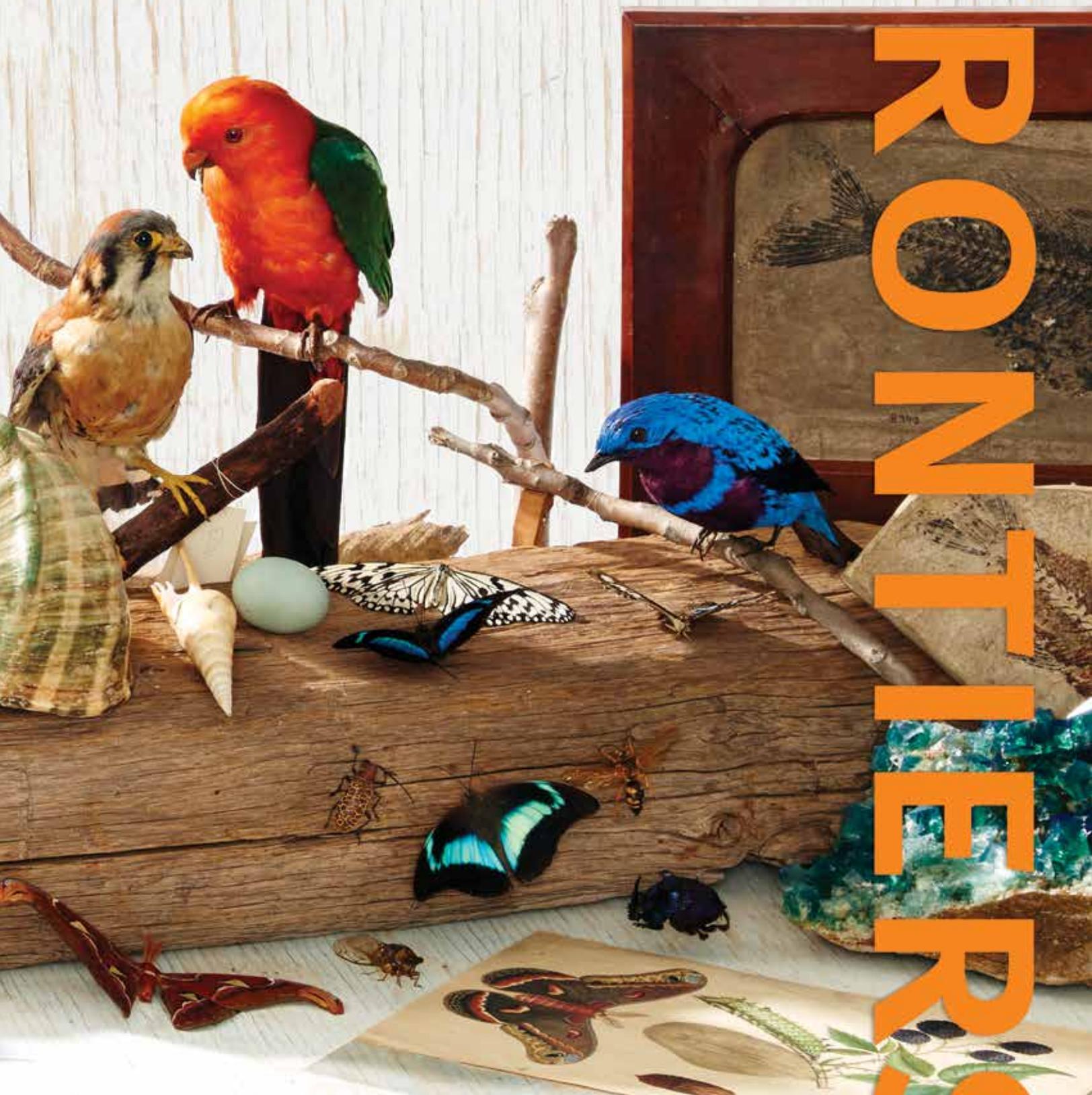


ACADEMY

INSIDE:
Where We Stand

FRONTIERS



The member-magazine of the
Academy of Natural Sciences
of Drexel University

FALL 2017

ACADEMY GREETINGS

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Academy Frontiers is a publication of the Academy of Natural Sciences of Drexel University, 1900 Benjamin Franklin Parkway, Philadelphia, PA 19103.

Please send questions or comments about *Academy Frontiers* to ans_editor@drexel.edu.

Academy membership includes a subscription to *Academy Frontiers*, free general admission to the museum, discounts in the Academy Shop and Academy Café, invitations to special events and exhibit openings, and much more.

For information about Academy membership, call 215-299-1022 or visit ansp.org/membership.

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ON THE COVER: The Academy's collection of 18 million specimens serves as a treasured resource for scientists around the world. Photo by Trevor Dixon for ANS



Jonathan Friedl

Dear Friends,

The Academy of Natural Sciences was founded in 1812 “for the encouragement and cultivation of the sciences, and the advancement of useful learning.” For more than two centuries, we have placed special emphasis on the word “useful,” continuously redefining this directive through research and education that reflects the needs of the times. Today we know that our earth is warming, human activities threaten the health and availability of our water supplies, biodiversity faces significant threats, and the established scientific evidence that validates evolution and climate change is under attack. It is more important than ever to deliver verified science to the public to help citizens, educators, and policymakers make informed decisions about issues impacting our everyday lives.

This spring, we put pen to paper to elucidate our core beliefs about significant issues affecting our planet. In this issue of *Academy Frontiers*, you will see statements noting where we stand on four critical issues that fuel our research and education programs: climate change, water, evolution, and biodiversity and extinction. We believe the success of our nation and the future of our planet depend on the prioritization and advancement of scientific research and education. The Academy is committed to building knowledge, sparking curiosity, and inspiring solutions to ensure a healthy future. We hope you will join us in making a difference.

As the holiday season approaches, please consider supporting the Academy's efforts to conduct and share relevant research into today's most important questions in biodiversity and environmental science. You can make a difference for someone by introducing them to our science through a gift membership. You can also make a gift to the Academy's Annual Fund in your friend or family member's honor. The Annual Fund provides support for research, collections care, education, and exhibits, and your contributions are vital to the Academy's continued success. Thank you for your generosity.

A handwritten signature in black ink, appearing to read "Peter Austen". The signature is fluid and cursive, written over a white background.

Peter A. Austen
Chair, Board of Trustees

FOUNDED IN 1812, the Academy of Natural Sciences of Drexel University is a leading natural history museum dedicated to advancing research, education, and public engagement in biodiversity and environmental science.

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Amanda Chan/ANS

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September 30, 2017–January 15, 2018

Special Exhibits Gallery

Tiny Titans: Dinosaur Eggs and Babies

Take a rare and exciting look at dinosaurs through their eggs, nests, and embryos. *Tiny Titans: Dinosaur Eggs and Babies* presents an astonishing array of authentic dinosaur eggs and nests collected from around the world, including examples from each of the major plant- and meat-eating dinosaur groups. Visitors can touch dinosaur fossils, play paleontologist and dig for dinosaur eggs, examine real dinosaur embryo skin and eggshells under magnification, get up close to a *Protoceratops* family, and so much more.



February 3–May 6, 2018 | Special Exhibits Gallery

CROCS

ANCIENT PREDATORS IN A MODERN WORLD

Come face-to-snout with live crocodilians, a group of reptiles that has evolved and thrived for 200 million years thanks to brute strength, keen senses, and murderous instincts. Today's crocs range from diminutive forest dwellers to monstrous creatures that eat wildebeests, buffaloes, and occasionally people. Their ancestors were the galloping land predators, jumping insect eaters, pug-nosed herbivores, and ocean-going filter-feeders that

haunted our waters and our dreams. Check out live species, including a Siamese crocodile and Albino American alligator, and peek into a real living American alligator nest. Learn to speak croc in under five minutes, test your strength against a croc's bite, view skulls, make water dance, and create a 3-D animation of a long-extinct croc. Get the facts on croc attacks, and understand how humans and crocs can coexist today and in the future.



May 26, 2018–January 21, 2019

Special Exhibits Gallery

What if the ant crawling on your counter, the spider in your doorway, and the butterfly in your garden were the size of your car or larger? What would they look like? What bizarre physical characteristics would you notice? And what mind-boggling behaviors would you observe? Find out when you come face-to-feet with nearly 20 massive, colorful, moving bugs! From a fluttering oversized monarch butterfly and a fluffy tri-colored bumblebee to a gigantic Madagascar hissing cockroach and a blood-sucking bed bug, these towering animatronics tell a rarely seen story of the behaviors and intricacies of extreme bugs. Get a bug's-eye view of the world, explore critter calls, dig for ancient arthropods, and play an Xtreme bug facts game. Each day, meet a live critter during bug encounters, and find out what makes these animals so incredible.

Chelsea Smith/ANS



Alison Minerovic: Diatom Herbarium Collection Manager

They're invisible to the naked eye and lie at the bottom of the food chain. But they are found in every body of water and can tell scientists a lot about streams, rivers, and oceans.

They are diatoms—single-celled organisms, or algae. Known for important yet subtle differences in structure, diatoms are valuable resources to scientists who assess water quality.

The Academy's Diatom Herbarium, first established in the late 1930s and utilized for environmental assessments by Dr. Ruth Patrick, is a premier resource for researchers around the world. With nearly 250,000 slides, each containing tens of thousands of diatoms, the collection is the second largest and one of the oldest of its kind in the world. Academy diatomists maintain an online database which makes type-rich and geographically diverse data available to any researcher. (A type is a specimen on which the description of a new species is based.)

Eager to learn more about the collection, what makes diatoms stand out in a natural history museum, and how diatoms help solve real-world problems, we spoke with Collection Manager Alison Minerovic.

WHEN DID YOU FIRST REALIZE YOUR INTEREST IN SCIENCE? I was about 4 or 5 years old. I grew up playing in the creek behind my house. I also used to play in the mud.

WHY DID YOU DECIDE TO CONCENTRATE ON DIATOMS? I got an internship with a consulting firm that specialized in water quality monitoring and that used diatoms as water quality indicators. Before that, I'd never even heard of them.

WHAT ARE DIATOMS, AND WHY ARE THEY IMPORTANT? Diatoms are a type of algae. What differentiates diatoms from other types of algae is that they are single-celled organisms contained in glass shells called frustules. They are the base of the food web for aquatic organisms, photosynthetic, can grow anywhere there's a little bit of water, and serve as really good indicators of the health of a water body. Algae, including diatoms, produce 20 to 25 percent of the world's oxygen—more than land plants!

HOW IS SEEING DIATOMS DIFFERENT FROM SEEING THEM IN A TEXTBOOK?

You can't really appreciate the 3-D structure of a diatom or understand what the scientific terminology means when you're just reading about them. To fully appreciate the complex structure of diatoms, you need to examine them with an electron microscope.

WHAT DO YOU DO EVERY DAY AS COLLECTION MANAGER OF THE DIATOM HERBARIUM? I'm responsible for cataloguing new specimens, diatom slides, and diatom literature; loaning out specimens; keeping detailed records of the herbarium's material; and digitizing the collection to disseminate information to fellow scientists worldwide.

WHY IS IT IMPORTANT TO PUT IMAGES AND DATA ABOUT DIATOMS ONLINE? We are making important information more accessible to taxonomists and researchers around the world who might not be able to come to Philadelphia to view the material in person.

HOW IS THE COLLECTION USEFUL IN HELPING SOLVE REAL-WORLD PROBLEMS? It provides taxonomic descriptions of diatoms that can be used to make assumptions or hypotheses about water quality. Without these taxonomic descriptions, carrying out applied research would be impossible.

In addition to "type" specimens that help aid in identification of individual species, our collection is made up of samples from all over the world with collection dates spanning over 100 years. Each sample is really an entire population of diatoms. We can compare older samples to new ones to determine changes in water quality, and we can better understand the ecological and geographical range of individual species.

WHAT DO YOU HOPE TO ACCOMPLISH AS THE ACADEMY'S DIATOM HERBARIUM COLLECTION MANAGER? I'm looking forward to working on longer, bigger projects, making information about the herbarium more readily available, and learning more about the other collections, as well as the history behind the Academy.

~Christine Sellers

*To support diatom research and collections, please contact
Monica Cawvey Gallagher, vice president of
institutional advancement, at gallagher@ansp.org.*

A Parting Gift

When retiring from most places, you can expect a farewell lunch, some trinkets to remember the office by, and even maybe a toast.

It's a little different at the Academy of Natural Sciences of Drexel University, though. Along with your goodbye speeches, you might also get a fish.

George W. Gephart, Jr. is now the namesake for the latest catfish to be named by the Academy's ichthyologists, *Trachydoras gepharti*.

"Naming the new species after George was an easy decision," says Mark Sabaj, PhD, interim curator of ichthyology at the Academy. "It took us almost two decades to describe this new species and, with tongue in cheek, you might say it's because we did not have a person to properly name it for—until now."

"This is perhaps the most special and enduring honor I could receive, thanks to Mark Sabaj, the Academy, and Carl Linnaeus," an appreciative Gephart says. "A beautiful exclamation point to my years with the Academy."

Gephart, who is a birder, says he's always been "fascinated by the people and stories behind the common names" of the birds he scopes out, such as (Thomas) Say's Phoebe, (John) Bachman's Warbler, (John James) Audubon's Oriole.

"Now we have Gephart's hard-nosed thorny catfish," he says. "Some in my family will think that I'm type-cast for this name!"

Sabaj has named 31 species over the years, including a catfish for an Academy mailroom employee and another for his daughter. Now, he's named one for a boss who inspired him.

"George's support of collections-based research at the Academy helped motivate us," Sabaj says.

Sabaj actually found the tiny fish with oversized eyes for the first time amid the Academy's collections all the way back in 1999 during a weeklong visit.

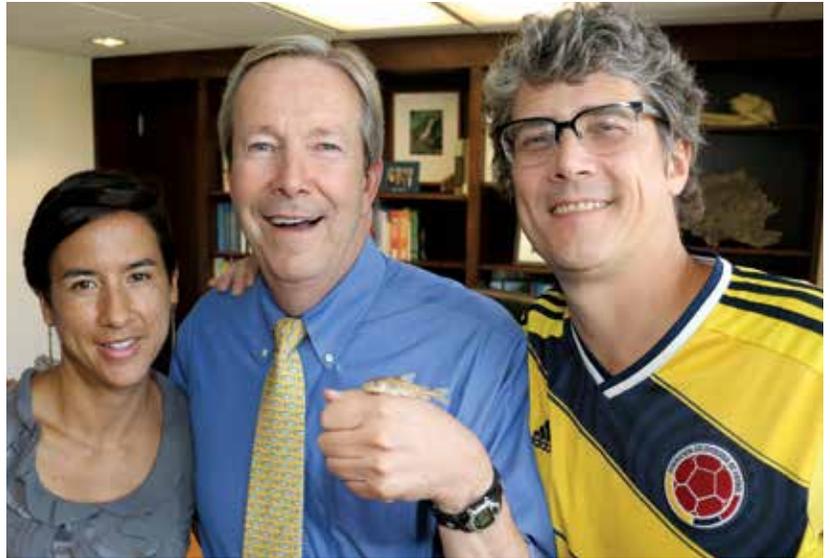
"As a graduate student working on my doctoral dissertation at the University of Illinois, I applied for support from the James Böhlke (longtime curator of fishes at the Academy)

Memorial Fund to visit," Sabaj explained.

"For my thesis, I studied catfishes in the family Doradidae, thorny catfishes, and the Academy has the most important collection of doradids in the U.S."

Sabaj was "immediately blown away" by what he saw in the collection. He even slept on a cot in the museum's offices to maximize his time there.

What jumped out at Sabaj and set off nearly two decades of work was a large lot of 312 small doradids that he sorted through. Most didn't even measure 50 millimeters long, but it became apparent that the lot didn't just contain a single species, but two. One already had a name, Sabaj believed:



John Hutelmeyer/ANS

Trachydoras microstomus. But there was another, it seemed, with unusually bushy chin whiskers. This fish appeared to be new.

Sabaj returned to the Academy as collection manager of fishes some years later and successfully defended his thesis in 2002. But it took four more investigations into the fish, with help from Mariangeles Arce Hernandez, who started as a student visitor and eventually became interim collection manager of fishes, to finally name *Trachydoras gepharti* this year, amid Gephart's retirement. While *gepharti* was easy to identify, it was the clarification of five other already named species of *Trachydoras* that slowed the process down.

In life, *Trachydoras gepharti* hails from the lowlands of South America's big river basins, such as the Amazon and Orinoco. Described as being shaped like a torpedo, it has a relatively large head with extremely large, oval-shaped eyes and a somewhat small mouth. It is often found along sandy beaches in large rivers and is specialized for vacuuming up midge larvae.

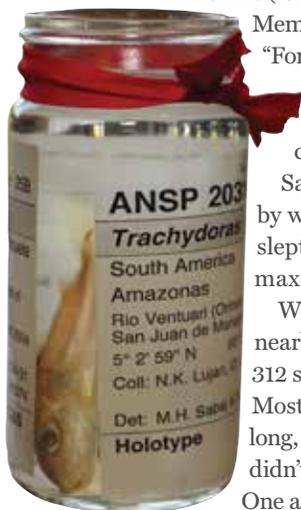
With a plethora of samples collected from those beaches and the nearby waters, Sabaj has decided to spread the wealth, sending Gephart's namesake fish to enrich other collections.

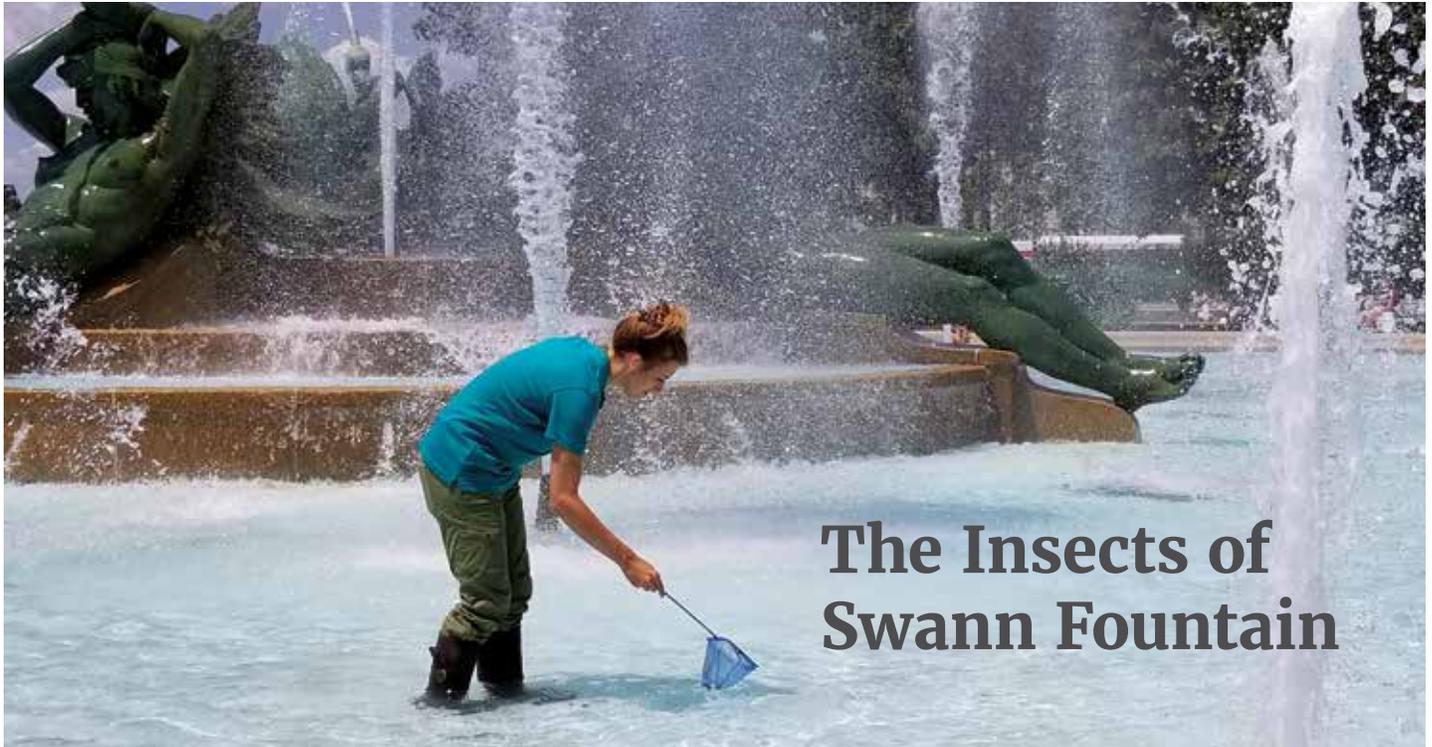
"We have a large number of specimens deposited at the Academy, so we decided to distribute paratypes to other institutions far and wide," Sabaj says. "Paratypes have a special status as specimens that were studied by the authors of the new species and explicitly designated as 'copies' of the holotype—the one 'true' specimen."

At 43 institutions around the world, on every continent, 176 paratypes will be spread out. That includes sending a few to the Yale Peabody Museum of Natural History, since Yale is Gephart's alma mater.

"So, should George and his wife, Elizabeth (Pooh), need an excuse to travel the world, visiting museums that curate his namesake might suffice," Sabaj says, adding, "And the holotype will permanently reside at the Academy of Natural Sciences, a place where George will always be welcome."

A full report on the fish is available in *The Proceedings of the Academy of Natural Sciences*. —Frank Otto





Carolyn Belardo/ANS

The Insects of Swann Fountain

Three nudes recline, flapping swans and splashing fish behind them shooting powerful jets of water up and over their heads. The iconic Swann Fountain at Logan Square in front of the Academy is a major tourist draw that also reels in a fair number of locals looking to cool off in the summer heat.

But it's the flying insects that get captured in the fountain's spray and sucked down into the expansive pool below that command the attention of entomologist Isabelle Betancourt.

One summer day she donned knee-high rain boots, grabbed a fine-mesh net, tucked a vial of ethanol into her back pocket, and stepped gingerly into the fountain. Then she waded slowly, methodically in a circle around Alexander Stirling Calder's sculptures in search of floating insects. And there were a lot of them.

June beetles, scarab beetles, tortoise beetles, ladybugs, dragonflies, fireflies, ants. At the end of her second rotation around the fountain, Betancourt and Drexel University sophomore Augustus Madden, who is working with her, had collected more than 100 bugs.

They dropped these into a vial with preservatives to take back to the Academy's Entomology Collection, where they will be sorted, identified, and stored along with the other 3.5 million insect specimens dating back to the institution's founding in 1812.

This is the third year for the Swann Fountain Insect Survey that Betancourt, a curatorial assistant of entomology, leads and plans to continue indefinitely.

"Insects are intimately intertwined with our environment. They serve important ecological roles, and they are great bioindicators," Betancourt says. "The presence or absence of certain insect species indicates changes in the surrounding environment.

"The insect samples we collect at Swann Fountain can tell us more about what insects are flying through Philadelphia and how

the Philadelphia environment is changing over time. Along with answering the question about what insects are hanging out in Center City Philadelphia, the project will also show when they are here," she says.

Each insect species has a unique relationship with the environment, and so its presence sends a message.

Comparing the specimens and data year after year can reveal changes in the composition of insect species and give researchers insight into shifts in the climate and the conditions of the surrounding environment. For example, certain insects are more pollution sensitive and others are more pollution tolerant.

"We are learning when to expect certain species to show up in the fountain at a certain time of year," Betancourt says. "In future samples (whether they are 5, 10, 25, or 50 years from now), an insect type that doesn't show up or shows up in an unusually high number or at a different time of year will indicate an environmental change that we might want to examine."

And then there are the surprises.

"Some of the insects in the fountain came from surrounding plants in the park, but others were just passing through," said Betancourt, who calls herself an urban entomologist. "One year we found a Pine Barrens cicada, but the Pine Barrens is way across the Delaware River in New Jersey. We were also surprised to find a phantom crane fly which is typically found in wetland habitats." -Carolyn Belardo

If you'd like to connect with Betancourt and learn more about the insect world, tune in to her weekly interactive live insect-themed broadcasts on Periscope every Tuesday at 2 p.m., periscope.tv/isabetabug.



Where We Stand

Most people don't realize how much we depend on science or where it comes from. Drink a glass of water, swallow an aspirin, check the weather report—all these mundane actions depend on a science infrastructure, not just for discovery and invention, but for making the system operate.

Science is a process for knowing and learning, a systematic way of reducing uncertainty in how the world works. To be successful, it has to adhere to a broader set of values. One of the most important of these values is the use of evidence as the basis for understanding and for reaching conclusions.

Unfortunately, in recent months we have seen a public dialogue that increasingly holds evidence-based thinking in contempt. Evidence-based thinking and other scientific values such as abstract reasoning, collaboration, and consensus, are central to the democratic process. It is no coincidence that many of our nation's founders were fascinated with science, nor that



Biodiversity and Extinction

The earth is experiencing a sixth mass extinction and a significant loss of biodiversity. Clear scientific evidence reveals that its cause is the effects of human activities over just the last few centuries. These activities, such as the wholesale burning of fossil fuels, reduction of forests and wetlands, and increase in impervious landscapes, greatly threaten our ecosystems on which all life depends.

Diverse ecosystems are healthy ecosystems, and measuring biodiversity is a critical means of gauging environmental

health. Since its founding in 1812, the Academy has been studying the variety and distribution of living things and their extinction and has amassed a research collection of more than 18 million specimens that serve as a treasured resource for scientists around the world. The Academy will continue its research on biodiversity and extinction, which enables scientists to better understand the dynamics of the natural world and allows policymakers and stakeholders to make informed decisions about issues that impact our everyday lives.

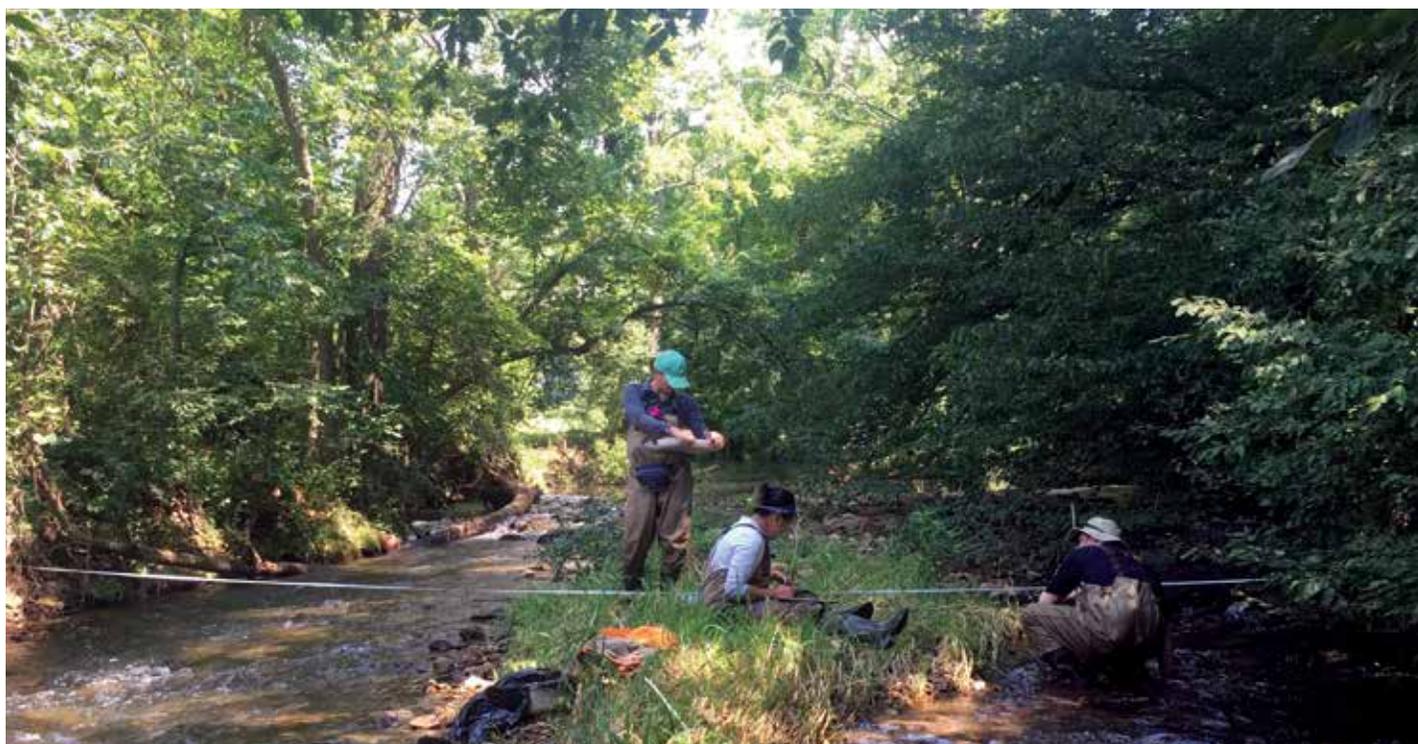
our constitutional system grew out of the same Enlightenment that gave us modern science.

And while it is possible to have science (of a sort) without democracy, there are no democratic systems that do not also support the spirit of inquiry, reason, and understanding that is central to science.

Faced with these challenges not only to the operation of science but to its very foundation, normally apolitical scientists are becoming more vocal. Beyond individual actions like marching and speaking out, scientific institutions also are now taking stands on public issues, actively entering the expanding public dialogue building on science and policy.

At the Academy of Natural Sciences, the study and communication of environmental and biodiversity sciences is central to our mission. For the first time in our 205-year history, the Academy has taken public positions on four crucial topics.

Last spring we posted our position statements on climate change, evolution, water, and biodiversity and extinction to our website, ansp.org. These issues often have been at the center of broader debates. Now we believe it is more important than ever to articulate and champion the established scientific consensus on these issues and to support policies that are driven by that proven and credible scientific consensus. *-David Velinsky and Roland Wall*



Water

Water is necessary for all life, and supplying clean water is one of the most critical resource issues of our time. Yet, in many places, adequate supplies of clean water are in danger or are simply not available. Large-scale human activities, including urbanization, agriculture, and emissions that affect climate change, are overwhelming many of the natural processes that control the availability and quality of freshwater. One of the great challenges will

be to balance immediate human needs with the long-term health of aquatic systems locally, regionally, and globally.

To meet this challenge, the Academy has led critical water research and environmental outreach for over 70 years. We will continue to investigate the complex human and natural systems connected to water quality and quantity and to seek potential solutions for our threatened water resources.



Amy Marvin/ANS

Climate Change

Academy research supports the consensus of the scientific community that the earth is warming and climates are changing at an unprecedented rate. The Academy also supports the consensus that these changes are largely because of human activity, including increased emissions of particular greenhouse gases, especially carbon dioxide, in the atmosphere.

Because climate change has the potential to disrupt human and natural ecosystems, the Academy will continue its critical research to understand environmental conditions, processes, and their impacts. We also will conduct research in support of climate adaptation and mitigation strategies.



Our mission at the Academy is to advance research, education, and public engagement in biodiversity and environmental science. We deliver robust, credible science to the public to help citizens, educators, and policymakers alike make informed decisions about issues that impact our everyday lives.



Evolution

There is an overwhelmingly strong body of firmly grounded scientific evidence that validates evolution. Given that there is no longer debate among scientists about whether evolution has occurred and is occurring, the Academy will continue to conduct research and to present programming that explicitly includes evolution.

To teach or practice science without acknowledgement of evolution deprives the public of a powerful concept that explains the order and coherence of life itself. Among other things, evolution informs how we treat human diseases, produce food crops, and develop conservation plans for habitats and wildlife.

Ted Dueschler/ANS

Did you know the Academy...

Educates some 240,000 museum visitors about the natural world every year?

Teaches nearly 80,000 schoolchildren using inquiry-based, hands-on science?

Employs 75 scientists who conduct research in the U.S. and around the world on critical issues from disease vectors to water quality to species extinction?

Is a leading scientific organization on a regional project to protect 14,000 square miles of drinking water for 15 million people?

Art of the Abyss



Frank Gill and Sally Conyne: Birders With a Purpose

Frank Gill and Sally Conyne were destined to cross paths, even though they grew up a hundred miles apart.

Frank's grandfather, a British birdwatcher, showed him how to spot a song sparrow through binoculars when he was a schoolboy, sparking a love that shaped the rest of his life. As a child, he spent weekends birding with the Audubon Society and even accepted his first job there.

Sally grew up visiting the Academy—her “dream place”—yearly during trips to Philadelphia. When she was a child, her father introduced her and her siblings to birding. Later she became the keeper of her grandfather's 19th-century egg collection, a treasure she holds dear to this day.

Though Sally became an English teacher, she continued birding and attended regular Delaware Valley Ornithological Club meetings at the Academy. Her sustained passion for birds finally brought her and Frank (the ornithologist) together, thousands of miles away from home on a boat to Antarctica.

Frank started at the Academy in 1969, his research in time broadening the focus of the bird department from taxonomy to behavioral science and genetics. In 1979 he established Visual Resources for Ornithology (VIREO), the world's most comprehensive collection of bird images, to bring raw photographic data into a centralized, professionally curated collection useful for amateurs and professional scientists.

He also served as managing editor of *Birds of North America*, a comprehensive reference for the life histories of North American bird species now housed online at the Cornell Lab of Ornithology. He expanded the staff, computerized the Ornithology Collection, and rehoused the entire collection in space-saving compacters.

Frank traveled the world for his own research, studying feeding dynamics of birds in Africa and Costa Rica. Committed to sharing the world with Academy supporters, he joined other scientists, bird enthusiasts, and patrons on expeditions, including Antarctica in 1994. That's when he noticed the amateur birder with a thirst for discovery.



“On the boat to Antarctica, Sally was on the bridge more than anyone else identifying special birds,” Frank says. “We joked that she should be working with us at the Academy.”

Sally later accepted the Academy's offer to apply her teaching skills to a natural science summer program for kids. The highlights of her time with the Academy included working with our scientists to survey biodiversity in Guyana and to set up education and ecotourism programs in the indigenous Makushi communities.

Frank left the Academy in 1996 to join senior staff at the National Audubon Society, a natural fit given his boyhood bond with Audubon chapters. He remained closely tied to the Academy through colleagues and members of the Board.

Both Frank and Sally have prioritized the Academy in their personal giving as Leadership Circle members. They have pledged a significant bequest to the Academy's Ornithology

Campaign, which will maintain the Academy as one of the world's leading ornithology centers in terms of its collection, research, and student training programs. Through their own giving, they are inspiring their friends to support the future of ornithology.

“Being part of [Drexel] University and its dynamic student community is exciting,” Frank says. “Now we are in a whole new era—a positive revolution—much due to technology. We have to use old and new collections in powerful and creative ways.”

Frank and Sally want science to be a guiding force in our country. Supporting Academy research goes hand in hand with a commitment to spreading critical knowledge about the future of the earth, they say.

“Good communications with the public will guide sound long planning,” Sally says. “We hope our modest gift will make a difference.”

“The Academy was generous with me and supported the things I believed in,” says Frank. “Our planned gift is a way of saying thank you, and we know that you will put it to good use.”

—Mary Alice Hartsock

Personalizing Your Donation

Are you looking for secure sources of fixed income for now or future retirement?

Like many individuals who own appreciated securities, you may be tired of living at the mercy of the fluctuating stock and real estate markets. You may own publicly traded stock and mutual funds that are producing low dividends but that may be highly appreciated.

Holding the securities may be undesirable because of the need to diversify, yet selling such assets may not be attractive because of capital gain taxes. Additionally, you may be at a time in your life when you want to make investments that are secure, both today and in the future.

There is a solution that provides you with fixed income for life, avoids capital gain tax, and offers the added benefit of leaving a lasting gift to the Academy: a charitable gift annuity.

A charitable gift annuity is a contract between you and the Academy. You can transfer your appreciated assets to us in exchange for our promise to pay you fixed income for your life. Capital gain tax may be bypassed on a gift of appreciated securities to fund a gift annuity. The income can be significant, depending on your age and the size of your gift, and a portion of your income stream may even be tax-free. Best of all, you will receive a charitable deduction for the value of your future gift to us.

Personalized Options

There are excellent options for establishing a charitable gift annuity. For

current income, you may transfer property for a fixed income beginning as early as this year. If you aren't quite ready to begin receiving income until a fixed retirement date, you can establish a deferred gift annuity. This will allow you to take your charitable deduction now and then plan to receive payments at a designated future date. If flexibility appeals to you, a flexible gift annuity offers you the option to establish the gift annuity now and take a current deduction while reserving the right to choose a beginning payment date in the future.

Immediate Charitable Gift Annuity

Barbara, age 70, purchased stock years ago for \$5,000. The stock appreciated substantially to a current value of \$25,000. Barbara will be retiring from her teaching career within a few months and is looking for a secure source of future income. Because of the recently fluctuating markets, she wants to sell her stock while the value is high; however, she wants to avoid paying high capital gain taxes.

As an avid birder and loyal Academy supporter, Barbara has been considering making a significant gift to the Academy's Ornithology Expedition Fund to help scientists do more fieldwork. Based on her current age, she can transfer her appreciated stock to the Academy in exchange for 5.1%* fixed annuity payments. She can begin receiving income now, take a current charitable deduction,

and avoid capital gain tax on securities she used to fund the gift. Best of all, a portion of her income would be tax-free.

Deferred and Flexible Gift Annuities

Jack is a 60-year-old stockbroker who is still several years away from retirement. Ten years ago, he inherited stock, currently valued at over \$15,000, from his father's estate. He wants to use it to ensure a secure source of income in later years. Jack also wants to make a gift to the Academy's library in memory of his father, who was a librarian at the Academy for many years. He decided to satisfy both of these goals—and avoid any possible capital gains tax—by donating the stock to the Academy to fund a deferred gift annuity. He'll receive an immediate charitable tax deduction and can begin taking payments at a fixed date in the future or, if he prefers a flexible charitable gift annuity, on a date he will choose in the future.

Learn More

A charitable gift annuity is easy to create and can be established with a simple contract. A new will is not required and estate taxes and probate are avoided.

If you have any questions related to charitable gift annuities, please don't hesitate to contact Monica Cawvey Gallagher at 215-299-1013 or gallagher@ansp.org. She would be delighted to assist you. ~Grace Beebe

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NEW LOGO

In June, the Academy unveiled a new logo that powerfully reflects its interconnected mission and growth in research, education, and public engagement. The new logo consists of a “heart of discovery” mark next to the Academy’s name, refined with a new typeface. The symbol evokes the interweaving pathways of knowledge, research, education, curiosity, and effort, resulting in years of groundbreaking discoveries by scientists in the lab, in the field, and even by visiting students on a class trip.



Mike Serradito/ANS

WILD WIZARDING WEEKEND

Explore the magical world of the Academy’s phenomenal beasts with a weekend of spellbinding, hands-on activities! Meet the Academy’s own live beasts and learn about the real animals that inspire your favorite wizarding stories. Take in a Bunny and Broomsticks game, make a magical wand, and take home a dragon’s egg during this wild weekend. Wear a costume—wizards are welcome! More at ansp.org.



Mike Serradito/ANS

DINO-MITE WINTER

Spend your winter break with us! Warm up in *Butterflies!*, spend some time with our live animals, catch exciting new stage shows, do a winter-themed animal craft, and check out the dinosaur eggs and babies in *Tiny Titans!* Explore real Academy specimens (including weird things in jars), and meet the knowledgeable scientists who care for them. Create a special *Tiny Titans* dinosaur make-and-take, free with special exhibit admission. Then relax as you watch live shows featuring animals of the Academy and everyone’s favorite bugs! More at ansp.org.



Mike Serradito/ANS

SHELL SHOW

Thousands of shells will be on display and for sale at the annual Philadelphia Shell Show, October 28–29. The largest of its kind in the Northeast, the show features beautiful, competitive displays on mollusks by collectors, amateur scientists, and artists. Visitors will have the chance to shop an international shell market packed with jewelry, shells, books, and more. Members of the Philadelphia Shell Club will be on hand to answer questions and identify shells you’ve collected during your travels. More at ansp.org.

NIGHT IN THE MUSEUM

Experience the Academy’s towering dinosaurs—including *T. rex*—after dark! Your action-packed night at the museum barely leaves room for shut-eye. Start with opportunities to enjoy close encounters with free-flying butterflies, dig for dinosaur bones, and come face-to-face with the animals in our dioramas. Go on a scavenger hunt, do a hands-on experiment, or inspect some not-so-creepy crawlies. Explore every corner of the Academy’s famous exhibits, and then sit back and relax as we bring you a fascinating live animal show. When it’s finally time for bed, pick your spot next to lions, tigers, or dinosaurs. Visit ansp.org for Night in the Museum dates, and learn how you can visit *Crocs* after dark!



Jeff Fusco/ANS



JUST FOR KIDS

Welcome to the Academy Frontiers page for kids, one of the many great ways you can participate in the Academy's Kids Club!

Marty's Birthday Challenge

With a *T. rex* that has celebrated millions of birthdays, the Academy really knows how to throw a party! Did you know that we throw birthday parties for kids who love dinosaurs, bugs, butterflies, animals, and bricks? Find out more at ansp.org or call 215-299-1060 to schedule your big day today.

In the picture below, Marty the Moose is celebrating his birthday with a cast of Academy characters.

Color the scene below. Can you find the seven things that are wrong with this picture?



Christine Danowsky/ANS

KEY: 1) Marty the Moose is missing an antler. 2) There aren't any flames on the candles. 3) The stag beetle is missing its eyes. 4) *Tiktaalik* has three eyes. 5) The lion has tiger stripes. 6) *T. rex* is missing a "finger." 7) "R" on the birthday cake is backwards.

ACADEMY PRINTING PARTNER



FPO Green symbols here

9.17_6000_CRW

CALENDAR OF EVENTS

OCTOBER

TINY TITANS:

DINOSAUR EGGS AND BABIES *

Open through January 15, 2018 

TINY TOT EXPLORERS

Mondays through

October 23, 11:30 a.m.  

MEMBERS' NIGHT

Friday, October 13, 5–9 p.m.  

ACCESS TO SCIENCE:

OPENING DOORS TO AUTISM

EARLY MUSEUM OPENING

Sunday, October 15, 9 a.m.  

DINOSAUR HALL CLOSED

FOR RENOVATIONS

Monday, October 16–Friday, November 3 

TOAST TO THE COLLECTIONS

Thursday, October 19, 5:30–7:30 p.m.  

MORNINGS AT THE MUSEUM

Saturday, October 21, 9–10 a.m.  

PHILADELPHIA SHELL SHOW

Saturday and Sunday,
October 28–29, 10 a.m.–5 p.m. 

NOVEMBER

BACK FROM THE FIELD

Wednesday, November 8, 5:30–8 p.m.  

WILD WIZARDING WEEKEND

November 24–26, 10 a.m.–5 p.m. 

DECEMBER

DINO-MITE WINTER

Wednesday through Saturday,

December 27–30, 10 a.m.–5 p.m. 



Artwork by Jordan, Academy Member

JANUARY

DINOSAUR DAYS

Saturday through Monday,

January 13–15, 10 a.m.–5 p.m. 

NIGHT IN THE MUSEUM:

DINOS AFTER DARK

Saturday, January 13, 6 p.m.–

Sunday, January 14, 9 a.m.  

MEMBER OPENING: CROCS

Friday, February 2, 5:30–9 p.m.  

CROCS: ANCIENT PREDATORS

IN A MODERN WORLD OPENS *

Saturday and Sunday,

February 3–4, 10 a.m.–5 p.m. 

*Fee for *Tiny Titans* and *Crocs*. Family Plus level members and above see these exhibits for free.

Unless otherwise noted, all events held at the Academy are free with museum admission. Visit ansp.org for more information or to register.

Purchase, upgrade, or renew your membership today at ansp.org/membership.

