

PALEONTOLOGICAL RESEARCH INSTITUTION









To help introduce children to Earth science, we plan to open our Jurassic World Play Lab which allows Early Learners -- children between the ages of 2-5 -- to immerse themselves in the Jurassic Period and experience life as a dinosaur! This exciting new exhibit will be followed by a new Outdoor Dig Site for children to search for fossils and discover their inner paleontologist!

Today we ask for your support to make these projects a reality. Your donation will assist PRI's commitment to developing a public that is informed on Earth's past and present, so tomorrow's generation - our children and grandchildren - can live in a better world.

Please join us in celebrating 2013 with a donation to fund initiatives that educate young children on Earth science concepts and teach the public about climate change and its impact. To make a donation, go to museumoftheearth.org/campaign



The Cayuga Nature Center brought environmental education to more than 800 campers.

### Year in Review

In FY2013 we:

Finalized our merger with the Cayuga Nature Center.

More than doubled the number of peer-reviewed papers published by our scientific staff and students.



Won a \$145,000 grant from the **Institute for Museum and Library** Services for our new immersive Glaciers exhibit.

Rebranded the Institution with a new logo.

Were the only awardee in New York's Southern Tier region of a New York State Council on the Arts' Special Project Grant to bring Laurie Anderson





Opened Coral Reefs, a major new climate exhibit featuring an us by Cornell Professor Dr. Drew Harvell and made possible by the Triad Foundation.

Expanded our partnership with the online magazine **Evolution- This View of Life** through a generous donation by a PRI Life member.

Launched Rock the Future: Inspiring Earth Scientists of the Future - a special fundraising campaign in honor



### PRI's NEW LOGO





The Nature Center provides a living laboratory for teaching and learning about the flora, fauna, and environment of the Cayuga Lake basin.

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### Inspiring the Earth Sc

### A MAJOR MILESTONE

Coming fast on the heels of last year's recognition of our illustrious director's 20 years of inspired service to PRI is another major milestone: the ten year anniversary of the Museum of the Earth. The Museum, now together with the Cayuga Nature Center, is the public face of PRI and a major means of connecting with residents and educators of Central New York and beyond. While PRI had been a valued collection and resource for paleontologists for decades, the opening of the Museum represented a major expansion in the goals and vision of the Institution, reaching well beyond the professional scientific community to engage the public in the excitement of science and discovery. We owe a great debt to Warren's foresight and persistence, the strong support of the Board, and the help and generosity of a number of individuals during those formative years in making this special place a reality. I encourage people to dive in and experience the Museum, with this year's two dynamic new exhibits, and participate in one of the many celebratory events associated with this big anniversary!



Linda C. Ivany, Ph.D.

President, PRI Board of Trustees

Linde Svary

I know I've inspired earth scientists of tomorrow when my students come back from vacation proud and excited that they were able to tell their friends and family how a particular landscape came to be, how a particular place looked many millions of years ago, and what might have been living there at a time so long ago.



Linda C. Ivany

### ientists of Tomorrow

### A CHANGING INSTITUTION FOR CHANGING TIMES

"In the end, we will conserve only what we love, we will love only what we understand, we will understand only what we are taught." – Baba Dioum (1937-), Senegalese conservationist, 1968

Like many of my scientific colleagues, as a young child I was drawn into a lifelong fascination with fossils, evolution, and geology by natural history museums. This happened despite the fact that, at the time, most such museums were pretty conservative, even stodgy, places, that did not really look much different than they had a generation or two earlier. Modern natural history museums, in contrast, must be dynamic places, reflecting and communicating the most up-to-date scientific research in ever-newer and more exciting ways. It is not just our increasingly distracted visitors who demand this. The natural world is changing rapidly before our eyes. As society's repositories of the material records of the history of the Earth and its life, natural history museums are not only ideally placed to explain current changes in climate and biodiversity, we are expected to.



2013 marks ten years since PRI opened the Museum of the Earth. As we were planning our celebration and fundraising for this anniversary, we focused on two initiatives: improvement and expansion of our permanent exhibits devoted to climate change, and expansion of our offerings for visitors under age 5 – our "early learners". Initially, we did not make an explicit connection between these two initiatives; they were two more-or-less separate things that we thought the Museum needed to position it for its second decade. The first initiative would address a topic of urgent and rapidly growing public interest. The second initiative would at last fulfill a goal we had 10 years ago but could not then afford.

It did not take long, however, for us to realize that these two efforts – climate change and early learners – were two sides of the same coin, and a perfect two-part focus for both celebrating and looking forward. It will, after all, be today's "early learners" who will live as adults in that late twenty-first century world that climate scientists have been forecasting about for the past thirty years. Many of them could well live to the year 2100, when the Earth's temperature may well be 2-3 degrees warmer than it is today, with all of the environmental changes that this will bring with it.

The past two decades have been both exciting and exhausting for PRI. What began in 1994 as a fantastic dream became a reality in 2003 when the Museum of the Earth opened. And 10 years later that improbable Museum is more successful than anyone ever thought it would or could be. Thank you to the staff, Trustees, volunteers, and donors who helped make this dream happen, at the same time we also improved our scientific research, collections, and publications, and merged with Cayuga Nature Center. And thank you to the more than 300,000 visitors who have shared the Museum with us over the past decade. Together we have all built a place where learners of all ages can explore the past and present of our planet, so that they can help make a better future.

Warren D. Allmon

Director

Everything I see in the natural world inspires me to think, learn, and teach more about it. **So just about everything I do**—
at PRI, Cornell, and elsewhere — is somehow devoted to sharing this inspiration with others.

Warren D. Allmon

### Research

### 19 peer-reviewed papers and 45 presentations at

professional meetings, and an

additional 27 papers and articles published by staff

members, PRI-affiliated postdocs and Cornell students, Research Associates,

and volunteers

### The Sixth Annual Summer Symposium at the Museum was

attended by thirty-nine paleontologists, geologists, students, and enthusiasts from across the region and featured a keynote speaker, twelve additional talks, and a fieldtrip

### 82 members of our new *Ecphora* membership, targeting

scientists and science enthusiasts, in its inaugural year

### We produced Research at PRI, our first

annual report to academic audiences on the scholarship that takes place here

Jansen Smith, Ph.D. student at Cornell University, studies conservation paleobiology with Dr. Gregory Dietl. With more than double the amount of peer-reviewed publications from FY2012 coming from PRI, and almost all of our PhDs carrying out original research — in addition to the jobs for which they were hired — research remains at the core of what we are. Research informs our programs and exhibitions, enhances our value as a community resource, and contributes to our relevance as we grow our collaboration with Cornell University.

### PRI RESEARCH STAFF

Warren Allmon, Ph.D.

Cenozoic mollusks, macroevolution

Carlyn Buckler, Ph.D.

Earth science education, genetics

Gregory Dietl, Ph. D.

Cenozoic mollusks, evolutionary paleoecology

Don Duggan-Haas, Ph.D.

Science education

Richard Kissel, Ph.D.

Paleozoic reptiles, science education

Paula Mikkelsen, Ph.D.

Recent mollusks, bivalve morphology

Judith Nagel-Myers, Ph.D.

Paleozoic mollusks, paleoecology

Robert Ross, Ph.D.

Earth science education, microfossils

Ingrid Zabel, Ph.D.

Climate change, geophysics

You can learn more about these talented individuals throughout this report. Our annual *Research at PRI* report covers their research in more depth. Go to museumoftheearth.org/research for more information.



### PEER-REVIEWED PAPERS BY STAFF, STUDENTS AND RESEARCH ASSOCIATES

Between July 1, 2012, and June 30, 2013, PRI scientists, affiliated students, research associates, and volunteers (names in **bold face**) published these 19 titles in peer-reviewed journals (plus numerous other publications and presentation abstracts not listed here). (**R** = Research Associate, **S** = student, **V** = Volunteer)

**Allmon, W.D.** 2013. Species, speciation, and paleontology up to the Modern Synthesis: persistent themes and unanswered questions. *Palaeontology*, 56(4): doi: 10.1111/pala.12054

Allmon, W. D., R. M. Ross, R. A. Kissel, and D. C. Kendrick. 2012. Using museums to teach undergraduate paleontology and evolution. In: *Teaching Paleontology in the 21st Century*, M. M. Yacobucci, & R. Lockwood (eds), *The Paleontological Society, Special Publications*, 12: 231-246.

Bieler, R., **P. M. Mikkelsen**, and G. Giribet. 2013. Bivalvia –  $\alpha$  discussion of known unknowns. *American Malacological Bulletin*, 31(1): 123-133.

Bieler, R., and **R. E. Petit<sup>R</sup>**. 2012. Molluscan taxa in the publications of the Museum Godeffroy of Hamburg, with a discussion of the Godeffroy Sales Catalogs (1864-1884), the Journal des Museum Godeffroy (1873-1910), and a history of the Museum. *Zootaxa*, 3511: 1-80.

Conner, T., Capps, D., Crawford, B., and **Ross**, **R**., 2013, Fossil Finders: Engaging all of your students using project-based learning. *Science Scope*. March 2013: 69-73

Conservation Paleobiology Workshop. 2012. Conservation Paleobiology: Opportunities for the Earth Sciences. Report to the Division of Earth Sciences, National Science Foundation. Paleontological Research Institution, Ithaca, New York, 32 pp.

**Dietl, G. P.,** & **M. Kosloski<sup>S</sup>**. 2013. On the measurement of repair frequency: how important is data standardization? *Palaios*, 28: 394–402.

Granshaw, F., & **D. Duggan-Haas**. 2012. Virtual fieldwork in geoscience teacher education: issues, techniques, and models. In *Google Earth and Virtual Visualizations in Geoscience Education and Research*, D. DePaor & S. Whitmeyer (eds). *Geological Society of America Special Papers*, 492: 285-303.

**Hendricks, J. R<sup>R</sup>.** 2012. Larvae, dispersal ability, and the evolution and persistence of species: examples from marine snails. *Evolution: Education and Outreach*, 5(4): 534-540.

Landau, B., **R. E. Petit<sup>R</sup>**, & C. M. da Silva. 2012. New Cancellariidae (Mollusca, Gastropoda) from the Miocene Gatun Formation of Panama, with eleven new species. *Journal of Paleontology*, 86(6): 907-930.

Landau, B., **R. E. Petit<sup>R</sup>**, W. Etter and C. M. da Silva. 2012. New species and records of Cancellariinae (Caenogastropoda) from tropical America, together with a catalogue of Neogene to Recent species from this region. *Cainozoic Research*. 9(2): 193-279.

Meyer, X., Capps, D., Crawford, B., and **Ross, R.M.**, 2012 Using inquiry and tenets of multicultural education to engage Latino ELL in learning about geology and nature of science. *Journal of Geoscience Education*. 60(3): 212-219

**Muscente, A. D.<sup>5</sup>**, & **W. D. Allmon**. 2013. Revision of the hydroid *Plumalina* Hall, 1858 in the Silurian and Devonian of New York. *Journal of Paleontology*, 87(4): 710-725.

Nagel-Myers, J., G. P. Dietl, J. C. Handley<sup>R</sup>, & C. E. Brett. 2013. Abundance is not enough: the need for multiple lines of evidence in testing for ecological stability in the fossil record. *PLoS ONE*, 8(5): e63071. doi:10.1371/journal. pone.0063071.

Padovani, V.<sup>R</sup>, C. S. Buckler, A. F. Gualtieri, & A. Vescogni. 2013. To teach is to learn: high-school students, local university and informal science educators collaborate in communicating science to the public. *Evolution: Education and Outreach*, 2013: 6:7 [doi:10.1186/1936-6434-6-7].

**Petit, R. E.<sup>R</sup>** 2012. The dating of modern books and their included taxa. *The Nautilus*, 126(4): 143-147.

**Petit, R. E.<sup>R</sup>** 2012. Remarks on "Two new species of Tornidae (Caenogastropoda, Rissooidea) from Espírito Santo, Brazil", by Luiz Ricardo Simone (*Zookeys* 238: 77-85, 2010) and a plea for improvement in *Zookeys* editorial policy. *ZooKeys*, 255: 133-139.

**Petit, R. E.<sup>R</sup>**, & M. G. Harasewych. 2013. Rediscovery of *Cancellaria corrosa* Reeve, 1856 (Gastropoda: Cancellariidae) in the tropical eastern Pacific. *Proceedings of the Biological Society of Washington*, 126(1): 83–89.

Ross, R. M., D. Duggan-Haas, & W. D. Allmon. 2013. The posture of *T. rex*: why do student views lag behind the science? *Journal of Geoscience Education*, 61(1): 145-160.

Smith, U. E., & J. R. Hendricks<sup>R</sup>. 2013. Geometric morphometric character suites as phylogenetic data: extracting phylogenetic signal from gastropod shells. *Systematic Biology*, 62(3): 366-385.

**Waite, R.**, D. Marty, A. Strasser, & A. Wetzel. 2013. The lost paleosols: masked evidence for emersion and soil formation on the Kimmeridgian Jura platform (NW Switzerland). *Palaeogeography, Palaeoclimatology, Palaeoecology*, 376: 73-90.

**Wilson, D. D.<sup>V</sup>**, & C. E. Brett. 2013. Concretions as sources of exceptional preservation, and decay as a source of concretions: examples from the Middle Devonian of New York. *Palaios*, 28(5): 306-316.

Please go to Museumoftheearth.org/research and click on the Publications and Presentations tab for a complete list of peer-reviewed papers, other papers or articles, and papers and posters presented at professional meetings over the past year.

### Collectio

### **2013 SPECIMEN DONORS**

Gordon Baird Howard Evans Daniel E. Karig Linda Ivany Mary Kosloski

Paul Krohn

Chuck McQuade Kevin McMahon J.W. Scatterday Susan Trainer Stolov Nathan Yax

A special thanks to all of our Specimen Donors. Their contributions make our work possible.

HIGHLIGHTS

The completion of a 2-year, \$246,504
National Science
Foundation-funded
project to database and curate the

Zinsmeister collection, one of the world's largest and most comprehensive

collection of Cretaceous-Eocene fossil mollusks from Antarctica

Twenty-nine professional and student researchers visited

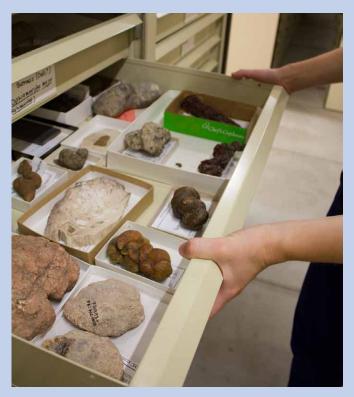
the collections in calendar year 2012

Receipt of a \$20,085 supplement to the Zinsmeister grant to begin

a database of the historic Hatcher collection of fossil mollusks from Patagonia collected by Princeton University in the 1890s



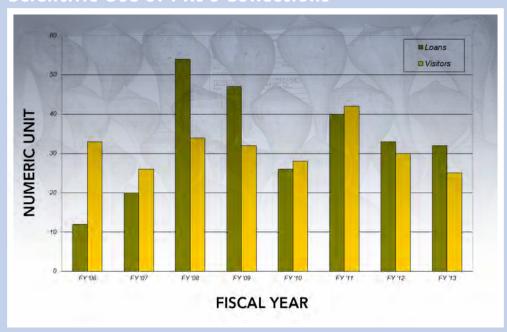
Collections volunteer Larry Jensen searches for a specimen in our cold storage facility.



PRI has over 3 million specimens in its collection containing everything from modern and Cenozoic mollusks to one of the most comprehensive Paleozoic invertebrate collections in the United States.

# SCIENTIST BIO

### Scientific Use of PRI's Collections



### **GREG DIETL, Ph.D.**Director of Collections

Dr. Dietl is a paleoecologist with a focus on the ecology and evolution of species interactions and conservation paleobiology—a rapidly developing field that applies the methods and theories of paleontology to conserve biodiversity and ecosystem services. His research approach is very much multidisciplinary in nature, integrating interests across diverse fields of organismal and theoretical biology. Research highlights from the past year included the publication of an NSF-funded workshop report on conservation paleobiology, which was debuted at the Geological Society of America annual meeting in Charlotte, North Carolina. His publication with J. Nagel-Myers (PRI), C. Brett (University of Cincinnati), and PRI Research Associate J. Handley entitled "Abundance Is Not Enough: The Need for Multiple Lines of Evidence in Testing for Ecological Stability in the Fossil Record, "published in PloS ONE, received national attention. He conducted field work and presented research findings at the Gulf of Mexico Oil Spill and Ecosystem Science Conference in Louisiana as part of his NSF-funded project to monitor the effects of the Deepwater Horizon oil spill on the ecology of oyster reefs; he also traveled



to Mexico to conduct fieldwork for a study designed to assess the impact of the damming of the Colorado River in the 1930s on the ecology of mollusks in the northern Gulf of California.

### Publicati

### EVOLUTION: This View of Life

A generous donation from a Life Member allowed us to hire part-time staff member Laura Komor to compose weekly news pieces for *Evolution: This View of Life*, an online magazine published by the Evolution Institute at Binghamton University in which all content is from an evolutionary perspective. These pieces, filtered from the Internet or produced exclusively for us by our staff of editors and contributing authors, detail new findings in paleontology, essentially a continuation of PaleoNews in our discontinued American Paleontologist magazine.

Ms. Komor solicits original articles and book reviews and coordinates the contributions of volunteer science writers. Receiving 400+ views in the first week, the PRI-sponsored Paleontology section of *Evolution: This View of Life* is now the website's second most successful section in terms of postings and views and is beginning to generate interest by outside scientists as a venue for promoting their new research. PRI's Life and Ecphora Members receive a special weekly e-newsletter that includes this content.

### We published two issues of Bulletins of American Paleontology

The Paleontology section of *Evolution: This View of Life* launched and received approximately 400 page views in its first week, it is now

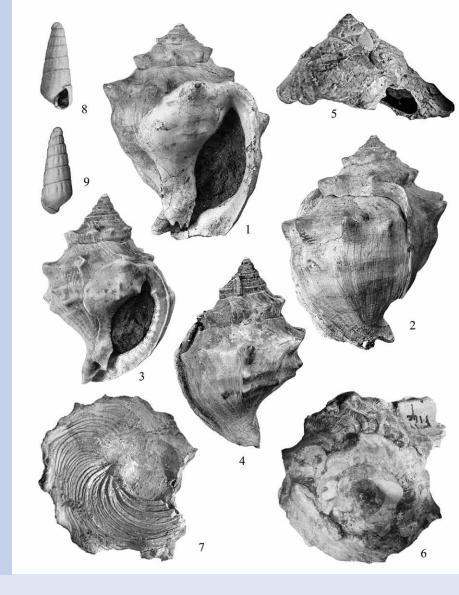
the website's second most successful section



# IENTIST BIO

### ons

In March 2013, Christopher Garvie (Texas Natural Science center, Austin) published three monographs on Paleogene Texas mollusks in a single issue of *Bulletins of American Paleontology*. In all, 75 new species or subspecies were described in this volume, including these four gastropods (1-2 *Phalium cingulae*, 3-4 *Phalium marcusi*, 5-7 *Xenophora spiralis*, and 8-9 *Turbonilla reklawensis*)



### PAULA M. MIKKELSEN, Ph.D. Associate Director for Science & Director of Publications



Dr. Mikkelsen is a malacologist, conducting research on the systematics and diversity of living and fossil marine mollusks. She specializes in two groups: shelled opisthobranch "bubble snails," and bivalves, including clams, scallops, mussels, and oysters. Dr. Mikkelsen's research program covers a relatively broad approach to systematics, phylogeny, and the evolution of diversity in marine mollusks, especially those from the southeastern U.S. and the Caribbean. She concentrates on morphological approaches to revisionary systematics, including dissection, histology, and light and scanning electron microscopy. She currently is a principle investigator on two National Science Foundation grants to study the evolution of bivalve mollusks in collaboration with colleagues: *BivAToL* (Assembling the Bivalve Tree of Life, www. bivatol.org), which produced the traveling exhibition *Science on the Half Shell: How and Why We Study Evolution*, and *BiTS* (Bivalves in Time and Space), which explores the evolution of two large clades of bivalves, from molecular, morphological, and paleontological viewpoints. She is also working on a book for

Princeton University Press on the marine snails of the Florida Keys, which will follow the format of her 2007 book Seashells of Southern Florida - Living Marine Mollusks of the Florida Keys and Adjacent Regions: Bivalves.



### Outreach

Outreach includes programs at our two venues for public education, the Museum of the Earth and the Cayuga Nature Center. We also offer a wide range of programming offsite in our own community and across the country.

### **STEM**

Within the four areas of STEM (Science, Technology, Engineering, and Math), we have become a national leader in K-12 Earth systems science education – the wide range of topics covering oceans and atmospheres, rocks and glaciers, and life itself. Topics of special focus include evolution, ecology and the environment, climate and energy, and the public understanding of science. We provide professional development for teachers as well as resources for classrooms. We also participate in local and national initiatives to improve education practices and increase scientific literacy, such as the development of the National Research Council's A Framework for K-12 Science Education and the NSF's Earth Science Literacy Principles.

### NEXT GENERATION SCIENCE STANDARDS

Dr. Don Duggan-Haas served on the New York Statewide Leadership team to develop the Next Generation Science Standards (NGSS), a new set of voluntary, rigorous, and internationally benchmarked standards for K-12 science education released in March 2013. He has contributed to the *Framework for K-12 Science Education*, the first step in developing the NGSS. Additionally, Dr. Duggan-Haas participates in the Climate Literacy Network, a network of people from around the U.S. working to provide feedback for the NGSS. Lastly, as the Chair of the Geological Society of America's Geoscience Education Division, he has encouraged its membership to actively participate in the NGSS feedback process.

### CITIZEN SCIENCE

The Mastodon Matrix Project, administered by Dr. Carlyn Buckler, had over 10,000 new participants in the last two fiscal years alone. This program engages participants in "reconstructing" the late Pleistocene in central New York by investigating 13,000- year-old sediment from a mastodon excavation. In doing so, participants better understand the process of science, and how we know what we know about past environments. In the past year, the MMP has been part of a National Science Foundation and American Library Association (ALA) project to engage libraries in

the US in providing science education to the public. "Dig into Reading" is the 2013 national library summer reading program theme, and the MMP is one of the projects recommended by ALA as part of the outreach for the program. The entire state library systems of Pennsylvania, Maryland, and Arkansas are using the MMP this year, and many other individual libraries throughout the country are also getting involved. Since 2008, more than 20,000 people from all over the US—and the world—have participated in this project.



The Hyde Park Mastodon is one of the most complete mastodon skeletons ever found.

### TEACHER PROFESSIONAL DEVELOPMENT

### JOIDES Resolution

In the fall of 2010, Dr. Don Duggan-Haas sailed aboard the research vessel *JOIDES Resolution*, participating in Ocean Leadership's Deep Earth Academy and School of Rock. This May, he returned to this professional development program as an instructor, working with 13 participants and four co-instructors. The *JR*, sometimes described as "the Hubble Space Telescope of the Oceans," has been a fundamental scientific instrument for a range of discoveries over the past thirty years that involve ocean sediment cores that the ship's seven-story drilling rig can bring up from thousands of feet below the seafloor in miles of ocean depth. Research includes our climate

### Education &

The 2013 [JOIDES Resolution] mission, Expedition 341S, had objectives including the recovery and replacement of a seafloor observatory placed in the 1990s and placement of a new kind of seafloor observatory.

history, the nature of plate tectonics, deep ocean life, and life in the deep below the seafloor in sediments over 100 million years old. Research objectives have included climate history, the nature of plate tectonics, deep-ocean life, and life below the seafloor in sediments over 100 million years old. The 2013 mission, Expedition 341S, had objectives including

the recovery and replacement of a seafloor observatory placed in the 1990s and placement of a new kind of seafloor observatory. Dr. Duggan-Haas worked with the teachers to connect this research to the newly published *Next Generation Science Standards* and to develop a Virtual Field Experience that will serve as a template for the *JR*'s future expeditions.

### **ReaL Earth Inquiry Project**

PRI's five-year, \$1.8 million NSF-funded project to develop a national series of Teacher-Friendly Guides™ to regional Earth system science, as well as an associated set of teacher professional development programming and online tools, continued to see significant advances during its fourth year. The project focuses on seven regions: Northeast; Southeast; Midwest; South Central; Southwest; West; and Rocky Mountains and includes innovative professional development highlighting virtual fieldwork experiences (VFEs). "Real" stands for "Regional and Local" -- referring to the focus on real-world Earth science relevant to educators' and students' communities and surroundings; "Inquiry" is a reference to the emphasis on learning that occurs when students learning by asking and seeking answers to questions about their surroundings.

This year's locations for teacher professional development included: the Jemez Volcanic field, the Valles Caldera National Preserve, and the Kasha-Katuwe Tent Rocks National Monument in New Mexico; the Craters of the



Dr. Kissel in Badlands National Park describing erosional processes to teachers participating in one of PRI's national teacher professional development programs.

Moon National Monument & Preserve in Idaho, and the Badlands National Park in South Dakota.

In January, Drs. Ross, Duggan-Haas, and Kissel published an article on the project within In the Trenches, a publication of the National Association of Geoscience Teachers. Two presentations were made at the North American Association for Environmental Education Annual Meeting, and Dr. Duggan-Haas joined ReaL teacherparticipant, Becky Alvarado-Alcantar via Skype for a pair of presentations at 5th Annual Southern New Mexico STEM Conference. For the 2013 Annual Meeting of the National Science Teachers Association, Drs. Duggan-Haas and Kissel led two sessions on VFEs. Frank Granshaw and Dr. Duggan-Haas published a chapter on VFEs in the GSA Penrose Volume, Google Earth and Virtual Visualizations in Geoscience Education and Research that was published in conjunction with the 2012 Annual Meeting & Exposition of the Geological Society of America.

### **Teacher Resource Day**

This annual event for local and regional educators provides teachers with specimens and publications perfect for hands-on instruction in the classroom. Teachers also tour the collections and the Museum, and attend presentations by staff on how to use their newly acquired specimens. We welcomed 68 educators and their guests this year. The event continues to be generously sponsored by Chemung Canal Trust Company.

### Outreach



Science educators at Teacher Resource Day selecting specimens for use in their classrooms.

### **EVOLUTION**

### **Fossil Finders**

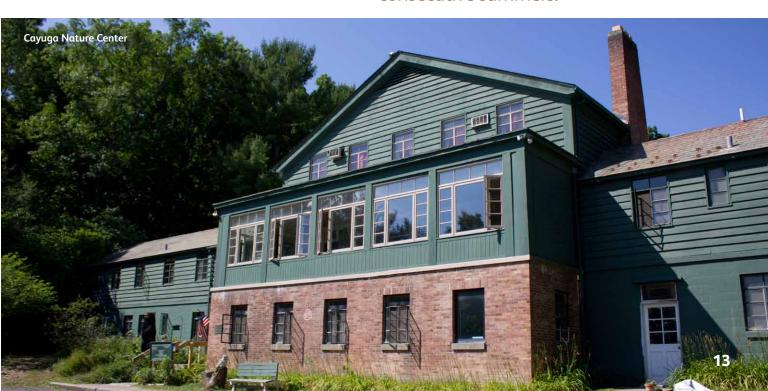
Now in its final year, this five-year, \$1.5 million NSF-funded project (originally in collaboration with Cornell University and now with the University of Georgia), focused on developing teacher professional development materials and 5th- to 9th-grade curricula using fossils, focusing on evolution, geologic time, and other major science concepts. The project engages students in authentic research on fossils from the renowned fossil-rich outcrops of Upstate New York. In the project, groups of teachers gathered for a week of professional development for three consecutive summers. Current work is focused upon completing publications and curating specimens.



**National Science Foundation** 

[Fossil Finders] engages students in authentic research on fossils from the renowned fossil-rich outcrops of Upstate New York. In the project,

groups of teachers gathered for a week of professional development for three consecutive summers.



### Education &

### CLIMATE AND ENERGY

### Marcellus Shale

The heightened interest in the Marcellus Shale, black Devonian-aged shale that contains natural gas, provides a teachable moment. For many people this is the first time they have been actively interested in where energy comes from. Our work is grant-funded, including a two-year \$149,000 grant from the National Science Foundation that focuses

The project not only develops resources and strategies for teaching about the Marcellus Shale, but also develops strategies for any community that faces emergent energy issues.

on educator professional development using the Marcellus Shale as a case study for developing approaches to emergent energy issues. We work with educators in two local

communities, Elmira and Binghamton, which are affected by Marcellus Shale development in Pennsylvania and will be affected even more if the current New York State moratorium on drilling is lifted. This project addresses the question "How can educators be better prepared for working with the public when new energy infrastructure is proposed?" A fundamental goal is to provide evidence-based information and to build understanding of the science related to the Shale, and



Boston II, a silk batik from Our Expanding Oceans, the recent traveling exhibit that uses art to showcase the effects of climate change.

associated environmental impacts. We strive to do this with as much impartiality as possible. Drs. Duggan-Haas and Ross, along with Kelly Cronin have led workshops and webinars. Ms. Cronin and Dr. Duggan-Haas also extended PRI's set of "Marcellus Papers", a series of papers providing detailed reviews of key topics regarding Marcellus geology and drilling, into a book expected to be published in late 2013 and will be revised for use in middle and high school classrooms. Numerous presentations have been given by staff in a range of venues, including national and state conferences.

Finally, PRI and Cornell Cooperative Extension co-hosted Best Practices in Marcellus Shale Education, a conference for those working to provide impartial information on the Marcellus and build energy literacy. The 59 participants came from five states and the District of Columbia; and included high-school, college, and university faculty, cooperative extension educators, curriculum developers, attorneys, municipal government employees, journalists, activists, and even one playwright.

### **DON DUGGAN-HAAS, Ph.D.**Director of Teacher Programming

Dr. Duggan-Haas's STEM education research is currently focused upon determining ideas that are important for people to understand about the Earth system, and how to help educators nurture understandings of those ideas. For example, the Marcellus Shale provides a teachable moment for engaging the public in understandings of energy, climate and the broader Earth system. He's grown especially interested in technology-rich place-based education—an approach that engages learners in the close study of their local environment and using these locally grounded understandings to better understand the global Earth system. Dr. Duggan-Haas serves as Chair of the Geological Society of America's Geoscience Education



Division. The Division boasts 1,000 members and at the 2013 Annual Meeting, nearly 500 Geoscience Education abstracts will be presented in 40 topical sessions. He has also played an active role in the development of the Next Generation Science Standards.

### Outreach

### TRAVELING EXHIBITIONS

### **Did Dinosaurs Poop?**

Designed for an audience of families with children ages 4 to 10, this exhibition presents a fun, colorful approach to learning about fossils and dinosaur diets long ago. Visitors take a digestion journey, traveling as dinosaur "food" from tooth to tush, and discover how poop can become a fossil. The exhibit, completely designed in-house, won an Award of Merit from Museumwise: The Museum Association of New York, a statewide service and advocacy nonprofit dedicated to making the diverse body of New York State museums better. In addition to being displayed at the Museum, this exhibit traveled to the North Museum of Natural History and Science in Lancaster, PA.

### My Climate, My Community: Weird Weather

In addition to being displayed at the Museum and the Nature Center, this exhibit traveled to the Ulysses Philomathic Library, the Buffalo Audubon Society, the DeWitt town hall, and the New York State Fair.

### Maize: Mysteries of an Ancient Grain

In collaboration with the Institute for Genomic Diversity at Cornell, we created this traveling exhibition with support of a grant from the National Science Foundation. The traveling exhibition focuses on the evolution and genetics of corn. Maize recently closed at the Wiesman Museum of Southwest Texas and is scheduled to continue on to the Smith College Botanic Garden in Massachusetts.



An early learner explores the science behind food chains with an original interactive developed by PRI staff for our traveling exhibit, *Did Dinosaurs Poop*?

### Science on the Half Shell: How and Why We Study Evolution

This NSF-funded exhibition follows a group of international scientists as they study bivalves, like mussels and oysters, in the field and in the lab to learn more about evolution and the tree of life. The exhibit was hosted by Tyler Junior College's Center for Earth and Space Science Education from January through May 2013 and is currently in storage.

continued on page 17



### Education G

FY2013 funding for education and exhibits allowed us to reach audiences in Tompkins County and across the country. Funding was received from both local and federal sources. The following grants were active during FY2013:

### National Science Foundation Discovery Research K-12

(FY2008): Enhanced Earth system teaching through ReaL Earth Inquiry: NSF DRL 0733303, Aug 15, 2007 – July 31, 2013, \$1,763,588 (PI: Ross; co-PIs: D. Duggan-Haas, R.A. Kissel).

### National Science Foundation Discovery Research

K-12 (FY2008): Fossil Finders: Using Fossils to Teach about Evolution, Inquiry and Nature of Science: NSF DRL 0733223, Jan 1, 2008 – Dec 31, 2013, \$1,491,746, \$266,951 to PRI. (PI: B. Crawford, Education | Grants Cornell Dept of Education; co-PIs: R. Ross, W. Allmon)

National Science Foundation (FY2008) AToL: Phylogeny on the Half-shell – Assembling the Bivalve Tree of Life, NSF DEB 0732860, Sep 15, 2007 – Aug 31, 2013, \$499,990 (PI: Paula Mikkelsen; co-PIs R. Ross, S.J. Chicone)

National Science Foundation (FY2009) Traveling exhibit and teacher professional development on evolution of maize, associated with maize genetics research. (DBI 0820619, March 1, 2009 – February 28, 2013, \$110,000 (PI: Ed Buckler of Cornell University)

### National Science Foundation Geosciences Division

(FY2009): Tracking Climate in Your Backyard: Climate education for 4-H educators & youth, GEO 808122, Sep 15, 2008 – Aug 31, 2012, \$148,455 (PI: R. Ross, co-PI: S. Sands, A. DeGaetano, B. Schirmer)

### National Science Foundation Informal Science

Education (FY2010): My Climate, My Community: Sustainable Climate Change Exhibits for Rural Audiences: NSF ISE 0917581, September 1, 2009 – August 31, 2012, \$74,346 (PI: S. Chicone; co-PIs: R. Ross, T. Smrecak, S. Sands)

### National Science Foundation Geoscience Division

(FY2010): Planning for a charter school-university-museum partnership to enhance diversity in the geosciences: NSF GEO 0939765, October 1, 2009 – September 30, 2012, \$39,055 (PI: R.Ross; co-PIs: R. Kissel, D. Duggan-Haas)

### **National Science Foundation Geoscience Division**

(FY2010): Geoscience education for communities impacted by gas drilling in the Marcellus Shale: NSF GEO 1016359, April 15, 2010 – March 31, 2013, \$97,127 (PI: R. Ross; co-PIs: T. Smrecak, T. Jordan, L. Brown)

### **National Science Foundation Geoscience Division**

(FY2011): Educator Professional Development on Energy and Environment: A Case Examples Focusing on Marcellus Shale Natural Gas Drilling: NSF GEO 1035078, September 16, 2010 – August 31, 2013, \$149,297 (PI: R. Ross; co-PIs: D. Duggan-Haas, C. Buckler, T. Smrecak)

Park Foundation (FY13). Fostering public understanding of the impact of climate change on natural environments in Tompkins County. October 1, 2012 – September 30, 2013, \$40,000 (PI: Ross; co-PI: Christine Whittaker)

"I love helping children tap into a well of deep internal curiosity, those conditions when children are unreservedly curious -- searching and discovering, asking questions, searching more, asking more, sharing findings, comparing ideas, searching again. This joyful practice is what drives Earth scientists into a lifetime of learning about the world."

Robert Ross, Ph.D, Associate Director for Outreach

### rants

Education and Outreach continued from page 15

### **OFF-SITE EDUCATION PROGRAMS**

- Summer fossil finding field trips and James Potorti gorge walks: The gorge walks are led by a PRI geologist who shares information about how the gorges were formed and the layers of rocks that can be seen as you hike.
- PRI to the American Museum of Natural History [and Back Again] (July 21, 2012): This trip to New York's American Museum of Natural History included a tour by PRI staff of several exhibits on paleontology and evolution.

### **Community Accessibility Program**

PRI is dedicated to ensuring that Earth science and environmental education is available to everyone. The Community Accessibility Program was developed to ensure that those of limited resources and/or those with special needs have access to programming and exhibits. Highlights this year include:

- Our Winter Free Days (January, February and March) and Community Day (May) offer free admission to all visitors for the entire day. Over 1,300 visitors came to the Museum for our Winter Free Days and nearly 125 visitors enjoyed the Nature Center. On Community Day, there were a total of 115 visitors to the Museum and 23 visitors at the Nature Center.
- Just over 230 visitors from our Agency Membership Program which provides nonprofit agencies offering human services an opportunity to allow free Museum and Nature Center admission to their constituents.
- 14 full and 5 partial need-based Summer Camp
   Scholarship Program at the Nature Center
- A "make your own free day" coupon was given to each
  of the children participating in the BackPack™ program,
  enabling them to come with their families to the Museum
  and the Nature Center for free through a partnership
  with the FoodBank of the Southern Tier.

### ROBERT ROSS, Ph.D Associate Director for Outreach

Dr. Ross received his B.S. in Geological Sciences from Case Western Reserve University and a Ph.D. in Earth and Atmospheric Sciences from Harvard University. Rob started his career at PRI in 1997, and since then has played a major role in developing the education and outreach at PRI from a two-person department giving programs to local schools in the halls of the old PRI building, into a world-class Earth science education presence with a major museum and nature center. He has facilitated the expansion of programming for local school and community groups, helped found teacher professional development programs focused on place-based learning and authentic science experiences, experimenting with hands-on "Discovery Labs" in the Museum, and planning permanent exhibits for the Museum of the Earth. Rob has also participated in various national initiatives to improve Earth



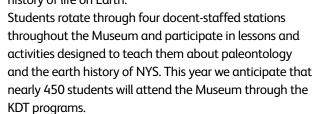
science education, including working toward improving public Earth science literacy, K-16 Earth system science education, and communication in Earth system science among informal education venues throughout the U.S.

### Museum of

Educational programs for school groups, community groups, and other visitors at the Museum of the Earth help the public learn that science is accessible, that they can handle authentic specimens, and that they are free and welcome to ask and answer questions. We reached over 26,000 people last year, including over 2,500 school children in the Museum and 1,300 students offsite.

### SCHOOL GROUPS

- Nearly 2,500 schoolchildren visited the Museum this year.
- Over 1,300 students were visited by PRI educators at offsite programs.
- Ancient Seas Over New York, Dinosaur Science, and New York State Geology continue to be our most popular programs.
- As a member of Kids
   Discover the Traill,
   the Museum provides
   every first grade class in
   Trumansburg and ICSD
   with a look into the
   history of life on Earth.



### **PUBLIC PROGRAMS**

- Fossil ID Day. The second Saturday of each month
- Museum in the Dark October 25th, 2012 66 visitors
- Girl Scout Overnight November 2nd, 2012 81 attendees
- Cecil's Dinosaur Holiday Party December 1st, 2012 –
   29 visitors
- Darwin Family Day February 16th, 2013 24 visitors (In honor of this year's Darwin Days theme: *Invasive* Species and Evolution, we moved our annual family celebration to the Nature Center)

- Winter Recess/Teachers Week (February 15 19, 2013):
   Over 110 teachers and their families visited and 24 participated in special climate change programs
- DinoEggstravaganza—March 30th, 2013. 564 visitors
- Spring Break Programs April 1st 5th, 2013 46 program participants
- Community Day in collaboration with the JOIDES Resolution—May18th, 2013.- 115 visitors
  - o This year we worked together with the education outreach team of the JOIDES Resolution, a research vessel often referred to as the "Hubble Space Telescope of the Sea." Visitors participated in a variety of activity tables and learned about life at sea, explored the work being done on the ship and met children's author, Kevin Kurtz, during a book reading of his new publication A Day in the Deep. They also experienced a live Ship-to-Shore Skype call with PRI Senior Education Research Associate, Don Dugan-Haas while he was onboard the JODIES Resolution
- At several times during the year, we host members of the academic community for lectures on a variety of topics.

### TEMPORARY EXHIBITIONS

SeaTrek, from Mote Marine Laboratory (June 22 – September 3, 2012)

Sea Monsters and the award-winning Sanctuary Reef featured hands-on activities, engaging, educational storylines, and live interactive videoconferences with Mote scientists. Sanctuary Reef included displays on coral anatomy, reef biodiversity, the latest scientific research, and human impacts and conservation. Sea Monsters explored the deepest parts of the sea – how life adapts to extreme underwater environments.



Beth Stricker, PRI's Director of Exhibitions, places a work depicting an *Australopithecus africanus* by John Gurche, as she puts together a diorama of his studio workspace in a new exhibition of his work at the Museum of the Earth. The show includes the originals of many of Gurche's paintings.

Did Dinosaurs Poop? (September 14 – January 11)

Did Dinosaurs Poop? presented a fun, colorful approach to learning about fossils and dinosaur diets long ago. This exhibit became our first traveling exhibit completely built in-house.

Our Expanding Oceans (January 25 – May 13)

Our Expanding Oceans utilized the beautiful silk batik artwork of Mary Edna Fraser to tell the story of global climate change. Each large batik illustrated important global warming impacts, supported by scientific text by Dr. Orrin Pilkey, Professor Emeritus of Geology at Duke University and Founding Director of the Program for the Study of Developed Shorelines.

### **ART EXHIBITS**

Capturing the Everyday: photographs by Martha Wright (June 22 – September 3)

A collection of scenes of life in a small pond near the Ithaca Farmer's Market illuminated the small day-to-day changes of the world around the photographer.

T. Rex Go Boom: The Prehistoric Cartoonery of Dr. Richard Kissel (September 14 – January 11)

This exhibit featured the scientifically whimsical artwork of PRI's vertebrate paleontologist and cartoonist.

Prehistoric Muses (August 17 – November 11)

A collection of art inspired by the Museum told the story of the history of life on Earth through the eyes of our local artists.

Within Nature's Design (November 20 – February 20)

Sarah Oros, PRI's summer 2012 Photographer in Residence, demonstrated her remarkable ability to capture the intricate details and unique qualities of fossil, agate, jasper, gem, and mineral specimens.

Raising the Dead: the Art and Science of John Gurche (June – September)

This exhibition explores the intersection of art and science through the works of world-renowned Paleo-artist and PRI's artist-in-residence. John Gurche.

### Rock the Future: Inspiring the Earth S



### GOAL: \$1.175 MILLION

Early Learners Initiative:

The Museum's permanent exhibits are designed to be accessible to a diverse

range of visitors, but lack elements that fully build on the natural wonder of young children (ages 2 to 5). By designing age-appropriate exhibits, we can introduce more children and their caregivers to Earth science through exciting early childhood education learning opportunities.

This initiative includes transforming our Dino Lab into the immersive Jurassic World Play Lab, allowing children to experience life as a dinosaur during the Jurassic period of Earth's natural history. We will also be constructing an Outdoor Dig Site, giving children the opportunity to discover their inner paleontologist.



Artist's rendition of outdoor dig site featuring the skeleton of *Coelophysis* (New York's only known dinosaur)

Our Dynamic Climate: Climate change is the most pressing Earth science topic of this century. Increasing the distribution of information about climate change and what it means is a paramount goal. In the Museum, we will build two new exhibits and renovate one existing exhibit to maximize visitor understanding of climate change. At the Nature Center, we will create an ADA-accessible wheelchair ramps and install an ADA-accessible elevator. Our goal to inspire visitors to see what climate change mean to them, to share what they have seen, and to encourage others to visit and learn.

Our Dynamic Climate includes the construction of a **Glaciers Exhibit**, for visitors to learn about glaciers impact on both our

local and worldwide environments, as well how these natural features are currently being affected by climate change. On similar note, we will build a new **Coral Reefs** exhibit that emphasizes the biodiversity entwined with corals in the Indo-Pacific and Caribbean region of our planets, and how these corals are becoming damaged due to changes in our climate. To bring the message home, our revitalized **Human Impact** exhibit will show visitors how they are personally having an impact on climate change, inspiring them to reduce their contribution to climate change.



Visitors to our new glacier exhibit will experience a compelling immersive environment; they will feel like they are truly in a glacier.

We also would like to make the **Cayuga Nature Center Lodge ADA (Americans with Disabilities Act) accessible**. This project will provide all visitors the opportunity to learn about climate change from innovative programming that will be implemented as a result of the merger.

Museum Enhancements: With the Museum's permanent exhibitions now ten years old and starting to show their age in terms of content and wear, this anniversary showcases the need and opportunity to update components of our institution to support PRI's mission in two specific areas: by "doing what we do, but better" and "increasing climate change content." These enhancements include: updating signage throughout the Museum, adding educational components to our Rock of Ages, Sands of Time mural and Hyde Park Mastodon, constructing an exhibit chronicling the history of PRI, and updating our Right Whale #2030 exhibit.

To learn more and/or to make a donation, visit museumoftheearth.org/rockthefuture



### Cayuga Nat

Our long-term vision for the Nature Center is to develop programming focused on the environment and biological communities of the Cayuga Lake basin. This includes building exhibits on climate, evolution, forest ecology, local flora and fauna, and human impacts. Our goal is to inspire visitors to learn what the local environment means to them, to share what they have learned, and to encourage others to visit and learn.

### ENVIRONMENTAL EDUCATION

We are working to overlay two key strategic conceptual themes from PRI -- evolution and climate change -- upon the Nature Center's existing programming strengths -- forests and local flora & fauna. We hope to expand the scope of our programming within the context of 120+ acres of "natural" environment. This year we reached 294 people during 18.5 hours of programming.

### TEAM CHALLENGE

Each year TEAM Challenge helps hundreds of participants develop cooperative problem-solving skills and accelerate communication skills. We provide group initiatives and challenges on our low and high element ropes course that encourages participants to work together. This year we had 2,113 participants, many of whom come back each year to complete the course.

### LIVE ANIMAL COLLECTION

The collection currently contains over 30 individual animals, including mammals, birds, turtles, snakes, salamanders, and millipedes, Although we lost a few animals due to old age during the year, we were excited to add some great new additions, including an African Pigmy Hedgehog, Bearded Dragon, Giant Black African Millipede, and Red Fox. Our Busy Bee exhibit was a huge hit during the summer of 2012 and our Animal Programs were presented at 105 programs and reaching 986 people.

### **CAMPS**

Our popular summer camps provided more than 800 campers with a wide variety of themed programs, and a new program for preschoolers was once again a success. In addition dozens of participants enjoyed "School's Out" camps on vacation days during the school year.

## IENTIST BIO

### INGRID H.H. ZABEL, Ph.D. Climate Change Education Manager

Dr. Zabel is part of a team developing the educational content for all climate change-related exhibits at the Museum and the Nature Center. This includes an upcoming exhibit at the Nature Center on climate change's effect on our local environment, as well as an exhibit at the Museum on the carbon cycle. In addition, she works on the educational content for the exhibits that are a part of the Our Dynamic Climate portion of the Rock the Future 10th Anniversary Campaign. She received a Ph.D. in Physics from The Ohio State University and she also holds an A.B. in Physics from Cornell University.





I "Inspire Earth Scientists of Tomorrow" when I see a camper having an "aha" moment, whether it's figuring out how to build a homemade scientific instrument, realizing his or her prediction about data was correct, or coming up with creative ideas of what to measure.

Ingrid H. H. Zabel, Ph.D., Climate Change Education Manage

### EXHIBITS

To attract off-season visitors to the Nature Center, we plan to design and install a suite of new permanent exhibits at the Lodge. This spring has seen initial development for *Our Changing Climate*, a room dedicated to climate research, education, and exhibits. The former "extinction case" from the Museum's Quaternary Gallery (replaced by the coral aquaria) is now in the conference room and will feature information and specimens related to climate change.



Campers measuring wind speed with their own hand-made anemometers (wind dials) as part of an activity on climate and weather.

### A grant from the Park Foundation enabled us to add

climate change programming in a variety of ways to exhibits and programs.

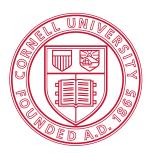
### A new weather station from Cornell Professor Mark Wysocki, which enables us

to continuously track weather and to make current weather available through Weather Underground, a commercial weather service that provides real-time weather information via the Internet.

### Initial development for Our Changing Climate

a room dedicated to climate research, education, and exhibits

### Cornell Univer



PRI continues to interact with Cornell University in numerous and varied ways, from PRI staff teaching undergraduate and graduate courses, to the Museum and Nature Center serving as resources for classes, to collaborations with faculty on NSF-funded outreach projects.

### FORMAL AFFILIATION

PRI and Cornell renewed their formal agreement of affiliation for a second five years in 2010.

### **TEACHING**

The Museum of the Earth serves as a teaching resource for Cornell, both formally and informally. Several classes require their students to complete exercises in the Museum exhibits. PRI collections are regularly used by Cornell faculty, staff, and students for research and teaching. PRI staff and facilities constitute the great majority of the non-botanical paleontology program for Cornell.

Four staff members hold full or adjunct faculty positions at Cornell: Drs. Allmon, Ross, and Dietl in the Department of Earth and Atmospheric Sciences (EAS) and Dr. Mikkelsen in the Department of Ecology and Evolutionary Biology.

Dr. Allmon teaches the equivalent of about 1.5 undergraduate courses per year, including Evolution at Shoals Marine Laboratory off the coast of Maine, as well as advises graduate students. He currently has two PhD students: Dana Friend, beginning her second year and Brendan Anderson starting his first year in September, 2013. Altogether, seven students have received Ph.D.'s from Cornell under Dr. Allmon's supervision.

Dr. Dietl supervises two Ph.D. students: Steve Durham is nearing the end of his second year, and Jansen Smith is nearing the end of his first year.

Dr. Ross teaches a summer course for EAS called "Earth in the News."

Dr. Mikkelsen gives guest lectures in several Cornell classes, most notably Invertebrate Zoology taught every other

### WARREN D. ALLMON, Ph.D.

PRI Director, Hunter R. Rawlings III Professor of Paleontology, Cornell University

As PRI's Director since 1992, Dr. Allmon has led the organization in its ambitious renovation and expansion, including the construction of the Museum of the Earth and the merger with the Cayuga Nature Center. In addition to his technical research, he writes and speaks frequently on the history of science, evolution and creationism, natural history museums and collections, and Earth science education. Dr. Allmon's research focuses on macroevolution and evolutionary paleoecology, especially the environmental and ecological context of evolutionary change, particularly in Cenozoic mollusks, and especially the gastropod family Turritellidae, which is nearly ubiquitous in the marine fossil record over the past 130 million years and also widely distributed in modern oceans.



Dr. Allmon with Trustee Emeritus Percy Browning (Cornell Class of 1956)

He also continues to work on theoretical and empirical aspects of speciation—the formation of new species—especially as it relates to patterns of nutrient availability and primary productivity in the oceans. Since 2008, he has been the Hunter R. Rawlings III Professor of Paleontology at Cornell University in the Department of Earth and Atmospheric Sciences.

## CIENTIST BIO



summer at Shoals Marine Lab. She is a Visiting Fellow in the Department of Ecology and Evolutionary Biology.

### OUTREACH

PRI continues to collaborate with Cornell Cooperative Extension on two NSF-funded public outreach projects: one focused on climate change education and the other focused on natural gas drilling in the Marcellus Shale. We are collaborating with EAS Professor Dr. Natalie Mahawold



Dr. Greg Dietl looks for cheniers in Baja, CA. The wide bands that these shell specimens create show past ecology of the species, specifically how they have been affected with the damming of the Colorado River.

on an exhibit scheduled for fall 2013 based on her NSF-funded research on the atmospheric carbon cycle. This exhibit fulfills the broader impacts portion of her grant.

Dr. Ross is frequently asked to collaborate on other NSF proposals by Cornell faculty. Research by Cornell faculty and students continues to be highlighted in both temporary and permanent exhibits in the Museum, and PRI maintains significant fossil exhibits in Snee Hall.

PRI serves as the informal "outreach arm" of Cornell's EAS department. In this role we develop temporary exhibits on research by EAS faculty, staff, and students for display in the Museum, manage fossil exhibits in Snee Hall on campus, design and staff the department's tables at annual campus events for alumni and incoming freshmen, and serve as "Cornell experts" to the media on relevant topics, from the Gulf oil spill and Marcellus Shale to dinosaurs and evolution.

Each year since 2006, PRI has taken the lead in organizing Ithaca's annual Darwin Days celebration, most of which happens on the Cornell campus with Cornell faculty and students. In February 2013, the theme was "Evolution and Invasive Species", and a total of around 700 people – mostly from Cornell – participated in the week's events.

We deeply appreciate the generosity of all our donors during the past fiscal year. PRI is a national leader in Earth science education largely because of a widelydistributed community that generously supports our mission. These gifts and grants were vitally important for daily operations as well as specific contributions to programs, research, publications and exhibits. The following list is for donations and gifts made in FY2013 (July 1, 2012- June 30, 2013)

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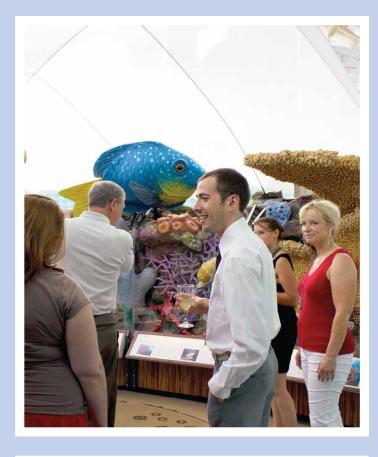
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Atwater Estate Vineyards

Cayuga Medical Center

CFCU Community Credit Union

Chemung Canal Trust Company

Chevron Humankind

ExxonMobil

Finger Lakes Beekeepers Club

Future PRI, LLC.

**GE** Foundation

IBM International Foundation

Kionix, Inc.

M &T Bank

Mid America Paleontology Society (MAPS)

NYSEG - Iberdrola USA Foundation, Inc.

Pall Corporation

Purity Ice Cream

Wegmans Food Markets, Inc.

### **GOVERNMENT**

Tompkins County Area Development

Tompkins County Tourism Program

National Science Foundation

New York State Council on the Arts with the support of Governor Andrew Cuomo and the New York State Legislature and the Regional Economic Development Council

New York State Council on the Arts

### **EDUCATION**

Cornell University

Society for Natural Resources Conservation

### **IN-KIND DONORS**

Willy and Betty Bemis

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Kathleen Lilley

Mark and Janet Mara

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Ms. Kathleen B. White

### RESTRICTED GIFTS FOR RESEARCH AND COLLECTION

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Kelly Cronin

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### 10TH ANNIVERSARY CAMPAIGN



Warren Allmon and Jennifer Tegan

Anonymous (2)

Peter and Wrexie Bardaglio

Jennifer and Alan Biloski

Henry Brecher

Lori J. and Dave Brewer



### In Memoriam

We mourn the loss this year of PRI Trustee Emeritus **Howard Hartnett**. Howard was a leading force in fundraising for the Museum of the Earth, as well as a community leader.

Percy Browning Alex Cavallo John C Conte Nicole and Nathan Cook Dryden Youth Opportunity Fund

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**Tompkins County** Tourism Program

**Triad Foundation** 

Ingrid and Mark Zabel

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Tom's Oasis Friends

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Foundation

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Harold Mills

Park Foundation



MEMBERSHIP Over 800 members belong to PRI and its Museum of the Earth. Every member is vitally important; to see a list of everyone who supported us this fiscal year, go to the complete Annual Report, posted online at www.museumoftheearth.org/annualreport

Catherine Penner Helen and Adam Perl Sandra and Bill Podulka Marvin P. and Allison Pritts Dewi Rainey Robert G. And Jane V. Engel Foundation, Inc. Martin Schlabach Dorothy and Harold Shepard Larisa Shlahet and Rob Wunder Frances Smith Allison and Leila Steele **Paul Tatar** Tompkins County Tourism Program Triad Foundation

### Volunteers

PRI would not be the success it is today without the continued support of many dedicated volunteers. In FY2013, we had 175 volunteers donate 11,525 hours. We focus on communication and add value to each volunteer's experience by offering a wide variety of opportunities, freedom to pursue individual projects, and chances to learn.

### VOLUNTEERS AND INTERNS

Betsy Acker Alex Aguilar Elizabeth Altier Maria Altier Craia Altier Stefanie Altman Christopher Andolina Joshua Antalek Nicole Attanasio Bethany Austin Anna Autilo Jacob Baker Dennis Baldwin Jerry Benjamin Daniel Bessemer Mike Blaney **Todd Bollinger** Karissa Breuer Erika Briaante D. Lukas Brown Janice Brown Kathy Bruce Dick Burlew Peg Burlew Kelly Cameron Irja Cantori Maija Cantori Jeffery Carman Alex Cavallo Pat Charwat Jessica Confer Leanne Cook Abby Cooper Jeffery Cotterill Heather Crespin Paula Cusano Amy Cusano John Cusano Kelin Daugherty Laurence Day Laetitia DeFreslon Nicole Deister

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Kira DiBetta Barbara Dimock Jon Doheny Chenga Drury Lenore Durkee Casey Ebner Monica Erle Morgan Feldman Felix Fernandez Penny Tim Finnerty Samantha Fonder Aaron Frederick Canny Fung Becky Garbo Benjamin Garbo Adric Garlick **Walter Gates** Ron George Taliet Gerretsen Sara Giometti Amy Godert Aaron Godert Clara Goldman Eileen Gongon Loren Gurche Cameron Halliday Juliet Halloran Kristen Handal Will Harrod Elisabeth Harrod Marshall Hayes William Hellman Cypress Hill Linda Hindall Hannah Hume Helen Hunsinger John Hunt Sierra Imanse Larry Jensen Viola Jones Elizabeth Kapinski Alison Keggan Colleen Keifer Wakana Kirihata

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Number of formal Volunteers and Interns

**175** 

Number of groups or one time volunteers

125

Volunteer hours logged



Volunteer Michael Marano carefully reveals the vertebrae of an adolescent Apatosaurus from a sandstone block on loan from the Carnegie Museum of Natural History.



For me, paleontology combines everything that's interesting in the world: the study of life, the study of the Earth, perceptions of time and truth, and our place in the panorama of existence. PRI is a great place to study all those things, not only because of the rich resources but because everyone around you shares your curiosity and joy in discovery.

**Avalon Bunge**, Preparation Lab Intern, Junior at Colgate University studying Geology

### Statement of Activities

UNRESTRICTED NET ASSETS		2013		2012
GRANTS, CONTRIBUTIONS, AND GIFTS	¢	565,986	\$	708,093
CONTRIBUTIONS RECEIVED IN ACQUISITION OF CNC	\$ \$	676,735	Φ	700,093
PROGRAMS	\$	74,934	¢	27,299
PUBLICATIONS	\$	31,271	\$ \$	39,241
DUES AND MEMBERSHIPS	\$	35,023	\$	29,137
MUSEUM ADMISSIONS	\$	90,168	\$	92,187
	Þ	90,100	Þ	92,107
MERCHANDISE SALES, NET COST OF GOODS SOLD ON \$30,394 AND \$28,736 RESPECTIVELY	¢	40,265	¢	39,780
INVESTMENT INCOME	\$ \$	1,816	\$ \$	39,780
GAIN ON INVESTMENTS		9,073		(593)
GIFTS IN KIND	\$ \$	51,061	\$ \$	57,942
OTHER	\$		\$	
OTHER	⊅ \$	69,405	<b>&gt;</b> \$	54,341
NET ACCETS DELEASED EDOM DESTRICTIONS	Þ	1,614,466	Þ	1,047,738
RET ASSETS RELEASED FROM RESTRICTIONS GRANTS	\$	1 120 202	<b>d</b>	744,365
SPECIFIC USES	\$	1,138,393	\$	
SECILIC 03E2	<b>\$</b>	370,666	\$ <b>\$</b>	256,426
	Þ	1,509,059	Þ	1,000,791
TOTAL REVENUE, GAINS AND OTHER SUPPORT	\$	3,123,525	\$	2,048,529
TOTAL REVERSE, GAINS AND STILE SOFFSRI	Ą	3,123,323	Ą	2,040,329
EXPENSES AND LOSSES				
PAYROLL AND RELATED BENEFITS	\$	1,303,924	\$	1,247,765
DEPRECIATION AND AMORTIZATION	\$	474,686	\$	445,980
INTEREST EXPENSE	\$	165,181	\$	171,012
PROFESSIONAL FEES	\$	78,343	\$	76,656
OTHER	\$	88,920	\$	74,376
BUILDING AND MAINTENANCE	\$	161,376	\$	124,823
GRANT SUBCONTRACTS	\$	199,113	\$	172,370
PUBLICATIONS AND PRINTING	\$	52,380	\$	54,381
EXHIBIT EXPENSE	\$	41,048	\$	15,973
SUPPLIES	\$	26,320	\$	16,547
TRAVEL AND WORKSHOPS	\$	13,249	\$	13,293
POSTAGE	\$	10,870	\$	12,963
PROGRAM EXPENSES	\$	7,428	\$	12,903
LOSS ON DISPOSAL OF ASSETS	\$	24,675	\$	_
BIOMASS FUEL EXPENSE			Ţ.	_
TOTAL EXPENSES AND LOSSES	\$ <b>\$</b>	4,300 <b>2,651,813</b>	\$ <b>\$</b>	2,426,139
TOTAL EXPENSES AND LOSSES	Þ	2,031,013	Þ	2,420,139
CHANGES IN UNRESTRICTED NET ASSETS	\$	471,712	\$	(377,610)
CHANGES IN OURESTRICTED HET ASSETS	Ą	471,712	4	(377,010)
TEMPORARILY RESTRICTED NET ASSETS				
GRANTS, CONTRIBUTIONS AND GIFTS	\$	1,021,131	\$	604,234
CONTRIBUTION RECEIVED IN ACQUISITION OF CNC	\$	439,837	Ψ	004,234
CONTRIBOTION RECEIVED IN ACQUISITION OF CIRC	Ą	459,057		
NET ASSETS RELEASED FROM RESTRICTIONS	\$	(1,509,059)	\$	(1,000,791)
CHANGE IN TEMPORARILY RESTRICTED NET ASSETS	\$	(48,091)	\$	(396,557)
CHANGE IN TEMI ORAKIEI RESTRICTED NET ASSETS	Ą	(40,031)	Ą	(370,337)
PERMANENTLY RESTRICTED NET ASSETS				
CONTRIBUTION RECEIVED IN ACQUISITION OF CNC	\$	60,000		_
CONTRIBUTION RECEIVED IN ACQUISITION OF CHE	Ą	00,000		
CHANGE IN NET ASSETS	\$	51,4892	\$	(774,167)
NET ASSETS, BEGINNING OF YEAR	\$	4,458,500	\$	5,268,780
PRIOR PERIOD ADJUSTMENT	Ψ	-, -, 50, 500	\$	(36,113)
				(50,113)
NET ASSESTS, END OF YEAR, AS RESTATED	\$	4,973,392	\$	4,494,613

### Year in Review

Paleontological Research Institution

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The Paleontological Research Institution is affiliated with Cornell University.

Please visit our two public venues for education – the Museum of the Earth and the Cayuga Nature Center.

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