one can distinguish several major landmarks that divide its 40 plus year history into phases. The



earliest phase was the physical construction and the early struggles with the organizational structure and championship of the Center. This extended until the first resident director, Dr. Lavern Weber, came to Newport in 1977.

The second phase was the consolidation and physical improvements to the Center so that it could attract a critical mass of investigators. This was a time of building relationships and connections with the community, the University, coastal industries, and legislators. It was at this time that the OSU Fisheries and Wildlife Department made a term at the HMSC mandatory for all fisheries majors and the 16-credit spring term Marine Biology class was started by the College of Science (1980). Key in this time period was the building of the NAL (1979) and RSF (1981) buildings and the creation of the Cooperative Institute of Marine Resources Studies (1982), which drew in two new federal agencies: the NMFS Alaska Fisheries Science Center's Fisheries Behavioral Ecology Program and the NOAA Pacific Marine Environmental Laboratory's VENTS Program. The relocation to Newport of the Environmental Protection Agency's Coastal Ecology Division in 1980 was another major milestone.

The third phase began about 1985, with the achievement of critical mass. Growth started to snowball with the creation of the Coastal Oregon Marine Experiment Station in 1989, which led to a fresh infusion of OSU principal investigators with solid line-item funding rather than just grant money. Now there was an OSU platform to build cooperative agreements on and the Molluscan Broodstock Program, the Marine Mammal Program, and the interconnections between OSU fisheries researchers and federal and state agencies researchers blossomed. The period between 1988 and 1997 required the Director to wear many hats: the supervisor of the Public Wing (1988), Superintendent of the Coastal Oregon Marine Experiment Station (1989) and Director of the Cooperative Institute for Marine Resources Studies (1991).

The fourth phase began in 1997 when Dr. Weber was appointed half-time Director of the Ag Experiment Station and Associate Dean of the College of Ag Sciences. This additional appointment required him to spin off his other responsibilities, having in most cases effected major developments and improvements in those realms. As he turned over supervision of the Visitor Center to Oregon Sea Grant (1997), he was turning over a completely redone and enlarged Visitor Center (\$5 million) instead of the shopworn Public Wing he had started with. When he turned over the leadership of the Coastal Oregon Marine Experiment Station (1997), it had grown from three reassigned positions and three new ones to a brand-new Astoria Seafood Laboratory and the Duncan Law Seafood Consumer Center with three principal investigators and staff and an active and involved Newport branch with six PIs on board and two more to come. In his least active role, that of CIMRS Director (2000), he turned over a collaborative effort with three federal agencies instead of the two he started with (the addition of the NMFS Northwest Fisheries Science Center).

The fifth phase is approaching with the arrival of the second resident Director, Dr. George W. Boehlert in July 2002. He faces far different challenges than that faced by Dr. Weber in 1977. He inherits a vigorous, diverse, large and involved

Center and can draw on a large reservoir of good will and positive history. He has the benefit of a state-of-the-art seawater system (even though it is rapidly growing too small), fiber optic communications, an exceptional marine library and a very involved community. The HMSC is internationally and nationally known and has many collaborative connections with state and federal agencies, industries and other research universities.

The future history of the HMSC remains to be written, but a solid foundation for future success has been laid. It is interesting to contemplate how the current trends, challenges old and new, and opportunities will mold the future, but the new Director can start his tenure with confidence.

**Appendix I. Original Job Description for Resident Director, 1976**

## JOB DESCRIPTION --- MARINE SCIENCE CENTER DIRECTOR

- The Marine Science Center Director will be located at the OSU Marine Science Center in Newport, Oregon and will have full responsibility for all use of the Marine Science Center and will be charged with promoting the Center for instruction, extension and research purposes.
- The Director will serve both as leader and manager, and will have the responsibility for assigning space and other use of the Marine Science Center facilities with the exception of the ship support facilities.
- He/She will promote the use of the Center for educational (including extension) and research purposes; will approve all courses, seminars, symposia and colloquia to be held at the Marine Science Center and will be responsible for the development and coordination of instructional programs there; will promote the development and the use of the Marine Science Center facilities for high quality research (both basic and applied), instruction, and public service.
- The Director will assist in the development of both individual and integrated research programs and will review research proposals involving Marine Science Center facilities and equipment. He/she will be expected to maintain a research program of his/her own.
- The Director should make every reasonable effort to secure non-University funds for research and program development, by which the State budget will be augmented.
- The Director will be responsible for overseeing the use of public museum and aquaria and will assist in the development of public education programs.



As a result of close association with MSC faculty, the Director will provide counsel to the appropriate academic units on campus regarding salary and promotion/tenure recommendations for those faculty who are involved with programs at Newport.

- As the designated leader of the Marine Science Center, the Director will serve as the spokesman for the Center in the local community. He/she will seek to encourage cooperation between MSC personnel and the community, promoting the appropriate use of the Center's public facilities by responsible elements of the community as opportunities arise.
- The Director of the Marine Science Center will be responsible to the Dean of Research with regard to the proper management of the Center. In carrying out his/her functions, the Director will be advised by a Marine Science Center Council, consisting of the Deans of Agriculture, Engineering, Oceanography and Science, and the Director of Extension or their designated representatives. The Council will meet a minimum of twice a year to review activities of the Marine Science Center and to assist the Director in developing MSC programs of University-wide interest.

29 April 1976

## SCREENING CRITERIA

- **Ph.D. or equivalent**
- **Experience in Marine Science** - a record of activity in some aspect of marine science; character of activity and duration will be evaluated.
- **Administrative experience** - candidate should have documented experience in managing personnel and fiscal matters.
- **Scholarly achievement** will be manifested by scholarly contributions to scientific literature and/or participation on national committees, symposia, etc. Documentation should include recognition of achievement by scientific peers.
- **Record of educational/research achievements** will be used to evaluate aptitude for developing education, extension and research programs; should possess an interest in the application of research to solve natural resource problems.

## Appendix II: First Five-Year External Review Panel Recommendations, April 2000

The External Review Panel for the Oregon State University Hatfield Marine Science Center met on April 4-5, 2000. The Panel included Dr. Russel Meints, Director of the Center for Gene Research and Biotechnology at Oregon State University; Dr. Lynda Shapiro, Director of the Oregon Institute of Marine Biology of the University of Oregon; Dr. A. O. Dennis Willows, Director of the Friday Harbor Laboratories of the University of Washington; and Dr. James Winton, Chief of the Fish Health Section at the Western Fisheries Research Center.

The Panel was able to develop several shared impressions about the HMSC. These include:

1. With few exceptions, the physical plant of the HMSC represents a state-of-the-art facility for marine research in its broadest sense. The combination of geographic location, oceanographic cruise staging and ship berthing, modern laboratory and office space, on-site faculty and student housing and an outstanding library offer no serious limitations to the ability to conduct high quality basic and applied research, teaching and outreach within the various disciplines of marine science. With the exception of comments about the rapid availability of short-term faculty housing and the need for satellite links to the teaching program on campus (see recommendations below), the impressions of the Panel and the comments received suggested the HMSC offers an unusually attractive and productive environment in which to work.
2. The scope and scale of the various programs housed at the HMSC is virtually unique. The combination of a large Federal research presence, several State and Federal management agencies and strong University extension and outreach programs are dominant factors in the type of work conducted at the HMSC. The presence of these diverse entities was judged by the Panel as offering both important opportunities and a potential liability. The opportunities involve the stated desire of scientists in the various State and Federal agencies to collaborate with University faculty to further the research, teaching and outreach programs. A liability involves their overwhelming presence relative to the modest support from the University for the basic science and teaching programs as discussed below.
3. A third impression was the obvious enthusiasm of the staff at the HMSC for the facility and the scientific and educational potential available at the Center. However, there was a shared perception that Oregon State University was failing to take advantage of these opportunities for a variety of reasons that included: a lack of direct budgetary support for the research and teaching programs at the HMSC, a lack of a shared vision as to the mission of the Center, and a perception by faculty on the Corvallis campus that the distance to Newport provided a major impediment to research or teaching and compromised the academic advancement of scientists located at the HMSC.
4. It appeared to the Panel that the HMSC had grown to its present form largely through circumstance and in the absence of a clear vision or substantial funding from Oregon State University. This is due, in part, to the nature of the federal funding that supported the major expansion of the Center's physical plant and that drives a significant amount of the current research agenda, the lack of a single entity at Oregon State University with ownership of the marine science program, and the need for the Director of the HMSC to spend a considerable amount of time seeking outside funds to support the operations and programs of the Center as well as serving as a facilities manager for the increasing federal presence at the HMSC.
5. Dr. Weber has proven to be an exceptionally effective Director in the absence of adequate resources from the University. The Panel was impressed with all that he has

accomplished and this effectiveness was generally reflected in the positive comments received from those at the Center and on campus. His success is due, in large part, to his strong personal commitment to the HMSC and his unfailing belief that the Center offers a unique opportunity for excellence. The impending retirement of Dr. Weber will require Oregon State University to recruit a replacement and the Panel believes that the University must use this opportunity to address many of the issues raised in the Review. While it will be challenging to find a person as effective as Dr. Weber in the role he has been given, this recruitment also provides an important opportunity to define a new vision for the Center and develop a cohesive program that will assist the HMSC in achieving its enormous potential and enhancing the stature of Oregon State University in the marine sciences.

**Recommendations designed to enhance communication between the HMSC and the various Colleges and Departments in Corvallis in order to develop a cohesive vision for the Center**

1. The Vice Provost for Research should form a committee of Deans, Department Chairs, Sea Grant, etc., that will visit the HMSC and work with the Director and senior University, Federal and State agency staff at the HMSC to develop a coherent vision for the Center including the recruitment of Dr. Weber's successor. This should include a formal plan for reaching identified goals and encouraging replacement faculty positions in the various departments be filled by those who could work at the HMSC (at least part-time). The Vice Provost for Research should accompany this group on visits to Newport (at least annually) to become familiar with opportunities and present staff there with a tangible measure of interest. This "working group" of Deans and Chairs with marine interests should also define priority areas in their units of scholarship, research and teaching which overlap and which could be supported at the HMSC. The goal is to glue together a program focus in marine science that includes the HMSC. New faculty appointments that emerge need NOT automatically reside at Newport, only be deeply interested. Some/all will grow at OSU to be HMSC constituents.

2. Consider creation of an interdisciplinary Marine Ecology (or Marine Sciences) program with regular meetings (including beer and wine) to develop multi-investigator initiatives across departmental lines. This could result in high competitive proposals for submission to granting agencies and might eventually lead to an interdisciplinary degree in Marine Biology. These meetings could also be used to review progress of the working group chaired by the Vice Provost for Research and to provide faculty members an opportunity for input into the future directions of the HMSC.

3. The HMSC should consider creation of a Development Advisory Board led by someone like Mark Hatfield. This Board could consist of about 20 people with a passion for the Center. They should be drawn from local enterprises with fundraising potential. This Board would seek to develop an endowment for the teaching and research programs at the HMSC. Place this high on the OSU Development list of agendas--it has much potential.

**Recommendations designed to enhance educational opportunities**

1. A short, intense research experience for senior undergrads at the HMSC would be invaluable, transformational and probably the most important experience of their lives at OSU. Consider making this possible by investing in undergraduate research apprenticeships.

2. All marine science programs at OSU should, for the sake of graduate program quality, require graduate students to include a quarter of intense training experience at a field station or on shipboard.

3. Encourage scientists in the State and Federal laboratories to seek affiliate faculty status in appropriate University Departments and to link up with campus faculty



in support of graduate student stipends, undergraduate research opportunities and extension activities at the HMSC. These Federal researchers expressed interest in funding such collaborations and are also available to teach courses on a limited basis.

4. Develop a series of seminars/short courses to be presented at the HMSC for students, the general public (the Seatuaqua Program) and improved science education for K-12. These should be team-taught in conjunction with academic staff from campus whenever possible.

5. Encourage campus faculty members to give more seminars at the HMSC.

#### **Recommendations designed to enhance infrastructure at the Center**

1. Enhance the use of satellite/internet links between the HMSC and Corvallis so that students in residence at the HMSC can take some of the required academic courses without commuting to Corvallis. Such links would also provide opportunities for students and faculty at both the HMSC and Corvallis to sit in on seminars offered at the other campus. [Such facilities already exist at the HMSC and have been used for this. The problem has been financing the cost of such broadcasts.]

2. Continue to emphasize the importance of support for the HMSC library. Federal and State agencies that use the facility should be expected to contribute to its operation. The library is an exceptional resource that can serve as the focal point for activities at the entire Center.

3. Investigate ways to obtain additional short-term faculty housing to encourage visits by faculty from Corvallis. Possible approaches include long-term rental of condos or apartments in Newport, seeking additional private donations and identifying some private or corporate entities that might be interested in trading access to housing and HMSC facilities (e.g., 1 month per year) in exchange for capital to buy facility. Companies to solicit include Tektronix, H-P, TI, etc.)

4. Establish a capital equipment fund to replace aging equipment at the Center

#### **Second Report by Panel Member**

The Hatfield Marine Science Center (HMSC) is an excellent facility for marine science and education, built primarily by the efforts of Lavern Weber. The outreach and "K-gray" educational programs are national models, and provide OSU with a powerful link to the public. The undergraduate and graduate education programs are outstanding and serve OSU students in a wide range of majors. The applied science research programs are spotty. Some are clearly excellent by any standards, while others bring less to OSU. The Center is not used much for basic research in coastal marine science.

#### **RECOMMENDATIONS**

1. **Strengthen the applied science program** by instituting a rigorous program of review. There is a widely-held belief, apparent here as well as at many universities, that "soft" scientists (whose programs are supported entirely by outside funding), since they provide funds rather than use them, should not be subject to the same review process expected of university-supported faculty. This policy often results in marginalization of outstanding scientists, and permits the retention of other scientists whose reputations do not benefit the university.

The actual review process should be designated by the departments in which these scientists hold courtesy appointments. Criteria might include (a) overhead contributions averaged over a three-year period that at least cover all costs, and (b) at least one first-authored publication per year, in journals approved by the supporting departments. At certain intervals, the opinions of qualified outside reviewers should be sought.

The extension program built around the applied science programs should be continued. It would be difficult to improve it.

**2. Develop a basic science program** in marine coastal science that utilizes the marvelous facilities at the HMSC. Whatever history has prevented this in the past, it is time to begin anew and build a strong link between basic science on the main campus and the HMSC.

This decade is being regarded widely as a time of opportunity for the environmental sciences, which have traditionally been regarded as instrumentation-limited. Advances in computer science, molecular science and medical science have provided exciting new tools that allow environmental scientists to ask questions that could not have been approached even ten years ago.

Funding will become more available because the environmental problems of the next several decades will force it. This year's proposed budget includes significant increases for environmental science research. Given that a very large proportion of the US population lives on a coast, it is reasonable to assume that the increased funding will provide specifically for coastal marine sciences.

Opportunities exist on campus in that faculty lines are open in several academic departments that might support basic research in marine science. While these lines are not under the control of the research office, support and encouragement in the form of setup opportunities can encourage the development of a strong coastal marine science program that will utilize the existing facilities of the HMSC.

A Visiting Scientist or Postdoctoral Scholar Program, for scientists hosted in Corvallis and utilizing the HMSC facility, could help to foster the development of a coastal marine program. NSF's IGERT program should be explored as a way to encourage interdepartmental training of coastal marine scientists.

**3. The College of Oceanic and Atmospheric Sciences** did not participate in the site visit. At one time, College faculty were in residence at the HMSC, but this practice was discontinued, perhaps because a strong programmatic link between the College and the HMSC was not maintained. Encourage partnership, especially in view of the new national interest in nearshore oceanographic processes. The HMSC could provide facility support for strong existing OCE programs in coastal oceanography. The College could and should be a major component of any new program development in coastal marine science.

**4. When Lavern Weber retires, consider replacing him with two people:** a director who resides in Corvallis and who is responsible for program development, encouragement of cooperation and coordination with main campus units, and general facility oversight; and an assistant or associate director who resides at the HMSC and who is responsible for day-to-day operation of the HMSC.

In summary, the perception that 50 is a great distance is just that -- a perception. Many of my colleagues commute that distance daily. The distance isn't the problem though the perception may be a symptom of it. The HMSC is a marvelous facility supporting some excellent programs. It is fully or mostly occupied, but it is not fully integrated with the main campus and thus does not serve OSU as well as it might. The HMSC could become the focus of a strong, centralized program in coastal marine science that

unites many separate programs in Corvallis, and links them to the programs and facilities at the HMSC.

I remain amazed at what Lavern has built despite the absence of a solid academic mandate from Corvallis. Rather than worrying about why the mandate never developed, I would take advantage of a number of open faculty lines to encourage its development now.

## Appendix III: Physical Plant Changes

### General Improvements

#### 1988-89

- Major repair of seawater pumping dock due to storm damage
- New concrete tile roof of public wing completed
- Asphalt sidewalks replaced with concrete
- Li apartments completely refurbished with new flooring, blinds, furniture, paint and general fix-up - paid out of housing income
- Thermoforms and Braille signs created and installed in public wing
- Video projector purchased and installed in auditorium
- Interpretive signs and benches installed on nature trail

#### 1989-90

- Replaced ship ops roof with concrete tile
- Complete renovation of public meeting room and auditorium (new tile floor, new auditorium seating, stage curtain and video projection equipment)
- Increased accessibility by installing audio loop in auditorium - radio receivers for electronic pickup available, pocket transmitters for tour guides)
- Marilyn Guin donates her home and three acres of swampland to OSU - used for visiting instructors and faculty housing after refurbishing
- New telephone system installed - fiber optics to all buildings
- Computer seawater monitoring system: monitors tidal changes, salinity at the seawater intake and in the building, temperature of bay water and water temperature in building
- 800,000-gallon seawater storage tank comes online
- June 28, 1990 - completely automated seawater control system passed test - automatic start-up after power failure - adds to our computerized monitoring system
- Added back-flushing line to storage tank to maintain free flowing seawater intake

#### 1990-91

- Paved parking lot in front of housing units and installed drains
- Replaced old corroded aquarium electrical system
- July 4, 1990 - Official dedication of new Guin Library

#### 1991-92

- Installation of Ed-Net I and II equipment
- Reconditioning of HVAC system - 10-year contract to recondition our heating system in main building and education building. 270-control point direct digital control system replaced old pneumatic controls
- Through cooperative efforts of NOAA and physical plant, we have a complete weather and tidal station.
- New walkway lighting
- November 22, 1991 - Official dedication of new EPA lab

#### 1992-93

- Emergency phone system around Center to provide increased security
- ADA Compliance committee established



- Leslie Terra does new bird exhibit
- Estuary nature trail extended across the marsh toward OrCA through OrCA and Angell Job Corps efforts

**1993-94**

- Purchase of Pic-Tel videoconferencing equipment
- Major upgrade of Ed-Net studio and control room and equipment
- Parker Henchman, Facilities Manager, retires after 12 years - replaced by Tony Watson

**1994-95**

- May 29, 1995 - Public wing officially closed for renovation
- Replaced wooden decks and ramps for housing units
- Installed safety railing around top of 800,000 seawater storage tank
- Wooden oyster sink-float constructed and installed by small dock

**1995-96**

- Construction completed on USFWS building
- January 1996 - Demolition and renovation of Public Wing begins
- 72-foot plastic greenhouse built in NAL courtyard for aquaculture experiments

**1996-97**

- August 23, 1996 - Two modular housing units officially dedicated
- May 17, 1997 - Public wing, Ship Operations building, dock expansion, and USFWS building officially dedicated

**1997-98**

- July 15, 1998 - Astoria Seafood Lab and Duncan Law Seafood Consumer Education Center officially dedicated

**1998-99**

- Education Building shake roof replaced with concrete tile
- Replaced chlorination system
- HMSC weather station data displayed and updated continually on the Web

**1999-2000**

- Randy Walker hired as new Facilities Manager
- Sea Grant installs low-power radio system
- Yellow submarine donated to HMSC by Oregon Museum of Science and Industry
- Physical plant shops moved from RSF to main building - added new dust collection system and other safety features
- Added new lighting to after-hours visitor entrance
- Boat storage shed built beside west wing of main building
- Completely renovated Lab 143 in main building (floor, walls, cabinets) for CIMRS
- June 2000 - Ed-Net decommissions Network I satellite system

**2000-2001**

- Re-roofed Li House, dining hall and bunkhouse
- Built new deck, walkway and stairs at Guin House
- November 2000, *R/V Elakha* dedicated - replaces *R/V Sacajawea*
- Completely renovated Labs 123, 125 and 145 for new COMES researchers (floor, walls, cabinets)

- Moved back-up generators to newly constructed sheds, one by boat shed and one by the seawater pump dock
- Modular office building placed between East Wing of main building and NAL for NMFS until Fisher Building is complete
- Construction begins on new NOAA Barry Fisher Building - removal of two above-ground seawater storage tanks in that location

### **Specific Building Construction Information**

#### **Estuary Nature Trail**

Funding: Land Conservation and Development Commission's 306(A) Coastal Zone Management Funds

Amount: \$19,500

Contractor: Angell Job Corps with donations from Road and Driveway Company

Distance: 1/4 mile one-way

Official Dedication: Jun 3 7, 1988

#### **New Environmental Protection Laboratory and Library:**

Funding Source: Supplemental appropriations FY 94 and FY 95 - two for planning and one for construction

Amount: \$12.2 million

Land: Donation of land from OSU (in exchange for building library)

Architects: NBBJ, Architects; Moreland Unruh, Associate Architects;

CH2MHill, Engineers

Contractor: Robinson Construction, Tigard

# of Square Feet: Library = 21,000 Lab = 40,000

Took possession: Library - June, 1990. Lab - October 1990

Official Dedication: Library - July 4, 1990. EPA Lab - November 22, 1991

1984 Supplemental appropriation language directed EPA to spend up to \$165,000 for a feasibility design study for a new laboratory facility

1985 Agency funded a study that concluded that in the long run, a new facility at Newport made good economic sense. This fit with the Agency's facilities master plan. Agency received \$500,000 for design in a supplemental appropriation.

1986 Agency developed a program of requirements for and selected an A&E firm for design

1987 A&E finished preliminary design and began final design. Agency received \$12.2 million in the FY 88 B&F appropriation for construction of new facilities at Newport.

1988 Design completed, approval by OSSHE - land acquisition from Port of Newport - Library building designed by Moreland Unruh (Jim Lewis) of Eugene

MOU created: OSU would donate land to EPA, OSU would operate and maintain the library on behalf of EPA, OSU will provide at its own expense everything necessary to operate and maintain the library, including all personal property; OSU will operate and maintain the seawater system on behalf of EPA. (June 1988)

1990 Construction completed with occupancy in July

Robinson Construction of Tigard was contractor

**US Fish and Wildlife Service Building**

Funding Source: \$1,700,00 available in fiscal year 1993 for "...a grant to the Newport Marine Sciences Center, Newport, Oregon, for an Oregon Coast Refuges Complex..." Project authorized under P.L. 102-395.

Amount: \$1,710,000 transferred to USFWS August 1, 1993

Land: On sub-lease from OSU

Architect: William Wilson Architects, Portland

Contractor: J. R. Turner, Roseburg

Number of square feet: 8,200

Took possession: August 31, 1995 - Moved in September 1995

Official Dedication: May 17, 1997

**Dock Expansion and Ship Ops Building**

Funding: (1) Through appropriations from the Congress, funds in the amount of \$1,700,000 have been made available in fiscal year 1994 for "...dock facilities at the Newport Marine Science Center in Newport, Oregon, in support of NOAA's VENTS Program and other federal oceanographic and marine research activities at the center..."

(2) Through appropriations from the Congress, funds in the amount of \$2,460,000 have been made available in fiscal year 1995 "...for the completion of a wharf and support facilities at the Marine Science Center in Newport, Oregon..." The Senate report further specifies that the "Hatfield Marine Science Center..." as the intended recipient.

Amount: See above

Land: On leased land from Port

Special Consideration: Mitigation project on native oysters because of off-season pile driving

Architect: k p f f = primary design contractor and gLAs Associates, building architecture sub-contractor

Contractor: Dale Ramsey Construction

Number of square feet: Building = 5,184; Staging Bldg on dock = 1,728 - Existing dock had 120" face x 24" - New dock 320" face x 60" wide (40" wide at small craft float)

Took possession:

Official Dedication: May 17, 1997

**Public Wing Renovation and New Entrance Roads**

Funding and amount: (1) VA/HUD/Independent Agencies Appropriations Act for Fiscal Year 1993 (Conference Report 102-902) directs the NASA to spend \$500,000 on the distance learning activities at the Marine Science Center. Planning grant from NASA \$500,000. Actual Grant NAGW-3683 for \$492,000 to begin September 1, 1993.

(2) VA/HUD/Independent Agencies Appropriations Act for Fiscal Year 1994 (Conference Report 103-715) "+\$5,000,000 for science education facility in Newport, OR - Public Law 103-327. Special Purpose Grant No. OR16SPG501 from HUD to OSU for \$5,000,000. To begin June 1, 1995.

Land: On leased land from Port

Architect: gLAS, Eugene, and Aldrich/Pears Associates, Vancouver BC  
Contractor: Dale Ramsey Construction  
Number of square feet: 17,000  
Took possession: Of bookstore, restrooms & lobby December 1, 1996  
Official Dedication/Opening: May 17, 1997

#### **Manufactured Units for Family and Handicapped Accessible Housing**

Funding: Donations from the International Living Center Campaign (\$70,000) and loan from OSU Housing (\$60,000?)  
Land: On leased land from Port  
Architect: Manufactured homes under supervision of Jerry Watson  
Contractor: Intercity Mobile Homes (Golden West, manufacturer)  
Number of square feet: 1188 each  
Took possession: August 22, 1996  
Official Dedication/Opening: August 23, 1996

#### **New Building for the Astoria Seafood Lab**

Funding and amount: \$3,206,908 - Cooperative effort

- Cooperative State Research, Education and Extension Service (Federal grant) of \$1,979,770
- Oregon AES \$1,117,387
- OSU Seafood Research Lab (Loan for AES Office) \$350,000
- OSU Seafood Research Lab (Specialized Fixed Equipment) \$225,000
- Oregon Economic Development Dept (State grant) \$70,000
- Oregon Department of Energy (Loan - Pending) \$171,000
- Astoria Development Commission (pending) \$300,000 - Contingent on motel completion - looking also into motel/hotel tax to offset shortfall)
- Seafood Consumer Center (pending) \$150,000

Land: 2001 Marine Drive, Astoria OR 97103  
Architect: SRG Partnership  
Contractor: Lease Crutcher Lewis  
Number of square feet: 20,805  
Took possession: November 1997  
Official Dedication/Opening: July 15, 1998

#### **NOAA NMFS Barry Fisher**

Senate Report 104-353, FY ending 97: "The recommendation also includes \$3,500,000 for remodeling and minor additions to existing buildings at the Newport Marine Science Center, and the Committee directs NOAA to immediately release funds appropriated last year for studies regarding critical space requirements at the Center."

NMFS NW spends \$140,000 for needs assessment study 9/26/96  
Funding: NOAA Budget  
Land: Built on land already owned by NOAA, previously housing two above-ground seawater storage tanks  
Construction begins: September 2001  
Architect: gLAS  
Contractor: Ramsay-Gerding Construction Co.  
Number of square feet: 15,000





## **Appendix IV: HMSC Timeline, 1965-2001**

**Hatfield Marine Science Center Timeline 1965-2001**

- 1965 Oregon State University Marine Science Center at Newport is completed. Facilities include main building and aquarium, dockside service building, and dock for oceanography research vessels.
- 1965 Dr. Wayne V. Burt, Chairman, Department of Oceanography, and Dr. Thomas Scott, Head, Department of Fisheries and Wildlife, are appointed Director and Associate Director respectively of the MSC.
- 1967 OSU acquires gift of land on Netarts Bay and builds a modest hatchery and laboratory on Whiskey Creek for research on salmon production.
- 1967 Dr. John V. Byrne is appointed Chairman, Department of Oceanography, OSU.
- 1967 OSU acquires U.S. Coast Guard facilities at Port Orford for marine research.
- 1968 OSU receives first institutional Sea Grant award.
- 1970 Separate 9,000 square-foot laboratory is completed for Oregon Department of Fish and Wildlife next to main building at MSC.
- 1972 Port Orford research station is returned to the Coast Guard because of budgetary restrictions.
- 1972 Dr. John V. Byrne is designated Director of the Marine Science Center.
- 1972 Li House residence building is completed at MSC.
- 1973 Year-round instruction at the MSC is established.
- 1973 Main staff access road is paved and storage/sedimentation tank for seawater system is constructed.
- 1974 Office addition to the aquarium to handle the Sea Grant Marine Advisory Program staff is completed.
- 1975 City of Newport connects MSC with water and sewer services. The new high volume seawater facility is operational. The bunkhouse is completed.
- 1975 R/V Wecoma is stationed at the MSC.

- 1976 Completion of education/library building at MSC. Dedicated in 1977.
- 1977 Meeting/dining hall for housing complex is completed.
- 1977 The position of Director of the Marine Science Center is expanded, placing responsibility and authority for the entire complex with the on-side director. Dr. Lavern J. Weber is appointed to fill this position.
- 1978 Northwest Coastal Information Center is stationed at the MSC.
- 1978 Four-year funding for Marine and Freshwater Biomedical Center is received.
- 1979 Newport Aquaculture Laboratory building funded by National Oceanic and Atmospheric Administration (NOAA) is completed.
- 1979 Fisheries and Wildlife Department establishes one-term residence requirement at MSC for major students.
- 1980 Environmental Protection Agency moves its entire Pacific Marine Division from Corvallis to the MSC and leases the west wing of the main building.
- 1980 First intensive one-quarter course in Marine Biology for College of Science students is begun at MSC.
- 1981 NOAA-funded Research Support Facility building is completed.
- 1981 First required winter term for Fisheries and Wildlife majors at MSC.
- 1981 Northwest Coastal Information Center is closed for lack of funding.
- 1982 Cooperative Institute for Marine Resources Studies (CIMRS) is established at MSC. Dr. William Percy is selected as first Director in 1983.
- 1983 OSSHE officially changes the name of the OSU Marine Science Center to the Mark O. Hatfield Science Center in honor of the man who was governor of the state when the HMSC was established.
- 1983 National Marine Fisheries Service, Alaska Fisheries Science Center, Fisheries Behavioral Ecology group is located at the HMSC with the arrival of Bori Olla.



- 1984 Pacific Marine Environmental Laboratory assigns Marine Resources Research Division, VENTS Program, to HMSC with arrival of Stephen Hammond and Robert Embley.
- 1984 National Coastal Resources Research and Development Institute is established under Director Thomas Maginnis with headquarters located at the HMSC.
- 1985 First official educational coordinator position (part-time) established and filled by Dr. Robert Olson.
- 1985 Dr. William McNeil replaces William Percy as Director of Cooperative Institute for Marine Resources Studies.
- 1985 Donation of \$300,000 is received and is used for construction of twelve-unit apartment complex, Winton Housing, increasing student housing capacity from 40 to 88.
- 1985 U.S. Fish and Wildlife Service stations Roy Lowe, coastal wildlife biologist for the Western Oregon Wildlife Refuges, at the HMSC..
- 1986 Coastal Oregon Productivity Enhancement Program (Adaptive COPE) through the College of Forestry is located at the Center.
- 1987 Coastal Oregon Productivity Enhancement Program (Adaptive COPE) established at the HMSC.
- 1987 Funding approved for \$12 million EPA laboratory building, seawater storage tank and library, to be completed 1990.
- 1988 HMSC Director given responsibility for overseeing Public Wing
- 1988 Estuary nature trail built with grant funds and labor of Angell Job Corps
- 1989 Official establishment of the Coastal Oregon Marine Experiment Station with Dr. Lavern Weber as the first superintendent. This includes the Astoria Seafood Laboratory.
- 1989 New telephone system installed with fiber optic links to all buildings
- 1990 Guin Library completed and dedicated on July 4. Marilyn Guin donates her home and three acres of marshland to OSU. The Guin House is to be used for visiting instructors and faculty housing. Janet G. Webster is selected to replace Marilyn Guin upon her death.

- 1990 Completely automated seawater control system comes online with 800,000 gallon seawater storage tank.
- 1990 Marine Mammal Program Endowment is voted as a university-wide fund raising priority. Dr. Bruce R. Mate is selected as the first Director of the Program.
- 1991 Thomas Chandler becomes the first dedicated HMSC development officer, stationed at the Center.
- 1991 Dr. Weber becomes Director of Cooperative Institute for Marine Resources Studies, replacing William McNeil.
- 1991 Official dedication of completed EPA on November 22.
- 1991 Installation of Oregon Ed-Net I and II satellite receive and broadcast equipment
- 1992 First Markham Research Symposium (though the name was not used until 1994 session).
- 1992 EPA officially relinquishes the Guin Library building to OSU.
- 1993 Whale Watch Program officially turned over to Oregon State Parks, with HMSC continuing to do the training of volunteers.
- 1994 First four members of NMFS, Northwest Fisheries Science Center, arrive at Center.
- 1994 PictureTel videoconferencing unit purchased - major upgrade of Ed-Net studio and control room equipment.
- 1995 Mamie Markham donates \$500,000 to establish the Markham Endowed HMSC Director's Chair, with funds to be used to support graduate education and research projects.
- 1995 Public wing officially closed for renovation on May 29.
- 1995 New USFWS building completed and occupied.
- 1996 Actual renovation of public wing begins in January.
- 1996 Adaptive COPE ends its ten-year funding life and remaining staff are relocated back to Forestry on the main campus.
- 1996 Purchase, installation and dedication of two handicapped accessible modular homes behind the bunkhouse.
- 1996 Oregon Area Health Education Consortium moves to the Center.

- 1997 May 17 is official dedication and reopening of the new Visitor Center, new two-story Ship Operations building , and extended dock.
- 1997 New Joint Project Agreement between NMFS and OSU is signed in December to strengthen the basis for the Cooperative Institute for Marine Resources Studies.
- 1997 Sea Grant assumes programmatic responsibilities for the Visitor Center in November.
- 1998 HMSC signs Memorandum of Agreement with Coastal America and the HMSC Visitor Center becomes an official Coastal Ecology Learning Center.
- 1998 Astoria Seafood Laboratory and Duncan Law Seafood Consumer Education Center are officially dedicated on July 15.
- 1998 Last Coastal Oregon Productivity Enhancement Program staff member leaves the Center. Program officially ends January 1999.
- 1999 Oregon Museum of Science and Industry donates yellow submarine to Visitor Center.
- 1999 Allan Stoner becomes new Program Leader for NMFS Alaska Fisheries Science Center Fisheries Behavioral Ecology Group.
- 1999 Oregon Area Health Education Consortium moves to Corvallis.
- 1999 Sea Grant installs low-power radio system along the central coast
- 2000 First Five-Year External Review conducted of HMSC.
- 2000 Dr. Clare Reimer s becomes next Director of Cooperative Institute of Marine Resources Studies as Dr. Weber steps down.
- 2000 Oregon Ed-Net decommissions Net I satellite system
- 2000 R/V Elakha dedicated in November and replaces the R/V Sacajawea.
- 2000 Construction begins on NMFS Barry Fisher building with removal of two above-ground open seawater storage tanks.
- 2001 Lavern J. Weber Visiting Scientist Fellowship created to support short-term marine scientists at the Center.

- 2001 Dr. Lavern Weber officially retires as Director on December 31, but continues half-time until July 1, 2002.
- 2002 Dr. George W. Boehlert begins his tenure as Director of the HMSC on July 1.