



Florida Museum  
of Natural History

Annual Report 2014-2015

## Vision

The Florida Museum of Natural History is a leading authority in biodiversity and cultural heritage, using its expertise to advance knowledge, solve real world problems, and impact public policy and perception.

An engaging and impactful hub for teaching and learning science, the Museum has been particularly successful at utilizing research collections and making them accessible to diverse audiences, demonstrating relevance in their daily lives. In so doing, the Florida Museum of Natural History inspires people to value the biological richness and cultural heritage of our diverse world and make a positive difference in its future.

## From the Director

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More than 40 years before the English founded Jamestown and nearly 60 years before the Pilgrims landed at Plymouth Rock, an expedition of Spaniards under the leadership of Don Pedro Menéndez de Avilés came ashore at St. Augustine on Sept. 8, 1565, and established our nation's first permanent European city. Four and one-half centuries later, following decades of careful archaeological fieldwork and archival study by Distinguished Research Curator Emerita of Historical Archaeology Dr. Kathleen Deagan, and her students and colleagues, we now know the precise location and extent of this initial settlement — today's Fountain of Youth Archaeological Park — owned and managed by the Fraser family of St. Augustine.

In 2013 the Frasers generously donated nearly 100,000 artifacts excavated from the Fountain of Youth site and valued at \$3.5 million. This remarkable donation allowed the Florida Museum to help "America's oldest city" celebrate its 450th anniversary in 2015 by telling the story of its origin with an immersive exhibition, *First Colony: Our Spanish Origins*, installed downtown in the historic Government House, and produced in cooperation with UF Historic St. Augustine, Inc.

When *First Colony* closes in Fall 2015, it will move to the Florida Museum until April 2016 when it begins a nationwide tour. During its run in Gainesville, *First Colony* will be visited by every Alachua County Public Schools fourth-grader at no cost to the students or the school system. The Florida Museum Associates Board voted to underwrite these visits with proceeds from the Museum's annual *Passport* fundraiser so that local school children can learn about the origin and rich cultural history of St. Augustine while studying Florida history as part of the fourth-grade curriculum. I am particularly proud of this partnership with our local school district and with Alachua County Superintendent of Schools Dr. Owen Roberts, who is also a member of our Museum Associates Board.

The *First Colony* project epitomizes the very best of what the Florida Museum strives to accomplish and reflects the full spectrum of our mission and professional activities. The roots of this exhibition lie in decades of fieldwork and painstaking research undertaken by Museum scientists, staff and students. Artifacts were recovered, conserved, studied and cataloged into the permanent collections. Scientific reports were published, lectures were presented at conferences and in university classrooms, and students received graduate degrees based on their research findings.

Following the research, our Museum exhibit designers and educators took over, interpreting the findings of professional archaeologists for the public. The result is a beautiful, object-rich, interactive exhibition that ultimately will be seen by hundreds of thousands of Floridians and millions of people across our nation. I anticipate *First Colony* visitors will rethink the stories they learned in elementary school concerning the earliest European settlements in the U.S. and hopefully gain a new appreciation for the significance of our Spanish origins in La Florida.

Sincerely,







## DANDO GRACIAS

Había muchas diferencias entre el primer Día de Acción de Gracias y el que fue celebrado por los Puritanos ingleses 36 años después en 1621.






### COMPARTIENDO EL ALIMENTO

El Día de Acción de Gracias se celebra en Estados Unidos y otros países de Europa. Se trata de un día para agradecer a los dioses por la cosecha y a los amigos por la comida. En 1621, los Puritanos ingleses celebraron el primer Día de Acción de Gracias en Massachusetts. En ese momento, los Puritanos estaban luchando por sobrevivir en un nuevo país. Los indios les enseñaron a cultivar maíz y a cazar aves. Los Puritanos les enseñaron a cazar cerdos y a cultivar trigo. Los Puritanos y los indios compartieron la comida y celebraron el primer Día de Acción de Gracias.



## FY 2014-2015 Our Impact by the Numbers

### Attendance and Outreach

<b>206,813</b>	Annual visitation, including more than 15,000 UF students
<b>11,517</b>	School program participants
<b>974</b>	K-6 camps and classes participants
<b>52</b>	Teacher workshop attendees
<b>16,641</b>	Public Programs attendees
<b>36,092</b>	Hours donated by 563 volunteers
<b>3,465</b>	News articles published with a potential viewership of 8.48 billion
<b>7,849</b>	School and Public Programs outreach participants
<b>156,873</b>	Visitors to Museum traveling exhibits at other venues
<b>8.8</b>	Million Web page views
<b>2.9</b>	Million Web page visits
<b>211,730</b>	Pinterest followers 
<b>15,275</b>	Facebook likes 
<b>4,119</b>	Twitter followers 
<b>636</b>	YouTube subscribers 
<b>754</b>	Instagram followers 



### Collections and Research

<b>194</b>	Peer-reviewed publications
<b>1,028</b>	Scientific and other visitors to collections
<b>375</b>	Collection loans of nearly 27,000 specimens and artifacts
<b>40+</b>	Million total specimens
<b>64</b>	New and continuing grants and contracts worth \$7.06 million
<b>185</b>	Undergraduates and postdoctoral fellows working in collections
<b>25</b>	Countries including the U.S. where Museum scientists conducted research
<b>15</b>	States including Florida where Museum scientists conducted research
<b>13,292</b>	Accessions to collections
<b>156,000</b>	New specimens and artifacts cataloged

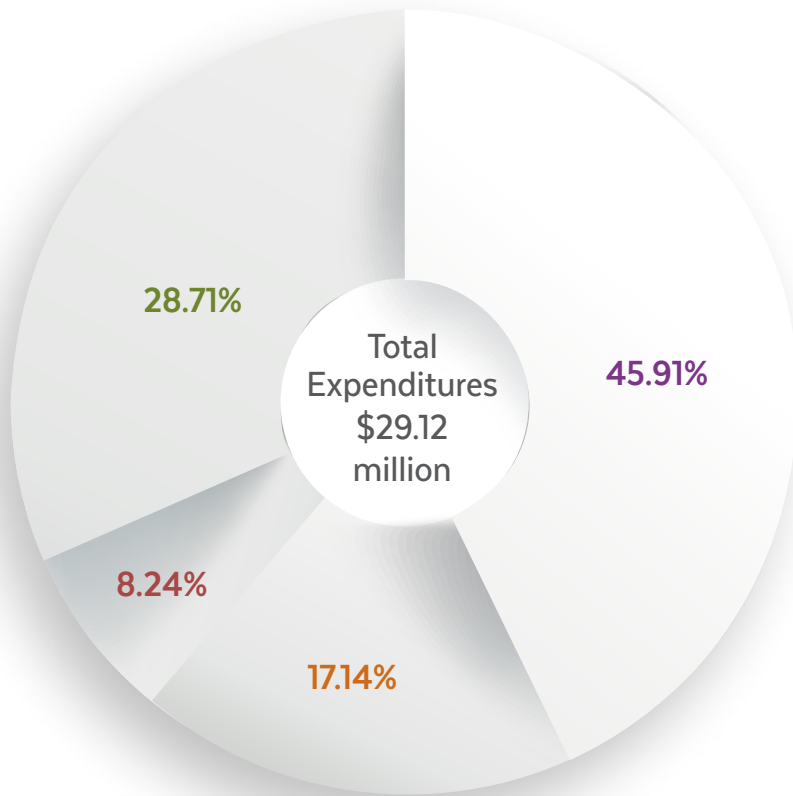
### Staff and Faculty Teaching

<b>35</b>	Courses taught by Museum faculty
<b>109</b>	Graduate committees chaired
<b>184</b>	Graduate committees served
<b>82</b>	Independent Studies supervised





## FY 2014-2015 Financials

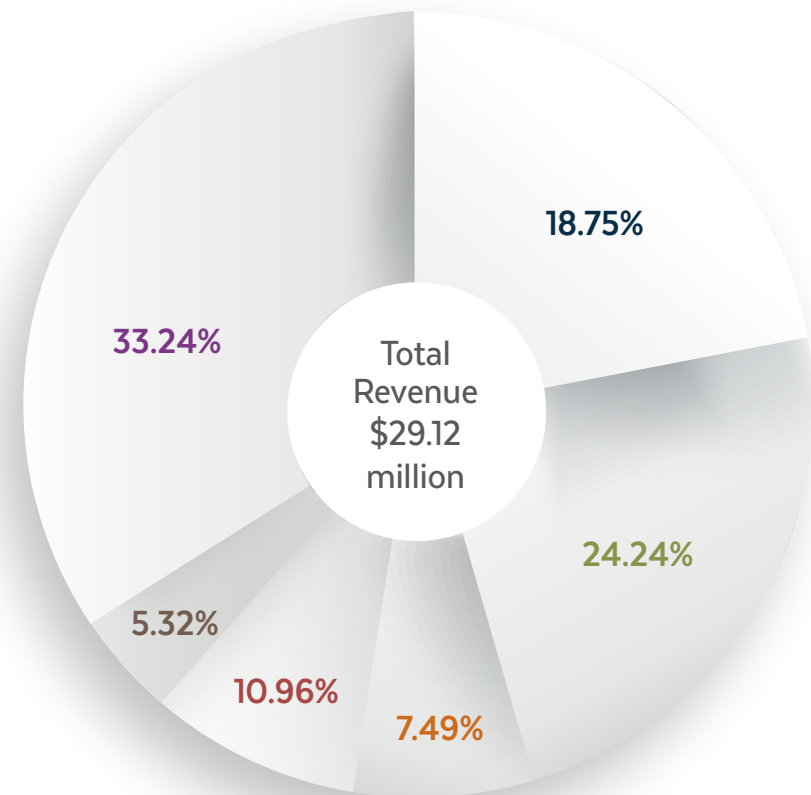


**Expenditures**

Salaries and benefits	\$13.37 million	45.91%
Operating	\$4.99 million	17.14%
Overhead/other fees	\$2.40 million	8.24%
Transfers for future programing	\$8.36 million	28.71%
<b>Total</b>	<b>\$29.12 million</b>	

**Revenue**

Gifts	\$5.46 million	18.75%
Grants and contracts	\$7.06 million	24.24%
Other UF income	\$1.55 million	5.32%
Private program support	\$3.19 million	10.96%
Earned income	\$2.18 million	7.49%
UF/State allocation	\$9.68 million	33.24%
<b>Total</b>	<b>\$29.12 million</b>	



## Research and Collections

The Department of Natural History had an outstanding year with 27 faculty overseeing about \$61 million in external multiyear projects to support collections and research activities, more than twice the amount managed the previous year. This included 28 new grants worth \$2.9 million.

Faculty and staff published 194 peer-reviewed books and journal articles, chaired 109 graduate committees and served on the graduate committees of another 184 students. An additional 160 undergraduates and 25 postdoctoral fellows were also trained in Museum labs and collections. Museum faculty and staff taught 437 students in 35 courses totaling 94 credit hours through the departments of Anthropology, Biology, Entomology & Nematology, Geological Sciences, Wildlife Ecology & Conservation and others, and directed 82 independent studies and research topics for 52 students totaling 420 credit hours.

Museum collections grew by more than 13,000 accessions totaling 156,000 new specimens and artifacts cataloged. Museum researchers hosted more than 1,000 scientific visitors to the collections and processed 375 loans of nearly 27,000 specimens. Many of the Museum's biological collections are transitioning to the Specify Database, with four currently using the new system and another four expected to go live soon. Eventually 14 collections will use Specify, dramatically increasing the productivity of our biological scientists.

The Museum also hired its third faculty member as part of the University of Florida's preeminence initiative, Dr. David Blackburn, a herpetologist whose primary research focus is African frogs. Blackburn, previously with the California Academy of Sciences, filled one of five biodiversity-focused positions UF awarded to the Museum, the College of Liberal Arts and Sciences and IFAS.



### Informatics

The Museum's iDigBio initiative, in its fifth year of funding from the National Science Foundation, is leading the U.S. effort to digitize information in the nation's biological collections (see page 14 for more information). Informatics is the new frontier in museum biodiversity studies, and during the past year, the Museum received several new grants in this field. Dr. Nico Cellinese was awarded an NSF grant of nearly \$1 million for a three-year project to develop software that will help navigate the Tree of Life. Specifically, it will allow computers to better understand the Tree of Life and place species on the Tree based on current data. Considering recent studies estimate at least 9 million species on earth, with only about 1.2 million formally described, Cellinese and her colleagues have their work cut out for them. Similarly, Drs. Doug and Pam Soltis received a \$1.7 million NSF grant to connect specimen data in iDigBio with phylogenetic information, species distributions and much more. Informatics, also referred to as big data, has come to the museum world in a tidal wave of new information. UF and the Florida Museum are at the forefront, building tools that will allow scientists and the general public to make sense of these data. Dr. Rob Guralnick and his colleagues launched the Map of Life, a new app that puts the world's biodiversity in the palm of the user's hand. This app uses data collected from hundreds of years of discovery by field and museum biologists worldwide to allow anyone to identify species observed in nature. Using this app, anyone can be a field biologist. Citizen scientists may record species they find in nature, and by doing so, enrich data from which the the Map of Life app draws.









### Anthropology

The Museum's Randell Research Center, directed by Dr. Bill Marquardt, is a jewel in Southwest Florida. Its research and interpretive missions are important to the vibrant Pine Island community and the Florida Museum. Last year the Museum announced the purchase of 5 acres containing two additional Calusa burial mounds adjacent to the now 67-acre site. The purchase was made possible by a \$150,000 gift from the Sear Family Foundation and \$50,000 from the Calusa Land Trust. Smith Mound is 25 feet high and 230 feet long. It was used as a Calusa burial mound about 350-1,000 years ago. Low Mound is a midden 10 feet high and 100 feet long. It contains charred wood, shells and animal bones from meals consumed by the Calusa 1,700 years ago. These mounds will eventually be added to the Randell's educational interpretive trail system.

### Paleontology

Dr. Jonathan Bloch and colleagues described the first postcranial bones of *Purgatorius*—an early primate previously known only by its teeth. The anklebones in particular demonstrate these small primates lived in trees, meaning arboreality occurred extremely early in primate evolution. The bones also suggest these early primates had a high degree of mobility, which probably aided in their successful radiation around the world. It's amazing sometimes how the discovery of a single bone can rapidly improve understanding of the natural world. Dr. Bruce MacFadden received a new grant to engage and interest K-12 science educators in paleontology. This NSF-funded initiative uses the Great American Biotic Interchange, a time when the newly formed Isthmus of Panama allowed plants and animals to move between North and South America, as a focal point into the study of paleontology. MacFadden takes teachers to Panama in conjunction with his ongoing research to work side-by-side with scientists during the summer. Teachers return to their classrooms with real-world experience and long-lasting connections to a paleontology research project. Training the next generation of scientists means focusing on K-12 education to create those sparks of excitement for young students.

### Biodiversity

Dr. David Steadman has been studying Cuban crocodile fossils and thousands of beautifully preserved bird fossils from dry and water-filled caves on the Bahamian island of Abaco to reconstruct the bird community found there during the last ice age and compare it with today's populations. More than half (25 of 45) of the bird species that inhabited Abaco during the last ice age no longer live on the island, including various hawks, rails, snipe, nightjars, woodpeckers and swallows. Working with recent doctoral student Angelo Soto-Centeno and others, Steadman studied fossil bats from the Bahamas and showed that at least five species withstood dramatic climate change and reduced land area, only to be wiped out at a time when climate conditions were largely similar to those of today. The demise of bat populations coincides with other land mammals, birds and reptiles in the Bahamas, and is concurrent with the arrival of humans, suggesting they may have caused the extinctions.





## Our Impact



### Research Locations:

Florida — All counties with special attention to Alachua, Bradford, Brevard, Broward, Calhoun, Charlotte, Citrus, Clay, Collier, Columbia, Dixie, Escambia, Franklin, Gadsden, Gilchrist, Hendry, Hillsborough, Jackson, Jefferson, Lafayette, Lake, Lee, Leon, Levy, Liberty, Madison, Manatee, Marion, Miami-Dade, Monroe, Nassau, Okaloosa, Orange, Osceola, Palm Beach, Pinellas, Putnam, Santa Rosa, Sarasota, St. Johns, Suwannee, Union, Volusia, Wakulla, Walton

Other States — Alabama, Alaska, Arizona, Arkansas, Colorado, Hawaii, Idaho, Montana, Nebraska, New Mexico, North Carolina, South Dakota, Tennessee, Texas, Wyoming

International — Antigua, Argentina, Australia, Bahamas, Brazil, China, Colombia, Costa Rica, Ecuador, France, French Guiana, Guatemala, India, Indonesia, Jamaica, Japan, Mexico, Panama, Peru, Philippines, Poland, Spain, Thailand, United Kingdom

### Special Achievements, Faculty and Staff:

Dr. Kitty Emery received a University of Florida Research Foundation Professorship in recognition of her distinguished record of research and scholarship.

Dr. Bruce MacFadden was elected as a Fellow of The American Association for the Advancement of Science.

Dr. Jacqueline Miller was elected as an Honorary Member of the Entomological Society of America.

Dr. Larry Page received the 2014 Robert K. Johnson Award for Excellence in Service from the American Society of Ichthyologists and Herpetologists.





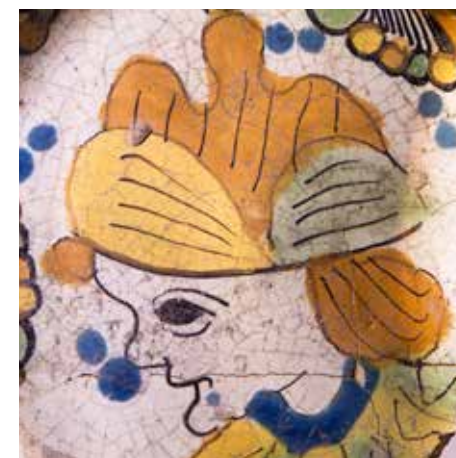
## Teaching:

AMT 3930	Plagues and People, 3 credits
ANG 5162	Maya Archaeoastronomy and Ethnoastronomy, 3 credits
ANT 4824	Field Sessions in Archaeology, 6 credits
ANT 3930	Florida Archaeology, 3 credits
ALS 6046	Grant Writing, 2 credits
ANG 4554C/6930/ ZOO 4926/6927	Primate Evolution, 3 credits
ANG 6186	The Archaeology of Kinship and Social Organization, 3 credits
BOT 4621	Plant Geography, 3 credits
BOT 4935	Research Methods, 1 credit
BOT 4935/ GLY 6932	Paleobotany, 3 credits
BOT 5725	Taxonomy of Vascular Plants, 4 credits
BOT 5725C	Vascular Plant Taxonomy, 4 credits
BOT 6726C/ ZOO 6927	Principles of Systematic Biology, 4 credits
BOT 6935	Molecular Systematics, 3 credits
BOT 6935	Phylogenetics Systematics Seminar (Spring), 1 credit
BOT 6935	Systematics of Orchidaceae, 3 credits
BOT 6935/ ZOO 6927	Phylogenetic Systematics Seminar (Fall), 1 credit
BOT 6935/ ZOO 6927	Phylogenomics, 2 credits

EDA 4930	Informal STEM Practice, 3 credits
ENY 3163/5164	Invertebrate Field Biology, 3 credits
GLY 3083C	Introduction to Marine Science, 3 credits
GLY 6930	Data Quality in Maya Zooarchaeology, 3 credits
GLY 6930/ ZOO 6927	Measuring Biodiversity in the Fossil Record, 1 credit
GLY 6932/4930/ ZOO 6927/4926	Data and Analysis in Natural Sciences, 3 credits
IDH 3931	Insects and Plants, 1 credit
WIS 4944/6934/ ZOO 4926/6927	Snake Biology, 2 credits
WIS 7979	Research: Surveying Aquatic Acoustic Methodology, 1 credit
WIS 7979	Research: Surveying Aquatic Acoustic Studies, 2 credits
ZOO 4305C	Invertebrate Biodiversity, 4 credits
ZOO 4472	Avian Biology, 4 credits
ZOO 4926/6927	Avian Anatomy and Specimen Preparation, 4 credits
ZOO 6927	Advanced Invertebrate Biodiversity, 4 credits
ZOO 6927	Broader Impacts of Science on Society, 2 credits
ZOO 6927	Special Topics: Citizen Science, 1 credit
ZOO 6927/ GLY 6927	Vertebrate Paleontology Seminar, 1 credit

**Graduate Committees Chaired: 109**  
**Graduate Committees Served: 184**

**Undergraduates and Postdoctoral Students Working in Collections: 185**  
**Independent Studies Supervised: 82**



## McGuire Center for Lepidoptera and Biodiversity

Built on a foundation of collections, the McGuire Center strives to document global patterns of biological diversity and help address emerging issues from climate change and evolution to organism conservation and public engagement in science. The diverse research and community outreach efforts by McGuire Center faculty, staff and students resulted in several notable highlights.

### Building a Learning Environment

Over the last two years, the McGuire Center has led an initiative to create butterfly gardens at schools across Alachua County. Students worked alongside Center faculty, staff and students to design and plant each butterfly-friendly landscape. The resulting interactions and gardens provide the foundation for an enriching curriculum of outdoor science learning and ultimately help reconnect children with nature.



### Evolution of Insects

A landmark study involving more than 100 researchers from 10 countries, including Assistant Curator Akito Kawahara, has reconstructed the insect Tree of Life and helped answer longstanding questions about the origins and evolution of the world's largest and most biodiverse group of animals. Appearing as a cover story in the preeminent journal *Science*, the research revealed insects originated at the same time as the earliest terrestrial plants, about 480 million years ago, suggesting both groups shaped the earliest land ecosystems. The findings advance our understanding of how life on Earth came to be what it is today and provide an essential foundation for future study of insects.

### Moth-Bat Interactions

The 65-million-year-old arms race between bats and moths has serious life-and-death consequences. Two of the largest and most charismatic groups of moths, hawkmoths and giant silkworm moths, have each developed sophisticated mechanisms to help thwart bat attacks. Research by the Kawahara lab and other collaborators investigated anti-bat ultrasound production and hearing in hawkmoths. Researchers found that nearly half of the species tested use their genitalia to generate effective defensive radar-jamming sounds. Similarly, the presence of hindwing tails, like those of the beautiful blue-green Luna moth, can confuse bat echolocation and divert attacks away from their vulnerable bodies.

### Enriching Young Lives

Among the approximately 120 Junior Volunteers who rotate throughout the Museum each summer, several dozen chose specifically to work with Collections Coordinator Andrei Sourakov. As a result, nearly 150 middle and high school students from all socio-economic backgrounds received training and were exposed to the art and science of making and maintaining a scientific collection. The students contributed to the preparation, labeling or curation of more than 100,000 moth specimens collected from around the world. During the past summer, some 26 JVs also helped digitize a recent special collection donated to the Museum, producing high-quality images of more than 15,000 specimens.





## iDigBio-Integrated Digitized Biocollections

In its fifth year of funding from the National Science Foundation, iDigBio is leading the national effort to digitize information in natural history collections and make that information readily available online.

In the past year, the iDigBio team held 24 workshops and other events in 14 locations and hosted 20 webinars to provide training on a broad range of digitization and other collection-centered topics. Activities included teaching courses at UF and Florida State University, creating informational videos, promoting citizen science education and outreach, and broadening participation of groups typically underrepresented in science, including women, minorities and persons with disabilities.

Much of the vast amount of information in the nation's collections is moving from storage cabinets to computers and from scientists exclusively to everyone interested in the environment and Earth's biological diversity. Information from specimens in collections is vital to understanding widespread changes taking place in the global environment, from modifications of the landscape to introductions of exotic species—both of which are major concerns in Florida.



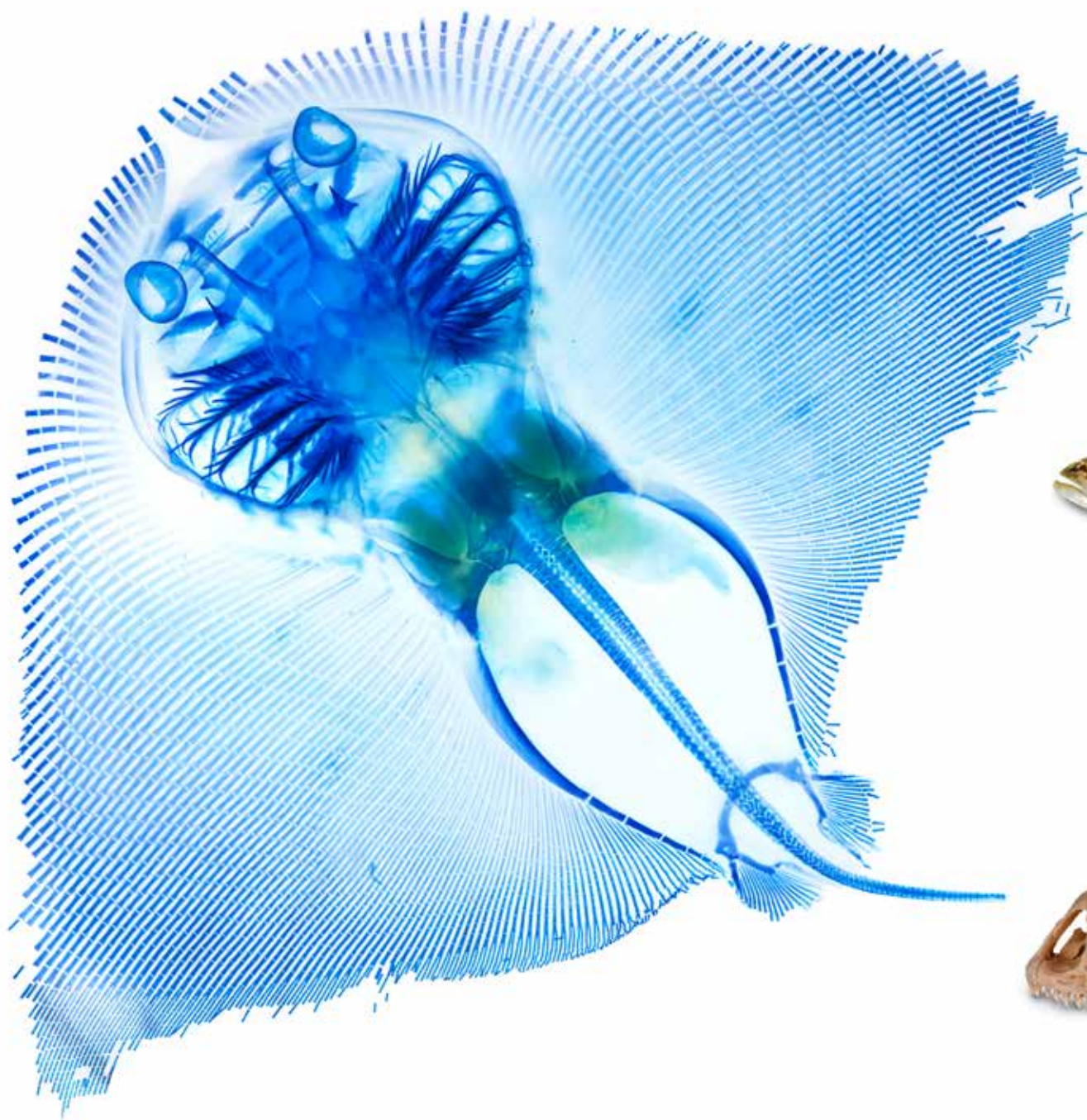
iDigBio is working with employees at nearly 300 institutions containing more than 400 collections to make specimen information available online through the iDigBio search portal, <https://www.idigbio.org/portal>. The portal contains more than 46 million records for about 150 million specimens, including 13 million images of specimens housed in institutional collections. The portal search page was recently revised to include a redesign of specimen and image pages as well as a point-clustering feature that allows users to more easily visualize individual records on maps.

During the first four years of the project, more than 2,200 participants from over 500 institutions have attended DigBio workshops. During this time, the project has defined digitization priorities for museums and other institutions with collections, integrated best practices into workflows, provided cyberinfrastructure resources including a search portal, and established collaborations with data providers and users. In the coming year, iDigBio staff will work with additional institutions to begin the digitization process, and harvest data from other collections already digitized.

Anyone may follow iDigBio's progress by visiting [www.idigbio.org](http://www.idigbio.org), which includes information on a continually evolving knowledge base as well as details and reports of recent and upcoming events, or by subscribing to the project e-newsletter, the *iDigBio Spotlight*.









## Exhibits and Public Programs



Exhibits and Public Programs present Florida Museum research and collections to the public in many ways. Collaborations across the Museum and with outside organizations resulted in significant highlights during the past year.

### **Interpreting St. Augustine**

Visitors to our nation's "first city" enjoyed the Museum's exhibit *First Colony: Our Spanish Origins* displayed at Government House in St. Augustine and headed to Gainesville in Fall 2015. The Museum partnered with UF Historic St. Augustine, Inc. to produce *First Colony* as well as another exceptional exhibit with a unique twist—*Toilets through Time*. This history of hygiene in colonial America is on display in St. Augustine's public restrooms.

### **Discovery Zone for Children and Families**

The Museum successfully concluded fundraising efforts for a new permanent *Discovery Zone* exhibit thanks to the generosity of numerous private donors and foundations, two state grants and an Alachua County grant. This exciting new space for early childhood experiences is now poised for construction.

### **Exploring Our World**

The Museum opened a new exhibition featuring the roles of UF research and Museum collections in examining world issues. Supported by UF's Office of Research, the exhibit launched with a range of stories, from invasive Burmese pythons in Florida to how genetics and the environment impact aging. The exhibit serves a vital role in sharing ongoing UF science research with Museum visitors as well as online audiences through the Museum's YouTube channel.

### **Dogs and Giant Sharks and Dinosaurs**

Featured exhibits drew crowds with *Wolf to Woof: the Story of Dogs*, from Wonderworks Exhibits Company, the Museum-produced *Megalodon: Largest Shark that Ever Lived*, and A T. rex *Named Sue* from the Field Museum in Chicago. All exhibits were complemented by public programs, and many Museum adult and Junior Volunteers also served as popular *Sue Speakers* to engage visitors in *T. rex* conversations.





### On the Road

The Museum reaches thousands of people with its touring exhibits. *Dugout Canoes: Paddling through the Americas* spent the year at the Chickasaw Cultural Center, Oklahoma, and *Megalodon: Largest Shark that ever Lived* cruised through Jacksonville and Gainesville before taking off for Liberal, Kansas, and Santa Barbara, California.

### Spotlight on Climate Change

Florida, with its unique geography and geology, is particularly vulnerable to the effects of climate change. The Museum began the year with a series of exhibits exploring climate change, including efforts of scientists to understand its potential impact on Florida. The first exhibit, *Our Changing Climate: Past and Present*, explored what 70 million years of evidence reveals about Earth's dynamic climate, including today's rapid rate of change. The exhibit featured an 11-foot-long climate timeline pinpointing some of the most fascinating natural history events, including the age of dinosaurs, the first arrival of humans and time periods of great civilizations.

### After-School 'Museum Club'

"Museum Club" is a collaboration with the Alachua County Extended Day Enrichment Program, an after-school project dedicated to the development and education of students outside of regular school hours. At schools with "Museum Clubs," Museum staff trained activity leaders and worked with students on topic-based activities, culminating in a visit to the Museum's featured exhibit.

### She's A Scientist

Partnering with Girl Scouts of Gateway Council, a new "She's a Scientist" program connected girls in North Florida with scientists to explore activities in the science, technology, engineering and math fields.



### Archaeology Workshops

Through a new partnership with the Florida Public Archaeology Network, workshops engaged children and adults in hands-on activities with hunting technology and pottery to learn more about the history and culture of early Florida peoples.

### Serving K-12 Students and Teachers

Each year the Museum serves K-12 students and teachers in many ways, including field trips, classroom outreach and teacher trainings. Special highlights this year included the Educator Open House, a collaboration with the School Board of Alachua County and more than 20 community organizations that connected teachers with resources and learning experiences throughout North Central Florida. Teacher trainings for Alachua County Public Schools linked the Museum's featured exhibits to classroom curricula and engaged teachers with Museum scientists and collections.

### New Partnerships

New partnerships with the Reichert House and Cultural Arts Coalition extended Museum programming. Museum staff presented hands-on activities to after-school science clubs at Caring and Sharing Charter School, Cone Park Library and Williams Elementary School. Middle and high school students from the Reichert House visited the *Butterfly Rainforest* and participated in A T. rex *Named Sue* guided programs.

### Homeschool Days

Special programs for homeschoolers featured exhibit explorations and hands-on activities with Museum staff and docents to complement the *Megalodon: The Largest Shark that Ever Lived*, A T. rex *Named Sue* and *Butterfly Rainforest* exhibits.

### Tweens and Teens – Volunteers Extraordinaire

From Sue Speakers to camp assistants and exhibit guides to butterfly pinners, 109 tweens and teens were Museum volunteers during summer 2015, donating more than 4,794 hours.

### JV Leadership Program

Summer 2015 inaugurated the Junior Volunteer Leadership program. Based on previous outstanding service, 19 returning JVs were selected to participate and further develop their leadership skills and museum roles. Lead JVs helped organize and facilitate training and recognition programs, suggested program improvements and mentored fellow JVs.

### Super Seniors

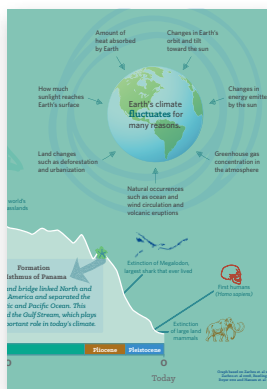
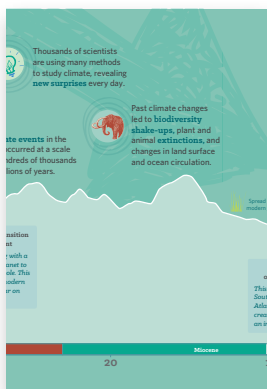
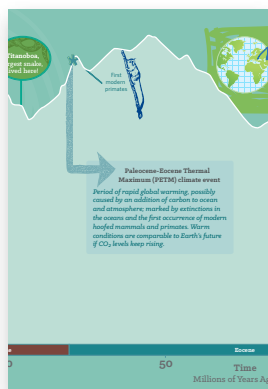
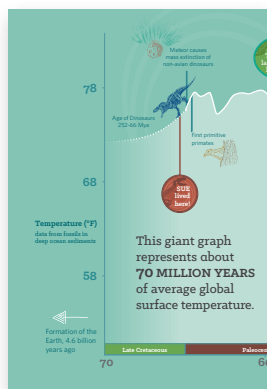
This year we recognized Super Seniors – JVs who served the Museum during all four years of high school. The six Super Senior recipients donated more than 2,700 volunteer hours.





## Our Changing Climate: The Past (millions of years)

### Climate changes over time and impacts life on Earth.







**WOLF TO WOOF**  
THE STORY OF DOGS



*"This place is amazing!....  
Well worth a visit."*  
-2015 visitor comment



**MEGA LODON**  
Largest Shark that Ever Lived

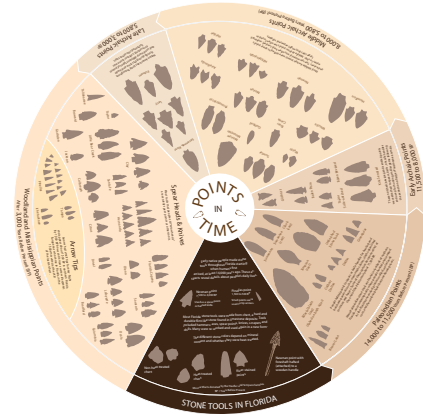






# EXPLORING

## *First Colony:* OUR SPANISH ORIGINS *La Primera Colonia:* NUESTROS ORÍGENES ESPAÑOLES *An Exhibition from the Florida Museum of Natural History*



*"The best butterfly conservatory in North America."*  
-2015 visitor comment



## Membership and Development

The Florida Museum of Natural History's strong partnership with donors is an essential component of its success. Museum donors passionately support capital projects, collections, education, exhibits, public programs and research. Generous gifts from many loyal donors, as well as family and corporate foundations, helped the Museum achieve its fundraising goal for a spectacular new *Discovery Zone*. Construction planning is currently underway, and Museum employees, volunteers and other supporters are excited to watch the new exhibit, designed for young children, take shape with a projected opening planned for 2017. In addition to raising the needed funds for this project, the Museum also secured more than \$500,000 in endowment support that will help sustain the *Discovery Zone* for years to come, including staffing, maintenance and upgrades.

Collection acquisitions continue to grow and add to the Museum's rich array of precious treasures, including gifts of artifacts, fossils and butterflies and moths, to name a few. In many cases, these gifts represent a lifetime of collecting by donors that carry not only an intrinsic dollar value, but also a priceless emotional connection. Apart from the local Gainesville family of supporters, the Florida Museum of Natural History reaches out both nationally and internationally, as evidenced by donations received from around the world. Collections are received weekly from as far away as Africa, adding to the Museum's already extensive library of life. The Museum heartily thanks its donors for gifting these objects so they may be shared with the public and studied by students and scientists. In addition to cash donations and in-kind gifts, many donors have documented bequests that will ensure a bright future for the Museum.



Museum membership experienced a steady rise with more than 1,500 active members. The Museum Associates Board hosted its annual fundraising gala, *Passport to: Around the World in 80 Days!* Costumes were beyond extraordinary and everyone enjoyed a wonderful evening. Proceeds from this event will be used to bring all Alachua County fourth-grade students to the Museum to visit the featured exhibit, *First Colony: Our Spanish Origins*. Funding will also provide busing for students and teacher training. The Museum is grateful to the Associates Board members for their dedication and service.

Your investment in the Florida Museum of Natural History is the lifeblood of our organization. The Museum couldn't function at such a high level without the continued generosity and support of its donors, and for this the Museum is extremely appreciative. Thank you!

For more information about giving opportunities please contact Marie Emmerson, Director of Development, [emmerson@ufl.edu](mailto:emmerson@ufl.edu) or 352-273-2087.









## Donor Highlight

### Fraser family played key role in preserving St. Augustine history

By preserving the original site of the nation's first colony as a tourist attraction, the Fraser family of St. Augustine protected one of the richest archaeological sites in Florida.

The Frasers own and operate the Fountain of Youth Archaeological Park where Museum researchers have uncovered more than 97,000 artifacts over the last 40 years left behind by Spanish immigrants. Valued at nearly \$3.5 million, the family recently donated the collection to the Museum.

Rather than allowing the artifacts to become ornaments stored away in drawers or boxes, Park Manager John Fraser said his family donated the artifacts to ensure they would be preserved and made available for further study.

"At the museum, they can be viewed and studied by researchers and students who, through their work, can bring the first colony to life," Fraser said.

The property is one of the places in St. Augustine where the historical context has remained intact and uncompromised—making it a prime location for archaeological work, said Florida Museum of Natural History Director Doug Jones.

"Many historical sites in the area are gone now or compromised due to development," Jones said. "Once a site is disturbed, it has really lost its context and that is what is important to archaeologists. This makes the Fraser family's gift that much more significant from a research standpoint."

The artifacts and accompanying research allowed the museum to develop the *First Colony: Our Spanish Origins* traveling exhibit, first displayed in St. Augustine's Government House and then at the Florida Museum beginning in Fall 2015.



Thought by its previous owners to be the landing site of Ponce de Leon, the property was purchased in 1927 by the Fraser family in an effort to preserve the history of St. Augustine in the midst of heavy development, Fraser said. The family kept the park open during the Great Depression, and in 1934 a park gardener found a skull belonging to a 17<sup>th</sup>-century Native American. But it was not until 1992 that Florida Museum archaeologist Kathleen Deagan and fellow researchers determined the site was the first colony of Spanish conquistador Pedro Menéndez.

"The story of the first colony is fascinating because it is the story of how people with different languages, cultures and religions, who looked so unfamiliar to one another, lived together for nearly a year," Fraser said. "It's an inspiring story for today's world. Having that history preserved was important to my father and important to my grandfather, and we are going to facilitate research being done here as long as we can."

The artifacts include a variety of items, including pottery sherds, glass beads and an olive jar that was reconstructed at the Florida Museum. Some of the pieces, including a figa amulet typically worn by infants to ward off evil spirits and an ornamental silver piece most likely made by a Native American with silver salvaged from a Spanish shipwreck, are rare and tell the story of a diverse society where Spaniards, Africans and Native Americans interacted nearly 450 years ago, Deagan said.





## Volunteer Highlights

### Volunteers serve critical roles in many areas

The interests and talents of Florida Museum volunteers are as varied as their ages. But regardless of their age, or how, where and when they serve, one point is clear: they play a vital role in the Museum's success.

Last year, 563 individuals donated a total of 36,092 hours—the equivalent of more than 17 full-time, 12-month employees!

The Museum is well-known for providing meaningful volunteer opportunities, including its highly successful program for Junior Volunteers ages 12-17. And with so many highly qualified individuals, the employee committee tasked with selecting the Museum's volunteers of the year often has an extremely difficult time reaching a decision.

The process was somewhat easier for this year's group with the addition of a new Student Volunteer of the Year Award, presented to Santa Fe College student Crystal Coleman.

Coleman was recognized for her leadership skills with school groups and other assistance for the Museum's Center for Science Learning. She served 187 hours during 2014 and has completed more than 352 hours since she began volunteering in 2013 as a school programs and exhibit docent.

"Her quick learning and sharp observations help her to effectively interact with students of all ages, from preschool to high school," said Florida Museum School Programs Coordinator Dianne Behringer.



Gerald Kidder and Russell Henderson were named winners of the James Pope Cheney Volunteer of the Year Award.

Recognized for his work in the Collections and Research Division, Kidder served 145 hours during 2014 and has completed more than 199 hours since he began volunteering in 2013 in the Museum's Ceramic Technology Lab. He developed new procedures to expedite processing time, contributing to a 55 percent increase of the Museum's clay sample collections.

"We are fortunate to have engaged Jerry's interest and expertise in achieving our research goals," said Museum Senior Biologist and Ceramic Technology Lab Coordinator Ann Cordell.

Winning in the Exhibits and Public Programs Division, Henderson served 220 hours during 2014 and has completed more than 1,454 hours at the Museum since he began volunteering in 2008 as a docent. He is known by his colleagues to attend a variety of Museum programs to further his knowledge, help visitors dig deeper into a topic and keep others informed of new ways to become effective docents.

"Russell's easygoing approach with visitors is one of his most valuable assets," Behringer said. "I very regularly observe laughter and smiles as I pass by Russell and his group."

For more information on Museum volunteer opportunities, email Volunteer Coordinator Amy Hester at [ahester@flmnh.ufl.edu](mailto:ahester@flmnh.ufl.edu) or visit [www.flmnh.ufl.edu/getinvolved/volunteers/volunteer-program/](http://www.flmnh.ufl.edu/getinvolved/volunteers/volunteer-program/).

## Peer-reviewed Publications

Alfonso, Y.U., V. Hřibálová, and **K.L. Krysko**. 2014. Copulation and oviposition in the Green-blotched Giant Anole, *Anolis smallwoodi* (Squamata: Dactyloidae), from southeastern Cuba. *Amphibians & Reptiles: Conservation and Natural History* 21:108-115.

**Allen, S.E., G.W. Stull, and S.R. Manchester**. 2015. Icacinaceae from the Eocene of western North America. *American Journal of Botany* 102(5):725-744.

Ashley, K.H., **N.J. Wallis**, and M.D. Glascock. 2015. Forager interactions on the edge of the early Mississippian world: Neutron activation analysis of Ocmulgee and St. Johns pottery. *American Antiquity* 80(2):290-311.

**Auffenberg, K., J. Slapcinsky, and R.W. Portell**. 2015. A revision of the fossil taxa assigned to *Hyperaulax* (Gastropoda: Odontostomidae), with the description of a new genus (Gastropoda: Bulimulidae). *The Nautilus* 129(2):54-62.

Baas, P., R. Srivastava, **S.R. Manchester**, and E.A. Wheeler. 2015. Circular or spherical vessels in the fossil record. *IAWA Journal* 36(2):152-157.

Barber, J.R., B.C. Leavell, A.L. Keener, **J.W. Breinholt**, B. Chadwell, C.J.W. McClure, G.M. Hill, and **A.Y. Kawahara**. 2015. Moth tails divert bat attack: Evolution of acoustic deflection. *Proceedings of the National Academy of Sciences, USA* 112(9):2812-2816. DOI:10.1073/pnas.1421926112.

Bauder, J.A.-S., L. Morawetz, **A.D. Warren**, and H.W. Krenn. 2015. Functional constraints on the evolution of long butterfly proboscides: Lessons from Neotropical skippers (Lepidoptera: Hesperidae). *Journal of Evolutionary Biology* 28(3):678-687.

Bauder, J.A.-S., **A.D. Warren**, and H.W. Krenn. 2014. Evolution of extreme proboscis lengths in Neotropical Hesperidae (Lepidoptera). *Journal of Research on the Lepidoptera* 47:65-71.



Bauder, J.A.-S., **A.D. Warren**, and H.W. Krenn. 2015. The ecological role of extremely long-proboscid Neotropical butterflies (Lepidoptera: Hesperidae) in plant-pollinator networks. *Arthropod-Plant Interactions* 9379. DOI:10.1007/s11829-015-9379-7.

Bethea, D., M.J. Ajemian, J.K. Carlson, E. Hoffmayer, **J.L. Imhoff**, R.D. Grubbs, C.T. Peterson, and **G.H. Burgess**. 2014. Distribution and community structure of coastal sharks in the northeastern Gulf of Mexico. *Environmental Biology of Fishes* 98:1233-1254.

Boonchai, N., **S.R. Manchester**, and E.A. Wheeler. 2015. *Welkoetoxylon multiseriatum*: Fossil moraceous wood from the Eocene Green River Formation, Wyoming, U.S.A. *International Association of Wood Anatomists Journal* 36:158-166.

**Bourque, J.R., J.H. Hutchinson, P.A. Holroyd, and J.I. Bloch**. 2015. A new dermatemydid (Testudines, Kinosternoidea) from the Paleocene-Eocene Thermal Maximum, Willwood Formation, southeastern Bighorn Basin, Wyoming. *Journal of Vertebrate Paleontology* 35(2). DOI:10.1080/02724634.2014.905481.

**Bourque, J.R.** and B.W. Schubert. 2015. Fossil musk turtles (Kinosternidae, *Sternotherus*) from the late Miocene-early Pliocene (Hemphillian) of Tennessee and Florida. *Journal of Vertebrate Paleontology* 35(1). DOI:10.1080/02724634.2014.885441.



**Boyd, B.M., J.M. Allen, V. de Crecy-Lagard, and D.L. Reed**. 2014. Genome sequence of *Candidatus Riesia pediculischaeffi*, endosymbiont of chimpanzee lice, and genomic comparison of recently acquired endosymbionts from human and chimpanzee lice. *Genes, Genomes, and Genetics* 4(11):2189-2195.

Boyle, J.H., Z.A. Kaliszewska, **M. Espeland**, T.R. Suderman, J. Fleming, A. Heath, and N.E. Pierce. 2015. Phylogeny of the Aphnaeinae: Myrmecophilous African butterflies with carnivorous and herbivorous life histories. *Systematic Entomology* 40(1): 169-182.

Buggs, R.J.A., J.F. Wendel, J.J. Doyle, **D.E. Soltis, P.S. Soltis**, and J. Coate. 2014. The legacy of diploid progenitors in allopolyploid gene expression patterns. *Philosophical Transactions of the Royal Society B* 369:20130354.

Calhoun, J.V., P.R. Leary, B. Berthet, and **A.D. Warren**. 2015. Discovered at last: *Lethe creola* (Nymphalidae: Satyrinae) is a resident of Florida. *Southern Lepidopterists' News* 37(2):81-87.

Carlson, J.K., S.J.B. Gulak, C.S. Simpfendorfer, R.D. Grubbs, **J.G. Romine**, and **G.H. Burgess**. 2014. Movement patterns and habitat use of Smalltooth sawfish, *Pristis pectinata*, determined using pop-up satellite archival tags. *Aquatic Conservation: Marine and Freshwater Ecosystems* 24:104-117.

Cellinese, N. 2015. *Taxonomy and Classification*. Oxford Bibliographies in Evolutionary Biology. New York, Oxford University Press.

Chamala, S., N. García, G.T. Godden, V. Krishnakumar, I.E. Jordon-Thaden, R. De Smet, W.B. Barbazuk, **D.E. Soltis**, and **P.S. Soltis**. 2015. MarkerMiner 1.0: A new application for phylogenetic marker development using angiosperm transcriptomes. *Applications in Plant Sciences* 3(4):1400115.

**Chanderbali, A.S., F. Hu, D.E. Soltis, and P.S. Soltis**. 2015. Out of the water: Origin and diversification of the LBD gene family. *Molecular Biology and Evolution*. DOI:10.1093/molbev/msv080.

**Checa, M.F. and K.R. Willmott**. Hadas del Ecuador: Una mirada a su diversidad. pp. 250-255. In: M. García and D. Parra, eds. *Ecuador: País de la Biodiversidad*. Fundación Botánica de Los Andes/Ministerio del Ambiente/Fundación Ecofondo. Quito, Ecuador.

**Chester, M., R.K. Riley, P.S. Soltis, and D.E. Soltis**. 2015. Patterns of chromosomal variation in natural populations of the neoallotetraploid *Tragopogon mirus* (Asteraceae). *Heredity* 114(3):309-317.

Chester, S.G.B., **J.I. Bloch**, D.M. Boyer, and W.A. Clemens. 2015. First postcranial fossils of *Purgatorius* indicate arboreality in the oldest primate. *Proceedings of the National Academy of Sciences* 112:1487-1492.

**Cobb, C.R.** 2014. The once and future archaeology. *American Antiquity* 79:589-595.

**Cobb, C.R.** 2014. What I believe: A memoir of processualism to neo-historical anthropology. *Southeastern Archaeology* 33:214-225.

**Cobb, C.R.** 2015. Mississippian microhistories and sub-mound moments. pp. 196-219. In: Z.I. Gilmore and J.M. O'Donoghue, eds. *The Archaeology of Events: Cultural Change and Continuity in the Pre-Columbian Southeast*. University of Alabama Press, Tuscaloosa.



**Cobb, C.R.** and A. King. 2014. The founding of Mississippian capitals in the southeast. pp. 119-125. *In*: S.M. Alt and T.R. Pauketat, eds. *Medieval Mississippians*. SAR Press, Santa Fe.

**Cobb, C.R.** and S.M. Sapp. 2014. Imperial anxiety and the dissolution of colonial space and practice at Fort Moore, South Carolina. pp. 212-231. *In*: N. Ferris, R. Harrison, and M. Wilcox, eds. *Rethinking Colonial Pasts through Archaeology*. Oxford University Press, Oxford.

**Cobb, C.R.**, A.M. Krus, and **D.W. Steadman**. 2015. Bayesian modeling of the occupation span of the Averbuch Site in the Middle Cumberland Drainage, Tennessee. *Southeastern Archaeology* 34:1-11.

Cook, J.A., S.V. Edwards, E. Lacey, **R.P. Guralnick**, **P.S. Soltis**, **D.E. Soltis**, C. Welch, K.C. Bell, K.E. Galbreath, C. Himes, J. Allen, T.A. Heath, A.C. Carnaval, K.L. Cooper, M. Liu, and J. Hanken. 2014. Aiming up: Natural history collections as emerging resources for innovative undergraduate education in biology. *BioScience* 64:725-734.

Corogin, P.T. and **W.S. Judd**. 2014. New geographical and morphological data for *Sideroxylon reclinatum* subspecies *austrorfloridense* (Sapotaceae), a taxon endemic to southeastern peninsular Florida, USA. *Journal of the Botanical Research Institute of Texas* 8:403-417.



Crawford, D.J., J.J. Doyle, **D.E. Soltis**, **P.S. Soltis**, and J.F. Wendel. 2014. Contemporary and future studies in plant speciation, morphological-floral evolution and polyploidy: Honouring the scientific contributions of Leslie D. Gottlieb to plant evolutionary biology. *Philosophical Transactions of the Royal Society B* 369:20130341.

Deck, J., **R.P. Guralnick**, R. Walls, S. Blum, M. Haendel, A. Matsunaga, J. Wieczorek. 2015. Meeting report: Identifying practical applications of ontologies for biodiversity informatics. *Standards in Genomics* 10:25. DOI:10.1186/s40793-015-0014-0.

Deng, J., **B.T. Drew**, **E.V. Mavrodiev**, **M.A. Gitzendanner**, **P.S. Soltis**, and **D.E. Soltis**. 2015. Saxifragaceae: Phylogeny, divergence times and clade evolution. *Molecular Phylogenetics and Evolution* 83:86-98.

Dobešová, E., H. Malinská, R. Matyášek, A. Leitch, **D.E. Soltis**, **P.S. Soltis**, and A. Kovařík. 2015. Silenced rRNA gene homeologs are activated and substitute for lost (active) copies in a recently formed *Tragopogon mirus* allotetraploid. *Heredity* 114:356-365.

Donovan, S.K., D.A.T. Harper, and **R.W. Portell**. 2014. In deep water: A crinoid-brachiopod association in the late Oligocene of Antigua, West Indies. *Lethaia* 48(3):291-298. DOI:10.1111/let.12105.

Donovan, S.K., T.A. Jackson, D.A.T. Harper, **R.W. Portell**, and W. Renema. 2014. The upper Oligocene of Antigua: The volcanic to limestone transition in a limestone Caribbee. *Geology Today* 30(4):151-158.

Dowd, A.S. and **S. Milbrath**, eds. 2015. *Cosmology, Calendars, and Horizon-based Astronomy in Ancient Mesoamerica*. University Press of Colorado, Boulder.

Ebel, E.R., J.M. DaCosta, M.D. Sorenson, R.I. Hill, A.D. Briscoe, **K.R. Willmott**, and S.P. Mullen. 2015. Rapid diversification associated with ecological specialization in Neotropical *Adelpha* butterflies. *Molecular Ecology* 24(10):2392-2405.

Ellwood, L., **B. Dunckel**, P. Flemons, **R.P. Guralnick**, G. Nelson, G. Newman, S. Newman, D. Paul, G. Riccardi, N. Rios, K. Seltmann, and A. Mast. 2015. Accelerating digitization of biodiversity research specimens through online public participation. *Bioscience* 65(4):383-396.

**Emery, K.F.** 2014. Animal remains. pp. 158-200. *In*: T. Inomata and D. Triadan, eds. *Life and Politics at the Royal Court of Aguateca: Artifacts, Analytical Data, and Synthesis*. University of Utah Press.

**Emery, K.F.** 2014. De restos zooarqueológicos a un contexto humano. pp. 651-670. *In*: C. Götz y **K.F. Emery**, eds. *La Arqueología de los Animales de Mesoamérica*. Lockwood Press, Georgia.

**Emery, K.F.** and P. Baker. 2014. Vertebrate animal remains from Classic Period Pacbitun. pp. 34-55. *In*: P.F. Healy and **K.F. Emery**, eds. *Zooarchaeology of the Ancient Maya Site of Pacbitun (Belize)*. Trent University Occasional Paper, Number 16. Trent University Press.

**Emery, K.F.** and P.F. Healy. 2014. A history of animal use at the ancient Maya site of Pacbitun. pp. 152-176. *In*: P.F. Healy and **K.F. Emery**, eds. *Zooarchaeology of the Ancient Maya Site of Pacbitun (Belize)*. Trent University Occasional Paper, Number 16. Trent University Press.

**Emery, K.F.**, **E.K. Thornton**, **N.R. Cannarozzi**, S.D. Houston, and H. Escobedo. 2014. Animales arqueológicos de las tierras altas Mayas del sur: Zooarqueología de Kaminaljuyu. pp. 381-416. *In*: C. Götz y **K.F. Emery**, eds. *La Arqueología de los Animales de Mesoamérica*. Lockwood Press, Georgia.



Erdei, B. and **S.R. Manchester**. 2015. *Ctenis clarnoensis* sp. n., an unusual cycadalean foliage from the Eocene Clarno Formation, Oregon. *International Journal of Plant Sciences* 176(1):31-43.

**Estes-Smargiassi, K.A.** and **A.A. Klompmaker**. 2015. An enigmatic trace fossil from the Upper Triassic shales of Western Europe. *Netherlands Journal of Geosciences* 94:271-277.

**Evans, N.M.**, A. Gilbert, **G. Paulay**, and S. Andréfouët. 2015. A massive subtidal aggregation of hermit crabs in Surprise Atoll lagoon, New Caledonia. *Coral Reefs* 34:917.

Feldmann, R.M., C.E. Schweitzer, and **R.W. Portell**. 2015. Crabs (Decapoda, Brachyura) from the lower Paleocene of Alabama, U.S.A., pp. 135-151. *In*: R.H.B. Fraaije, M. Hyžný, J.W.M. Jagt, M. Krobicki, and B.W.M. Van Bakel, eds. *Proceedings of the 5th Symposium on Mesozoic and Cenozoic Decapod Crustaceans, Krakow, Poland, 2013: A tribute to Pál Mihály Müller*. *Scripta Geologica* 147:135-151.

Franklin, J., E.H. Freid, J. Ripplinger, H. Marciano-Vega, and **D.W. Steadman**. 2015. Regional variation in Caribbean dry forest tree species composition. *Plant Ecology* 216:873-886. DOI:10.1007/s11258-015-0474-8.

Frédou, F.L., M. Tolotti, T. Frédou, F. Carvalho, H. Hazin, **G.H. Burgess**, R. Coelho, J.D. Waters, P. Travassos, and F. Hazin. 2015. Sharks caught by the Brazilian tuna longline fleet: An overview. *Reviews in Fish Biology and Fisheries* 25:365-377.

Fritsch, P.W., **S.R. Manchester**, R.D. Stone, B.C. Cruz, and F. Almeda. 2015. Northern Hemisphere origins of the amphi-Pacific tropical plant family Symplocaceae. *Journal of Biogeography* 42:891-901.

Garzón-Orduña, I.J., K.L. Silva-Brandão, **K.R. Willmott**, A.V.L. Freitas, and A.V.Z. Brower. 2015. Incompatible ages for Clearwing butterflies based on alternative secondary calibrations. *Systematic Biology* 64(5):752-767. DOI:10.1093/sysbio/syv032.

Godden, G.T. and **P.S. Soltis**. 2014. pp. 173-181. In: W.L. Applequist and L.M. Campbell, eds. *DNA Banking for the 21st Century: Proceedings of the U.S. Workshop on DNA Banking*. William Brown Center, Missouri Botanical Garden, St. Louis, MO.

Götz, C. and **K.F. Emery**, eds. 2014. *La Arqueología de los Animales de Mesoamérica*. Lockwood Press, Georgia. Complete Spanish version of 2013 Archaeology of Mesoamerican Animals.

**Granatosky, M.C.** and **K.L. Krysko**. 2014. Morphological variation in the Mediterranean House gecko (Gekkonidae: *Hemidactylus turcicus*) along geographical gradients in the southeastern United States. *Herpetological Conservation and Biology* 9:535-542.

**Guralnick, R.P.**, **N. Cellinese**, J. Deck, R.L. Pyle, J. Kunze, L. Penev, R. Walls, G. Hagedorn, D. Agosti, J. Wieczorek, T. Catapano, and R.D.M. Page. 2015. Community next steps for making globally unique identifiers work for biocollections data. *Zookeys* 494:133-154.

**Guralnick, R.P.**, T. Conlin, J. Deck, B.J. Stucky, and **N. Cellinese**. 2014. The trouble with triplets in biodiversity informatics: A data-driven case against current identifier practices. *PLOS ONE* 9(12):e114069. DOI:10.1371/journal.pone.0114069.

**Hastings, A.K.**, J. Krigbaum, **D.W. Steadman**, and N.A. Albury. 2014. Reptile-dominated terrestrial food web in the Bahamas prior to human occupation. *Journal of Herpetology* 48:380-388.

**Hastings, A.K.**, **J.I. Bloch**, and C.A. Jaramillo. 2014. A new blunt-snouted dyrosaurid, *Anthracosuchus balrogus* gen. et sp. nov. (Crocodylomorpha, Mesoeucrocodylia), from the Paleocene of Colombia. *Historical Biology* 27(8):998-1020. DOI:10.1080/08912963.2014.918968.

Healy, P. and **K.F. Emery**, eds. 2014. *Zooarchaeology of the Ancient Maya Site of Pacbitun (Belize)*. Trent University Occasional Paper, Number 16. Trent University Press.

Healy, P.F., **K.F. Emery**, T. Wagner, B. Hohmann, P. Baker, and N. Stanchly. 2014. Maya artifacts of bone and shell from Pacbitun. pp. 97-151. In: P. Healy and **K.F. Emery**, eds. *Zooarchaeology of the Ancient Maya Site of Pacbitun (Belize)*. Trent University Occasional Paper, Number 16. Trent University Press.

**Hecht, K.**, and M. Monroe. 2015. Connecting parents to connect children with nature. pp. 131-146. In: M. Monroe and M. Krasny, eds. *Across the Spectrum: Resources for Environmental Educators (2nd Edition)*. North American Association for Environmental Education.

**Hecht, K.**, **M.A. Nickerson**, and R. Vollbrecht. 2014. *Cryptobranchus alleganiensis* (Hellbender). Predation. *Herpetological Review* 45(3):471.

**Hendy, A.J.W.**, **D.S. Jones**, F. Moreno, V. Zapata, and C. Jaramillo. 2015. Neogene molluscs, shallow marine paleoenvironments, and chronostratigraphy of the Guajira Peninsula, Colombia. *Swiss Journal of Palaeontology* 134(1):45-75. DOI:10.1007/s13358-015-0074-1.

Hernández-Mejía, B.C., **A.D. Warren**, and J. Llorente-Bousquets. 2014. Distribution of genus *Codatractus* Lindsey, 1921 (Hesperiidae: Eudaminae). *Southwestern Entomologist* 39(4):813-852.

Herrera, F., **S.R. Manchester**, J. Vélez-Juarbe, and C. Jaramillo. 2014. Phytogeographic history of the Humiriaceae (Part 2). *International Journal of Plant Sciences* 175(7):828-840.

Herrera, F., **S.R. Manchester**, M.R. Carvalho, C. Jaramillo, and S.L. Wing. 2014. Paleocene wind-dispersed fruits and seeds from Colombia and their implications for early Neotropical rainforests. *Acta Palaeobotanica* 54(2):197-229. DOI:10.2478/acpa-2014-0008.



Herrera, F., **S.R. Manchester**, R. Koll, and C. Jaramillo. 2014. Fruits of *Oreomunnea* (Juglandaceae) in the early Miocene of Panama. pp. 124-133. In: W.D. Stevens, O.M. Montiel, and P.H. Raven, eds. *Paleobotany and Biogeography*. Missouri Botanical Garden, St. Louis.

Inomata, T. and **K.F. Emery**. 2014. Bone and shell artifacts. pp. 127-157. In: T. Inomata and D. Triadan, eds. *Life and Politics at the Royal Court of Aguateca: Artifacts, Analytical Data, and Synthesis*. University of Utah Press.

Jadin, R., F. Burbrink, G. Rivas, L. Vitt, C. Barrio-Amoros, and **R.P. Guralnick**. 2014. Finding arboreal snakes in an evolutionary tree: Phylogenetic placement and systematic revision of the Neotropical birdsnakes. *Journal of Zoological Systematics and Evolutionary Research* 52:257-264. DOI:10.1111/jzs.12055.

Jaramillo, C., E. Moreno, V. Ramírez, S. da Silva, Atria de la Barrera, Adara de la Barrera, C. Sánchez, S. Morón, F. Herrera, J. Escobar, R. Koll, **S.R. Manchester**, and N. Hoyos. 2014. Palynological record of the last 20 million years in Panama. pp. 134-251. In: W.D. Stevens, O.M. Montiel, and P.H. Raven, eds. *Paleobotany and Biogeography*. Missouri Botanical Garden, St. Louis.

Jia, L.-B., **S.R. Manchester**, T. Su, Y.-W. Xing, W.-Y. Chen, Y.-J. Huang, and Z.-K. Zhou. 2015. First occurrence of *Cedrelopspermum* (Ulmaceae) in Asia and its biogeographic implications. *Journal of Plant Research* 128(5):747-761.

**Johns, C.A.**, N. Tangalin, K. Bustamente, **A.Y. Kawahara**. 2014. Evidence of an undescribed extinct *Philodoria* species (Lepidoptera: Gracillariidae) from Hawaiian *Hesperomannia* herbarium specimens. *Proceedings of the Hawaiian Entomological Society* 46:55-57.

**Judd, W.S.**, E.R. Bécquer, and **L.C. Majure**. 2014. Taxonomic studies in the Miconieae (Melastomataceae). XI. A revision of *Miconia* sect. *Calycopteris* on Hispaniola. *Brittonia* 66:216-249. DOI:10.1007/s12228-014-9326-4.

**Judd, W.S.**, E.R. Bécquer, J.D. Skee, Jr., and **L.C. Majure**. 2014. Taxonomic studies in the Miconieae (Melastomataceae). XII. Revision of *Miconia* sect. *Miconiastrum*, with emphasis on the *Miconia bicolor* complex. *Journal of the Botanical Research Institute of Texas* 8:457-491.

**Judd, W.S.**, **L.C. Majure**, G.M. Ionta, and **K.M. Neubig**. 2015. Taxonomic studies in the Miconieae (Melastomataceae). XIII. Systematics of *Miconia subcompressa*, a Hispaniolan endemic comprised of three eco-geographic subspecies. *Phytotaxa* 192(2):61-83.

Jue, D.K. and **J.C. Daniels**. 2014. A successful model for citizen science involvement in building a statewide at-risk butterfly database. *Journal of Insect Conservation* 19:421-431. DOI:10.1007/s10841-014-9733-6.

**Kawahara, A.Y.** and J.R. Barber. 2015. Tempo and mode of anti-bat ultrasound and jamming in the diverse hawkmoth radiation. *Proceedings of the National Academy of Sciences, USA* 112(20):6407-6412. DOI:10.1073/pnas.1416679112.

**Keegan, W.F.** 2015. Mobility and disdain: Columbus and cannibals in the land of cotton. *Ethnohistory* 62:1-15.

**Klomp maker, A.A.** and P.H. Kelley. 2015. Shell ornamentation as a likely exaptation: Evidence from predatory drilling on Cenozoic bivalves. *Paleobiology* 41:187-201.

**Klomp maker, A.A.**, M. Hyžný, and S.L. Jakobsen. 2015. Taphonomy of decapod crustacean cuticle and its effect on the appearance as exemplified by new and known taxa from the Cretaceous – Danian crab *Caloxanthus*. *Cretaceous Research* 55:141-151.



**Klompaker, A.A., M. Hyžný, R.W. Portell, and M. Kowalewski.** 2015. Growth, inter- and intraspecific variation, palaeobiogeography, taphonomy, and systematics of the Cenozoic Ghost shrimp *Glypturus*. *Journal of Systematic Palaeontology* 13:1-28.

**Klompaker, A.A., R.W. Portell, S. Lad, and M. Kowalewski.** 2015. The fossil record of drilling predation on barnacles. *Palaeogeography, Palaeoclimatology, Palaeoecology* 426:95-111.

**Kowalewski, M., J.M. Wittmer, T.A. Dexter, A. Amorosi, and D. Scarponi.** 2015. Differential responses of marine communities to natural and anthropogenic changes. *Proceedings of the Royal Society B* 282(1803):20142990. DOI:10.1098/rspb.2014.2990.

**Krysko, K.L., D.C. Smith, M.R. Rochford, G.N. Kieckhefer III, and L.P. Nuñez.** 2014. Confirmation of introduced Louisiana pinesnakes, *Pituophis ruthveni*, in Florida based on molecular analyses. *Amphibian and Reptile Conservation* 8:36-43.



Laktionov, A.P., N.N. Tzelev, E. Arkhipova, and **E.V. Mavrodiev.** 2014. *Elytrigia fursaevii* Laktionov, Tzelev et Mavrodiev (Poaceae), a new species from the Lower Volga region. *Novitates Systematicae Plantarum Vascularium* 45:18-21.

**Landis, J.B., K.L. Ventura, D.E. Soltis, P.S. Soltis, and D.G. Oppenheimer.** 2015. Optical sectioning and 3D reconstructions as an alternative to scanning electron microscopy for analysis of cell shape. *Applications in Plant Sciences* 3:1400112.

Lebreton Anberrée, J., **S.R. Manchester**, J. Huang, S. Li, Y. Wang, and Z.-K. Zhou. 2015. First fossil fruits and leaves of *Burretiodendron* s.l. (Malvaceae s.l.) in Southeast Asia: Implications for taxonomy, biogeography, and paleoclimate. *International Journal of Plant Sciences* 176(7):682-696.

**LeCompte, E.V.** 2015. Archaeological artifacts. pp. 15-29. In: D.R. Van Horn, H. Culligan, and C. Midgett, eds. *Basic Condition Reporting, A Handbook, 4th edition*. Rowman and Littlefield, Lanham, MD.

Liu, K.N., S.-P. Xie, **S.R. Manchester**, Y.-F. Wang, Y. Shao, and B.-K. Li. 2015. Samaras of *Ventilago* (Rhamnaceae) from the upper Miocene of Lincang, Yunnan, China and their phytogeographic implications. *Journal of Systematics and Evolution* 53(3):252-258.

Londoño, G.A., M.A. Chappell, M.R. Castañeda, J.E. Jankowski, **S.K. Robinson.** 2014. Basal metabolism in tropical birds: Latitude, altitude, and the 'pace of life'. *Functional Ecology* 29(3):338-346. DOI:10.1111/1365-2435.12348.

Long, A., **J.I. Bloch**, and M.T. Silcox. 2015. Quantification of neocortical ratios in stem primates. *American Journal of Physical Anthropology* 157(3):363-373. DOI:10.1002/ajpa.22724.

LoPresti, E.F., **A.D. Warren**, S.B. Stichter, and R. Eastwood. 2015. The historical occurrence of *Hesperia attalus* (Lepidoptera: Hesperidae) in New England. *Journal of Research on the Lepidoptera* 48:9-12.

**MacFadden, B.J.** 2014. Chapter 16. pp. 156-167. In: M.R. Sanchez-Villagra and N. MacLeod, eds. *Issues in Palaeobiology: A Global View. Interviews and Essays*. Scidinge Hall Verlag Zurich.

**MacFadden, B.J., G.S. Morgan, A.F. Rincón, and D.S. Jones.** 2015. Gomphothere proboscidean (*Gomphotherium*) from the Miocene of Panama. *Journal of Paleontology* 89:360-365.

**Macrae, S.** 2014. Agricultural intensification amongst the charter states of Southeast Asia: A study of resilience, vulnerability, and entanglement. pp. 58-85. In: G. Iannone, ed. *Framing a Comparative Analysis of Tropical Civilizations: SETS Project - Phase 1 (Volume 1)*. Trent University Occasional Papers in Anthropology No. 17, Peterborough, Canada.

Maia, V.H., **M.A. Gitzendanner, P.S. Soltis, and D.E. Soltis.** 2014. Angiosperm phylogeny based on 18S/26S sequence data: Constructing a large set using next-generation sequence data. *International Journal of Plant Systematics* 175:613-650.

**Majure, L.C., W.S. Judd, G.M. Ionta, J.D. Skean, Jr., E.R. Bécquer, and K.M. Neubig.** 2014. *Miconia cineana* (Melastomataceae: Miconieae), a new species from the Massif de la Hotte, Haiti, based on morphological and molecular evidence. *Systematic Botany* 39:906-914. DOI:10.1600/036364414X682247.

**Majure, L.C., W.S. Judd, and F.A. Michelangeli.** 2014. Taxonomic revision of the Greater Antillean *Pseudolima* clade of *Miconia* (*Miconia* sect. *Krugiophytum*: Miconieae: Melastomataceae). *Brittonia* 67:11-28. DOI:10.1007/s12228-04-9349-x.

**Manchester, S.R.** 2014. Revisions to Roland Brown's North American Paleocene flora. *Acta Musei Nationalis Pragae, Ser. B - Historia Naturalis* 70(34):153-210.

**Manchester, S.R., L. Calvillo-Canadell, and S.R.S. Cevallos-Ferriz.** 2014. Assembling extinct plants from their isolated parts. *Boletín de la Sociedad Geológica Mexicana* 66(1):53-63.

**Manz, C.L. and J.I. Bloch.** 2015. Systematics and phylogeny of Paleocene-Eocene Nyctitheriidae (Mammalia, Eulipotyphla?) with description of a new species from the late Paleocene of the Clarks Fork Basin, Wyoming, USA. *Journal of Mammalian Evolution* 22(3):307-342. DOI:10.1007/s10914-014-9284-3.

**Manz, C.L., S.G.B. Chester, J.I. Bloch, and E.J. Sargis.** 2015. Partial skeletons of Paleocene Nyctitheriidae and reevaluation of proposed euarchontan affinities. *Biology Letters* 11:20140911. DOI:10.1098/rsbl.2014.0911.

**Marte, M.G., D.L. Reed, and J.A. Soto-Centeno.** 2014. Identification of microbial diversity and potential pathogens in Bahamian caves. *Journal of Undergraduate Research* 15(3):1-8.

**Martin, Z.P. and L.M. Page.** 2015. Comparative morphology and evolution of genital papillae in a genus of darters (Percidae: *Etheostoma*). *Copeia* 2015:99-124.

Matasci, N., L.-H. Hung, Z. Yan, E.J. Carpenter, N.J. Wickett, S. Mirarab, N. Nguyen, T. Warnow, S. Ayyampalayam, M. Barker, J.G. Burleigh, **M.A. Gitzendanner**, E. Wafula, J.P. Der, C.W. dePamphilis, B. Roure, H. Philippe, **B.R. Ruhfel, N.W. Miles, S.W. Graham, S. Mathews, B. Surek, M. Melkonian, D.E. Soltis, P.S. Soltis, C. Rothfels, L. Pokorny, J.A. Shaw, L. DeGironimo, D.W. Stevenson, J.C. Villarreal, T. Chen, T.M. Kutchan, M. Rolf, R.S. Baucom, M.K. Deyholos, R. Samudrala, Z. Tian, X. Wu, X. Sun, Y. Zhang, J. Wang, G. Ka-Shu Wong, and J. Leebens-Mack.** 2014. Data access for the 1000 plants (1kp) pilot. *GigaScience* 3:17. DOI:10.1186/2047-217X-3-17.



Matos-Maravi, P., R. Nuñez Aguilar, C. Peña, **J.Y. Miller, A. Sourakov, and N. Wahlberg.** 2014. Causes of endemic radiation in the Caribbean: Evidence from the historical biogeography and diversification of the butterfly genus *Calisto* (Nymphalidae: Satyrinae, Satyrini). *BMC Evolutionary Biology* 14(1):1-18. DOI:10.1186/s12862-014-0199-7.

Mathews, A., K. Emelianova, A. Hatimy, **M. Chester, J.P. Moscardó, S.A. Khawaja, G. Rouhan, D.E. Soltis, P.S. Soltis, I.J. Leitch, A.R. Leitch, E.V. Mavrodiev, and R.J.A. Buggs.** 2015. *Tragopogon pratensis* x *T. porifolius*: 250 years of hybridization without speciation? *AoB PLANTS* 2015(7):plv081. DOI:10.1093/aobpla/plv081.

**Mavrodiev, E.V.**, M. Martinez-Azorin, P. Dranishnikov, and M.B. Crespo. 2014. At least 23 genera instead of one: The case of *Iris* L. s.l. (Iridaceae). *PLOS ONE* 9(8):e106459. DOI:10.1371/journal.pone.0106459.

**Mavrodiev, E.V.**, J.P. Gomez, A. Laktionov, and **S.K. Robinson**. 2015. Invasive plant distributions recapitulate patterns found in native plant assemblages in a heterogeneous landscape. *Ecosphere* 6(4):1-16.

**Mavrodiev, E.V.**, **M. Chester**, V.N. Suárez-Santiago, **C.J. Visger**, R. Rodriguez, A. Susanna, R.M. Baldini, **P.S. Soltis**, and **D.E. Soltis**. 2015. Multiple origins and chromosomal novelty in the allotetraploid *Tragopogon castellanus* (Asteraceae). *New Phytologist* 206(3):1172-1183. DOI:10.1111/nph.13227.

McLaughlin, C.A., J. Broo, **B.J. MacFadden**, and **S. Moran**. 2015. Not looking a gift horse in the mouth: Exploring the merits of a Student-Teacher-Scientist Partnership. *Journal of Biological Education*. DOI:10.1080/00219266.2015.1028571.

Metcalfe, J., S. Prost, D. Nogues-Bravo, E. DeChaine, C. Anderson, M. Araujo, A. Cooper, and **R.P. Guralnick**. 2014. Integrating multiple lines of evidence into historical biogeography hypothesis testing: A *Bison bison* case study. *Proceedings of the Royal Society B* 281:20132782.

Meyer, C., H. Kreft, **R.P. Guralnick**, and W. Jetz. 2015. Global priorities for an effective knowledge base of biodiversity distributions. *Nature Communications* 6:8221. DOI:10.1038/ncomms9221.

**Milbrath, S.** 2015. A seasonal calendar in the Codex Borgia. pp. 141-164. In: A.S. Dowd and **S. Milbrath**, eds. *Cosmology, Calendars, and Horizon-based Astronomy in Ancient Mesoamerica*. University Press of Colorado, Boulder.

**Milbrath, S.** and A.S. Dowd. 2015. An interdisciplinary approach to cosmology, calendars, and horizon-based astronomy. pp. 3-20. In: A.S. Dowd and **S. Milbrath**, eds. *Cosmology, Calendars, and Horizon-based Astronomy in Ancient Mesoamerica*. University Press of Colorado, Boulder.

**Milbrath, S.** 2014. Maya images of the smoking mirror deity. pp. 163-196. In: E. Bacquedano, ed. *Tezcatlipoca: Trickster and Supreme Aztec Deity*. University Press of Colorado, Boulder.

**Miller, J.Y.**, **D.L. Matthews**, M.J. Simon, and R.M. Rozycki. 2015. Review and comments on the current status of *Choranthus richmondi* L. Miller (Lepidoptera: Hesperidae) in the Bahamas. *Insecta Mundi* 0414:1-9.

Misof, B. ...**A.Y. Kawahara**... et al. 2014. Phylogenomics resolves the timing and pattern of insect evolution. *Science* 346(6210):763-767.

Moreno, F., **A.J.W. Hendy**, L. Quiroz, N. Hoyos, **D.S. Jones**, V. Zapata, S. Zapata, G.A. Ballen, E. Cadena, A.L. Cardenas, J.D. Carrillo-Briceño, J.D. Carrillo, D. Delgado-Sierra, J. Escobar, J.I. Martinez, C. Martinez, C. Montes, J. Moreno, N. Perez, R. Sanchez, C. Suarez, M.C. Vallejo-Pareja, and C. Jaramillo. 2015. Revised stratigraphy of Neogene strata in the Cocinetas Basin, La Guajira, Colombia. *Swiss Journal of Palaeontology* 134(1):5-43. DOI:10.1007/s13358-015-0071-4.

**Neubig, K.M.**, **W.M. Whitten**, J.R. Abbott, **S. Elliott**, **D.E. Soltis**, and **P.S. Soltis**. 2014. Variables affecting DNA preservation in archival plant specimens. pp. 81-136. In: W.L. Applequist and L.M. Campbell, eds. *DNA Banking for the 21st Century: Proceedings of the U.S. Workshop on DNA Banking*. William Brown Center, Missouri Botanical Garden, St. Louis.

O'Loughlin, P.M., M. Mackenzie, **G. Paulay**, and D. VandenSpiegel. 2014. Four new species and a new genus of Antarctic sea cucumbers with taxonomic reviews of *Pseudocnus*, *Cladodactyla*, *Paracucumidae* and *Parathyronidium* (Echinodermata: Holothuroidea: Dendrochirotrida). *Memoirs of Museum Victoria* 72:31-61.

**Papastamatiou, Y.**, D. Grubbs, **J. Imhoff**, S. Gulak, J. Carlson, and **G.H. Burgess**. 2015. A subtropical embayment serves as essential habitat for sub-adults and adults of the critically endangered smalltooth sawfish. *Global Ecology and Conservation* 3:764-775.

Parmentier, B., B. McGill, A. Wilson, J. Regetz, W. Jetz, **R.P. Guralnick**, M.-N. Tuanmu, N. Robinson, and M. Shildhauer. 2014. An assessment of methods and remotely sensed covariates for regional predictions of 1 km daily air temperature. *Remote Sensing* 6(9):8639-8670. DOI:10.3390/rs6098639.

Parmentier, B., B. McGill, A. Wilson, J. Regetz, W. Jetz, **R.P. Guralnick**, M.-N. Tuanmu, and M. Shildhauer. 2015. Using multi-timescale methods and satellite derived land surface temperature for the interpolation of daily maximum air temperature in Oregon. *International Journal of Climatology*. DOI:10.1002/joc.4251.



Peña, C. and **M. Espeland**. 2015. Diversity dynamics in Nymphalidae butterflies: Effect of phylogenetic uncertainty on diversification rate shift estimates. *PLOS ONE* 10(4). DOI:10.1371/journal.pone.0120928.

**Pimiento, C.** and M.A. Balk. 2015. Body-size trends of the extinct giant shark *Carcharocles megalodon*: A deep-time perspective on marine apex predators. *Paleobiology* 41:479-490. DOI:10.1017/pab.2015.16.

**Pimiento, C.** and C.F. Clements. 2014. When did *Carcharocles megalodon* become extinct? A new analysis of the fossil record. *PLOS ONE* 9(10):e111086. DOI:10.1371/journal.pone.0111086.

Pitt, A.L. and **M.A. Nickerson**. 2014. Description and comparison of turtle assemblages and population located in a spring-fed river. *Herpetology Conservation Biology* 9:475-483.

Pomerantz, A.F., M.A. Hoy, and **A.Y. Kawahara**. 2015. Molecular characterization and evolutionary insights into potential sex-determination genes in the western orchard predatory mite. *Journal of Biomolecular Structure and Dynamics* 33(6):1239-1253. DOI:10.1080/07391102.2014.941402.

**Ponce, F.V.**, **J.W. Breinholt**, T. Hossie, J.R. Barber, D.H. Janzen, W. Hallwachs, and **A.Y. Kawahara**. 2014. A molecular phylogeny of *Eumorphia* (Lepidoptera: Sphingidae) and the evolution of anti-predator larval eyespots. *Systematic Entomology* 40(2):401-408. DOI:10.1111/syen.12111.

**Portell, R.W.**, **B.A. Kittle**, and **S.W. Roberts**. 2015. Invertebrate paleontology of Honeymoon Island, Pinellas County, Florida. pp. 24-27. In: B. Carrick, ed. *Honeymoon Island Beach Nourishment Field Trip: Southeastern Geological Society Guidebook No. 64*. Southeastern Geological Society, Tallahassee, Florida.

Pregill, G.K. and **D.W. Steadman**. 2014. The prehistory of reptiles and birds in the Lau Group, Fiji. *Bulletin of the Florida Museum of Natural History* 53:1-25.

Purdy, B.A., K.M. Rohlwing, and **B.J. MacFadden**. 2015. Devil's Den, Florida: Rare earth element analysis indicates contemporaneity of humans and latest Pleistocene fauna. *PaleoAmerica* 1:266-275.

Rada, D.P., **G.H. Burgess**, R. Rosa, and O.B.F. Gadig. 2015. Necrophagy of a nurse shark (*Ginglymostoma cirratum*) by tiger sharks (*Galeocerdo cuvier*). *Universitas Scientiarum* 20(3):313-320.

**Randall, Z.S.** and **L.M. Page**. 2015. On the paraphyly of *Homaloptera* (Teleostei: Balitoridae) and description of a new genus of hillstream loaches from the Western Ghats of India. *Zootaxa* 3926:57-86.

**Randall, Z.S.** and P.A. Riggs. 2015. Revision of the hillstream lizard loaches, genus *Balitoropsis* (Cypriniformes: Balitoridae). *Zootaxa* 3962:206-225.

**Reed, D.L.**, J.M. Allen, M.A. Toups, **B.M. Boyd**, and **M. Ascunce**. 2015. The study of primate evolution from a lousy perspective. pp. 202-215. In: S. Morand, B. Krasnov, and T.J. Littlewood, eds. *Parasite Diversity and Diversification: Evolutionary Ecology Meets Phylogenetics*. Cambridge University Press.



**Rincón, A.F., J.I. Bloch, B.J. MacFadden,** and C.A. Jaramillo. 2015. New early Miocene protoceratids (Mammalia, Artiodactyla) from Panama. *Journal of Vertebrate Paleontology* 35(5):e970688. DOI:10.1080/02724634.2015.970688.

Robertson, T., M. Döring, **R.P. Guralnick**, D. Bloom, K. Braak, J. Otegui, L. Russell, J. Wiczorek, and P. Desmet. 2014. The GBIF integrated publishing toolkit: Facilitating the efficient publishing of biodiversity data on the internet. *PLOS ONE* 9(8):e102623. DOI:10.1371/journal.pone.0102623.

**Robins, C.M.,** R.H.B. Fraaije, **A.A. Klompmaker**, B.W.M. Van Bakel, and J.W.M. Jagt. 2015. New material and redescription of *Gastrosacus wetzleri* von Meyer, 1851 (Decapoda, Anomura, Galatheoidea) from the Late Jurassic of southern Germany. *Neues Jahrbuch für Geologie und Paläontologie Abhandlungen* 275:83–91.

Robinson, N., J. Regetz, and **R.P. Guralnick**. 2014. EARTHENV-DEM90: A nearly global, void-free, multi-scale smooth, 90M digital elevation model from fused ASTER and SRTM. *Journal of Photogrammetry and Remote Sensing* 87:57–67. DOI:10.1016/j.isprsjprs.2013.11.002.

Robinson, N., M.D. Bowers, T. Kadlec, and **R.P. Guralnick**. 2014. Integrating species traits and habitat characteristics into models of butterfly diversity in a fragmented ecosystem. *Ecological Modelling* 281:15–25.

**Rojas, A.,** A. Gracia, and P. Patarroyo. 2015. Brachiopods from off the San Bernardo Archipelago (Colombian Caribbean), with comments on specific synonymies in *Tichosina* Cooper, 1977. *Zootaxa* 3914:055–063.

Sanping, X., **S.R. Manchester**, L. Kenan, Y.-f. Wang, and S. Yang. 2014. *Firmiana* (Malvaceae: terculioideae) fruits from the Upper Miocene of Yunnan, Southwest China. *Geobios* 47:271–279.



Saupe, E.E., J.R. Hendricks, **R.W. Portell**, H.J. Dowsett, A. Haywood, S.J. Hunter, and B.S. Lieberman. 2014. Macroevolutionary consequences of profound climate change on niche evolution in marine mollusks over the past three million years. *Proceedings of the Royal Society B* 281:20141995. DOI:dx.doi.org/10.1098/rspb.2014.1995.

Sehrish, T., V.V. Symonds, **D.E. Soltis, P.S. Soltis**, and J.A. Tate. 2014. Gene silencing via DNA methylation in naturally occurring *Tragopogon miscellus* (Asteraceae) allopolyploids. *BMC Genomics* 15:701.

**Servick, S., C.J. Visger, M.A. Gitzendanner, P.S. Soltis, and D.E. Soltis.** 2015. Population genetic variation, geographic structure, and multiple origins of autopolyploidy in *Galax urceolata*. *American Journal of Botany* 102:973–982.

Sessa, E.B., J.A. Banks, M.S. Barker, J.P. Der, A.M. Duffy, S.W. Graham, M. Hasebe, J. Langdale, F.-W. Li, **D.B. Marchant**, K.M. Pryer, C.J. Rothfels, S.J. Roux, M.L. Salmi, E.M. Sigel, **D.E. Soltis, P.S. Soltis**, D.W. Stevenson, and P.G. Wolf. 2014. Between two fern genomes. *GigaScience* 2014(3):15.

**Sharpe, A.E.,** W. Saturno, and **K.F. Emery.** 2014. Rubbish to ritual. pp. 85–106. In: S.A. McCarty and B. Arbuckle, eds. *Animals and Inequality*. University of Colorado Press.

**Sharpe, A.E.** 2014. A Reexamination of the birds in the central Mexican codices. *Ancient Mesoamerica* 25(2):317–336.

Silcox, M.T., E.J. Sargis, **J.I. Bloch**, D.M. Boyer. 2015. Primate origins and supraordinal relationships: Morphological evidence. pp. 1053–1081. In: W. Henke, H. Rothe, and I. Tattersall, eds. *Handbook of Paleoanthropology*. Springer-Verlag, New York.

**Singer, R.A. and L.M. Page.** 2015. Revision of the zipper loaches, *Acanthocobitis* and *Paracanthocobitis* (Teleostei: Nemacheilidae), with descriptions of five new species. *Copeia* 2015:378–401.

**Slapcinsky, J.** 2014. Hypervariable or hyperdiverse, an independent assessment of the taxonomically confusing land snail genus *Tropidophora* (Pomatidae: Littorinoidea: Caenogastropoda) in Madagascar. *American Malacological Bulletin* 32:259–266.

Smith, T.A., P.J. Cicotto, T.C. Mendelson, and **L.M. Page.** 2014. Dense taxon sampling using AFLPs leads to greater accuracy in phylogeny estimation and classification of darters (Percidae: Etheostomatinae). *Copeia* 2014:257–268.

**Soltis, D.E.** 2014. 12.31: Chromosome data. *Iranian Journal of Botany* 20(2):228–229.

**Soltis, D.E., C.J. Visger, and P.S. Soltis.** 2014. The evolutionary importance of polyploidy, then...and now: Stebbins revisited. *American Journal of Botany* 101:1057–1078.

**Soto-Centeno, J.A. and D.W. Steadman.** 2015. Fossils reject climate change as the cause of extinction of Caribbean bats. *Nature Scientific Reports* 5:7971. DOI:10.1038/srep07971.

**Sourakov, A.** 2015. Temperature-dependent phenotypic plasticity in wing pattern of *Utetheisa ornatrix bella* (Erebidae, Arctiinae). *Tropical Lepidoptera Research* 25(1):33–45.

**Sourakov, A.** 2015. You are what you eat: Native versus exotic *Crotalaria* species (Fabaceae) as host plants of the Ornate Bella Moth, *Utetheisa ornatrix* (Lepidoptera: Erebidae: Arctiinae). *Journal of Natural History* 49(39–40):2397–2415. DOI:10.1080/00222933.2015.1006700.

**Sourakov, A. and A.D. Warren.** 2015. Irving Finkelstein's collection finds a new home at the McGuire Center. *News of the Lepidopterists' Society* 57(1):42–43.

**Steadman, D.W. and J. Franklin.** 2015. Changes in a West Indian bird community since the late Pleistocene. *Journal of Biogeography* 42:426–438.

**Steadman, D.W. and C.A. Hastorf.** 2015. Prehistoric birds from the Lake Titicaca region, Bolivia: Long-term continuity and change in an Andean bird community. *Wilson Journal of Ornithology* 127:359–375.

**Steadman, D.W., J.A. Oswald, and A.D. Rincon.** 2015. The diversity and biogeography of late Pleistocene birds from the lowland Neotropics. *Quaternary Research* 83:555–564. DOI:org/10.1016/j.yqres.2015.02.001.

Straub, S., M. Moore, **P.S. Soltis, D.E. Soltis**, A. Liston, and T. Livshultz. 2014. Phylogenetic signal detection from an ancient rapid radiation: Effects of phylogenetic noise reduction, long-branch attraction, and model selection in crown clade Apocynaceae. *Molecular Phylogenetics and Evolution* 80:169–185. DOI:10.1016/j.ympev.2014.07.020.



Stuessy, T.F., D.J. Crawford, **D.E. Soltis, and P.S. Soltis.** 2014. *Plant Systematics: The Origin, Interpretation, and Ordering of Plant Biodiversity*. A.R.G. Gantner Verlag K.G. FL-9491, Ruggell.

Sukhorukov, A.P., **E.V. Mavrodiev**, M. Struwig, M.V. Nilova, K.K. Dzhaliilova, S.A. Balandin, A. Erst, and A.A. Krinitsyna. 2015. One-seeded fruits in the core Caryophyllales: Their origin and structural diversity. *PLOS ONE* 10(2):e0117974–e0117974. DOI:10.1371/journal.pone.0117974.

Sun, M., **D.E. Soltis, P.S. Soltis**, X. Zhu, J.G. Burleigh, and Z. Chen. 2014. Exploring deep incongruence in the angiosperms: An example involving the COM clade. *Molecular Phylogenetics and Evolution* 83:156–166.

Tian, S., S.-Q. Lei, W. Hu, L.-L. Deng, Q. Meng, **D.E. Soltis**, **P.S. Soltis**, D.-M. Fan, and Z.-Y. Zhong. 2015. Repeated range expansions and inter-/postglacial recolonization routes of *Sargentodoxa cuneata* (Oliv.) Rehd. et Wils. (Lardizabalaceae) in subtropical China revealed by chloroplast phylogeography. *Molecular Phylogenetics and Evolution* 85:238-246.

Tropek, R., D. Lestina, P. Jansta, O. Brattström, **M. Espeland**, and S. Sáfián. 2015. First records of *Hypolycaena anara* Larsen, 1986 from Cameroon (Lepidoptera: Lycaenidae). *SHILAP Revista de lepidopterología* 43(170):235-239.

van der Meij, S.E.T., M.L. Berumen, and **G. Paulay**. 2015. A new species of *Fizesereneia* (Brachyura: Cryptochiridae) from the Red Sea. *Zootaxa* 3931:585-595.

Vasquez, S. and **C. Pimiento**. 2014. Sharks and rays from the Tonosi Formation (Eocene of Panamá). *Revista Geológica de América Central* 51:165-169. DOI:10.15517/rgac.v51i1.16911.

Velez-Juarbe, J., **A.R. Wood**, C. De Gracia, and **A.J.W. Hendy**. 2015. Evolutionary patterns among living and fossil Kogiid Sperm whales: Evidence from the Neogene of Central America. *PLOS ONE* 10(4):e0123909. DOI:10.1371/journal.pone.0123909.



Veras, D., F. Hazin, I. Branco, M. Tolotti, and **G.H. Burgess**. 2014. Reproductive biology of the pelagic stingray *Pteroplatytrygon violacea* (Bonaparte 1832), in the equatorial and southwestern Atlantic Ocean. *Marine and Freshwater Research* 65:1035-1044.

Verissimo, A., C. Cotton, R. Bush, J. Guallart, J. Gailbraith, and **G.H. Burgess**. 2014. Species diversity of the deep-water gulper sharks (Squaliformes: Centrophoridae: *Centrophorus*) in North Atlantic waters - current status and taxonomic issues. *Zoological Journal of the Linnean Society* 172:803-830.



Walden H., **J. Slapcinsky**, Y. Qvarnstrom, A. McIntosh, H. Bishop, and B. Rosseland. 2015. *Angiostrongylus cantonensis* in introduced gastropods in southern Florida. *Journal of Parasitology* 101(2):156-159.

**Wallis, N.J.** 2015. The living past: Itineraries of "Swift Creek" images through wood, earthenware, and ether. pp. 201-219. In: R. Joyce and S. Gillespie, eds. *Things in Motion: Object Itineraries in Archaeological Practice*. School for Advanced Research Press, Santa Fe, New Mexico.

**Wallis, N.J.** and M.E. Blessing. 2015. Big feasts and small scale foragers: Pit features as feast events in the American southeast. *Journal of Anthropological Archaeology* 39:1-18.

**Wallis, N.J.** and M.E. Blessing. 2015. Ritual prescriptions for feasting: A sacred bundle of animal remains in Mississippi Period Florida. *Cambridge Archaeological Journal* 25(1):79-98.

**Wallis, N.J.**, **A.S. Cordell**, and J.B. Stoltman. 2014. Foundations of the Cades Pond Culture in North-Central Florida: The River Styx Site (8AL458). *Southeastern Archaeology* 33:168-188.

Walls, R., **R.P. Guralnick**, J. Deck, J.J. Parnell, P. Rocca-Serra, J. Wieczorek, and J. Zheng. 2014. Advancing practical applications of biodiversity ontologies. *Standards in Genomic Science* 9:17. DOI:10.1186/1944-3277-9-17.

**Warren, A.D.** and J.V. Calhoun. 2015. A new name for alpine populations of *Hesperia colorado* (Scudder) (Hesperiidae, Hesperinae) in Colorado. *Journal of the Lepidopterists' Society* 69(1):39-49.

**Warren, A.D.**, D.R. Dolibaina, and C. Hernández-Mejía. 2015. A new species of *Cogia* from Oaxaca, Mexico (Lepidoptera: Hesperidae: Eudaminae). *Zootaxa* 3941(2):239-246.

Wickett, N.J., S. Mirarab, N. Nguyen, T. Warnow, E. Carpenter, N. Matasci, S. Ayyampalayam, M. Barker, J.G. Burleigh, **M.A. Gitzendanner**, **B.R. Ruhfel**, E. Wafula, J. Der, S.W. Graham, S. Mathews, M. Melkonian, **D.E. Soltis**, **P.S. Soltis**, C. Rothfels, L. Pokorný, J. Shaw, L. DeGironimo, D. Stevenson, B. Surek, J.C. Villarreal, B. Roure, H. Philippe, C.W. dePamphilis, T. Chen, M. Deyholos, J. Wang, Y. Zhang, Z. Tian, Z. Yan, X. Wu, X. Sun, G. Ka-Shu Wong, and J. Leebens-Mack. 2014. A phylotranscriptomics analysis of the origin and early diversification of land plants. *Proceedings National Academy of Sciences U.S.A.* 111:E4859-E4868.

Wittmer, J.M., T.A. Dexter, A. Amorosi, D. Scarponi, and **M. Kowalewski**. 2014. Quantitative bathymetric models for Late Quaternary transgressive-regressive cycles of the Po Plain, Italy. *Journal of Geology* 122:649-670.

Wolf, P.G., E.B. Sessa, **D.B. Marchant**, F.W. Li, C.J. Rothfels, E.M. Sigel, **M.A. Gitzendanner**, **C.J. Visger**, J.A. Banks, **D.E. Soltis**, **P.S. Soltis**, K.M. Pryer, and J.P. Der. 2015. An exploration into fern genome space. *Genome Biology and Evolution* 7(9):2533-2544.

**Wood, A.R.** and N.M. Ridgwell. 2015. The first Central American chalicotheres (Mammalia, Perissodactyla) and the paleobiogeographic implications for small-bodied schizotheriines. *Journal of Vertebrate Paleontology* 35(3):e923893. DOI:10.1080/02724634.2014.923893.

Xiaoyan, L., **S.R. Manchester**, and J. Jianhua. 2014. *Alnus* subgenus *Alnus* in the Eocene of western North America based on leaves, associated catkins, pollen, and fruits. *American Journal of Botany* 101(11):1925-1943.

Yang, Y., M.J. Moore, S.F. Brockington, **D.E. Soltis**, G. Ka-Shu Wong, E. Carpenter, Y. Zhang, L. Chen, Z. Yan, Y. Xie, R.F. Sage, S. Covshoff, J.M. Hibberd, M.N. Nelson, and S.A. Smith. 2015. Dissecting molecular evolution in the highly diverse plant clade Caryophyllales using transcriptome sequencing. *Molecular Biology and Evolution* 32(8):2001-2014.

Yoo, M.-J., X. Liu, J.C. Pires, **P.S. Soltis**, and **D.E. Soltis**. 2014. Non-additive gene expression in polyploids. *Annual Review of Genetic* 48:485-517.

Yuling, N., **S.R. Manchester**, S. Chunlin, and Z. Shuqin. 2015. The Middle Jurassic palynology of the Daohugou area, Inner Mongolia, China, and its implications for palaeobiology and palaeogeography. *Palynology* 38(2):270-287. DOI:10.1080/01916122.2014.961664.





## Some of Our Favorites

### Front and Back cover:

This Thomas Jefferys map of St. Augustine identifies the city as the capital of East Florida.

Though most of the gold and silver mined in Central and South America was sent to Spain, some did find its way into St. Augustine in the form of coins and jewelry. Divers recovered these gold and silver coins from a shipwreck off the Florida coast. Photo by Gifford Waters

### Page 2

Scientists excavated this 18<sup>th</sup>-century glass seal from a wine bottle in St. Augustine. Photo by Julie Waters

### Page 3

Museum Director Doug Jones is pictured in the *First Colony: Our Spanish Origins* exhibit in front of a painting of the First Thanksgiving held in St. Augustine, Florida, in 1565. Photo by Kristen Grace

### Page 4

This small amulet in the shape of a clenched fist excavated from the Fountain of Youth Archaeological Park is the earliest-known figa (ca. 1565-1570) in the United States. Photo by Kristen Grace

Religious objects like this Late 16<sup>th</sup>-century jet devotional veneration of St. Catherine of Alexandria were important to devout Catholic St. Augustine colonists. Florida Museum of Natural History photo

Researchers found this 18<sup>th</sup>-century women's heart-shaped amulet made of glass in St. Augustine. Photo by Gifford Waters

### Page 6

A Bolifamba Reed Frog, *Hyperolius bolifambae*, from southern Cameroon. Photo by Daniel Portik

Museum scientists Pamela Soltis, from left, Rob Guralnick and Nico Cellinese received grants for various projects in informatics, the new frontier in museum biodiversity studies. Photos by Kristen Grace, Bernard Brzezinski and Jeff Gage

### Page 7

Molecular Lab Collections Manager Matt Gitzendanner and Distinguished Professor Doug Soltis are pictured in front of a graphical representation of the first draft of the Tree of Life in the University of Florida Marston Science Library. Museum and other UF scientists published the draft, including all 2.3 million named species and their connection to every other named organism on the planet, in September in the Proceedings of the National Academy of Sciences. Photo by Kristen Grace

### Page 8

This bone bead from Key Marco in Collier County, circa 700-1,500, is part of the Museum's South Florida Collection. Photo by Jeff Gage

Museum scientists used these tiny ankle bones to determine the earliest-known primate *Purgatorius* was a tree-dwelling, squirrel-like creature that weighed no more than a deck of playing cards. Photo by Stephen Chester

This skull of a land-roaming Cuban crocodile is one of many preserved fossils found in the Sawmill Sink on Great Abaco Island. Photo courtesy of Nancy Albury and The Antiquities, Monuments and Museums Corporation

### Page 9

A diver excavates the skull of a crocodile from the deep saltwater layer of the sinkhole on Great Abaco Island. Photo by Curt Bowen

### Page 10

This piece of Native American pottery, known as a Lamar-like Bold Incised, was found in St. Augustine along with jewelry and weaponry. Photo by Julie Waters

Kitty Emery received a UF Research Foundation Professorship in recognition of her distinguished record of research and scholarship.

Bruce MacFadden was elected as a Fellow of The American Association for the Advancement of Science.

Jacqueline Miller was elected as an Honorary Member of the Entomological Society of America.

Larry Page received the 2014 Robert K. Johnson Award for Excellence in Service from the American Society of Ichthyologists and Herpetologists. Florida Museum of Natural History photos

### Page 11

This fossil twig with attached winged fruits from an extinct member of the elm family, *Cedrelospermum nervosum*, is part of the Museum's Paleobotany collection. Photo by Steven Manchester

Scientists collected these 4,000-year-old hummingbird fossils in an above-ground cave in the Turks and Caicos Islands. Photo by Mary E. Warrick

These microfuge tubes containing DNA samples are used in plant diversity studies. Photo by Eric Zamora

Researchers found this majolica Abó Polychrome plate in St. Augustine. Florida Museum of Natural History photo

### Page 12

Luna moth, *Actias luna*. Photo by Geena Hill

Hawkmoth species belonging to the subtribe *choerocampine*. Photo by Pablo Padron

### Page 13

The journal *Science* published a cover story featuring a landmark insect study involving researchers from 10 countries, including Assistant Curator of Lepidoptera Akito Kawahara. Photo by Kristen Grace

### Page 14

Participants in a Panama Canal Project PIRE meeting use a 3-D scanner to capture an image of a fossil horse tooth. Photo by Jeff Gage

The digitization of museum specimens stored in liquids and cataloged online make them more accessible to the public. Photo by Kristen Grace

French Angelfish, *Pomacanthus paru*. Photo by Kristen Grace

Ichthyology Collections Manager Rob Robins and Research Associate Jim Williams survey potential habitat to collect fish from the Indian River in Brevard County, Florida. Photo by Zachary S. Randall

### Page 15

Florida Museum of Natural History research technician Zachary Randall won first place in the 2014 Elegance of Science contest for his cleared-and-stained image of a Smooth Butterfly Ray, *Gymnura micrura*.

Largemouth Bass, *Micropterus salmoides*.

Preserved skull of a Curly-tailed Lizard, *Leiocephalus carinatus*. All photos by Zachary S. Randall

### Page 16

This nearly complete, 17<sup>th</sup>-century, Puebla polychrome majolica plate made in Mexico was discovered in St. Augustine. Photo by Julie Waters

### Page 17

Museum scientists excavated this 16<sup>th</sup>-century olive jar from the Fountain of Youth Archaeological Park site. Photo by Jeff Gage

Researchers recovered this 18<sup>th</sup>-century glass wine bottle in St. Augustine. Photo by Julie Waters

Divers recovered this 16<sup>th</sup>-century ceramic anafe, or charcoal grill, from a Spanish shipwreck off the Florida coast. Photo by Gifford Waters

### Page 18

Scouts search for fossils during the *She's a Scientist* public program. Photo by Jeff Gage



**Page 19**, Clockwise from top left:

Archaeology Workshop participants use wooden paddles to make stamped pottery patterns. Photo by Jeff Gage

Museum Educator Jeanne Chamberlin shows Homeshool Day participants animal skeletons. Photo by Kristen Grace

Four-year Junior Volunteer Emily Tseung mans the Northwest Florida Discovery Cart. Photo by Kristen Grace

Scouts agitate DNA samples during the *She's a Scientist* public program. Photo by Jeff Gage

Homeschool Day attendees use paleontology tools to look for fossils in clay. Photo by Kristen Grace

The *Our Changing Climate: Past and Present* exhibit explored climate change's potential impact on Florida. Florida Museum photo

Museum educators Neha Guarente, Barb Ornstein and Jeanne Chamberlin lead an after-school Museum Club program at Cone Park Library. Photo by Jeff Gage

Junior Volunteer Sarah Kereston was one of six Super Seniors recognized for serving all four years of high school. Photo by Amy Hester

**Pages 20-21**

The Museum hosted several featured exhibits, including A T. rex *Named Sue*, *Wolf to Woof: The Story of Dogs*, The Florida Museum-produced *Megalodon: Largest Shark that Ever Lived* and *Sharkabet: A Sea of Sharks from A to Z*.

**Page 22**

This iron meteorite from Camp del Cielo, Argentina, was donated to the Museum. The specimen is about 17 inches long by 14 inches wide and weighs nearly 200 pounds. Photo by Sean Roberts

Sheila Jones, Wanda Denny, Museum Exhibits and Public Programs Director Darcie MacMahon and Museum Docent Bonnie Ogle enjoy *Passport to Around the World in 80 Days*. Photo by Kristen Grace

**Page 23**

Top center: Museum Director Doug Jones and wife Sheila prepare to welcome guests for the *Passport to Around the World in 80 Days* fundraiser. Photo by Kristen Grace

Center: Donors Phil and Barbara Emmer, back row, third and fifth from left, sponsored a Museum visit for a group of students in the Reichert House program to see the A T. rex *Named Sue* and *Butterfly Rainforest* exhibits. Photo by Jeff Gage

Bottom right: McGuire Center Founding Director Dr. Thomas Emmel, from left, Drs. Bill McGuire, Lincoln Brower, Museum Director Doug Jones and McGuire Center Director Jaret Daniels celebrate during a reception in recognition of the McGuire Center for Lepidoptera and Biodiversity 10th anniversary. Photo by Kristen Grace

**Page 24**

This small (about 3 x 1.5 centimeters) silver plaquette was discovered at the Fountain of Youth site, but researchers believe it was made by Florida natives rather than Spaniards. Photo by Gifford Waters

Historical Archaeology Distinguished Research Curator Emerita Kathleen Deagan, right, shows the Fraser family maps from the 1950s excavations in the Fountain of Youth Archaeological Park in St. Augustine, which the family owns and operates. Pictured are Elaine Fraser, from left, Ian Fraser, Elizabeth Binninger, Bryan Fraser, John W. Fraser, Suzanne Fraser and John W. Fraser II. Photo by Jeff Gage

**Page 25**

Collections and Research Volunteer of the Year Gerald Kidder processes clay samples in the Ceramic Technology Lab. Photo by Neill Wallis

Exhibits and Public Programs Volunteer of the Year Russell Henderson shares his knowledge with two young visitors. Photo by Kristen Grace

Crystal Coleman received the Museum's first Student Volunteer of the Year Award. Photo by Kristen Grace

Junior Volunteers working with McGuire Center Collections Coordinator Andrei Sourakov prepare Lepidoptera specimens. Photo by Kristen Grace

**Page 26**

This 18<sup>th</sup>-century pewter syringe and bone domino were found in St. Augustine. Florida Museum photos

**Page 27**

This wooden chocolate frother found in St. Augustine reflects one of the many American food traditions early Spanish colonists adopted, including Mexican chocolate drinks.

These brass doublet buttons and thimble were excavated in St. Augustine. Florida Museum of Natural History photos

**Page 28**

These 16<sup>th</sup>-century chevron, fluted red opaque and blue glass trade beads were discovered at the site of the 1565 initial settlement of St. Augustine. Florida Museum of Natural History photo

**Page 29**

This 18<sup>th</sup>-century ring found in St. Augustine contains copper alloy, paste glass stone and gold, and was worn as a sign of European status.

Horn amulets like this one found in St. Augustine were worn by children in the 18<sup>th</sup> century and believed to provide protection from rabies and lightning. Florida Museum of Natural History photos

**Page 30**

While most of the gold and silver mined in Central and South America went back to Spain, some did find its way into St. Augustine in the form of coins and jewelry. This toothpick was recovered from a shipwreck off the Florida coast. Photo by Gifford Waters

**Page 31**

This jaw harp and iron key were excavated in St. Augustine. Florida Museum of Natural History photos

**Page 32**

This Spanish redware chamber pot found in downtown St. Augustine is from a 16<sup>th</sup>-century deposit of the colonial city. It is believed to be the oldest chamber pot found in what is now the United States.

This small (4-5 inches long) 18<sup>th</sup>-century glass medicine vial was found in St. Augustine. Photos by Gifford Waters

**Page 33**

Sawmill Sink on Great Abaco Island in the Bahamas. Photo by Curt Bowen

**Florida Museum of Natural History**

Marketing and Public Relations  
PO Box 112710  
Gainesville, FL 32611

**Editor**

Paul Ramey, APR  
pramey@flmnh.ufl.edu

**Contributing Editors**

David Reed  
Beverly Sensbach  
Griffin Sheehy

**Designer**

Hollis Wooley

**Printing**

StorterChilds Printing Co.





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