



Newsletter of the Friends of Hatfield Marine Science Center

Profiles in student achievement:

Thom Gilbert

Towards the end of his thesis defense presentation, Thom Gilbert stood answering questions before an audience in the Guin Library Seminar Room, conveying a sense of calm confidence that made this final step towards earning his Master's degree in fisheries science seem almost too easy. Perhaps it was because he knew that no matter how hard the grilling, he already had plenty to celebrate.

Thom entered the Department of Fisheries and Wildlife graduate program in 2003, barely a year after bruising his spinal cord and crushing his L1 vertebrae in a snowboarding accident that left him paralyzed from the waist down. The doctors had told Thom's family that he would never be able to walk again, which makes the fact that he now walks with a cane and has regained much of his lower body function a



true cause for celebration.

He attributes his recovery to his own hard work, determination, lots of support from other people, and some luck.

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Donor-supported scholarships and fellowships for 2006-07 available

In February, HMSC announced the availability of approximately \$85,000 in privately funded scholarships and fellowships for college students interested in pursuing research, coursework, or marine science education activities at the Center. The awards will provide financial assistance for up to 20 students during the 2006-2007 academic year.

One of the largest sources of ongoing student support at HMSC is the Mamie L. Markham Research Endowment, which annually provides over \$50,000 in awards. This funding allows graduate students to spend a year or more in residence at the Hatfield center, enabling them work to closely with scientists and take advantage of lab and field research opportunities.

Some scholarships encourage research in a specific area, such as the Bill Wick Marine Fisheries Award and the Walter G. Jones Fisheries Development Award, which focus on fisheries ecology and management. The Anja

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Upwelling is produced and distributed 3 times a year to the Friends of HMSC membership. Your feedback is welcomed.
- Ken Hall, Editor (email: ken.hall@oregonstate.edu)

Listening for whales in the deep

Oregon State University researchers track the movement of whales around the world with the aid of various technological tools – from tags that transmit location data via satellite, to underwater hydrophones that record the unique clicks, pulses and calls of different whale species.

For researchers in the acoustics monitoring group of the Vents Program at HMSC, the deployment of moored autonomous hydrophones in the ocean has produced some surprising results, including the discovery of critically endangered North Pacific right whales (*Eubalaena japonica*) swimming in the Gulf of Alaska.

"There has been only one confirmed sighting of a right whale in the Gulf of Alaska since 1980, so discovering them is not only surprising, it is fairly significant," said David K. Mellinger, an assistant professor with the NOAA-OSU Cooperative Institute for Marine Resources Studies (CIMRS).

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Notes from the Director

We are in very interesting times for ocean and coastal sciences. National assessments from the Ocean Commission reports have called for new initiatives and strengthened funding for research, education, and outreach. At the same time, we are dealing with record federal deficits and major cuts in discretionary federal spending, in many cases including marine research.



The new "Joint Ocean Commission Initiative" (see <http://jointoceancommission.org/>) has recently issued a report card on how the federal government has responded to the commission reports. Most grades are rather dismal, and the "F" in new funding for ocean policy and programs and the "D" for research, science, and education are alarming for the HMSC.

Still, our institution, with our diverse partners, is poised to move forward in a strong manner to address many of the issues the commission reports raise. Our hands-on education programs at all levels make significant contributions to national ocean literacy. We note in this issue that 5 of the 10 undergraduate research interns from last summer attended the Ocean Science Meeting in Hawaii last month, presenting their scientific results and learning about futures in marine science careers. Education for youth, teacher training programs, and enhanced public involvement are all strengths of the HMSC.

About to enter its third year, the Friends of the HMSC are making increasing financial contributions to our programs, supporting housing and graduate scholarships, internships, and youth programs. Another important and new activity is the Lavern Weber Visiting Scientist program. Funded by an endowment honoring the past director of the HMSC, we are currently taking applications. While we are working to make the endowment grow to strengthen the program, the OSU Research Office has matched the endowment earnings in the first year to help get the program off the ground. In future issues of this newsletter, we will highlight these contributions and the benefits they provide to HMSC's programs.

Scholarships *continued from pg. 1*

Robinson Fellowship supports shellfish aquaculture research. Together, these awards provide over \$5,000 in student assistance annually.

Financial awards provided by the Fred and Joan Crebbin Memorial Fellowship and the Holt Marine Education Fund support the development of student research projects with a focus on marine education. Other awards, such as the Lylian Brucefield Reynolds Scholarship, are given for excellence in academic and research performance in any marine related discipline, while some of the newest awards are earmarked specifically to cover housing expenses for those taking courses and living at the HMSC over the summer.

The application deadline for most of the scholarships is April 15, 2006. Information and applications for all of the awards can be found on the web at: <http://hmsc.oregonstate.edu>.

HMSC well represented at National Ocean Science Meeting



HMSC made a strong showing at the 2006 national Ocean Science Meeting in Hawaii, with five undergraduates from last summer's REU program presenting research posters: Andrew Smith, Stephen Levas, Natalie Roman, Raquel Sosa, and Joy Smith (pictured above at the poster session, along with 2004 REU alumna Rachel Ruppel and some of the HMSC research faculty and post-docs in attendance).

Coastwatchers learn about OSU Coastal Imaging Lab research from Rob Holman



Professor Rob Holman of OSU's College of Oceanic and Atmospheric Sciences explains how image data from Argus Network cameras stationed at overlook points along the coast inform scientific understanding of sand bar formation and other beach processes. The January 26 lecture was co-sponsored by Friends of HMSC and CoastWatch, a volunteer program of the Oregon Shores Conservation Coalition.

Lavern Weber Visiting Scientist Program Announced

The Hatfield Marine Science Center is pleased to announce availability of funding for the first Lavern Weber Visiting Scientist opportunity. This program is funded by donations to a named endowment and matching funding from the OSU Research Office. Named in honor of Lavern Weber, who directed the HMSC between 1977 and 2002, the program will support a distinguished scientist for visits of up to several months duration. The scientist will participate



in HMSC programs, including teaching and research, encouraging examination of new specialties and expertise at the HMSC. It is also expected to stimulate cooperative research with different institutions, and provide new opportunities for OSU students.

For the 2005-6 program, up to \$10,000 will be available to fund a visiting scientist. These funds may be used for salary, travel, research expenses, or a combination of these costs. Nominations and applications will be accepted in the HMSC Director's office throughout the year (or until a decision is reached) and evaluated by a committee of HMSC faculty and graduate students.

Housing scholarships help students spend time at HMSC

For OSU students wanting to take advantage of courses at HMSC without having to commute between Newport and Corvallis, the on-site housing at HMSC offers an obvious solution. But sometimes a lease obligation forces students to continue paying rent in Corvallis during the period they are in residence at HMSC.

Through the generous donations of private donors such as Jean Roth, several scholarships have been made available to ease the financial burden for students in such situations. This past fall, four students were grateful to receive that assistance, which facilitated their participation in the Fisheries and Wildlife fall term courses at HMSC.



Jonathan Baldwin (far left), from Sheridan, Oregon, is studying to be a freshwater biologist. He plans to graduate this spring and would like to attend graduate school. Jed Kaul (second from left), from Florence, Oregon, graduated in December and is pursuing professional opportunities in riparian and estuarine ecology in the northwest. Kari Gerretsen (sitting) is interested in environmental education and will graduate from OSU in June. She plans to get her Masters in Science Education and become a high school science teacher. Jim Davis (far right) is from Eugene, Oregon. His area of interest is marine and fisheries habitat conservation and he hopes to stay in Oregon and find work on the coast after graduating in June.

HMSC and Oregon Coast Aquarium host visitors from Taiwan



Among the visiting scientists in residence at HMSC this fall were Bi-Wen Su and Chun-Yu Chiang from the National Aquarium and Museum of Marine Biology of Taiwan, one of the largest in Asia. Rola and Sue (their chosen names for use in the U.S.) came to Newport for an internship at the Oregon Coast Aquarium in seabird and marine mammal husbandry, in preparation for receiving a group of tufted puffins from Oregon as part of a new exhibit of northern diving birds.

"Seabirds require specialized care, and we stipulated to the aquarium in Taiwan that they send staff members to learn from our established colony here before we send birds to them," said Karen Anderson, Curator of Birds at the Oregon Coast Aquarium.

"We put them right to work learning our seabird care routine, and they did everything from feeding the birds and cleaning the big aviary to assisting in medical care," Anderson continued. "They studied books on seabirds and we took them to Yaquina Head and other spots on the coast to observe wild seabirds."

During their stay, Rola and Sue lived in HMSC housing and were given a tour of HMSC's own aquatic animal husbandry area and exhibits in the Visitor Center by aquarist Michael Liu, who is also from Taiwan. The visitors stayed for three weeks, and then went to the Monterey Bay Aquarium Research Institute, before heading back to Taiwan.

Teachers engage with HMSC scientists during professional development workshops

On February 4, Oregon Sea Grant hosted a NOAA Ocean Exploration Professional Development follow-up workshop at HMSC for 21 teachers. As part of an Aquarium Alliance program with NOAA's Office of Ocean Exploration, professional development workshops are being offered to Oregon's middle and high school teachers at HMSC under the theme "Learning Ocean Science Through Ocean Exploration".

The February workshop was a follow-up to the introductory training offered last year. Activities included lesson plan training, a tour of PMEL labs, and talks from guest speakers who have been involved in Ocean Exploration expeditions.

Dr. Bob Embley's session presented the "Ring of Fire" expeditions, Dr. Bob Dziak's presented the recent expedition "Exploring the Submarine Volcanic Activity along the Antarctic Peninsula" and Bill Hanshumaker shared his experience as a teacher at sea on Dr. Dziak's expedition.

Whale Watch Week returns March 25-April 1

Early spring is a good time to catch a glimpse of gray whales off the central Oregon coast as they pass on their northward migration from calving grounds in the warm waters around the Baja California peninsula to feeding grounds in the Bering and Chuckchi seas. Although the whales can be spotted weeks before and after the Oregon Department of Parks and Recreation's officially designated "Whale Watch Week", late March is usually the peak of the migration along this part of the coast.



The HMSC Visitor Center is open every day during Whale Watch Week (March 25 to April 1) with the following scheduled activities taking place:

A public marine mammal class is scheduled for 1:30-2:30 in Hennings Auditorium

Whale Tales/Storytelling with Barb Kellay begins at 2:30 in the new Wet Pets room.

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Meet a VC Volunteer featuring Barbara Kellay HMSC Volunteer Storyteller

Every winter and spring since at least 1997, Barbara Kellay has been telling stories to help celebrate *Whale Watching Spoken Here*. Children have always been an important part of Barbara's life. Telling "Whales' Tales" on a daily basis for two weeks every year is her current contribution to the younger ones in our society.



As the oldest child of eight, Barbara really has been working with young children her whole life. In addition to helping to raise her younger siblings, she was also a pediatric nurse many years ago. She loves the questions that children raise. Today Barbara has a special family who's children she calls her "bonus grandchildren." How lucky for them!

When Barbara first volunteered to tell stories during Whale Watching Spoken Here, she studied hard to learn as much as possible about the whales that swim off the Oregon Coast. As she worked with the youngsters she realized that they really didn't need – or want all that information. All they needed was a spark to light their sense of wonder and to help them create a life-long curiosity. And that's what she's been doing ever since.

Barbara judges the age and developmental level of her young audience and adjusts her stories so they are appropriate. This past winter she had a child at a session who had returned for his third year of storytelling – and requested his favorite story for the third time. It's moments like this that keep Barbara coming back year after year.

Whale Watch Week activities

(continued from previous page)

Daily updates on migrating gray whales will be posted on the Information Board.

Marine Mammal videos will be shown in the Auditorium

Special marine mammal displays and exhibits are featured throughout the Center

Gray Whale calf skull preparation and articulation demonstration on Tuesday and Wednesday afternoons.



Sand Transport



These photos, taken from nearly the same spot at Moolack Beach in 2005 (top) and 2006 (bottom), offer striking evidence of how much sand can be moved by winter storms, uncovering what lies beneath. *Photos courtesy of Clay Creech, who enjoys photographing nature's beauty along the coast in his semi-retirement.*

HMSC happenings

HMSC to host AmeriCorps*NCCC team for coastal habitat restoration service project

A team of volunteers from the AmeriCorps*National Civilian Community Corps are scheduled to arrive at HMSC on April 5th for a month-long deployment to work on habitat restoration at several sites along the central Oregon coast.

The team is composed of hard-working, enthusiastic youth leaders aged 18-24, who are devoting 10 months of their lives to serving the country through national service. With over 1,200 members nationwide, AmeriCorps*NCCC teams address compelling community needs, from emergency relief and rebuilding in hurricane-devastated areas to tree plantings, youth education projects, and assistance to seniors.

The service project organized by HMSC was selected by AmeriCorps*NCCC as one of its "signature projects" for 2006, underscoring its collaboration with the Coastal America partnership and highlighting the importance of coastal ecosystem manage-

ment and education activities.

With a focus on addressing the impact of invasive plant species on native habitats, AmeriCorps team members will be trained by US Forest Service and US Fish and Wildlife Service staff on identification and removal techniques targeting English ivy, holly, Himalayan blackberry, Scotch broom, and other invasives at 3-4 sites between Cape Perpetua and Siletz Bay.

The targeted species grow efficiently under the tree canopy and do not require direct sunlight to thrive. They out-compete other plants for water and nutrients and can form dense understory monocultures, severely reducing native species diversity, natural resource values and scenic views.

Although complete eradication of these



species is not feasible, intensive manual treatments can successfully keep them under control and help prevent native plant species from being crowded out. In addition, team members will visit local schools to share what they have learned about local natural resource management needs, and communicate the value and benefits of their experience in AmeriCorps.

In return for their service, the AmeriCorps members receive an education award to help pay for college or graduate school, or to pay back qualified student loans.



View from atop Cape Perpetua and Siuslaw National Forest, one of the project sites where local volunteers can join AmeriCorps*NCCC team members in habitat restoration activities during Earth Day celebrations on or around April 22nd.

Spend a few hours with AmeriCorps*NCCC!

Able to volunteer a few hours of your time working alongside AmeriCorps team members on habitat restoration activities this Spring? Activities are being planned around Earth Day (April 22nd) -- contact Ken Hall at HMSC (541) 867-0234 for information on how to participate.

Marine Mammal Stranding Network offers training for volunteers

The Oregon Marine Mammal Stranding Network, based at HMSC, is hosting a training session on Saturday March 11 for volunteers interested in helping out with the Network's monitoring activities. The session will consist of a talk/slide-show presentation, by the Network's new coordinator, Dr. Jim Rice, followed by a practical information session to familiarize participants with basic methods of collecting Level A Data from live and dead stranded marine mammals.

The session begins at 10:00 A.M. in the Auditorium of the Visitor's Center and will run until approximately 12:00 P.M. Please RSVP to jim.rice@oregonstate.edu or by calling 867-0446 if you plan on attending.

If you are reading this after the date of the event, but are still interested in volunteering with the Stranding Network, please contact Jim to let him know of your interest.



Jim Rice is the new Coordinator of the Oregon Marine Mammal Stranding Network, and works in the Marine Mammal Program at the Hatfield Marine Science Center. Jim began his career as a marine mammal trainer at the Mystic Aquarium in Connecticut, and later worked as an animal keeper at the Roger Williams Park Zoo in Providence, RI, where he studied cogni-

tion in California sea lions and African elephants. He most recently served as a biologist with the New England Aquarium in Boston, where he coordinated marine mammal and sea turtle stranding response, oversaw husbandry and medical care to animals in rehabilitation, performed necropsies, analyzed trends in stranding events, and conducted studies of harbor porpoise habitat use of Boston Harbor, and field diagnostics and post-release monitoring of mass stranded pelagic dolphins. Jim began work at HMSC in October 2005.

Student Profile: Thom Gilbert continued from p. 1

"I am a walking, talking miracle who wants to have a positive effect on as many people as possible," Thom says, "because the only thing that you can leave behind in this world is the interactions you have with other people."

Growing up in Santa Cruz, California, Thom developed a love for the ocean at a young age, surfing and earning his first scuba certification before high school. He majored in biology at Loyola Marymount University, and took advantage of every field opportunity he could find, participating in marine ecology classes in Baja Mexico, performing ocean floor transects off Redondo Beach, taking an advanced diving course in Roatan, Honduras, and volunteering at the Cabrillo Marine Aquarium.

Not letting go of his love for the ocean and pursuing that passion in whatever ways he could after the accident helped Thom find his way to Oregon and the Hatfield Marine Science Center in 2002.

Thom took on rearing and maintenance of Rockfish larvae for a Washington Department of Fish and Wildlife trans-generational marking project, and assisted in the construction of larval rearing and broodstock holding systems for Dr. Chris Langdon's oyster breeding facility at HMSC. This work led to Thom's graduate research focus on defining the culture conditions and nutritional requirements for rearing Pacific rockfish larvae to benthic juvenile stage.

The importance of this research to conservation of threatened rockfish species was highlighted in Thom's application for a Mamie Markham Research Award, which he received in 2005. With this award, Thom was able to complete experiments utilizing rockfish larvae from four threatened species housed at the Oregon Coast Aquarium, reared under experimental conditions

at NOAA's Alaska Fisheries lab at HMSC. The results should provide information helpful to future rockfish culture efforts by research institutes, aquariums, and aquaculture operations for food production, hopefully relieving pressure on wild populations.

Demonstrating the benefits of collaborative research involving OSU and NOAA facilities at HMSC and the Oregon Coast Aquarium, Thom made the most of his graduate school experience, taking advantage of opportunities to dive in the Aquarium's huge tanks, and making new friends along the way. Living in Newport, Thom also managed to resume many of his favorite outdoor activities, including fishing and bodyboarding.

Three months ago, Thom and his wife Lisa Lysak, celebrated another milestone with the birth of their son, Jackson Daniel Gilbert.

"Fatherhood is amazing, especially after what I have been through with my accident and paralysis," says Thom. "The greatest part of my life is ahead of me and I know that great things are in my future."

After earning his Master's, Thom is considering writing a book about his experiences over the past 5 years. He also plans to put more time into his physical rehabilitation, working out four hours a day in order to one day be able to run again.



Listening for whales under water *continued from p. 1*

“We picked up the sounds of one whale off Kodiak Island, and several others in deep water, which is also something of a surprise, since most right whale sightings have been near-shore.”

Results of these and five years of studies were published in the January 2006 issue of the journal *BioScience*.

Mellinger said that bioacoustics researchers have been able to use the hydrophones to distinguish sounds made by different whale species. And some species, he added, have different “dialects” depending on where they are from. Blue whales off the Pacific Northwest sound different than populations of blue whales that live in the western Pacific Ocean, and those sound different from populations of blue whales off Antarctica. They all sound different than the blue whales off Chile.

“The whales in the eastern Pacific have a very low-pitched, pulsed sound, followed by a tone,” Mellinger said. “Other populations use different combinations of pulses, tones and pitches. The difference is really striking, but we don’t know if it is tied to genetics, or some other reason.”

“There are also some hybrid sounds that are rare,” he added. “We don’t know if they are part of a common ‘language’ that different populations of whales use to communicate with each other, or if they come from a confused juvenile who hasn’t completely learned the complexities of communicating.”

Scientists began hearing whale sounds several years ago on a U.S. Navy hydrophone network. The hydrophone system – called the Sound Surveillance System, or SOSUS – was used by the Navy during the Cold War to monitor submarine activity in the northern Pacific Ocean. As the Cold War ebbed, these and other military assets were offered to civilian researchers performing environmental studies.

Another OSU researcher, Christopher Fox, first received permission from the Navy to use the hydrophones at his laboratory at HMSC to listen for undersea earthquakes – a program now directed by CIMRS associate professor Robert Dziak.

While listening for earthquakes, the OSU researchers began picking up sounds of ships, marine landslides – and whales. An engineer at the center, Haru Matsumoto, then developed an autonomous hydrophone that can be deployed independently, and Mellinger’s colleagues placed seven of these instruments in the Gulf of Alaska about five years ago. The hydrophones can pick up right whale sounds from about 40 kilometers away – and even further, if waters are shallow and the terrain even. (See sidebar story about a more recent deployment of the hydrophones off the coast of Antarctica.)

Using those hydrophones, Mellinger discovered a number of sperm whales living in the Gulf of Alaska in the winter. The hydrophones picked up almost half as many whale sounds as in the summer – indicating a surprisingly robust “off-season” population.

“There are a handful of records of people spotting sperm whales in the region – and they’re all in the summer,” Mellinger said. “Likewise, all of the historic whaling records are from the summer. The Gulf of Alaska is not a place you want to be in the winter. But apparently, sperm whales don’t mind.”

Other researchers participating in the study include Sue Moore of NOAA’s Alaska Fisheries Center in Seattle; Kathleen

M. Stafford, an OSU graduate now at the University of Washington; and John A. Hildebrand of the Scripps Institution of Oceanography in La Jolla, Calif.

This spring, the researchers plan to deploy three more hydrophones in the Bering Sea next to a series of long-duration NOAA moorings. They will analyze possible connections between the appearance of the whales and ocean conditions.

“We’ll look at water temperature, salinity and even chlorophyll growth,” Mellinger said. “Ultimately, what we hope is to be able to identify a certain water mass and know that it will lead to chlorophyll growth and an abundance of plankton, and that the whales will soon appear.”

The research is funded by the North Pacific Research Board, part of the reparations from the Exxon Valdez oil spill.

Latest mission assignment for hydrophones: Antarctica



The autonomous underwater hydrophone system developed by engineer Haru Matsumoto and colleagues in the Vents Program at HMSC was most recently put into service in December 2005, as part of NOAA’s Sounds of the Southern Ocean expedition to Antarctica. Pictured above, assembling the hydrophone in the geological lab aboard the Russian icebreaker and research vessel *Yuzhmorgeologiya*, are Haru Matsumoto (holding the hydrophone), along with CIMRS colleagues Sara Heimlich, Bob Dziak (expedition leader), and a member of the expedition team from the Korea Polar Research Institute.

A website containing photos and daily logs from the Sounds of the Southern Ocean Expedition can be found at: <http://www.oceanexplorer.noaa.gov> under “Explorations”



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Upcoming Event

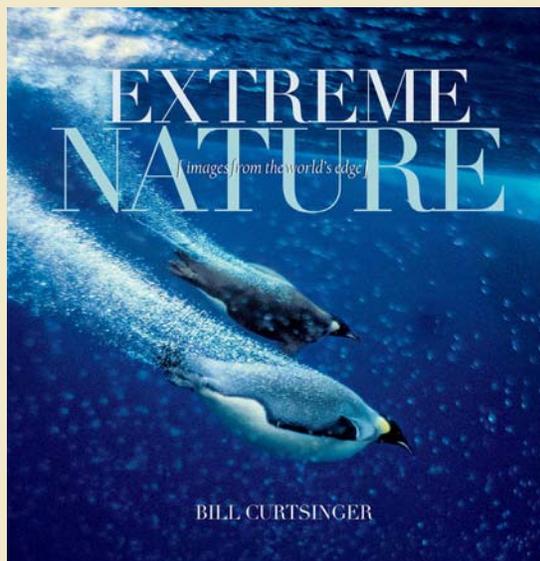
Extreme Nature: Images From the World's Edge Lecture and book signing with Bill Curtsinger

Saturday, April 8, 1:30pm

Long-time National Geographic photographer Bill Curtsinger will share slides and stories from his new book, *Extreme Nature*. From frogmen descending through cracks in the ice into the black depths of the McMurdo Sound, to a right whale retreating, penguins marching to sea and back, and a tiger shark attacking an albatross, his images offer a fascinating glimpse at life in places most of us will never go.

Specializing in underwater subjects, Curtsinger has photographed 33 articles for the National Geographic including six cover stories.

He writes: "I like to think that my work has revealed to some how splendid a place our planet is and has helped others discover their own sense of wonder and reverence for our planet's many gifts—especially those that often go unnoticed and unseen."



The HMSC Visitor Center has aquariums and interactive exhibits that showcase marine research conducted by more than 300 scientists.

Fall/Winter hours at the Visitor Center are 10am-4pm, Wednesday to Friday, and 10am-5pm on weekends. Summer hours are 10:00am-5:00pm daily.

Admission is by donation and all special program activities are offered free of charge. Call 541/867-0167 for a schedule of events or for more information.