June, 2014

Read stories this month in these UNH research areas:

Agriculture & Biosciences  
Business & Technology  
Engineering & Physical Sciences  
Health, Behavioral & Social Sciences  
Humansities & the Arts  
Marine & Ocean Sciences  
Sustainability & the Environment

Click on the area name at right to jump to that section, or browse through the entire list.

Agriculture & Biosciences

Bobcats in the Granite State
Marian and John Litvaitis, professors of natural resources and the environment, study bobcat populations in the Granite State. Now in the study’s fourth year, the Litvaitis team is focused on bobcat genetics, using the distribution of different genetic patterns to identify barriers to bobcat movements, such as specific areas where bobcats try to cross roads in southwestern and southeastern New Hampshire. Cars are a major cause of bobcat mortality in New Hampshire, and roads can be barriers to successful breeding, making the populations of this important predator less resilient to disease and other environmental challenges.

http://nhpr.org/post/bobcats-granite-state

Fairchild Dairy Center Receives 2013 Quality Milk Award from Dairy One
The Fairchild Dairy Teaching and Research Center, a facility of the NH Agricultural Experiment Station at UNH’s College of Life Sciences and Agriculture, has been awarded a 2013 Quality Milk Award from the nationally-recognized nonprofit dairy farmers cooperative, Dairy One. The Fairchild Dairy Center’s research herd was recognized for consistently producing milk with a low somatic cell count throughout the year. Milk with low somatic cell count is produced by healthier cows, resulting in more profitable herds, higher milk production per cow, higher milk quality premiums, and milk with a longer shelf life and higher yield of cultured dairy products.


Finally, a Mug Shot for a Crop-Killing NH Pest
Researchers at the NH Agricultural Experiment Station at UNH have identified and catalogued New Hampshire’s nearly 600 leafhoppers for the first time. Entomologist Don Chandler, a zoology professor whocurates the University’s insect collection, oversaw the three-year project to assist New Hampshire farmers in distinguishing the “good” leafhoppers from the “bad” ones, some capable of devastating crops and causing millions of dollars in damage. To control crop-threatening leafhoppers, Chandler offers advice to farmers such as mowing regularly, removing red clover and mulch from under trees, or using herbicide strips to reduce the habitat of the invasive leafhoppers.

http://colsa.unh.edu/aes/article/nhaes/leafhoppers
MacLea Joins Biology Department as Assistant Professor
Kyle MacLea will join the UNH Manchester faculty in fall 2014 as an assistant professor of biology, teaching courses in microbiology and molecular biology. MacLea’s research interests include understanding how prions (small protein infectious agents) are transmitted between mother and daughter cells in a yeast model system, and the molecular genetics of the processes of molting and limb regeneration in crabs, lobsters, and crayfish.

http://manchester.unh.edu/blog/campus-news/maclea-joins-biology-department-assistant-professor

New Bee ‘Hotel’ at UNH is Reserved for Pollinators
Sandra Rehan, assistant professor of biological sciences and a NH Agricultural Experiment Station researcher at the UNH College of Life Sciences and Agriculture; Cathy Neal, UNH Cooperative Extension specialist and professor of plant biology; and Woodman Farm staff have constructed a bee hotel as part of the research project, Sustainable Solutions to Problems Affecting Bee Health. “This study will assess the complete diversity of native bees in the region for the first time, serve as the baseline for long-term monitoring, and provide a better understanding of pollinator diversity and ecology. This information will be used to protect native bees in New England and to raise awareness of pollinator health and how human land use practices affect native pollinators and, in turn, our food supply and ecosystems,” says Rehan.

http://www.unh.edu/news/releases/2014/06/lw10bees.cfm

The Ick of the Tick
In his role as overseer of UNH Cooperative Extension’s integrated pest management program, Alan Eaton, professor of entomology, has been surveying NH for ticks for more than two decades. During this time he’s found that more black-legged ticks (*Ixodes scapularis*, a.k.a. deer ticks) call Rockingham, Strafford, and Hillsborough counties home than anywhere else in the state. This abundance most likely is due to increased humidity along the coast and rivers, more deer, and more people. Eaton’s advice on preventing tick bites, and possible Lyme disease, includes using insecticides and pruning brush to limit the ticks one is likely to encounter, and tucking long pants into tall socks to keep ticks away from the skin.

http://www.unh.edu/unhtoday/unhtoday/2014/06/ick-tick

UNH Names Innovative Composting Facility after Sustainable Agriculture Pioneer
UNH has named its high-tech composting/energy capture facility at the Organic Dairy Research Farm in honor of the sustainable agriculture pioneer who advanced the technology. The Joshua Nelson Energy Recovery Compost Facility, the only one of its kind at a land-grant university, produces high-quality compost and captures generated heat, thereby reducing fossil fuel use on the farm. Nelson developed this compost production system with colleagues at Agrilab Technologies of Enosburg Falls, VT. The technology can be used to heat greenhouses and buildings or meet demands for hot water while producing compost on a commercial scale for use in sustainable agriculture.

http://colsa.unh.edu/aes/article/unh-names-innovative-composting-facility-after-sustainable-agriculture-pioneer
**Business & Technology**

**Hackers Beware: Cyber Defense Competition Brings Region’s Brightest to UNH**
UNH’s computer science department hosted the seventh annual Northeast Collegiate Cyber Defense Competition, in which some of the world’s most skilled hackers gathered to compete against student cyber defense teams from 10 universities. The three-day competition, organized by UNH computer science instructor Ken Graf, pits hackers from the U.S. military, government, and top security firms against the student teams in real-world situations in which cyber security is threatened. The students must resolve and prevent the hacker’s attacks while allowing people in their simulated company to continue working at the same time.

http://www.unh.edu/unhtoday/unhtoday/2014/06/hackers-beware

**UNH Manchester and Prominent Business Duo Launch Emerging Technology Start-up Rejee**
UNH Manchester has partnered with Rejee founders, long-time New Hampshire advertising businessman Gary M. O’Neil, and Cambridge-based serial entrepreneur and MIT Enterprise Forum organizer/lecturer Ken Smith, to create what they call “an early-stage through completion, start-up internship program.” Twelve interns from diverse major areas of study have joined O’Neil and Smith in a strategic product review of the company’s iOS and Android mobile apps and website, tools that disrupt the cycle of personal property crime and its $50 billion direct economic impact, as well as the $90 billion in annual fraudulent insurance claims.


**Weight Watchers: A New Product that will Help Measure Rooftop Snow Loads**
Six UNH Manchester students led by Mihaela Sabin, associate professor of computer science, and Christopher LeBlanc, assistant professor of electrical engineering, are working with civil engineering alumnus and entrepreneur Chris Dundorf ’02 during the summer of 2014 to adapt his company’s SnowScale—a system designed to measure water content in snow loads in industrial settings—for commercial rooftop use. Based in UNH Manchester’s Engineering and Technology Laboratory, which was launched by LeBlanc, the project is funded by grants awarded by the New Hampshire Innovation Research Center and the New Hampshire EPSCoR program.

http://unh.edu/unhtoday/veterans/2014/06/weight-watchers

**Engineering & Physical Sciences**

**Mind Games: A Look at the FIRST Robotics Competition Held at UNH**
Teams faced off in UNH’s Lundholm Gym in a FIRST (For Inspiration and Recognition of Science and Technology) Robotics competition that drew about 2,000 high school-age engineers from schools around New England. Forty teams had designed and constructed their own robots to compete in a series of tasks that showcased the students’ computer programming and engineering skills. In between matches, teams toured the UNH campus, learned about the College of Engineering and Physical Sciences, and met members of the University’s WildCats robotics team.

http://www.unh.edu/unhtoday/unhtoday/2014/06/mind-games
**Health, Behavioral & Social Sciences**

**Founding Director Hired to Lead UNH’s New Carsey School of Public Policy**

Michael Ettlinger, a senior director with The Pew Charitable Trusts, has been named the founding director of the UNH Carsey School of Public Policy. The new Carsey School will leverage the existing work of the Carsey Institute as well as the University’s diverse instructional, research, and outreach activities to train future leaders in the craft of policymaking and in the use of research to solve problems. Opening of the Carsey School is planned for late summer 2014.

[http://www.unh.edu/news/releases/2014/06/em09carsey.cfm](http://www.unh.edu/news/releases/2014/06/em09carsey.cfm)

**History Professor Wins SHEAR Prize for First Book**

Assistant professor of history Jessica Lepler has been awarded the James H. Broussard Best First Book Prize by the Society for Historians of the Early American Republic (SHEAR) for her 2013 publication *The Many Panics of 1837: People, Politics, and the Creation of a Transatlantic Financial Crisis*. The Prize is awarded annually to the best first book by a new author published in the previous calendar year that deals with any aspect of the history of the early American republic.

[http://cola.unh.edu/article/2014/06/shear-prize](http://cola.unh.edu/article/2014/06/shear-prize)

**New Book Explores Courts and Mental Illness in Early Modern Italy**

Assistant professor of history Elizabeth W. Mellyn has published her first book, *Mad Tuscans and Their Families: A History of Mental Disorder in Early Modern Italy*, which uses court cases to examine four centuries of Italian policy and practice concerning citizens with mental disorders.

[http://cola.unh.edu/article/2014/06/mad-tuscans](http://cola.unh.edu/article/2014/06/mad-tuscans)

**Seichepine Joins Psychology Department This Fall**

Daniel Seichepine will join the UNH Manchester faculty as a lecturer in psychology in fall 2014. Seichepine is a Massachusetts-licensed psychologist with a practice in neuropsychology; his current research is focused on better understanding the long-term cognitive and physical effects associated with the 1990-1991 Persian Gulf War. Seichepine supervised many students’ research projects while a post-doctoral researcher at Boston University and is eager to do the same at UNH Manchester, especially in areas related to neuropsychological evaluations.

[http://manchester.unh.edu/blog/campus-news/seichepine-joins-psychology-department-fall](http://manchester.unh.edu/blog/campus-news/seichepine-joins-psychology-department-fall)

**UNH Prevention Innovations Director Testifies Before Senate Committee**

Jane Stapleton, co-director of UNH’s Prevention Innovations: Research and Practices for Ending Violence Against Women, testified before the U.S. Senate Committee on Health, Education, Labor & Pensions (HELP) on June 26, 2014. Her testimony was part of a full committee hearing examining sexual assault on college campuses. Stapleton spoke about Prevention Innovations’ evidence-based bystander intervention strategies (which include Bringing in the Bystander®, an in-person prevention program, and the Know Your Power® bystander intervention social marketing campaign) and about the Campus Sexual and Relationship Violence Consortium. She urged lawmakers to consider ways to reform and strengthen federal law to better address issues of campus domestic violence, sexual assault, and stalking.

UNH Researchers Receive $1.7M NIH Grant to Study Blindness Disorder
UNH biomedical researchers have received $1,659,375 from the National Institutes of Health for ongoing research studying the enzyme phosphodiesterase (PDE), the central protein in the photoreceptor cells (rods and cones) in the eye that transform light into images. The interdisciplinary research team led by Rick Cote, professor of molecular, cellular, and biomedical sciences, uses a variety of approaches, including structural biology, proteomics, and biochemical tools, to gain a better understanding of the three-dimensional structure and complex regulation of PDE during the very first steps in the visual signaling pathway. Mutation of PDE is a factor in the development of the vision disorder retinitis pigmentosa. Cote collaborates with researchers in his department – assistant professor Feixia Chu and professor Tom Laue – and Hengming Ke at the University of North Carolina.

http://www.unh.edu/news/releases/2014/06/bp17blindness.cfm

Humanities & the Arts

Music Professor Releases CD of Works by Women
Professor of music and flutist Peggy Vagts has released a new CD of compositions by women. UNH Murkland Lecturer Arlene Kies accompanied Vagts on piano. Titled *Persistence, Works by Women, 1850-1950: Music for Flute and Piano*, the CD includes works by composers such as Lili Boulanger (1893-1918) and Mélanie Bonis (1858-1937).

http://cola.unh.edu/article/2014/06/persistence

Credit: UNH College of Liberal Arts

The Office: Step Inside the Office of UNH's Only Puppetry Instructor, Carol Fisher
Carol Fisher, one of just a handful of puppetry instructors in the U.S., has been accumulating her puppet collection for more than 20 years. A mix of student projects, puppetry conference purchases, and her own handiwork, Fisher’s collection includes hundreds of puppets, from delicate paper shadow puppets to oversized foam figures. Take a digital tour of some of her favorites!

http://www.unh.edu/unhtoday/unhtoday/2014/06/office

Credit: UNH College of Liberal Arts

Wicked Cool Research: Linguistics Major Looks at Use of the Word “Wicked”
According to the Urban Dictionary, Boston is the place where use of the word ‘wicked’ as an adverb was born. Fascinated with words and the way their use and implication can vary, UNH linguistics major Emma Brown ’15 decided to make ‘wicked’ the subject of her research project for UNH’s 2014 Undergraduate Research Conference. Brown explored whether ‘wicked’ has undergone grammaticalization, the process of a word shifting from its original meaning and taking on new context.

http://unh.edu/unhtoday/veterans/2014/06/wicked-cool-research
Marine & Ocean Sciences

Bluebloods: Horseshoe Crabs’ Contribution to Modern Medicine Comes at a Cost
New research from UNH and Plymouth State University (PSU) suggests that collecting blood from horseshoe crabs (*Limulus polyphemus*) for use in testing vaccines and medical devices for bacterial contamination might be playing a significant role in the decline of horseshoe crab populations, thus negatively impacting coastal ecosystems from the Gulf of Mexico to the North Atlantic. A team led by Win Watson, UNH professor of zoology, and Christopher Chabot, PSU professor of biology, discovered that a significant percentage of the horseshoe crabs released back into the water after bleeding die, while those who survive are less active and have low levels of hemocyanin, a blood protein that carries oxygen throughout their bodies.

http://unh.edu/unhtoday/veterans/2014/06/bluebloods

Gift Expands Student Access to UNH’s Shoals Marine Laboratory
As part of a recent major gift to UNH, alumnus J. Morgan Rutman ’84, and his wife Tara, allocated $375,000 to the Shoals Marine Laboratory, a cooperative research and education program of UNH and Cornell University. The funds will be used for new curriculum development and to provide support for 10-week summer research internships, awards, and scholarships to lower the cost of participating in a program at the Lab for current UNH students as well as high school students with an interest in science, technology, engineering, and math.

http://www.unh.edu/news/releases/2014/06/em30marine.cfm

Hope on the Halfshell: The Humble Mollusk: Superhero
Ray Grizzle, research professor of zoology, and Ray Konisky ’03G, marine conservation ecologist for The Nature Conservancy’s Oyster Conservationist Program, are on a mission to help the declining oyster population along the Great Bay Estuary – as are about 58 local “oyster sitters” who have volunteered to help. The citizen oyster program restores oyster beds by creating a layer of shells to act as a foundation for a living reef and then placing it disease-resistant oysters that have been raised in Grizzle’s laboratory. With this head start, the mollusks will rebuild a reef, creating a giant natural water-filtering machine, helping to bring the Bay ecosystem back into balance.

http://www.unh.edu/unhtoday/2014/06/hope-halfshell
http://www.fosters.com/apps/pbcs.dll/article?AID=/20140629/GJNEWS_01/140629366/-1/FOSNEWS0413

UNH Scientist’s Image Appearing in New Godzilla Movie
An image of the Mariana Trench, which was mapped and developed by UNH scientist James Gardner, has been licensed by Warner Bros. and is being used within a quick-cut-montage sequence in the new Godzilla movie. The licensed image was taken during an underwater survey of the area by a team of researchers from the UNH Center for Coastal and Ocean Mapping/Joint Hydrographic Center that took place from August through October of 2010.

http://www.unh.edu/news/releases/2014/06/cd02godzilla.cfm
http://www.unh.edu/unhtoday/unhtoday/2014/06/unh-scientist%E2%80%99s-image-appearing-new-godzilla-movie
Sustainability & the Environment

Forest Sentinels: Healthier air means healthier trees
Two decades after Barrett Rock, professor emeritus of forestry and botany, started the Forest Watch program, which enlists science teachers and students at schools around New England to help UNH scientists monitor the region's forests, student research shows that trees have grown healthier overall since 1991. But trees on the seacoast, where there is more smog, fare worse than trees in the mountains, where there is less pollution.

http://unh.edu/unhtoday/veterans/2014/06/forest-sentinels
Credit: UNH Communications and Public Affairs

Marshes Called Key in Combating Sea-level Rise
David Burdick, associate research professor in the department of natural resources and the environment, took community members to the salt water marshland near the Seacoast Science Center in Rye to explain its important role as a buffer from ocean surge and sea-level rise. In addition to providing places for storm surge to collect and preventing further coastal erosion, the marshes play an integral role in supporting biodiversity within human and animal food chains, and wildlife habitats.

http://www.seacoastonline.com/articles/20140617-NEWS-406170368
Credit: Ben Kimball

NHAES Research: New England Lakes Recovering Rapidly From Acid Rain
New research funded by the NH Agricultural Experiment Station (NHAES) at the UNH College of Life Sciences and Agriculture indicates that lakes in New England and the Adirondack Mountains are recovering rapidly from the effects of acid rain. NHAES researcher William McDowell, professor of environmental science and director of the NH Water Resources Research Center, and his team of scientists found that the sulfate concentration in rain and snow declined by more than 40 percent in the 2000s, and sulfate concentration in lakes declined at a greater rate from 2002 to 2010 than during the 1980s or 1990s. During the 2000s, nitrate concentration in rain and snow declined by more than 50 percent and nitrate concentration declined in lakes.

http://colsa.unh.edu/aes/article/nhaes-research-new-england-lakes-recovering-rapidly-acid-rain
http://www.unh.edu/news/releases/2014/06/lw09acidrain.cfm

Pollution Solutions: Smart Dogs, Smart Pavement, Smart Gardens
Three practices are currently in use in New Hampshire that may help to solve water pollution problems and promote water conservation. Two dogs from Environmental Canine Services in Michigan are working in Durham, sniffing out stinky sewage from leaky pipes, bad plumbing joints, seeping septic systems – anywhere untreated wastewater is escaping. In Greenland, a small section of porous pavement has been so successful at cleaning runoff that the water flowing back into Pickering Brook, and eventually into Great Bay, is cleaner than the water in the brook itself. The third initiative is Soak Up the Rain Great Bay, a new state-funded program that is helping homeowners become stakeholders simply by taking action in their own yards by building rain gardens to catch runoff from driveways and lawns before the runoff reaches the Great Bay.

http://www.unh.edu/unhtoday/2014/06/pollution-solutions
Credit: Robert Vincent
Reduce, Reuse, Peecycle: Senior Project Gets students to Think Before They Flush

UNH environmental engineering majors Taylor Walter ’14, Alyson Packhem ’14, and Adam Carignan ’14, and business major Liz McCrary ’14, conducted Durham Urine Diversion & Recycle, a senior capstone project that collected urine from fellow students so the urine could be diverted from Durham’s wastewater treatment plant and instead be converted to nitrogen-rich fertilizer. While the researchers fell short in their goal of collecting the 1,000 gallons needed to fertilize one acre of hay crop, they used this project as an opportunity to teach fellow students about the complex environmental issues behind ‘the flush.’

http://www.unh.edu/unhtoday/2014/06/reduce-reuse-peecycle

Restoring Dunes

Greg Moore, research assistant professor in UNH’s School of Marine Science and Ocean Engineering, will direct a key component of a National Wildlife Federation project recently funded by a $2.9 million restoration grant from the U.S. Department of the Interior. His goal will be to rebuild some of the eroded dunes at Salisbury Beach, MA, and restore native dune plants to Salisbury and Plum Island. Dune plants are seen as a natural defensive barrier against storms, because their roots hold the dune together and their grasses collect drifting sand.

http://www.newburyportnews.com/local/x1927804311/-2-9-million-eyed-for-dune-marsh-protection

The Battle Continues: Eelgrass, Nitrogen, and the Complexities of Sewage

Fred Short, research professor of natural resources and marine science, has found in the 30 years he has been studying the Great Bay that the total area of marine eelgrass coverage is shrinking and the density within the beds also has decreased dramatically. Called an "ecosystem engineer" for its ability to stabilize the seabed and slow currents, eel grass, or *Zostera marina*, has become the focus in a new battle for Great Bay. UNH’s Water Resources Research Center has worked to help Great Bay communities understand the rationale for the U.S. Environmental Protection Agency’s new limits on nitrogen water discharge from wastewater treatment plants so that the communities will accept and comply with the new rules. Excess nitrogen is the main cause of the decline of eelgrass and resulting loss of habitat for the tiny fish and other invertebrates that serve as food for herons, egrets, and other wading birds.

http://www.unh.edu/unhtoday/2014/06/battle-continues

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http://www.unh.edu/research/UNH-Research-Digest