

Report of an external review

Oregon State University Hatfield Marine Science Center

September 16-17, 2010

The External Review Team for the Oregon State University Hatfield Marine Science Center (HMSC) met on September 16-17, 2010. The Review Team included:

- **Susan Capalbo** (chair), head, OSU Department of Agricultural and Resource Economics,
- **Jack Barth**, professor, OSU College of Oceanic and Atmospheric Sciences,
- **Sally Hacker**, associate professor, OSU Department of Zoology,
- **Jo-Ann Leong**, director, Hawaii Institute of Marine Biology, University of Hawaii,
- **Jim Sanders**, director, Skidaway Institute of Oceanography, University of Georgia, and
- **John Stein**, deputy director, NOAA Northwest Fisheries Science Center, Seattle.

A schedule for the review is attached as Appendix A.

The charge to the Panel is to “determine how [the OSU Hatfield Marine Science Center (HMSC)] has performed on its strategic plan, which has four basic principal objectives related to research, education, partnerships, and community interactions. ... how HMSC as an entity orchestrates and facilitates the work of Oregon State University and its partners.” The Review Team was provided with a “self-study” review document and the HMSC Strategic Plan which was completed in December, 2006, access to the HMSC Master Plan 2007-2022, and links to other HMSC annual reports and newsletters, and to the OSU Strategic Plan—Phase II, 2009-2013. The Review Team would like to commend George Boehlert, HMSC director, for the careful and professional presentation of the material in the self-study and to thank him and colleagues at the HMSC for their honest and open discussions, for their hospitality, and for their passion and vision for the future of the HMSC. The academic and research environment we experienced during the course of the two-day review and the dedication of the faculty and staff are a credit to the leadership and talent that exists at HMSC. It is also clear that the director, the Center itself and HMSC personnel are valued members of the central Oregon coast community, and that this relationship offers expanded opportunities for Oregon State University.

The Review Team has done its best to ensure that statements made in this report are correct although it is possible that some minor inaccuracies may exist. We believe such inaccuracies, if present, would not negate the intent and thrust of our recommendations.

General overview and observations

At the conclusion of the two-day review, the Review Team was able to develop several shared impressions and overarching observations (not mutually exclusive) about the OSU Hatfield Marine Science Center which help shape the context within which we evaluated the opportunities for Center and the recommendations that follow. These shared impressions and overarching observations include:

1. *Connectivity and relevance of HMSC to OSU.* The research, teaching, and outreach connections between HMSC and OSU are strong but could be even stronger. In particular, it is important for OSU to view HMSC as a valuable and highly relevant asset for University-wide marine and coastal research, teaching, and outreach. It is clear that opportunities exist to better integrate faculty research interests on both campuses and to coordinate and expand academic programs currently offered on the main campus.
2. *Access to the sea and all things marine and coastal.* The HMSC provides a physical facility and intellectual climate for researchers, educators, and students of all ages to have unparalleled access to the sea and all things marine. The combination of geographic location, oceanographic ship staging and berthing, state-of-the-art technology and office space, on-site housing for faculty and students, the excellent library and the breadth and depth of scientific expertise provides a unique environment among research-intensive institutions to position OSU to be the recognized leader in addressing issues critical to the sustainability of our planet and more specifically to our coastal and marine ecosystems.
3. *Coastal face for OSU.* The HMSC is OSU's coastal campus for research and education in marine and coastal sciences, but it is also the face of the University to the local communities, to international visitors to the Oregon coast, and to all Oregonians. Because of this OSU has a tremendous advantage, not enjoyed by the other OSU institutions. It is our responsibility as well as privilege to enhance the Land Grant and Sea Grant missions and what better way than through the front door of the HMSC.
4. *Incubator for research and applied analysis on "big" science and policy issues regarding marine and coastal challenges.* It is clear to the Panel that the research breadth and expertise in the biological and ocean sciences has provided a solid platform for marine science research, and the added presence of federal and state research partners provides a critical mass that begs for more big science and collaborative projects. These opportunities would be enhanced if the infrastructure and process to encourage such collaborations were set as a high priority by the Research Office and respective colleges, if a collective identity as an interdisciplinary Marine Science faculty were supported, and if the social science and policy dimensions were strongly developed and connected to the collaborative research.
5. *Aligning organizational structure with core support.* The complexity of the HMSC, coupled with the four strategic objectives related to research, education, partnerships, and community interactions, clearly distinguish the HMSC from the "typical" research center. Such a responsibility, to meet these four objectives and be the coastal face of OSU, must come with a well-crafted process to deliver

needed and sustained core support in terms of financial resources as well as internal “champions” within the larger OSU infrastructure. Within the University more broadly, support for establishing and maintaining partnerships, creating educational opportunities, and sustaining community relationships necessarily draws from talented people and other resources throughout the institution; such resources should likewise be available to support the missions of HMSC.

We have structured our review to address the four specific areas noted in the charge—research, education, partnerships, and community interactions—and have added a fifth area which reflects our observations and recommendations regarding organizational structure and core support for the HMSC. For each of the specific areas, we provide a brief overview and conclude with area-specific recommendations. We summarize the key recommendations based on the analyses of each of the five specific areas in the following section.

Summary of key recommendations

Key recommendations based on the analyses of each of the five specific areas are provided below. Please refer to the discussions in each specific area for greater detail on each of these key recommendations, for other recommendations that have been articulated by the Review Team, and for the context within which these recommendations are made.

Research

- *Establish a Marine Science Faculty at HMSC with the “department” head having formal input into the promotion and tenure proceedings in the faculty member’s home department (e.g., Fisheries and Wildlife, COAS).*
- *Hire an additional person in the HMSC cyberinfrastructure group and task them with improving the HMSC web presence, especially the access to marine data and information. In tandem, examine how the cyberinfrastructure is supported at HMSC to make it equitable across units and able to be included as a direct cost in research grants.*
- *Elevate the importance of the seawater system and the dive and small-boat programs as prime enablers of research and provide the necessary coordination and support to ensure safe and reliable access.*
- *Ensure research and applied analysis on “big” science and policy issues regarding marine and coastal challenges is elevated to highest priority at HMSC and at the main campus and integrated into a cohesive program. Provide seed monies to develop these intellectual clusters that will target funding opportunities and build the transdisciplinary connections. To further enhance the connectivity between these two facilities and these two faculties, initiate an HMSC-OSU seminar series on timely research topics, such as marine reserves or climate and policy impacts on marine ecosystems and coastal watersheds.*

Academic programs

- *HMSC should actively encourage departments on the main campus to develop courses at all levels (lower and upper division, graduate, and extension) to be taught at HMSC (either on-site or delivered remotely).*
- *HMSC should appoint a faculty representative from the Center to facilitate graduate education at the Center by engaging faculty, administrators, and staff on both campuses. HMSC and main campus need to work together to make graduate courses more accessible to graduate students living in Newport. They also need to resolve the fee structure charged graduate students who are living off-campus at HMSC.*
- *Main campus, HMSC, and Oregon Sea Grant should work together to better market and showcase the Visitor Center, bookstore, and surrounding nature reserve. In addition, consider establishing a small Visitor Center “outlet” on Newport’s northern bay front.*

Partnerships and infrastructure

- *So the HMSC director may be an effective advocate for the Center, including securing new facilities and equipment, OSU should ensure that the HMSC director has access to key leadership within the OSU administration.*
- *OSU should strongly consider dedicating a development officer to HMSC because of the pressing space and associated infrastructure issues, and because of the strong support for HMSC by Oregon’s coastal community.*
- *OSU should develop an institutional initiative to make the HMSC the recognized face of OSU on the coast. The initiative should address the administrative, organizational, and infrastructure needs to solidify HMSC’s prominence as the coastal portal for all elements of the University—research, academic, outreach.*

Community interactions

- *Improve both the perceptual and physical “entrances” to HMSC through highly recognized campus entry points, well-positioned signage, and electronic communications and displays.*
- *Involve others at HMSC who have the needed skills and knowledge to be a collective voice for the Center and a critical connection point with the community.*

Organizational structure

- *OSU should consider an expanded reporting structure that recognizes the diversity and uniqueness of the HMSC; such a structure should include, at a minimum, an additional reporting responsibility for the director to the academic side of the University, specifically to the executive vice president and provost.*

Review of specific areas

1. Research

Research at the Hatfield Marine Science Center encompasses a wide range of disciplines and is facilitated by HMSC's access to running seawater in its laboratories, nearby estuarine and coastal ecosystems, formal collaboration with OSU academic units, and partnerships with federal, state, and community partners. In talking with community partners, it is clear that HMSC is seen as an exciting center of marine scientific research. While the actual number of formal OSU faculty housed at HMSC is relatively small, the range and impact of research facilitated by the Center is significant. HMSC faculty, for example in the Coastal Oregon Marine Experiment Station (COMES),¹ and scientists in co-located government labs, for example the National Oceanic and Atmospheric Administration (NOAA) Northwest and Alaska Science Centers, conduct leading-edge fisheries and marine ecology and policy-related research. Seafood and aquaculture research, as well as internationally recognized marine mammal and genetics studies, are conducted through COMES. There is also a clear focus on wetlands, estuaries, and coastal habitats both by HMSC faculty and through collaboration with state (Oregon Department of Fish and Wildlife (ODFW)) and federal partners (U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, U.S. Geological Survey).

We commend the HMSC director, George Boehlert, and the HMSC strategic plan for identifying and enabling top-quality research. It is clear that the director is well-respected and well-connected across Newport, OSU, nationally, and internationally, enabling him to put HMSC researchers in contact with many potential research opportunities. It is also clear that the director does not have enough time to focus on marine research opportunities. We hope that the newly hired program director can be tasked with paying attention to and connecting HMSC researchers with new research opportunities. We also encourage the continued effort to make HMSC the face of coastal research in Oregon. The physical improvements in Marine Science Drive, creating a welcoming portal to HMSC, and improved web presence (see below) should both help.

Through conversations with HMSC faculty, students, and scientists from partner agencies, a few themes emerged that could focus research at HMSC and bring further recognition to this outstanding science center. The study of climate impacts on marine ecosystems, focused on the northern California Current, is timely both because of existing funding opportunities (NOAA Integrated Ecosystem Assessments, NSF-NOAA Comparative Analysis of Marine Ecosystem Organization (CAMEO)) and because of the need to contribute to informed and science-based public policy (e.g., the West Coast Governors Agreement on Ocean Health, Catch Shares and/or Individual Transferable

¹ The Coastal Oregon Marine Experiment Station is part of the Oregon Agricultural Experiment Station and has locations and staff at Newport and Astoria (OSU Seafood Laboratory).

Quotas, marine spatial planning). One specific example spanning basic science to fisheries impact is the study of the recurring hypoxia (levels of dissolved oxygen so low that marine life is adversely affected) in Oregon's coastal ocean. A climate impacts seminar series could bring researchers from the biophysical and social science disciplines together from across the HMSC campus and draw upon expertise at the Corvallis campus. The study of coastal watersheds, including changes due to climate variability like shifting runoff patterns and rising sea level, as well as anthropogenic influences, could also be a focus for the skills resident at HMSC and its partner agencies (e.g., EPA, USFW, USGS, ODFW).

To enable the ongoing and future research at HMSC, two opportunities related to cyberinfrastructure were identified. The first is that because HMSC researchers are isolated from the main campus and are also relatively isolated geographically, they rely heavily on electronic tools. HMSC should improve its cyberinfrastructure support by hiring a person to improve the HMSC web site, including its use for accessing marine data. The second cyberinfrastructure opportunity is related to access to marine data, that is, an improved effort on ecoinformatics, especially including the federal agencies at the Center who are themselves embarking on major ecoinformatics programs. To accomplish these tasks may require a re-examination of how cyberinfrastructure is supported at HMSC. This may include (1) finding ways to charge these costs to research grants and (2) charging equitably across the various faculty members and units (not all HMSC faculty contribute to meeting HMSC cyberinfrastructure costs).

Opportunities to expand HMSC-based research through collaboration with the newly based NOAA fleet in Newport and for conducting research in collaboration with local fishermen were identified. Lastly, the importance of safe diving and small-boat programs is critical to enabling research at HMSC. Access to coastal sites requires consistent, safe, and reliable infrastructure such as boats and dive gear, and competent staff to oversee and coordinate these activities. Because these activities carry inherent risk, it is imperative that procedures be in place to provide appropriate training and guidance and ensure safe operations. OSU has recently hired a full-time person to manage these programs, but we note that this person should be housed at HMSC and administratively placed under the Environmental and Health Safety officer at OSU.

In talking with HMSC faculty and the representatives of the various OSU entities at HMSC (COMES, CIMRS, MMI) it is clear that the faculty do not feel like, nor are they viewed from the outside as, a cohesive group. Faculty members not only have differing levels of state support, not unlike faculty in units on main campus, but they are treated differently by their home departments. For example, some home departments allow HMSC faculty to be major advisors for graduate students and some do not, some provide faculty mentors and some do not. We suggest forming a Marine Science Faculty, but simply renaming the faculty without changing the ways in which they are treated will not be enough. Members of the HMSC Marine Science Faculty should be treated evenly

by their home units on campus and the Marine Science Faculty “head” should have formal input into promotion and tenure activities in each faculty member’s home department. Last, we note that the young faculty members we talked with were all senior research “soft money” positions and urge caution about relying too heavily on this OSU faculty category. We realize “soft money” positions allow flexibility in responding to emerging research opportunities, but those positions are not always the best for young faculty (they can be excluded from various federal government young researcher awards, for example). Perhaps a formal procedure for transition from soft-money to a tenure-track OSU faculty position could be adopted.

Structurally, we note the importance of the OSU-NOAA Cooperative Institute for Marine Resource Studies (CIMRS) for enabling cross-disciplinary research at HMSC. OSU should give its strongest support to CIMRS for its recompetition, likely to happen next year. We also noted that the Marine Mammal Institute (MMI) was split off from COMES as a separate identity. The Review Team is concerned that MMI has very few faculty and a mission similar to COMES, and thus splitting it off from COMES may be adding more complexity to the organizational structure at HMSC. The added benefits of the separation are not obvious to the Review Team.

Recommendations

Based on our analysis, the Review Team makes the following recommendations related to research:

- *Establish a Marine Science Faculty at HMSC with the “department” head having formal input into the promotion and tenure proceedings in the faculty member’s home department (e.g., Fisheries and Wildlife, COAS). This would help with building a cohesive faculty at HMSC and improve the uniformity by which HMSC faculty members are treated by their home departments. In particular, Marine Science Faculty should be able to be major advisors to OSU graduate students, no matter their home department affiliation. (Note: this recommendation is restated as part of the set of recommendations in Section V.)*
- *Encourage further interdisciplinary linkages by exploring the social science and policy dimensions of the big science research issues in coastal and marine sciences. Provide seed monies to develop these intellectual clusters that will target funding opportunities and build transdisciplinary research programs*
- *Hire an additional person in the HMSC cyberinfrastructure group and task them with improving the HMSC web presence, especially the access to marine data and information. In tandem, examine how the cyberinfrastructure is supported at HMSC to make it equitable across units and able to be included as a direct cost in research grants.*

- *As voiced in other parts of this report, establish the amount of needed research space at HMSC and elevate a request for new space on OSU's priority list.*
- *Elevate the importance of the seawater system and the dive and small-boat programs as prime enablers of research and provide the necessary coordination and support to ensure safe and reliable access.*
- *OSU should proactively seek better connectivity with HMSC faculty and students. Two relatively low cost but effective means could be: add a tour of HMSC facilities and research opportunities to the orientation activities and handbooks for both new OSU faculty and graduate students, and convene a OSU-HMSC-wide seminar series on a timely research topic, in particular climate and policy impacts on marine ecosystems and coastal watersheds.*
- *Consider an OSU-HMSC-supported shuttle to enhance existing three-day-a-week service between Corvallis and Newport.² With increased capacity to move easily between facilities, researchers, faculty, and graduate students would be able to make better use of both facilities and strengthen the connectivity between the two campuses. A frequent, reliable shuttle service should be viewed as a modest but strategic investment, given the potential collaborations and big science research opportunities that HMSC can help facilitate. (Note: This recommendation is repeated in the Academic Programs section of this report.)*
- *Accelerate campus-wide effort to move toward electronic submission of research grants and timely acknowledgement of the receipt of submitted proposals. These efforts will contribute to more efficient and effective use of faculty and researchers' times preparing and submitting proposals, and help to minimize infrastructure barriers with researchers on the main campus.*
- *Review the incentives that are in place for enabling cross-disciplinary research at HMSC, support the efforts of collaborative centers such as the Cooperative Institute for Marine Resources Studies (CIMRS)³ to obtain needed base- and project-level funding, and avoid adding unnecessary complexity to the organizational structures.*

² In cooperation with the City of Corvallis, Benton and Lincoln Counties have established a "Coast to Valley Express" taking riders to and from the cities of Corvallis and Newport for \$7.00 one way. The service runs in the mornings and afternoons on Mondays, Wednesdays and Fridays.

³ The OSU-NOAA Cooperative Institute for Marine Resources Studies (CIMRS) is a long-term, NOAA-university partnership dedicated to research in marine science, graduate and public education, and cooperation with regional industries and communities that are dependent on marine resources.

2. Academic programs

Academic opportunities at HMSC are diverse, targeting a variety of age groups and types of learning. At one end, HMSC has a strong K-12 program and Visitor Center highlighting public outreach. At the other end, HMSC contributes to the undergraduate and graduate marine education mission of the University. The organizational structure of the academic programs at HMSC is complex because the Center is an interdisciplinary research center, not a traditional academic unit. This non-traditional nature stems from the fact that HMSC reports administratively to the Research Office at OSU and has few faculty members with teaching FTE. Thus funds for college-level education (including the salary of the Academic Program coordinator, instructors, equipment, and infrastructure) must come from either inappropriate sources (i.e., the Research Office) or highly unpredictable sources such as the departments and colleges on campus. With the advent of OSU's Ecampus, there is a mechanism to offer courses using paid instructors (rather than faculty with teaching FTE) but, as is explained below, there is no formal funding model that keeps tuition costs the same for students who are taking courses at HMSC rather than on the main campus. Below we review the opportunities and challenges of academic programs at HMSC in more detail.

HMSC has a strong K-12 program and Visitor Center highlighting public outreach.

The K-12 and Visitor Center are managed by Oregon Sea Grant, which focuses on providing marine science literacy for the general public. By most accounts, these programs are highly successful: 12,000 K-12 children from a variety of traditional and non-traditional backgrounds visit HMSC annually, about 150,000 others each year tour HMSC's Visitor Center individually and in groups, and approximately \$80,000 in donations is raised. The Visitor Center, in particular, provides the public face for marine programs at HMSC and OSU. The Center provides an opportunity for OSU to reach out to the local coastal population but also vacationing tourists from around the world (see also Community Partnerships for more about this outreach opportunity). It is clear that funding is a constant struggle for the Visitor Center, which is eased by the thousands of hours donated by nearly 75 volunteers. Additionally, nominal fees charged to the participating schools or clubs help support the K-12 program. Based on our conversations with Nancee Hunter, Sea Grant education director), other challenging areas include keeping the bookstore associated with the Visitor Center profitable and updating the exhibits (many of which are focused on and developed by researchers at OSU). On the positive end, much needed renovation in 2009-2010 to the Education Building (discussed below) has substantially improved the K-12 teaching facilities.

The Visitor Center also serves as a "social laboratory" for the Free Choice Learning Program created by Oregon Sea Grant. Science and Math Education (SMED), Marine Resource Management (MRM), and Environmental Sciences offer graduate study in free choice learning. This educational program is one of six partners along the west coast developing education and research opportunities for marine science educators. We did

not have an opportunity to interview participants or look at program statistics to gauge its success.

HMSC contributes substantially to the undergraduate and graduate marine education mission of OSU. College-level education at HMSC is a collaborative effort between the Center and the colleges and departments on the main campus. There are a number of different educational opportunities that include upper and lower division undergraduate courses, undergraduate internships, graduate courses, and support for graduate student residents.

1. *Undergraduate upper division courses:* Upper division undergraduate courses (e.g., Bi 450, FW 323, FW 426, FW 431, FW 454) are mostly taught by faculty or instructors in the colleges of Science and Agricultural Sciences. These courses have been relatively successful (high student satisfaction and enrollment), particularly over the past 5 years, when the director, the Academic Program coordinator, and select administrators and faculty from the College of Science and College of Agricultural Sciences in Corvallis began to work together in a coordinated and collegial fashion to create an attractive learning environment. These upper level courses provide hands-on, experiential learning to students who attend class all day, and live at HMSC, for an entire term. Some of these courses are so successful that they attract undergraduate students from all over the country and world to OSU explicitly so that they can enroll in these courses. The collaboration mentioned above has stimulated the director to make a number of much needed infrastructure improvements including the renovation of the classrooms and laboratories in the Education Building and the acquisition of new microscopes to replace old and dilapidated versions (jointly funded by HMSC, Program in Biology, and Department of Fisheries and Wildlife). A continuing challenge for those departments that offer these courses is funding. The courses cost more than campus-based courses because they often require more faculty, teaching assistants, and transportation given their term long nature (e.g., Bi 450 is 16 credits). As of now, these courses are offered through Ecampus so that funds come back directly to the responsible units but Ecampus tuition is much higher than on-campus rates. Thus, students who want to take a course at HMSC have to pay extra for tuition and housing while living off campus. This may be prohibitive for most students and disadvantages lower-income students. Thus far, this extra tuition has been waived by the administration but there is no policy to formalize this model.

Summer courses at HMSC are designed for students who would like to take upper division courses within the summer session schedule. These courses have had uneven enrollment over the years, but by offering more popular courses (e.g., marine mammals and birds) that are not available any other time of year, it seems likely that the enrollment will stabilize.

2. *Undergraduate lower division courses:* Lower division undergraduate courses are a new development at HMSC. The goal of these courses is to expose new OSU undergraduates to marine biology and the opportunities at HMSC. For the most part, these have been organized and taught by Itchung Cheung, the Academic Program coordinator. They consist of 1 credit experiential weekend courses (Bi 111, FW 111) for non-science majors, where they are exposed to such topics as marine mammals, marine birds, ecology of coastal forests, and marine habitats. They have had moderate enrollment each term (15-40 students). In addition, HMSC has recently been using a hybrid model, which involves an online portion coupled with a weekend trip to HMSC for more hands on activities, for students with time constraints. It's too early to tell whether this will be a good model, but early indications have been good. Overall, outreach to lower division students at OSU has been promising but modest and incremental.
3. *Undergraduate summer internships:* Other opportunities for undergraduates at HMSC involve summer internships. The summer internship program at HMSC is strong, with about 30 students sponsored in 2010. The students are sponsored from a variety of sources including a National Science Foundation Research Experiment for Undergraduates grant, HMSC Visitors' Center, NOAA, U.S. Environmental Protection Agency, Oregon Department of Fish and Wildlife, and other programs, and provide an additional mechanism for OSU and agency scientists to engage in education. Although we didn't have an opportunity to interview the participants in these programs or view exit interviews, it seems clear that HMSC is gaining a reputation as an active center for talented and diverse undergraduate students from around the country to conduct research in marine science.
4. *Graduate courses:* The availability of graduate courses at HMSC has mostly involved access to those offered on main campus using the telecom system. HMSC has a dedicated room for this purpose, part of the 2009-2010 Education building renovations, but the access and use on the main campus side has been spotty and unreliable. In a meeting with the graduate students, they cited many cases in which faculty on campus were unwilling to use the telecom system due to the hassles of setting it up and having students off campus. The students and their advisors see this as a huge impediment for them because, without telecom, they must either drive to campus for a course or move there for the term. Many students are supported on graduate research assistantships when at HMSC, so this can be a strain on their ability to work and take courses simultaneously at HMSC. In addition, the commute can be costly, inconvenient, or impossible if they do not own a vehicle.

Another type of graduate course offered at HMSC has been the 2-week intensive course, typically offered in September before courses start in the fall. In the past,

these courses have been offered by Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO) faculty and include graduate students from OSU and other PISCO institutions.

5. *Graduate student residents:* Graduate student residents at HMSC face a number of challenges compared to those on main campus. As described above, they have competing needs to conduct research with their advisors at the Center and take courses on the main campus. As well, they do not normally have access to graduate teaching assistant positions, and even if they do, most of those positions are at the main campus. Another important issue for resident graduate students is the OSU fees they must pay for health care and other on-campus activities, which are impractical for them to access. Thus, they are paying for services they rarely use, resulting in less money for them to use to gain such services in Newport. The graduate students expressed a feeling of frustration that there is no formal graduate student advocate to help them navigate what they perceive to be a major problem with fees and access to health care (this is not part of the Academic Program coordinator's duties).

On the positive side, graduate students who conduct research at HMSC can compete for the lucrative Markham Research Awards, which can be upwards of \$10,000. These awards make a significant difference in the kinds of thesis research projects students can conduct at HMSC. Finally, there is a successful graduate student organization (Hatfield Student Organization, HsO) that is designed to help with issues unique to HMSC students. Students expressed appreciation for the HsO but wished for more faculty engagement and intellectual interaction.

Recommendations

Based on our analysis of the Academic Programs at HMSC, the Review Team makes the following recommendations:

- *HMSC should have a clear funding mechanism to support the important educational programs offered at the Center.* This is partially an organizational structure issue (addressed in Section 5) for which funding needs to be identified to pay for the Academic Program coordinator and maintenance of the educational facilities and equipment. However, it is also a funding-model issue. A formal and permanent plan must be in place to allow the sponsoring units of the courses to use Ecampus without having the extra tuition charged to their students. Without the tuition, in part, coming back to the sponsoring units, there is no incentive for courses to be taught at HMSC.
- *With a consistent funding model and online courses, HMSC should actively encourage more departments on the main campus to develop courses at all levels (lower and upper division, graduate, and extension) to be taught at HMSC (either*

on-site or delivered remotely). The success of the summer education programs should be maintained and future summer courses encouraged. HMSC should pay special attention to underrepresented departments or colleges such as Oceanic and Atmospheric Sciences, Forestry, Engineering, and Liberal Arts. The goal should be to increase marine science literacy and exposure in all disciplines at OSU, and make HMSC the face of marine science and marine policy on the coast.

- *HMSC and the main campus should continue to support accessibility of the Center to new undergraduate students who are unfamiliar with the HMSC and the marine educational opportunities at OSU. In addition, HMSC should continue to increase the visibility of their undergraduate internship program especially to historically underrepresented students.*
- *HMSC should appoint a faculty representative from the Center to facilitate graduate education at the Center by engaging faculty, administrators, and staff on both campuses. This representative would be similar to a chair within a graduate program and could advocate for HMSC graduate students within their respective programs, at HMSC and University-wide.*
- *HMSC and the main campus must work together to make graduate courses more accessible to graduate students living in Newport. This should include consideration of the following actions: a) Require faculty on the main campus use electronic delivery by videoconference or related means when an HMSC student is enrolled in their course (b) provide for a dedicated HMSC videoconference-equipped classroom on the main campus (this would require support and facilitation by Media Services so it would be easy and reliable for all concerned), and c) provide more graduate courses at HMSC using the funding model described above.*
- *Main campus, HMSC, and Oregon Sea Grant should work together to better market and showcase the Visitor Center, bookstore, and surrounding nature reserve. With the new NOAA facility, the road and sidewalks will be improved and this seems like a great opportunity to upgrade the entrance to the Visitor Center and make HMSC more the face of OSU at the coast (see also recommendations in section 4).*
- *Establish a small Visitor Center “outlet” on Newport’s northern bay front. The bay front area attracts by far the majority of visitors to the area. This outlet could advertise the programs and attractions of HMSC and the Visitors Center, thus attracting more visitors to the south side of the bay, but also be a small bookstore retail outlet, increasing revenue to that venture. Staffing could be part of the usual Visitors Center volunteer program.*
- *Consider an OSU-HMSC-supported shuttle to enhance existing three-day-a-week service between Corvallis and Newport. With increased capacity to move easily between facilities, students, scientists, and staff could attend lectures or meetings on campus, as well as enroll in classes in lieu of using videoconferencing. As*

connectivity grows, there could be a second shuttle for OSU faculty and students (and administrators!) to make better use of the facilities and expertise the HMSC community has to offer.

- *HMSC and main campus must resolve the fee structure charged graduate students who are living off-campus at HMSC.* If these students are charged the same fees as those on campus, they are entitled to equal and ready access to health care and other services in Newport.

3. Partnerships and infrastructure

It was clear from the perspective meetings that the Hatfield Marine Science Center is a respected partner of the federal and state agencies and institutions working in Oregon and the Pacific Northwest. In addition, the graduate students located at HMSC acknowledged that they saw clear advantages for them to be able to work with scientists from federal and state agencies; they noted that the interdisciplinary atmosphere on the HMSC campus was a distinct opportunity to them when compared to being on the main OSU campus.

The HMSC federal partners include three organizations from the National Oceanic and Atmospheric Administration: the Alaska Fisheries Science Center, the Northwest Fisheries Science Center, and the Pacific Marine Environmental Laboratory Vents Program, and soon, a fourth, the Marine Operations Center–Pacific. In addition, the U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, and the Oregon Department of Fish Wildlife have facilities on the campus of HMSC. Other agencies resident at HMSC are the U.S. Department of Agriculture and the U.S. Geological Survey. While the Review Team could not speak to all partners, those with whom we did meet uniformly saw clear advantages to working with OSU faculty and students as facilitated by HMSC. A culture of interdisciplinary collaboration was evident; the leadership of HMSC was effectively fostering that collaboration. The NOAA entities and EPA provide opportunities for lab and field work and the Fish and Wildlife Service is looking to increase interactions and can offer ‘restoration test beds’ because they manage six refuges in the region and there are significant habitat restoration activities taking place or planned. This offers an excellent opportunity for OSU students to be engaged in ecological monitoring of restoration effectiveness and is an opportunity to be pursued and facilitated (see the Research section about coastal watersheds as a research opportunity).

An additional partner is the Oregon Coast Community College. The Review Team met the president of the College and it was evident that he saw a high value of partnership with HMSC and eagerly wanted to expand that partnership. For example, the OSU Extension Service is partnering with the College and others on the first annual Natural Resources School, which is covering agriculture, forestry, and fisheries and includes field sessions with several courses taught by OSU faculty. A stronger partnership between HMSC and

OCCC can only benefit the value of HMSC to the region, and will also serve as another education conduit to increase translation of OSU marine research for use by Oregon's coastal community.

Related to increasing partnership, all the agency representatives noted that they would like to see even more interaction with graduate students. The Review Team did hear, however, that one clear gap limiting collaboration through graduate students was the lack of a mechanism to support students during their first year. The federal scientists can often find funding to support the masters student's research but cannot easily find financial support during the first year when the student is completing coursework. If there were financial support for first-year students then the possibilities for additional collaboration and support for students from federal agencies would likely increase.

The relationship with NOAA has special characteristics because NOAA owns two of the buildings that are used primarily by OSU faculty and is part of a shared seawater system. This sharing of facilities requires a joint operating agreement between NOAA and OSU. In addition, there is an acute space limitation at HMSC that was acknowledged by many during the review. This space limitation is severe and will only become more acute as NOAA increases its operations in Newport when the Marine Operations Center is fully operational. To emphasize that this is a pressing and legitimate issue is to recognize that no new University research building has been built since 1965. HMSC has sought outside capital funding and has been aggressive in doing so; the Review Team learned, however, that HMSC was not selected for a National Institute of Science and Technology grant for a new Marine Genomics Building. Thus, a near-term resolution of space issues is not on the horizon at this time; this illustrates that the University must look within to put HMSC and HMSC leadership in a position that maximizes the potential to resolve this pressing issue.

As space becomes limited, tensions among partners and staff can increase, which is a common issue at any facility and does not reflect on the management of HMSC. However, because of this space dilemma, staff at HMSC would like to see more transparency in the negotiations between OSU and the federal agencies, particularly NOAA because of the shared facilities. Moreover, if the HMSC director is to be effective in securing new facilities then the director must have the right access to key leadership within the OSU administration (see section V on organization) to be an effective advocate for HMSC. Further, the Review Team suggests that OSU strongly consider dedicating a development officer to HMSC, because of the pressing space and associated infrastructure issues. In the perspective meeting with community leaders it was clear that the community is willing and eager to support HMSC because they see the value of the Center to region, and the South Beach area, where HMSC is located, is the growth area for Newport. Thus, they support targeted growth at HMSC to increase its value to the community, which further supports consideration by OSU for a dedicated development officer for HMSC.

HMSC has built and is maintaining strong partnerships with key federal agencies that have substantive and significant research and management mandates in the Pacific Northwest. The director has sought to nurture those partnerships. There is a potential for further synergy if the HMSC can truly become the coastal face of OSU. A stronger position for HMSC as the coastal presence of OSU will bring stronger recognition of its value to the University and coastal communities of Oregon and Pacific Northwest. An increase in the ability of HMSC to be OSU's portal to the Northern California Current ecosystem through enhancement or development of infrastructure such as a small boat program and associated vessels, a dive program and a state-of-the-art seawater system would be tangible assets that would enhance partnership possibilities and opportunities with all partners, federal, state, and local.

Recommendations

Based on our analysis, the Review Team makes the following recommendations related to partnerships and infrastructure:

- *So the HMSC director may be an effective advocate for the Center, including securing new facilities and equipment, OSU should ensure that the HMSC director has access to key leadership within the OSU administration.*
- *OSU should strongly consider dedicating a development officer to HMSC, because of the pressing space and associated infrastructure issues, and because of the strong support of HMSC by Oregon's coastal community.*
- *OSU should develop an institutional initiative to make the HMSC the recognized face of OSU on the coast. The initiative should include the administrative, organizational, and infrastructure needs to solidify and enhance HMSC's prominence as the coastal face of OSU. This would include making HMSC OSU's portal to the Northern California Current ecosystem through enhancement or development of infrastructure such as a small boat program and associated vessels, a dive program and a state-of-the-art seawater system. These tangible assets would enhance partnership possibilities and opportunities with federal, state, and local organizations. It would also strengthen the research efforts and academic programs.*
- *HMSC and OSU should build a stronger partnership with Oregon Coast Community College. An enhanced partnership with OCCC will increase the value of HMSC to the region, and will also serve as another education conduit to increase translation of OSU marine research for use by Oregon's coastal community.*
- *HMSC and OSU should identify a mechanism for financial support for first-year graduate students. For master's students working with federal scientists, the federal scientists can often find funding to support the student's actual research but cannot easily find financial support during the first year when the student is completing coursework. If there were financial support for first-year students*

then the possibilities for additional collaboration and support for students from federal agencies would likely increase. Implementing this recommendation would enhance academic opportunities and attractiveness of the HMSC.

- *HMSC should continue to support partnerships with NOAA and EPA to provide opportunities to graduate students for lab and fieldwork, and should work with the Fish Wildlife Service to facilitate the use their refuges as 'restoration test beds'. This offers an excellent opportunity for OSU students to be engaged in ecological monitoring of restoration effectiveness.*

4. Community interactions

Newport community leaders clearly see the Hatfield Marine Science Center as an economic driver and valued resource. We interviewed an enthusiastic and supportive group of community leaders including:

- Patricia Patrick, Newport City Council member; chair, Newport Urban Renewal Commission;
- Jim Voetberg, Newport city manager;
- Patrick O'Connor, president, Oregon Coast Community College;
- JoAnn Barton, commissioner, Port of Newport;
- Tom Picciano, Georgia Pacific Toledo mill;
- Tom Rinearson, superintendent, Lincoln County School District; and
- Fred Postlewait, chair, Oregon Coast Aquarium board, and president, Oregon Coast Bank.

All expressed their support of the marine science center and their perception that scientific expertise there was a valuable resource for them. Many of the community leaders were able to cite examples of connections to HMSC, such as research assistance sought for assessing ecosystem impact of effluent discharge 8 miles from the Toledo Georgia-Pacific plant into the ocean. Another example pointed to attracting new residents and the benefits of having more than 300 scientists in the area. Others applauded efforts to involve coastal fishers (small boat owners) in research, helping offset otherwise lost income and also helping members of the fishing community better understand OSU and HMSC research efforts. Tension that had resulted from a perception that OSU was imposing a "conservation philosophy" on fishers' ability to make a living had begun to ease. HMSC was credited with this more favorable perception.

These community leaders are looking forward to the NOAA move to Newport. They see increased economic activity associated with the move and they are planning to put investments into the "south side" which they designate as their science enterprise area. The Urban Planning Commission envisions a more inviting entry to the south side with bicycle pathways and citizen trails that will bring visitors to the HMSC campus. Thus, they are completely supportive of the HMSC master plan which aims to create a

pedestrian-friendly site and ask that OSU make an investment into programs and projects that will bring more visitors to the site.

The Review Team was interested in the community leaders' perception of HMSC as the coastal face of Oregon State University. The response was interesting. All were strong supporters of OSU. One was a third-generation "Beaver Believer." Another proudly reported that her son was going to OSU and that she hoped he would play for the Beaver football team. The support for OSU was strong, but the connection between the HMSC and OSU was less clear. One prominent community leader who was actively engaged in the NOAA fleet admitted to not realizing that the site was Oregon State University's Hatfield Marine Science Center as opposed to a separate research center. This individual had previously viewed the Marine Science Center as a consortium of science partners, not necessarily connected to OSU in Corvallis. What also emerged from the interview is the importance of personal relationships with these community leaders. The connections were made with George Boehlert and he was the contact they sought in their community deliberations. By all counts, the community leaders felt he has done an outstanding job, but there needs to be a sharing of this responsibility because George cannot be available as the needed voice at all City Council meetings, Urban Planning Commission meetings, and other such sessions.

Recommendations

The Review Team makes the following recommendations:

- *Improve both the perceptual and physical "entrances" to HMSC.* Signage, newsletters, campus entry points, websites, all news releases from HMSC should provide some short explanation that this is Oregon State University's Hatfield Marine Science Center. By improving the physical entrance to the campus, the rehabilitation and redevelopment of infrastructure in the HMSC vicinity offers OSU a one-time opportunity to enhance HMSC visibility and improve connections to the community.
- *Involve others at HMSC who have the needed skills and knowledge to be a collective voice for the Center and a critical connection point with the community.* HMSC representation at the many community meetings cannot be met by the director alone. The newly hired program director might be charged with developing and coordinating the participation of HMSC faculty and staff in community organizations. Janet Webster, head librarian at the Center, has been appointed to a City Council budget committee, but other faculty members in Sea Grant, COMES, NOAA, etc. should become participating members of the community as well. Their input should be viewed as an HMSC contribution.
- *HMSC planning should include pedestrian walkways for site tours and educational field sites that explain the coast to visitors.*

- *The integration of research within the community has been a successful endeavor and HMSC should continue to seek opportunities to work with all sectors of the community to demonstrate the usefulness of the research. The linkages should be continued with the K-12 school system, the Oregon Coast Community College, and Oregon Coast Aquarium. This recommendation links with the earlier recommendation regarding a northern bay front Visitor Center outlet.*

5. Organizational structure

At present, the director of HMSC reports to the OSU vice president for research. This is an appropriate and important link as research is the primary effort underway on the HMSC campus. However, there are also educational efforts, and faculty members and students from at least five colleges are in residence at HMSC. The direct linkages between these efforts and Academic Affairs are weak, at best, relying on indirect communications through individual faculty members and their department chairs, and the several deans. In addition, the director of HMSC is responsible for the operation and maintenance of a discrete campus, requiring that he interact with many aspects of the University and other outside entities that are not normally the responsibilities for mid-level managers such as deans or department chairs. For example, the director and his staff are responsible for managing utility relationships for electricity, water, and sewer with local public utilities. The seawater system, discussed elsewhere, is essentially another utility that is managed internally. HMSC has a facilities group, responsible for the maintenance, upkeep, and repair of all OSU and NOAA buildings. This group is managed and tasks are prioritized by the director's office. Management and oversight of security for the campus, provided by a mixture of HMSC staff and late-night services provided by a private contractor, also fall to the director.

In summary, the position held by the director is complex, and consideration should be given to broadening the reporting and communication responsibilities among the director and senior administration at OSU.

Recommendations

The Review Team makes the following recommendations with respect to organizational structure:

- *OSU should consider an expanded reporting structure that recognizes the diversity and uniqueness of the HMSC; such a structure should include, at a minimum, an additional reporting responsibility for the director to the academic side of the University, specifically to the executive vice president and provost. This structure will serve to broaden and strengthen communication between the HMSC campus and both the research and academic arms of the University. Membership on the Provost's Council may be an ideal mechanism to ensure that adequate communication and interaction occurs between the director of HMSC and the deans of the colleges that have students and faculty members involved in HMSC*

research and education activities. We recognize that dual reporting responsibilities are not always straightforward, and require that the parties work together to ensure efficient operations. However, in this instance, we strongly believe that the complexity of the HMSC enterprise, and its importance to OSU as a window to the coast, requires that the HMSC director be able to interface with OSU administration as broadly as possible.

- *Development of a HMSC faculty association which can be an informal faculty association, perhaps named the HMSC or the Marine Science Faculty, with a direct linkage to the director's office.* It would be possible for this faculty to meet with the director on a regular basis, to discuss topics of mutual interest, including new research and educational initiatives, space allocations, infrastructure needs and opportunities, IT support, and other academic challenges, and other issues germane to the academic programs underway at HMSC. The director could have input into the OSU's Periodic Review of Faculty (PROF) process and periodic assessments for promotion and tenure. Membership in the Marine Science Faculty could be expanded to beyond just those faculty members resident on the HMSC campus, possibly including faculty members at the COMES OSU Seafood Laboratory in Astoria, and elsewhere, thus building the breadth of research and student advising opportunities. The advice generated by this body and such meetings would be valuable to HMSC administration as they develop their annual budgets and with longer-term planning exercises.

Appendix A: Schedule for the Review

Hatfield Marine Science Center External Review September 16-17, 2010

Location: HMSC. Most meetings will take place in the Library Seminar room or the adjacent Barry Fisher Room.

Review Team

Dr. Susan Capalbo (Chair), Head, OSU Department of Agricultural and Resource Economics
Dr. Jack Barth, Professor, OSU College of Oceanic and Atmospheric Sciences
Dr. Sally Hacker, Associate Professor, OSU Department of Zoology
Dr. Jo-Ann Leong, Director, Hawaii Institute of Marine Biology, University of Hawaii
Dr. Jim Sanders, Director, Skidaway Institute of Oceanography, University of Georgia
Dr. John Stein, Deputy Director, NOAA Northwest Fisheries Science Center, Seattle

Agenda

Thursday, 16 September (*Library Seminar Room*)

0730 Breakfast, Review team with Rick Spinrad, Rich Holdren (Barry Fisher Room, Guin Library)
0830 Welcome and Introductions Spinrad
0845 Center and Institute Review Process and Review Objectives Holdren
0915 Overview of the HMSC Boehlert
1000 Break
1020 *Research*: Coastal Oregon Marine Experiment Station Miller
1040 *Research*: Marine Mammal Institute Baker
1100 *Research*: Cooperative Institute of Marine Resources Studies Banks
1120 Discussion and Q&A session—Organization and Research
1150 Lunch (on-site) with HMSC Graduate Students
1250 HMSC Administrative Advisory Committee
1320 HMSC's Education Programs: Introductory Comments Boehlert
1330 College-level Marine Education Programs Cheung
1350 Oregon Sea Grant: Youth and Public Education Hunter
1410 Community relationships Webster
1430 Discussion and Q&A Session – Education and Community Holdren
1450 Break
1510 HMSC tour for review committee Bozza
1600 Perspective Meeting: HMSC Executive Committee
1650 Adjourn for Day
1700 Social event in HMSC Staff Lounge or Visitor Center

Friday, 17 September

0830 Review Committee Discussions

0900 Perspectives meeting: On-site Agency representatives

0950 Break

1000 Perspectives meeting: Community representatives

1100 Perspectives Meeting: HMSC Faculty and Staff

1200 Working Lunch – Review Committee Deliberations

1330 Meeting with Boehlert, Q&A

1400 Review Committee Deliberations and Writing

1530 Closeout meeting/Verbal reporting (Spinrad, Holdren, Boehlert)

1630 Adjourn