
COBWEBS



Summer 2010 – Volume 14

A newsletter for GVSU Alumni in Biology and Natural Resources Management

This Old House

Neil MacDonald, Chair, Biology Department

“I intend to immerse myself in the exhilaration and challenges of life as a teacher-scholar and to befriend Time again.”

Shaily Menon, our outgoing Department chair, left us with these words last spring. I personally thank Shaily for exemplary service to the Department during her time as chair, and for her effective efforts to make the chair transition a relatively easy one. I also have been fortunate to have the assistance of an efficient and collegial team of faculty and staff who have made my first year as chair an enjoyable (but nonetheless busy!) one. I can assure you that Shaily has been adjusting well to the relative freedoms of being a full-time faculty member again; in fact, she seems to be immensely enjoying her old friend Time, and deservedly so!

In anticipation of the 50th anniversary of Grand Valley State University that we will celebrate next year, I wanted to share with you where the similarly venerable Biology Department finds itself today. Enrollments in all of our programs have been increasing rapidly over the last few years. In the Winter, 2010 semester, we had a total of 557 undergraduate Biology majors, and the Natural Resources Management Program had a record enrollment of 141 undergraduates. Our MS Program, launched in the Fall of 2003, had 29 graduate students enrolled last winter, and there is a total of 29 completed theses on the Departmental bookshelf, with more on the way. All of our programs continue to attract hardworking and dedicated students, and our graduates pursue an amazing variety of careers in science, education, and public service.

In the context of the current economic situation, rapidly increasing enrollments in our programs is not a bad “problem” to have. It does present challenges in how we physically house and staff the increasing number of course sections that we need to offer to satisfy the demand. Like the owners of an aging but beloved house, we find ways to expand and renovate. One area that we have begun to address this past year is how to reconfigure the Biology curriculum to facilitate the larger number of students who wish to take our courses and pursue our degrees. Like an old house, curriculum can become creaky and cranky, and requires diligent maintenance to keep in working order.

To this end, a group of professors are diligently working this summer to develop ways of reconfiguring the introductory Biology course sequence to better serve our students, without cutting out content that is vital. Because our knowledge of biological systems continues to evolve and expand, it is increasingly difficult to cover everything that students should know in

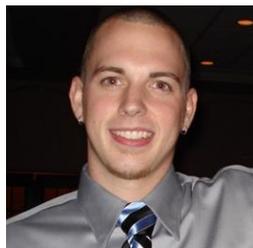
the same number of courses! I think of this effort as our version of Norm Abrams and Tom Silva on the television program “This Old House,” poking and probing skeptically at an aging but hopefully still sound foundation. Like Norm and Tom, I am confident that we also will find ways to keep our “old house” sturdy and functional.

Please feel free to share your experiences with us; we are always interested to hear of your accomplishments. We will look forward to hearing from you.

Outstanding Graduates



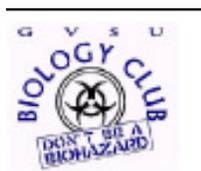
Corey Kapolka is the 2009/201 Outstanding Graduating Senior Biology Major. Following graduation, Corey will be taking a year off from school to explore potential work experiences and communicate with graduate programs. “There are many excellent plant biology and ecology programs that I am considering whose faculty are addressing invasive threats to our native ecosystems, and I hope to be able to contribute to the development of new methods of curtailing these threats. My ultimate goal is to work in a position where I am able to facilitate the improvement of public policies and understanding regarding invasive species through education and research, because I believe our current methods of solving these problems are sorely lacking in long-term efficacy.”



Thomas Schmidt is the 2009/201 Outstanding Graduating Senior Natural Resources Management Major. After graduation Thomas plans on obtaining some research experience with Dr. Greer and will begin preparation for graduate school by taking the G.R.E. He will also be searching and applying to schools that catch his interest in plant ecology as he is still unsure of where exactly to continue his education.

GVSU Biology Club News

President: Beth Baumgartner, Vice President/ Financial Officer: Adrienne Gibson, Public Relations: Melissa Bobowski, Secretary: Samantha Bond



The Biology Club has been busy this year! We started the year with our annual Meet and Greet. We started this event last year to familiarize students with the biology program and ask any questions they may have about completing the major. This year we added a research aspect to the event. Students and faculty were asked to display their research posters, as examples of some of the research work that is happening at GVSU. It was a lot of fun and the students were exposed to all of the different research projects faculty work on.

Some other events that we had this fall included a canoe trip and our annual zoo tour at the John Ball Zoo. We were very lucky this year to have one of the keepers feed the Komodo Dragon for us! We also had an alumni chat with Allison Hoving from Belrea institute in Denver, Colorado.

This spring we volunteered at the Science Olympiad, which was a very fun way to give back to our community! We also tried a new event, called the GVSU Ravine Clean-up! We had a group of people come volunteer to take part in this event and we were able to clean up under the bridge by Padnos Hall. During our lunch break of this event, we had Dr. Luttenton come in and give an interesting lecture on the importance of water.

We would like to thank the biology department, the faculty and especially Dr. Trier for their support. We will be welcoming Dr. Jacquot and Dr. Henshaw as our new co-advisors for the 2010-2011 school year. We also are excited to welcome our new officers for next year, who will be Adrienne Gibson for President, Melissa Bobowski for Vice President, Lindsay Meirow for Secretary, Korie Hamming for Financial Officer and Erin Sattler as our Event Planner.

Soil and Water Conservation Society News



This year has been quite a busy one for the members of GVSU's Soil and Water Conservation Society. This past fall we participated in a number of annual events. We were welcomed back to the 14th annual Thornapple River clean-up. It is always the first event we participate in and is a great chance to get out and canoe with new members and local citizens. Two weeks after that, grass seed was ripe for collection. Volunteers met at Cheryl Tolley's property in Rockford, MI, as they do every year, to collect native Indian grass and Bluestem seeds. These seeds are used to help restore native prairies of Michigan. Our final outing was a guided hike of the newly protected Saugatuck Harbor Natural Area with Melanie Good of the Land Conservancy of West Michigan. It was a chance to view the property from a more intimate setting and to learn about the conflicts that come with securing valuable habitat for protection. At the time of our hike, negotiations were still underway as to the price of the property. A few weeks later, the Land Conservancy received a public donation of \$2 million, allowing them to purchase and forever protect this valuable environment along Lake Michigan's shore.

This winter of 2010 has also been an exciting one. A number of guest speakers came to talk to the group about employment. Beth McCarthy, a Student Conservation Association representative, about fascinating summer internship opportunities. Lucas Wescott, an Isle Royale employee, also came to speak about how to secure federal employment. Guests are a great way for students in the Natural Resource Management/Biology to learn about securing much needed experience in the field. Some of our workdays included invasive Scotch pine removal and Castle Park sand dune restoration with Melanie Good of the Land Conservancy. We also sponsor a two mile stretch of Lake Michigan Drive that we clean-up through MDOT's Highway Clean-up program. This clean-up takes place in both the fall and winter semesters. It is usually the close to our activities in mid-April, but this year we have scheduled a Garlic Mustard pull at Aman Park as our final outing. Also, in conjunction with the Land Conservancy of West Michigan, we are hosting a documentary on land trusts as our final event, scheduled for April 28, 2010.

GVSU Pre-Veterinary Club News

By: Genevieve Dinsmore



This year the GVSU Pre-Veterinary club has continued to grow with many new members ready to learn and participate. We had a large number of younger students attending our meetings throughout the year so our main focus has been educating members about the veterinary career and the requirements for getting accepted into a college of veterinary medicine. Our officers for the 2009-2010 school year are President Genevieve Dinsmore, Vice President Erin Matero, Secretary Katie Bedard, and Treasurer Samantha Denio.

The Pre-Vet club started the fall semester by participating in Campus Life Night where we actively recruited new members and informed students about our club. We were also busy in the fall semester planning pre-professional day. This day was a collaborative effort with many of the other pre-professional clubs and served to inform students about applying to professional schools and finding opportunities to enhance their applications. The Pre-Vet club invited Dr. Jennifer Trippany to speak at this event about her traveling large and small animal vet clinic. Later in the year, we also invited Professor Osman Patel to give a lecture on his experiences as a veterinarian and we had a horse dentist give an informational speech on the details of his career.

Throughout the year, we had meetings informing our students on the procedure to apply to vet school, volunteer opportunities, and planning club events. The club held two bake sales in which the members baked various treats and sold them to raise money. The club also sponsored a donation drive for the Kent County Humane Society during family weekend.

Along with the Biology club, the Pre-Vet club visited Char VanderHoning's family farm where we were able to admire her beautiful horses, learn a little about working on a farm, and have a bonfire and hayride. This was the first year the Pre-Vet club attended this event with the Biology club and it was a huge success.

We also visited Post Family Farms in the fall and had a movie night to promote quality bonding time between the members of the club. The club took its annual trip to MSU to visit the College of Veterinary Medicine and we were given a presentation on the admissions process by Dr. Norma Baptista. This was very informative for club members and will be extremely helpful with the application process.

It has been a very busy and informative year for the Pre-Vet club and many of these fun activities will be included in next year's program. Also included in the agenda for next year will be a trip to the zoo for a behind the scenes tour as was done in previous years. It should be a great year!

Eleven Students Earn Biology Related Academic Scholarships from GVSU

Thanks to generous contributions to four biology endowment funds, eleven students will receive financial support for the 2010/2011 academic year.

Julie Wesselink and Kyle Coopere received a scholarship from the **John Salski Memorial Fund**. The John Salski Memorial Fund is awarded on the basis of academic merit and supports summer academic and research activities.

Joshua Duram and Cody Hager received a scholarship from the **Howard and Rose Stein Endowed Biology Scholarship**. The Howard and Rose Stein scholarship is awarded on the basis of academic merit and supports students who are majoring in Biology and earning a secondary teaching certificate or a biology major who intends to pursue a research career with a laboratory focus after graduation.

Brittini Hopkins, Erin MacDonald, Alexander Nolan, and Lauren Spaans received a scholarship from the **Professor Paul A. Huizenga Education Scholarship**, which is awarded on the basis of academic merit & financial need and supports biology majors pursuing secondary teaching certification.

Korie Hamming, William Lindberg, and Grady Zuiderveen are the recipients of the **John Shontz Scholarship**, which is funded through the **Waddell-Treanor Native Plants Endowment**, and supports students who are majoring in Biology with a Plant Biology emphasis.

For more information on contributing to these funds, please visit the GVSU University Development web site (<http://gvsu.edu/development/>) or email/ call the Biology/NRM Department.

New Faculty



Erin Naegle, *Assistant Professor of Biology (Education)*

D.A. in Biology, Idaho State University, Pocatello, ID, 2009

M.S., Horticultural Science, North Carolina State University, Raleigh, NC, 2004

M.S. in Plant Physiology, North Carolina State University, Raleigh, NC, 2002

B.S. in Crop Science, Utah State University, Logan, UT, 1999

Erin Naegle taught at Utah Valley University as an adjunct faculty member. While earning her doctorate at Idaho State University, she also spent a year as a NSF GK-12 Fellow teaching seventh grade Life Science. Erin's research interests center around understanding student misconceptions and aiding teachers and students in successfully overcoming these misconceptions in teaching and learning. Her most recent project investigated common misconceptions regarding the interpretation of phylogenetic trees. This year she taught BIO 104, Biology for the 21st Century, and SCI 225, Integrated Life Science for K-8 Teachers. Erin has recently become enamored with bird watching, especially those pesky kleptoparasitic American coots.



M. Megan Woller-Skar, *Assistant Professor of Biology (Quantitative Ecology)*

Ph.D. in Biology, Bowling Green State University, Bowling Green, OH, 2009

M.S. in Biology, Central Michigan University, Mount Pleasant, MI, 2006

B.S. in Zoology, Miami University, Oxford, OH, 1998

Meg Woller-Skar comes from Bowling Green State University where her dissertation focused on ecosystem level changes in low-nutrient lake basins following zebra mussel establishment. Prior to this, she served as Stewardship Director for the Leelanau Conservancy and Director of the Leelanau Watershed Council. She enjoys bringing together challenging datasets that include chemical, physical and biological variables, and using a suite of basic, multivariate and geostatistical techniques to determine underlying trends. This year, Meg taught general ecology, environmental science, and a graduate course in quantitative methods. She is a member of the North American Benthological Society and the American Society of Limnology and Oceanography.

Baby Announcements

Three new babies arrived during the 2009/2010 academic year:



Daniel George MacDonald was born on October 16, 2009 at 12:30 p.m. He weighed 7 lbs. 5 oz. and was 21" long. He now weighs about 19 lbs, and was 28" long at 6 months old, so he is going to be a big boy it looks like! Here is a picture of Daniel on his first SWCS event!



Clare Maureen Morgan was born on March 12, 2010. Clare weighed 9 lbs. 3 oz. and was 21 inches long. She joins her 4 brothers and very grateful sister.



Violet Arden Mohr Jacquot was born on April 16th, 2010. She weighed in at 7 lbs 6ozs and 20 inches long. We call her the 'Shrieking Violet' because she is very good at letting you know when she needs attention.

Biology Department Mission

The Biology department integrates meaningful practical experiences with excellent classroom teaching to prepare students to be critical thinkers, engaged citizens, and creative and competent professionals in the biological sciences.

Student Scholars Day, 2010



Student Scholarship Day: A GVSU Tradition

Student Scholars Day (SSD) is held once each year to celebrate the scholarship and creative work performed by GVSU students. The day showcases faculty-mentored student work, shared through many venues, including (but not limited to) oral presentations, discussion and panel sessions, fine arts exhibits and performances, and poster presentations.

Student Scholars Day projects may be initiated as part of a course or as independent collaborations with faculty. GVSU encourages all students to consider enhancing their personal and professional development by engaging in scholarly and creative work with faculty, and to share their work with the GVSU community.

The Brooks College of Interdisciplinary Studies is proud to present and host the 15th Annual Student Scholarship Day on Wednesday April 14, 2010. This event showcased over 400 presentations by more than 600 student presenters.

Many Biology Department faculty and students presented this year, please take a look at all of the presentations below!

Poster Presentations

Baiz, Marcella (Michael Lombardo). Factors that Affect Egg Mass in Tree Swallows.

Baumgartner, Beth (Michael Henshaw). Personality in the Jumping Spider, *Phidippus audax*.

Bedard, Kathleen (Rod Morgan). The Antibacterial Activity of a Variety of Carboxylic Amides.

Davis, Corey (Timothy Evans). A Preliminary Phylogenetic Analysis of the Genus *Aneilema* (Commelinaceae) Based on Chloroplast DNA Sequences.

Gibson, Adrienne (Rod Morgan & Alexey Nikitin). The Effect of Caffeine on the Bacterial Populations of a Freshwater Aquarium System.

Hightower, Liberty (Michael Lombardo). Factors that Affect Egg Mass in Tree Swallows.

Houdek, Bradley (Michael Lombardo). Factors that Affect Egg Mass in Tree Swallows.

Lordanou, Ekaterini. Alternate Source of Serum for Mammalian Cell Culture.

James, Caleb (Timothy Evans). Phylogenetic Relationships within the Neotropical Plant Genus *Lymania* (family Bromeliaceae) based on Several Chloroplast DNA Regions.

Knapp, Stacey (Elena Lioubimtseva). Possible Effects of Climate Change on Australia's Coast.

Lee, Min (Amy Russell). The Phylogeography of Eastern Red Bats (*Lasiurus borealis*) and Effects of Wind Turbine-Related Mortality.

Mee, Erica (Nancy Shontz). BRCA1/BRCA2 and Genetic Counseling.

Pashnick, Jeffrey (Martin Burg). *Drosophila* Genomics: An Active Approach to Genomics in the Classroom.

Roach, Patrick. The Effect of Ascorbic Acid and Histidine on Coronary Artery Function.

Romeyn, Matthew (Michael Lombardo). Factors that Affect Egg Mass in Tree Swallows.

Stambaugh, Tammy (Michael Lombardo). Development of Innate Immunity in Nestling Tree Swallows.

Zuiderveen, Grady (Timothy Evans). A Phylogenetic Analysis of the African Plant Genus *Palisota* (family Commelinaceae) Based on Chloroplast DNA Sequences.

Cookingham, Megan (Eric Snyder). Ecology of Juvenile Salmon in Upland vs. Lowland Alaskan Streams: An Assessment of Food Webs Using Stable Isotope Analysis.

Horne, Nicole (Bopi Biddanda). Cyanobacterial Mats of the Earth: Spotlight on Lake Huron's Sinkholes.

Krynak, Edward (Eric Snyder). Importance of Macrophytes for Macroinvertebrate Secondary Production and Implications for Juvenile Salmon Feeding Ecology.

Slider, Robert (Robert Hollister). Why the Top of the World is on the Top of Our Minds.

Vander Boon, Calvin (Figen Mekik). A New Aragonite Preservation Proxy to Measure [CO₃=] in Shallow Pelagic Seas.

Young, Anna (Michael Lombardo). Nest Characteristics of Piping Plovers.

Ickes, Karen (Paul Keenlance). The Effectiveness of Individual Identification of Bobcats (*Lynx rufus*) Using Automatically Triggered Cameras in Michigan.

Stauber, Josh. Using GIS to Evaluate the Effective Use of Parking Spaces for Residents and Commuting Students on GVSU's Allendale Campus: Mapping the Vacant Spaces.

Oral Presentations

Kapolka, Corey (Neil MacDonald). Site Preparation and Hand Pulling Effects on Spotted Knapweed Control and Native Plant Establishment in the Bass River Recreation Area, Ottawa County, Michigan.

LaRue, Elizabeth (Carl Ruetz). Population Genetic Structure of the Invasive Round Goby in Lake Michigan.

Richardson, Vernon (Edwin Joseph). Using LiDAR Data to Evaluate Road Runoff on Impermeable Surface Roadways and Identifying Locations to Install Methods for Reducing Runoff on Grand Valley State University's Allendale Campus.

Defore, Angela. Carbon Cycling by Production and Respiration in a Drowned River Mouth Lake.

Liebig, Jennifer (Robert Hollister). Predicting Responses of Arctic Plants to Warming with Species Distribution Maps.

May, Jeremy (Robert Hollister). Vegetation Community Response to Long Term Experimental Warming in Northern Alaska.

Slider, Robert (Robert Hollister). Why the Top of the World is on the Top of Our Minds.

Vander Boon, Calvin (Figen Mekik). A New Aragonite Preservation Proxy to Measure [CO₃=] in Shallow Pelagic Seas.

Young, Anna (Michael Lombardo). Nest Characteristics of Piping Plovers.

Ickes, Karen (Paul Keenlance). The Effectiveness of Individual Identification of Bobcats (*Lynx rufus*) Using Automatically Triggered Cameras in Michigan.

Stauber, Josh. Using GIS to Evaluate the Effective Use of Parking Spaces for Residents and Commuting Students on GVSU's Allendale Campus: Mapping the Vacant Spaces.

Chapman, Jill (Todd Ashenbach). An Adaptive Management Plan for Improving Spring Migrant Bird Species Habitat in Saugatuck Dunes State Park.

Sutherland, Natalie (Todd Ashenbach). An Adaptive Management Plan for the Improvement of Mitigated Wetland Quality.

Mellema, Ryan (Todd Ashenbach). Hardwood Regeneration Since Red Pine (*Pinus resinosa*) Removal In Ottawa, Co. MI.

Patterson, Tyler (Todd Ashenbach). Examining the Predicted Effects of Climate change across the United States with Regards to Electrical Heating and Cooling.

Sisson, Andrew (Todd Ashenbach). A Geographic Information System Analysis of Land Use affects on the Water Quality of the Plaster Creek Headwaters, Kent County, MI.

Bourdon, Erica. Assessing Stream Health Near an Agricultural and Industrial Site with Indicator Species *Chironomus dilutus* and *Hyallolella azteca*.

Ickes, Karen (Todd Ashenbach). Predator Conflict: Fragmentation Impacts on Bobcats (*Lynx rufus*) and Coyotes (*Canis latrans*) in Central Michigan.

Cook, Emily (Todd Ashenbach). The Effect of Climate Change on the Abundance of Winter Bird Species in Benzie County, Michigan.

Brandt, Elizabeth (Todd Ashenbach). Assessment of Paper Waste Between Students and Faculty at Grand Valley State University.

Bethke, Paul (Todd Ashenbach). An Adaptive Management Plan for Improving the Howard Christensen Nature Center Trail System.

Beaver, Kyle (Paul Keenlance & Todd Ashenbach). Manipulating Site Selection of North American Beaver (*Castor canadensis*) Using Predator Odors to Reduce Impact on Anthropogenic Structures.

Kapteyn, Mathew. Examining the Potential Placement of Rain Gardens Using GIS Technology: Reallocating Rooftop Run-off.

Reinhardt, Andrew. Examining the Potential Placement of Rain Gardens Using GIS Technology: Reallocating Rooftop Run-off.

Upchurch, Lindsey. Examining the Potential Placement of Rain Gardens Using GIS Technology: Reallocating Rooftop Run-off.

Lemon, Kaitlyn. Mapping Manhole Utilities: GVSU Allendale Campus.

Highlights of Faculty Activity

Todd Aschenbach was the co-author of 2 presentations given at Grand Valley State University. The two presentations entitled *Green Curriculum, Green Architecture* and *Ottawa County's Pigeon River: A Qualified Success Story*, were part of the Sustainable Community Development Initiative. He also co-authored an article that was published on-line entitled *The Initial Phase of a Longleaf Pine-Wiregrass Savanna Restoration: Species Establishment and Community Responses*.

Sheila Blackman contributed to a press release regarding the recent Nature paper by Melcher *et al* (Van Andel Institute): *A gate-latch-lock mechanism for hormone signaling by abscisic acid receptors*. She also presented a poster entitled *Acquisition of Desiccation Tolerance During Seed Development in Phalaenopsis*, at the Joint annual meeting of the American Society of Plant Biologists and the Phycological Society of America in Honolulu, Hawaii.

Stephen Burton was the co-author of three journal articles. The first article entitled *The sucker project: How many licks does it take to address student misconceptions about natural selection with Tootsie Pops?* was published in the Michigan Science Teachers Association Journal. The second article entitled "*Spork & beans: Addressing evolutionary misconceptions*" was published in the American Biology Teacher. The third article entitled *Student Understanding and Misconceptions of Evolutionary Theory* was published in Interchange.

Margaret Dietrich was the co-author of an article entitled, *Morphological functions of endogenous gibberellins in filicalean gametophytes: insights into the evolution of form and gender expression*.

Chris Dobson was the co-author of four publications. The first article entitled *Spork & beans: Addressing evolutionary misconceptions* was published in The American Biology Teacher. The second article entitled *Moss, beech trees, and stemflow: Integrated science* was published in the MSTA Journal. The third article entitled *Student understanding and misconceptions of evolutionary theory* was published in Interchange. The fourth article he published on the GVSU Integrated Science website entitled *The biodiversity invasion*. Chris also co-authored 2 presentations. The first, entitled *Helicopter seeds and hypotheses...that's funny!* was given at the Michigan Science Teacher's Association Annual Conference in Detroit, MI. The second entitled *What every non-science major should know about teaching science* was given at the Fire Up! Student Conference, GVSU, in Allendale, MI. In addition, he authored a presentation at the Fall Science Update given at GVSU in Allendale, MI entitled *The biodiversity invasion*.

Tim Evans published a book chapter entitled *Plant Systematics in the 21st Century* in the book *Contemporary Plant Systematics: 4th Ed*. He was also the co-author and presenter of a presentation given at both the Botany 2009, Botanical Society of America and the American Society of Plant Taxonomists in Snowbird, Utah and the Botany 2009, Van Andel Research Institute, in Grand Rapids, Michigan. The presentation was entitled *A preliminary phylogenetic analysis of the genus Aneilema (Commelinaceae) based on chloroplast DNA sequences*.

Gary Greer was the co-author of a journal article that was published in the Botanical Journal of the Linnean Society entitled *Morphological Functions of Endogenous Gibberellins in Leptosporangiate Gametophytes: Insights into the Evolution of Form and Gender Expressio*. He was also the co-author of a presentation given at the Botany 2009, joint meeting of American Botanical Society, American Bryological and Lichenological Society, American Fern Society, American Society of Plant Taxonomists, and American Mycological Society in Snowbird, Utah. The presentation was entitled *Ailanthus altissima Increases Nodulation in Trifolium pratense: A Novel Weapon for an Invasive Species?*

Carol “Griff” Griffin submitted a report to the Manistee National Forest in Manistee, Michigan entitled *Dunes Wilderness Visitor Use Survey – Summer 2009*. She also submitted a publication that was accepted by the Michigan Academician entitled *Visitors’ Perceptions of the North Country National Scenic Trail*.

Mike Henshaw was the co-author of a presentation entitled *Prey choice in Polistes: Comparing three Michigan species*, which was given at the URGE Undergraduate researcher presentations at the Pierce Cedar Creek Institute in Hastings, MI.

Robert Hollister was the co-author of two accepted journal articles, entitled *Above and below ground plant biomass response to experimental warming in northern Alaska* and *Remote sensing of tundra gross ecosystem productivity and light use efficiency under varying temperature and moisture conditions*. He was also the co-presenter and co-author of seven presentations. The presentations were entitled *Barrow Arctic Terrestrial Observatory (BATO): An IPY Legacy*, *Arctic Observing Networks: Collaborative Research: Sustaining and amplifying the ITEX AON through automation and increased interdisciplinarity of observations*, *IPY Arctic Observing Networks. Collaborative Research: Study of Arctic ecosystem changes in the IPY using the International Tundra Experiment*, *Monitoring the response of tundra vegetation to temperature at Barrow and Atkasuk, Alaska*, *Lessons learned from past ITEX synthesis efforts*, *Changes in distribution of northern and southern Arctic plant species due to warming*, and *Long-term Phenological Changes in Tundra Plants in Response to Experimental Warming and Observed Changes in Climate*.

Jodee Hunt was the co-author of an article entitled *Innovative teaching to engage and challenge twenty-first century entrepreneurship students: an interdisciplinary approach*. She was also the co-presenter of five presentations. The first two presentations entitled *Development of ecotourism and curriculum development in Miraflór, Nicaragua: outreach and collaboration with faculty of FAREM, Esteli*, and *Short-term effects of soil amendments in restoring riparian habitat following gravel mining in an urban inland lake*, were given at the Ecological Society of America’s annual meeting in Albuquerque, NM. The third presentation entitled *Agroecology and ecotourism in Nicaragua: an Interdisciplinary Exploration*, was given at the NSF Advance research symposium and celebration on the Pew Campus of GVSU. The last two presentations entitled *Effects of perches and rodent-exclusion fences on the restoration of an urban riparian plant community* and *Effects of manure and sawdust + sucrose amendments on soil nutrients and plant species abundance in urban riparian restoration*, were

given at The Science, Practice and Art of Restoring Native Ecosystems, 2nd annual conference of the Stewardship Network in East Lansing, MI.

Joe Jacqout was the presenter of a poster entitled *Rising above the conflict: Meadow jumping mice coexist with meadow voles through vertical habitat partitioning*. He was also the co-author of a poster entitled *Identifying hybrids of *Peromyscus leucopus* and *P. maniculatus* in Michigan using molecular genetics*.

Jann Joseph co-authored an article entitled *A Framework for Facilitating Equitable Discourse in Science Classrooms*, which was accepted by Science Scope. She also authored a journal article entitled *Does Intention Matter? Assessing the Science Teaching Efficacy Beliefs of Pre-service Teachers as Compared to the General Student Population*, which was accepted by the Electronic Journal of Science Education. She co-authored a presentation entitled *The SCI-CARE Project: A sustainable Collaboration to Improve Content, Assessment, Reflection and Efficacy of Science Teachers*, given at the National Science Teachers Association Annual Meeting, NSTA, in New Orleans, LA. In addition, she authored a presentation entitled *Associate/Assistant Deans and Authority Outside the Decanal Office: Definitions, Models, and Means of Acquisition*, given at the Council of Colleges of Arts and Sciences 2009 Annual Meeting in Baltimore, Maryland.

Paul Keenlance was the presenter and co-author of a presentation entitled *Small Mammal Use of a Savannah Restoration Site in West Michigan*, given at the 70th Midwest Fish and Wildlife Conference, IL DNR/The Wildlife Society in Springfield, IL. He was the co-author of a poster presentation entitled *Impacts of Savannah Restoration on Small Mammal Density and Diversity in West Michigan* and the author of a presentation entitled *The effectiveness of individual identification of bobcats (*Lynx rufus*) using automatically triggered cameras in Michigan*, both presentations were given at the 16th Annual Wildlife Society Conference in Monterey, CA.

Michael Lombardo was the co-author of a publication entitled *Captivity affects sperm production, testes size and beak color in House Sparrows (*Passer domesticus*)*. He was the co-author of 5 poster presentations given at the West Michigan Undergraduate Research Conference, Van Andel Institute, in Grand Rapids, MI. The presentations were entitled *Parent anti-predator responses during the nestling period in Tree Swallows*, *Nest site characteristics and reproductive success in Tree Swallows*, *Factors that affect egg mass in Tree Swallows*, *Sex differences in innate immunity in Tree Swallows*, and *Development of innate immunity in Tree Swallows*. He was also the co-presenter and co-author of two presentations given at the Ornithologists' Union, University of Pennsylvania in Philadelphia, PA entitled *Sex differences in innate immunity in Tree Swallows* and *Social environment and beak color in House Sparrows*.

Mark Luttenton was the co-author of a publication entitled *An analysis of internal phosphorus loading in White Lake, Michigan*. He was the co-author of a journal article entitled *Analysis of mitochondrial nucleotide polymorphism in the ND-1 locus in the North American brown trout (*Salmo trutta*)*, which was published in the Journal of Great Lakes Research. He also gave a presentation entitled *Local, Regional and Global Water Issues*, given at Loyola University of Chicago, Center for Urban Environmental Research and Policy.

Neil MacDonald was the co-author of a research report entitled *Establishing a Diverse Assemblage of Native Grasses and Forbs on a Knapweed-Infested Site in the Bass River Recreation Area, Ottawa County, Michigan*. He was also the author of a presentation given at both the Ottawa County Water Quality Forum in West Olive, MI and the Campus Sustainability Week on the Allendale Campus of GVSU. The presentation was entitled *Ottawa County's Pigeon River: A Qualified Success Story*.

Shaily Menon was the co-author of publication entitled *Projected climate change effects on nuthatch distribution and diversity across Asia*, which was published in The Raffles Bulletin of Zoology. She was the co-author of a publication entitled *Fundamentals for using geographic information science to measure the effectiveness of land conservation projects*, which was published in Geoinformatics for Natural Resource Management. In addition, she presented a paper entitled *Predictive Modeling of Plant Diseases to Manage Climate Change Risk in Forests*, given at the IUFRO Working Group Meeting in Hilo, Hawaii.

Rod Morgan was the co-author of a journal article entitled *An Efficient Enrichment Technique for the Isolation and quantification of indigenous Diesel-Fuel Utilizing Bacteria Present in Freshwater Sediments*, which was accepted by the Journal of Biotech Research. He was also the co-author of a presentation given at the West Michigan Undergraduate Science Research Conference, Van Andel Institute, in Grand Rapids, MI, entitled *Amides as Potentially New Antibacterial Agents*.

Erin Naegle gave a presentation entitled *Helping students understand evolutionary trees*, given at the Fall Science Update, Grand Valley State University. She also gave a presentation entitled *Incorporating evolutionary trees into the curriculum*, given at the National Evolutionary Synthesis Center, Duke University.

Alex Nikitin gave a presentation entitled *The Origins of Agriculture East of the Carpathians: Cultural Diffusion or Demic Influence?* which was given at the Questions on the Neolithic and Eneolithic of Our Land, 28th Annual Meeting, Charles University, Melnik, Prague. He was also the co-author of three journal articles. The first article, entitled *Analysis of mitochondrial nucleotide polymorphism in the ND-1 locus in the North American brown trout (Salmo trutta)*, was published in the Journal of Great Lakes Research. The second article, entitled *Mitochondrial DNA sequence variation in Boyko, Hutsul and Lemko populations of Carpathian highlands*, was published in Human Biology. The third article, entitled *The genetic trail of pre-historic migrations in ethnic Carpathian populations*, was published in The Carpathians: People, Ethnos, Civilization.

Erik Nordman was the co-author of a journal article entitled *Beliefs and attitudes of four stakeholder groups in the Saranac Lakes are of New York's Adirondack Park*, which was published in the Adirondack Journal of Environmental Studies. He was the co-author of a journal article entitled *The science of ecological economics: A content analysis of Economics*, which was accepted by the Ecological Economics Reviews 2010. He was the co-presenter and co-author of a presentation entitled *Smart+Connected Learning: Building Sustainable Next Generation Learning Environments and Communities*, given at TEDIndia, Mysore, India. He was also the co-author of two presentations given at the West Michigan Undergraduate Science Research

Conference, Van Andel Institute, Grand Rapids, MI, entitled *Education as an additional management factor in the Recreation Opportunity Spectrum* and *Nest site characteristics and reproductive successes in Tree Swallows*. In addition, he was the co-presenter and co-author of a presentation given at the Michigan Public Service Renewable Energy Program and the Ottawa County Planning Commission, entitled *Status and trends of Wind Energy Development in West Michigan*.

Amy Russell was the co-author of a journal article entitled *Roadkilled bats, highway design, and the commuting ecology of bats*, published by Endangered Species Research. She also co-authored a journal article published in *Molecular Phylogenetics and Evolution* entitled *Multiple colonisations of the Western Indian Ocean by Pteropus fruit bats (Megachiroptera: Pteropodidae): the furthest islands were colonised first*. She was the co-author of four presentations given at the North American Society for Bat Research in Portland, OR. The presentations were entitled *Assessing the utility of genetic data as a monitoring tool: a case study of eastern red bats (Lasiurus borealis)*, *Constant frequency calls as determinants of divergence between Antillean populations of Pteronotus parnellii (Mormoopidae)*, *How to store mammalian tissues for DNA-based analyses in tropical field conditions*, and *Island area change, not species range, explains bat extinction in the West Indies*. She was also the co-presenter and co-author of two presentations given at the North American Symposium on Bat Research, North American Society for Bat Research in Portland, OR, entitled *Population growth of Mexican free-tailed bats (Tadarida brasiliensis mexicana) predates human agricultural activity* and *Recent radiation in a Neotropical bat? A genetic analysis of population structure and possible cryptic speciation in Pteronotus parnellii*. In addition, she was the co-presenter and co-author of a presentation entitled *Adaptive radiation in a Neotropical bat? Contributions from NSF ADVANCE*, which was given at the NSF ADVANCE Grant Celebration, Grand Valley State University, Grand Rapids, MI.

Georgette Sass was the co-author of a presentation given at the West Michigan Undergraduate Research Conference, Van Andel Institute, in Grand Rapids, MI entitled *PCR characterization of the $pkn^{dln\Delta 5}$ derivative in Drosophila melanogaster*. She was also the presenter and author of a presentation entitled *Genetic considerations of the delorean mutation of Drosophila melanogaster*, which was given at the NSF Advance Celebration, NSF Advance, Grand Valley State University, Devos Center, Pew Campus.

Eric Snyder was the co-author of a journal article entitled *Summer Movement Patterns of Fish in Sickle Creek, Manistee County, Michigan*, which was accepted by the American Midland Naturalist. He was the presenter and author of a presentation given at the CLAS colloquium and Sabbatical Showcase, GVSU, entitled *Alpine stream response to glacial retreat*. He was also the presenter and author of a presentation given at the Annual meeting of the North American Benthological Society, NABS, Grand Rapids, MI, entitled *An argument for the preservation and protection of a unique set of 1st order tributary streams and their response to a press disturbance*.

Mark Staves was the co-presenter of a presentation entitled *Increasing the density of the external medium inhibits and reverses root gravitropism*, which was given at the International Symposium on Plant Neurobiology in Florence, Italy.

Pat Thorpe was the co-author of a paper entitled *Captivity affects sperm production, testes size and beak color in House Sparrows (*Passer domesticus*)*, which was published in *International Studies of Sparrows*. He was also the co-author of two presentations given at the West Michigan Undergraduate Research Conference, Van Andel Institute, Grand Rapids, MI, entitled *Nestling Oral Microbial Colonization in Tree Swallows (*Tachycineta bicolor*)* and *Sex differences in innate immunity in Tree Swallows*.

Megan Woller-Skar was the author of a dissertation entitled *Zebra mussel (*Dreissena polymorpha*) promotion of cyanobacteria in low-nutrient lakes and the subsequent production and fate of microcystin*.