In 2015, the OSU Hatfield Marine Science Center - dedicated in 1965 - will be celebrating 50 years as Oregon State University’s Marine Lab. Help us honor the past and celebrate the future with these special events throughout 2015!

Sign up now for monthly email updates starting in January with details on upcoming events - http://tinyurl.com/hmsc50th

**Marine Science Day, April 11**

Marine Science Day will feature interactive displays on current research presented by HMSC scientists and students, with special exhibits highlighting HMSC’s history.

**All-HMSC Reunion, April 12**

Current and former students, faculty, and staff are invited to join us. The Reunion will be a rare opportunity for anyone who was a part of HMSC’s 50-year history to connect with friends and colleagues from around the country.

**50th Anniversary Commemoration**

Fifty years after Oregon State University dedicated the Marine Science Center in Newport, OSU will look to the future with the re-dedication of HMSC and celebration of OSU’s Marine Studies Initiative (see sidebar). Date and details to be announced.

**Alumni Speaker Series**

Special presentations by our distinguished former faculty and alumni. Schedule to be announced soon.

OSU Professor Emeritus Robert “Bob” Olson was interviewed in November by the OSU Sesquicentennial Oral History Project. Dr. Olson’s history with HMSC goes back to 1968, when he arrived from the Midwest after receiving his PhD to work in the field of parasitology at OSU’s new Marine Science Center. Bob recalls, “I went to Newport, Oregon and the new Marine Science Center to become a marine biologist without ever having seen the ocean.” Dr. Olson went on to a distinguished career at HMSC in teaching and research in marine parasitology. Bob’s interview and an interview with Janet Webster (see page 5), will be posted soon at http://scarc.library.oregonstate.edu/oh150/

**The Future is Bright!**

Oregon State University has exciting new plans to expand its marine programs on the coast. The Marine Studies Initiative positions OSU, and Hatfield Marine Science Center, to increase our stature as a premiere institution in transdisciplinary research and education in marine studies, in disciplines ranging from science and engineering to arts and humanities.

Central to the new Marine Studies Initiative is the Marine Studies Building in Newport – a 100,000 sq ft facility for teaching and research at Hatfield Marine Science Center, supporting 500 students and associated faculty and staff.

For more information about the Marine Studies Initiative and the Marine Studies Building, see hmsc.oregonstate.edu/coastal–community–challenge
Notes from the Director

As we come to the close of another year, it is amazing to look back at all of our varied activities and accomplishments, our comings (new students and staff and faculty) and goings (retirements and graduations), and plans for the future. This coming year is particularly exciting as we reflect on and celebrate our 50th Anniversary while looking forward to opportunities ahead. HMSC has come a remarkably long way to the point of being a premier marine research center of national prominence while maintaining amazingly close local connections. Our research, education and outreach mission has continued to address issues of local interest as well as global importance. A review of these pages gives a brief view into the many varied activities at HMSC we all can be proud of.

Throughout all of the change of the past 50 years, one constant is the excitement of what we do here, shared by our researchers, staff, students and supporters. You are an important part of our Hatfield community, and I hope you share a sense of ownership in HMSC. Your support has been and continues to be key in helping us serve our mission.

The theme for our 50th Anniversary year will be “Honoring the past; celebrating the future.” We hope you can join us as we hold a variety of special events throughout 2015. Also, join us as we continue to roll out the exciting plans of OSU’s Marine Science Initiative. The Initiative includes significant expansion of the research, teaching and outreach mission at HMSC and plans for a new 100,000 sq ft teaching and research facility, the Marine Studies Building. As we pursue this ambitious program, we hope you will be as excited for the future as we are. Your continued support and participation as part of our HMSC Community is deeply appreciated.

To learn more about our plans for HMSC, please feel free to contact me at 541-867-0212.

Thank you and Happy Holidays.

Bob Cowen, HMSC Director

Sea Star Wasting Syndrome

Summer 2014 on the Oregon Coast may well be remembered for the mysterious disappearance of sea stars from their rocky intertidal haunts. Since the first signs of a problem occurred in 2013, the outbreak has continued to spread north into Alaska and south to Baja California.

As unsettling as the rapid disappearance was the pathology leading to the decline – a wasting disease that caused sea stars of several species to literally disintegrate. The disease, known as Sea Star Wasting Syndrome (SSWS), did not have a known cause, and quickly became the subject of intense study by multiple groups searching for the pathogen.

Part of this team included scientists and educators from the Hatfield Marine Science Center, including Oregon Sea Grant veterinarian Dr. Tim Miller-Morgan, and researcher Dr. Steve Rumrill from the Oregon Department of Fish and Wildlife, the agency guardian for the sea star communities in Oregon. They monitored the outbreak through field observations, kept the public and research communities updated, and organized a workshop in June 2014 to coordinate and share research findings.

In November 2014, a viral disease agent was isolated which appears to cause the disease. The virus, it turns out, is already known and is ubiquitous in the marine environment, so the reason for the outbreak is still unclear. “Often, environmental stressors will predispose an animal to developing a disease,” said Dr. Miller-Morgan. “Identifying such stressors would be the obvious next steps to understanding the factors that predispose stars to this disease.”

Although the extent of the 2014 outbreak is unprecedented, scientists are guardedly optimistic as sea star numbers recover following the outbreak. “It is encouraging that juvenile sea stars are beginning to emerge from cracks and crevices,” said Rumrill, “and a few scattered populations appear to be relatively unaffected by the 2013-2014 event. With few exceptions, the sea star and sea urchin communities have been fairly resilient and have largely recovered from the past mortality events.”

For updates on SSWS, see seastarwasting.org.
Working Waterfronts Volunteer Program

by Becca Harver, Volunteer Coordinator

This year marks the third summer of having volunteers stationed at Port Dock One (PD1) on Newport’s Historic Bayfront. PD1 is both a working dock used by fishing vessels and a popular tourist destination as the public flocks to see California sea lions basking on the docks below. This causes potential issues when members of the public occasionally get in the way of working boats. To help ensure that all users interact safely, Oregon Sea Grant and the Port of Newport worked together to create the Working Waterfronts Volunteer Program in 2012. The program stations volunteers, also known as “docents,” (Latin for teacher) at PD1 throughout the busy summer season to answer questions about California sea lions, the local fishing community, and anything else that inquiring minds want to know!

Chris Burns is one of the founding members of the program and volunteers twice every week at PD1. He provides the crew of about 13 volunteers with pertinent updates and tips for interpretation. Here is an example of one of Chris’ updates to paint a picture of volunteering at this dynamic site: “Nice Monday at PD1. 150-plus contacts, sunshine and a hake trawler tied to the pier. Lots of interest in the trawler, so after speaking with the skipper and hearing about the 75 tons of hake he delivered this morning, I spent most of my shift talkin’ to visitors about commercial fishing. Yeah!”

For more information, see: http://hmsc.oregonstate.edu/visitor/Working Waterfronts Volunteer Program

Seatauqua is BACK!

Seatauqua is fondly remembered by many as a series of workshops at the intersection of science, art and nature that ran for decades in Newport. Originally conceived and coordinated by Oregon Sea Grant, Seatauqua has been revived as part of the Oregon Coast Community College Community Education Program. Toledo artist Heather Fortner was instrumental in jumpstarting the effort, and proudly taught the first of five Seatauqua classes offered in Fall 2014. Thanks to an enthusiastic response, more offerings are expected in Spring 2014.

See http://www.oregoncoastcc.org for more information.

Aquarist’s Corner

We have a Giant Pacific Octopus onsite again! by Colleen Newberg, HMSC Senior Aquarist

A Giant Pacific Octopus was recently donated by Mike Pettis, who named the octopus after his boat, the Patriot. We will quarantine the new octopus until mid-to-late January, which gives us a chance to make sure the animal is healthy before going into the exhibit. It also gives us a chance to get it used to people and ready for the regular octopus presentations offered three times each week in the Visitor Center and online (hmsc.oregonstate.edu/octocam).

A small temporary red octopus exhibit was put up quickly this summer with items we had onsite in storage. This display worked well and allowed us to continue displaying an octopus, although not our signature Giant Pacific Octopus, while we waited patiently for another donation. The exhibit was well received, however, so our hope is to design a permanent exhibit for the red octopus. It would be in close proximity to the Giant Pacific Octopus exhibit to highlight the differences and similarities between the two local species.

If any of our Friends are interested in helping to fund a new red octopus exhibit, please contact us! Email mark.farley@oregonstate.edu or call Mark at 541-867-0276.
The **Submarine Ring of Fire - Ironman 2014 Expedition** is underway! HMSC scientists from OSU and NOAA are part of an interdisciplinary team exploring two seamounts in the western Pacific, using the ROV Jason aboard the ship R/V Revelle. The team is studying hydrothermal vents and the communities that thrive in this unusual environment.

HMSC scientists aboard are part of the Cooperative Institute for Marine Resources Studies (CIMRS), a formal partnership between OSU and NOAA. Their research focuses on how the emission of carbon dioxide from active submarine volcanoes acidifies the local marine environment, and how that in turn affects the unique biological communities living around the vents. Other research aboard the Revelle studies the ecology of iron-oxidizing bacteria (the “Ironman” part) that form microbial mat systems at the hydrothermal vent sites.

Most of the expedition will be spent at two Mariana Seamounts: NW Eifuku and NW Rota-1. Both are part of the “Volcano Unit” of the Mariana Trench Marine National Monument. The expedition website, featuring short videos, photos and mission logs, can be found at [http://oceanexplorer.noaa.gov/explorations/14fire/](http://oceanexplorer.noaa.gov/explorations/14fire/)

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**Volunteer Corner**

**Kent Kroneman**, long-time volunteer handyman for the Visitor Center, is indispensable throughout the year but most notably at the end of the busy summer season when virtually every exhibit needs repair. To better get the job done, Kent generously donated his entire professional collection of tools to Oregon Sea Grant! Amassed through a lifetime as an electrical engineer, the tools occupy a small shop on the West Wing and have already resulted in small miracles such as repair of the Lego Light House Wave Energy Exhibit, the Chart the Wind Exhibit and many others.

**Waltraud Fischer** has been volunteering since 2007 and has accumulated approximately 1,400 hours by working nearly every Saturday afternoon. During her time here she’s educated and enriched the lives of thousands of visitors. Originally hailing from Germany, Waltraud has travelled all over the world and has no shortage of incredible stories to share about her experiences. She has care and compassion for all types of wildlife and stated on her application: “My friends named me “Greenpeace” because of my preaching and protesting about mankind’s ways.” Waltraud moved to Salem in July and as a result, her volunteerism came to an end at HMSC but she will surely become an active community member in her new city. We greatly miss Waltraud and thank her for all of her dedication over the years!
Celebrating the Legacy of Dr. Lavern Weber

Over 200 people attended a July 26 Celebration of Life at HMSC to honor Dr. Lavern Weber, Director from 1976-2002. A series of touching, funny and heartfelt stories were shared by family, friends and colleagues in a packed auditorium, while dozens of others watched on screens throughout the Visitor Center. As the program concluded, bagpipe music filled the halls and the Celebration continued in a reception hosted by Lavern’s family.

As we approach our 50th year, the HMSC community will continue to celebrate Dr. Lavern Weber’s legacy. See page 1 for more information.

Read more about Lavern Weber at hmsc.oregonstate.edu/lavern-weber

Retirements

Janet Gray Webster is retiring; both HMSC and the OSU Libraries and Press will miss her exceptional talent and energy. Janet has been Head Librarian of OSU’s Guin Library since 1989 and a member of the HMSC Executive Committee. She also served as Interim director of HMSC in 2013. Throughout her career, Janet has been an innovative library professional, an inspiring leader and a role model for community service.

Janet’s professional accomplishments are extensive and include ongoing upgrades and changes to Guin Library’s various electronic library systems and a recent successful remodel of the Guin library. Both visionary and hands-on, Janet established innovative ways to archive and access HMSC’s scientific publications across collaborative partnerships and multiple colleges and agencies.

Janet was honored with the 2013 Oregon Library Association’s Distinguished Service Award for decades of professional service and outstanding leadership, including as a tenacious advocate for libraries. Janet has served on numerous committees and has published extensively.

Janet has also been active for decades throughout the community— in local government, non-profits, schools, and libraries. She was recognized at the 2014 HMSC Holiday Party with the Community Spirit Award. “Janet Webster brings diligence, intelligence, incisiveness, energy, élan and an absence of pretension to her work,” wrote Susan Gilmont, in her nomination letter. “Janet Webster knows the joy of service. She lives it.”

Janet is also an accomplished artist and an avid reader, and we wish her a joyful retirement doing the many things she loves to do!

Roy Lowe, Project Leader for the Oregon Coast National Wildlife Refuge Complex, is retiring in January. Roy has worked for the U.S. Fish and Wildlife Service for over 37 years and has been at HMSC since 1985 protecting, conserving and restoring habitat for fish and other wildlife all along the Oregon coast.

Roy moved from his original one-room office in the NAL building to the current USFWS building, which was built in 1997 with support from Dr. Lavern Weber and Senator Hatfield and now houses a staff of 12.

Today, Roy manages the natural resources for six National Wildlife Refuges and two Wilderness Areas that span 320 miles of the Oregon coast. The habitats on the marine refuges support important seabird nesting colonies for over a million seabirds and breeding and haul-out sites for harbor seals and Steller and California sea lions. The estuarine refuges have been dramatically expanded on Roy’s watch, including restoration of the Ni-lés’tun Tidal Marsh at the Bandon Marsh National Wildlife Refuge. This project on the Coquille River estuary restored 418 acres of intertidal salt marsh, freshwater marsh and riparian areas that are habitat for migratory birds and anadromous fish (see http://www.fws.gov/oregoncoast/).

We congratulate Roy on his successful career and wish him great adventures in his well-earned retirement!
2014 Summer Session Reflections on Invertebrate Zoology Course

By Nate Kirk, Instructor

Each year during the academic summer program, undergraduate students are placed in the challenging, real-life situation of conducting primary research in their classwork with help from the Hatfield community at large. This occurs in Marine and Estuarine Invertebrate Zoology (Z461) where students are introduced to basic phylogenetic analyses of invertebrate phyla of their choosing. This past summer two OSU students, MacKenzie Tuttle and Kaelie Sivihok, became interested in taxa that do not have large publicly-available genetic resources: Ctenophores (comb jellies) and Hydromedusa (similar to jellyfish). These students sequenced genes that did not exist in international databases for their organisms of interest, which allowed them the unique opportunity to submit their DNA sequences to be used by future researchers for organism identification.

This class also pairs the molecular phylogenetics with traditional taxonomy and identification. As a review for their comprehensive final exam, students formed teams and competed against each other in a modified “BioBlitz” competition (http://www.nationalgeographic.com/explorers/projects/bioblitz/). The purpose of the BioBlitz is to find and identify as many species as possible within a set period of time. This year, there was a tie for first place with two teams correctly identifying 44 invertebrate species within 1 hour and 15 min during a low tide at Seal Rock on the Oregon coast. These 4 OSU undergraduates were Melissa Campana, Tayler Nichols, MacKenzie Tuttle, and Zoë Wiggers. In addition, the class frequently interacted with the general public during this event, helping them identify organisms that they found. This included the stalked jellyfish Haliclusters ‘sanjuanensis’, which has abandoned the pelagic stage of its lifecycle remaining attached to the bottom throughout most of its life.

REU students receive accolades for best oral presentations and research posters

2014 Society for the Advancement of Chicanos and Native Americans in Science Conference in Los Angeles, CA, October 2014: Alison Aceves and Emily King (photo at left), both 2014 Research Experience for Undergraduates interns, received awards for best student research poster in their categories.

68th Annual Shellfish Conference in Vancouver, Washington, September, 2014: Natalie Coleman first participated in an HMSC internship for community college students in 2013, and has since enrolled in OSU. Natalie not only came back for Summer 2014 as a Research Experience for Undergraduates intern but went on to receive the conference award for the best student oral presentation!

2014 Summer Session a huge success!

The Hatfield Marine Science Center dramatically expanded summer course offerings in 2014! The photo at right - students in Biology and Conservation of Marine Mammals - demonstrates the enthusiastic response. Photo by instructor Renee Albertson.

For more information about HMSC’s Academic Programs, see hmsc.oregonstate.edu/academics
HMSC Academic Program News

Community College Students Gain First Hand Research Experience at HMSC

The COSEE (Center for Ocean Sciences Education Excellence) Pacific Partnerships internship program had its largest cohort yet at HMSC this past summer. Six community college students from Edmonds, Chemeketa, Portland and Oregon Coast Community Colleges spent 8 weeks gaining their first research experience with NOAA NW Fisheries Science Center, OSU, USDA Agricultural Research Service and the ODFW Marine Reserves Program.

Cyberlab: At the Edge of Science and Science Communication

by OSU graduate students Susan O’Brien and Jenny East

Oceanographers collect remote data from the bottom of the ocean through instruments such as satellites. The Cyberlaboratory at Hatfield Marine Science Center strives to do the same, but in a social science setting. A fully automated video-based data collection system has been installed in the Visitor Center with video observation tools, interactive computer-based kiosks, and face detection and recognition software. These components are linked with a research control and content management that allows for remote data collection as well as customization of visitor experiences.

This means we can remotely (and unobtrusively) capture the visitors’ experience in the Visitor Center and learn better about how the ocean science communication we do through exhibits is being used and received. For example, researchers are studying family interaction with and learning from physical interactives, digital display platforms, and live animal interactions. Furthermore, Cyberlab represents a breakthrough resource at the edge of science and science communication as an innovative, open access remote laboratory for interdisciplinary research efforts and collaborations among different institutions and researchers, improving ocean sciences exhibits and the science communication effort they carry.

To learn more about Cyberlab activities visit http://oregonstate.edu/freechoicelab/cyberlab

Congratulations to a wave of students! Recent HMSC Graduates

Becca Hamner, PhD - All in a DNA’s work: conservation genetics and monitoring of New Zealand Maui’s and Hector’s dolphins

Cheryl Horton, MSc - Top-down influences of Bald Eagles on Common Murre populations in Oregon

Mee-ya Monnin, Undergraduate honors thesis - Weight watching: Morphometric indices of ontogenetic and reproductive stages in Weddell seals

Sophie Pierszalowski, MSc - The Influence of Local Fidelity and Recruitment on Population Dynamics and Specialized Foraging of Humpback Whales in Glacier Bay and Icy Strait, Alaska

Alana Alexander, PhD - The influence of social structure and molecular evolution on genetic diversity in the sperm whale (*Physeter macrocephalus*)

Renee Bellinger, PhD Defense, Genomic studies for Chinook salmon migration: from stock-specific differences in ocean distribution to characterization of transcriptome profiles to gain insights into mechanisms of magnetic and olfactory cue perception

Renee Albertson, PhD - The worldwide phylogeography and local population structure of the rough-toothed dolphin (*Steno bredanensis*)
Can oyster beds act as buffers to create refuges for juveniles?

by Iria Gimenez Calvo, Graduate student in the College of Earth, Ocean and Atmospheric Sciences

Many bivalves, including the Pacific and native oysters, form dense aggregations such as oyster reefs or clam beds that provide important ecosystem services. Beds create a surface for newly settled bivalves and other organisms, improve water quality through filtration, enhance nutrient cycling and, in some cases, help to stabilize the shoreline. Also, formation and decomposition of the bivalves’ calcium carbonate shell serve an important role in carbon cycling and in buffering the pH of seawater.

Through my research as PhD student under the supervision of Dr. George Waldbusser I hope to understand the biogeochemical dynamics on bivalve aggregations and the impacts of ocean acidification. We suspect that the presence of the oyster beds changes the chemistry of the water and the ocean sediments around them, and we are interested in the implications. Our hypothesis is that shell production and dissolution, and biodeposit generation and respiration are the predominant processes in shaping the geochemistry. Oyster or clam aggregations could act as either “alkalinity regenerators,” adjusting the pH of the water through the dissolution of shells, or as “carbon sinks” through the burial of shells and biodeposits.

In recent years bivalves have been shown to be very sensitive to ocean acidification (OA), the process by which increasing levels of carbon dioxide in seawater alter ocean chemistry and turn it more acidic and corrosive. However, we don’t know much about the effects of OA on bivalve aggregations such as oyster and clam beds. We also don’t know if the aggregations respond differently than individual bivalves. Could aggregations act as a refuge against OA if dissolving shells buffer the chemical environment, making it more hospitable for juveniles?

Thanks in part to funding through the Mamie Markham award, I have been able to explore the intricate relationship between bivalves, ocean acidification, and the health of important marine resources.