Academy

FRONTIERS

The member magazine of the
Academy of Natural Sciences

Spring 2010

GREETINGS FROM THE ACADEMY

Bruce Tepper/ ANSP

Welcome to the spring issue of Academy Frontiers. While the world outside is busy with springtime activity, there is a lot going on inside the Academy as well. Administratively, we are continuing the search for a new president with the help of the executive search firm Spencer Stuart. In the meantime, it is a thrill for me to serve as acting president during this transition in leadership. I have been lucky to build a research career here, to have incredible library and specimen collections at my fingertips, and to work with dedicated colleagues throughout the Academy.

For those who may not know me, I have been with the Academy for more than 20 years, starting as the collection manager for Vertebrate Zoology and progressing to my most recent position as vice president for Systematics and the Library. My field of study is paleontology, with a particular focus on Devonian-age fossils and the origin of limbed vertebrates. From personal experience, I can tell you that the Academy is an amazing place to grow as a scientist and educator. Part of the excitement of working here is being surrounded by people who are passionate about our mission. During my time as acting president, I hope to be able to share some of that excitement and passion with you.

I sincerely thank you for your membership at the Academy of Natural Sciences, one of Philadelphia's—and our nation's—greatest institutions. Members like you enable us to continue to explore the natural world and communicate the excitement and importance of our discoveries to the public. Please talk up the Academy to your friends and neighbors. Bring them along to some of the stimulating exhibits, events, and lectures that we have planned throughout the year. We need more people to see the value of membership at the Academy—not only for the direct benefits, but also in the knowledge that they are helping to support an institution that is on the forefront of discovery and education about the natural world.

Thank you for your support—your commitment ensures our continued success. I look forward to keeping you updated on the wonderful things happening at the Academy.

Sincerely yours,

Ted Daeschler
Acting President and CEO

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Acting President and CEO:
Dr. Ted Daeschler

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

Academy membership includes a subscription to *Academy Frontiers*, free admission to the museum, discounts in the Academy Shop and Ecology Café, invitations to special events and exhibit openings, and much more. For information about Academy membership, call 215-299-1022 or visit www.ansp.org/membership.

THE ACADEMY OF NATURAL SCIENCES

On the cover: *Digital X-ray equipment used by Academy scientists produces pristine radiographs like this image of two seahorses and a sea moth. These specimens were collected in the Pacific Ocean's Kii Straight, off Minabe, Japan, in the 1980s and 90s. Scientists in the Academy's Ichthyology Department are in the middle of an extensive project to X-ray thousands of historic type specimens in the Academy's collections.* *Read more on page 8.* Photo by Kyle R. Luckenbill

CALENDAR OF EVENTS

April

16–17 Friends and Family Overnight—"Survivor," 6:30 p.m.–9 a.m.
For more information, visit www.ansp.org/activities

17–18 Earth Day Festival, 10 a.m.–5 p.m. each day.
For more information, visit www.ansp.org/activities/festivals.php.

19 Town Square, 6:30–8:30 p.m.
"Marcellus Shale: The Science and the Policy"

22 Town Square, 6:30–8:30 p.m.
"Imagining Philadelphia's Future: The Plans and the Realities"

May

5 Town Square, 6:30–8:30 p.m.
"Socially Responsible Investment"

8 "Insect Field Study" adult program, 10 a.m.–4 p.m.
Join the Academy's Greg Cowper and Karen Verderame for a field study at the Franklin Parker Preserve in the New Jersey Pine Barrens. For more information, visit www.ansp.org/adult-programs.

8–9 Animal Moms weekend, 10 a.m.–5 p.m. each day.
For more information, visit www.ansp.org/activities/weekends.php.

10 Science on Tap, 6 p.m.
Derrick Pitts, chief astronomer for the Franklin Institute presents "The Search for the Other Earth."
National Mechanics, 22 S. 3 rd Street, Philadelphia
For more information, visit www.chemheritage.org

10 Annual Cheryl Beth Silverman Memorial Lecture, 6:30–8:30 p.m.
Featuring Sylvia Earle, American oceanographer.

15 *All Types of Fishes* exhibit opening
Art of Science Gallery

16 *Looking at Animals* exhibit closes

19 Sierra Club Film Screening: *The Arctic*, 5–7 p.m.

22–23 Friends and Family Overnight—"Survivor," 6:30 p.m.–9 a.m.
For more information, visit www.ansp.org/activities.

22 "Sun Fun" family workshop, 10:30 a.m.–noon
Test the sun-blocking power of sunscreen, investigate UV light, and use the sun to create a unique work of art. Admire professional sun prints—called cyanotypes—and take home your own masterpiece.
For more information, visit www.ansp.org/activities.

25 Academy of Natural Sciences 198th Annual Meeting, 6 p.m.
Keynote speaker Scott Weidensaul presents "Philadelphia and the Birth of American Ornithology."

June

4 Members' Preview of *Creatures of the Abyss*, 5–8 p.m.
Featuring a screening of *Undersea Gardens* (ca.1938), a recently restored film featuring Bahamian coral reefs by underwater photographer E.R. Fenimore Johnson.

5 *Creatures of the Abyss* exhibit opens, running through Sept. 6
For more information, visit www.ansp.org/museum/future.php.

13 "Shells: Creatures and Collecting" family workshop, 1:30 p.m.–3 p.m.
Identify your own treasures from the shore with the help of Academy staff and learn about the animals that left these magnificent shells behind.
For more information, visit www.ansp.org/activities.

June continued

14 Science on Tap, 6 p.m.
National Mechanics, 22 S. 3 rd Street, Philadelphia
For more information, visit www.chemheritage.org.

19–20 Catfish weekend, 10 a.m.–5 p.m. each day.
For more information, visit www.ansp.org/activities/weekends.php.

26 "Electrofishing Field Study" adult program, 9:30 a.m.–1 p.m.
Join Academy fisheries scientists on an electrofishing study in a local stream.
For more information, visit www.ansp.org/adult-programs.

July 12–August 27

Academy Explorers Summer Camp
Spend your summer at the Academy! (Ages 5–12)
For more info, visit www.ansp.org/activities/summer_camp.

Cruisin' the Fossil Freeway

With Artist Ray Troll and Paleontologist Kirk Johnson

Cruisin' features the fossil-inspired artwork of celebrated artist Ray Troll and explores questions about evolution, extinction, and early life on Earth. Troll's whimsical illustrations of imagined scenes from prehistoric times are placed side by side with real fossils.

AT THE ACADEMY OF NATURAL SCIENCES

October 23, 2010 – January 2, 2011

Cruisin' the Fossil Freeway was organized by the Burke Museum at the University of Washington, Seattle, in collaboration with Ray Troll and Kirk Johnson. Sponsorship of the traveling exhibit has been provided by Microsoft Corporation, Pendleton and Elisabeth Carey Miller Charitable Foundation, and Wells Fargo.

THE BURKE MUSEUM OF NATURAL HISTORY AND CULTURE TRAVELING EXHIBITS SERVICE

ON EXHIBIT

Henry Horenstein

Looking at Animals

Now through May 16, 2010

Looking at Animals is a collection of the best animal photographs by noted photographer Henry Horenstein. In his unique style, Horenstein makes us look at animals as we have never seen them before—not as mere documents of what animals look like, but as a creative interpretation by one of the best photographers of the subject.

The exhibit features 24 oversized photographs by Henry Horenstein, several of which are accompanied by rarely seen specimens from the Academy's extensive natural history collections. Watch for appearances from the Academy's live animal collection.

 Exhibition organized by Harvard Museum of Natural History. This show is managed by art2art Circulating Exhibitions.

First Impressions: Thomas Horsfield's printed plants of Java

In the new Art of Science Gallery

Now through May 2, 2010

The first exhibit in the newly renovated Art of Science gallery, *First Impressions* is a collection of 22 striking prints from a one-of-a-kind volume found in the Academy Archives. The book is a leather-bound collection of handmade, amazingly detailed prints of the plants of the Indonesian island of Java. The prints were made in the early 1800s by Thomas Horsfield, a native of Bethlehem, Pennsylvania, and the first American scientist to explore Southeast Asia.

The original book is on display to complement the giclee (pronounced zhee-clay) prints made from the originals. The prints are made by Brilliant Studio of Exton, PA, and are available for purchase in the Academy Shop.

Ewell Sale Stewart Library/ANSP

Kyle R. Luckenbill/ANSP

All Type of Fishes

In the new Art of Science Gallery

May 15 through August 1, 2010

When thinking of art, fish bones may not be the first things that come to mind. In a new Art of Science Gallery exhibit, *All Types of Fishes*, a collection of dramatic digital radiographs (X-ray images) reveal the complexity, intricacy, and unexpected beauty that exist beneath the scaly, slippery skin of a fish. All of the images feature type specimens held in the Academy's Ichthyology Collection, one of the most important and diverse collections in the world.

Debbie Carr Wechsler

ACADEMY VOICES

Doug Wechsler

When he was a kid, Doug Wechsler dreamed of catching wild animals from exotic places and bringing them back to America for people to admire and enjoy. Lucky for him, his dream came true—for the most part. For more than 30 years, Wechsler has captured—on camera—more than 2,000 rare, beautiful, and strange birds, plants, and animals from around the world.

Loaded with camera gear, Wechsler has traipsed the tropical forests of Costa Rica, Brazil, Panama, Cameroon, and Borneo, to name a few. He's photographed many kinds of plants and animals, but specializes in bird photography. At the Academy, Wechsler serves as director for the Visual Resources for Ornithology (VIREO) Department, a title he has held since 1987. His bird photographs, in which more than 1,100 bird species are represented, are part of more than 160,000 digital photos and slides that make up the VIREO collection, which is the most comprehensive collection of bird images in the world.

Much of Wechsler's time is spent at a computer, managing, marketing, and adding to the VIREO Web site (http://vireo.ansp.org), which boasts more than 76,000 images accessible to anyone in the world. Fortunately, about once a year, he gets to leave the office and explore the tropics. Coming home with successful shots takes a little luck and a lot of patience.

"In the wild, I'll spend hours waiting for something to happen," he says.

While waiting for his shot out in the field, Wechsler has come in contact with many snakes, some of them poisonous. But, Wechsler is an opportunist. Instead of bolting from the snakes, he photographed them.

In addition to their place among the VIREO collection, Wechsler's photos also decorate the pages of the 22 children's books about bugs, birds, frogs, and snakes he has authored since 1995. Wechsler says he hopes his books inspire children to take an interest in nature. At work, Wechsler says, his top priority is to continue growing the VIREO collection.

"Building that collection has really been one of my biggest accomplishments," he says. That, paired with the "great bunch of people" he works with, is what keeps Wechsler coming back, day after day, for almost 25 years. To learn more about Wechsler and his adventures, visit www.dougwechsler.com.

ACADEMY ABBREVIATED

VIREO—There's an App for That

Over the past few centuries, birdwatching has experienced its own kind of evolution—the changes in how we watch and find birds have been quite dramatic. The latest leap forward is a new iPhone application called BirdsEye, developed by Birds in the Hand, LLC.

BirdsEye marries 1,400 stunning photos from the Academy's VIREO (Visual Resources for Ornithology) collection—the most comprehensive bird photo collection in the world—with the world's largest collection of bird calls and songs at Cornell University's Macaulay Library of Sound. Combine that with the proven field guide experience and birding advice of Kenn Kaufman (a former VIREO staff member) and you've got an iPhone application powerhouse.

The core of the application is the eBird database—a joint project between Cornell and the National Audubon Society—which tracks bird sightings and population trends from backyard and hardcore birders in real time.

With behavior details, photos, and sounds for more than 800 different species, BirdsEye can take you to recent birding hotspots, or even to the specific bird you want to see, anywhere north of Mexico. You can also track your life list—a list of all the species of bird a birder has seen in his or her life—and have BirdsEye notify you when a new bird is nearby. Future versions will allow users to contribute sightings to eBird right from the field, as well as receive up-to-date information on nearby rare sightings, so you don't miss the bird of a lifetime just a few miles down the road.

For more information on the application, which is designed for the iPhone and iPod Touch, visit www.getbirdseye.com.

Life After WINS

For 28 years, more than 600 young women have been exposed to the fascinating world of science through the Academy's Women in Natural Sciences (WINS) program. Through hands-on science classes and scientific literacy activities, female public school students in grades 9 through 12 in the Philadelphia School District are invited to get excited about science.

But most importantly, the WINS program is all about making connections.

Katie O. Clark/ANSP

That was the common thread woven into the testimonials of three WINS alumnae at the recent Life After WINS alumnae panel, where "WINS girls" from years past were invited to share their experiences and success stories after leaving the WINS program.

"It's important for the (current WINS girls) to meet the ladies from the 1980s and 90s and to see what they have gone through to get to where they are now," says Betsy Payne, manager of the WINS program.

The alumnae panel featured Andrea Friedman, who entered WINS in its first year in 1982, and is currently a climate policy analyst in the Office of Climate and Energy at the New Jersey Department of Environmental Protection; Ninette Cooper, who entered WINS in 1989, and is the unit director for the Boys and Girls Clubs of Philadelphia-Northeast Frankford Unit; and Jenne Johns, who entered WINS in 1995, and is currently the deputy director of programs for the Summit Health Institute Research and Education (SHIRE), in Washington, D.C.

The current WINS girls pocketed some great advice at the event, and had a question and answer period with the panel. "The girls were definitely impressed," says Payne. The Life After WINS event is scheduled to be an annual event.

ACADEMY ABBREVIATED

The Marriage of Art and Science

Last spring, the Academy transformed a once-empty wall into a new gallery designed with an important message in mind—science is beautiful. This new space, called the Art of Science Gallery, opened with *Seasons in the Pennypack Valley*, a collection of nature photographs by noted photographer and filmmaker Feodor Pitcairn. After that first show, ideas for other shows flooded in, ranging from chalk drawings of sea creatures to photographs of our live animals.

After four gallery shows and positive feedback from staff and visitors, it was clear that the gallery's single wall was no longer enough.

Katie O. Clark/ANSP

The Art of Science Gallery has been renovated and transformed into a permanent space, encompassing the entire area outside of the *Butterflies!* exhibit. The gallery features rarely seen treasures from our own collections, works by contemporary artists, and imagery generated by Academy scientists, past and present. It is our hope that visitors to the gallery will be delighted, surprised, and challenged by what they see and become more aware of science's often overlooked beauty.

GET CONNECTED

Anyone can be a naturalist. In each issue of *Academy Frontiers*, our scientists and staff share their knowledge of the natural world and highlight a seasonal plant or animal that you might find right in your own backyard.

In this issue, the Academy's Ned Gilmore, collection manager for the Department of Vertebrate Zoology, describes the pickerel frog (*Rana palustris*), a small North American frog known for its squares and snoring.

The pickerel frog got its name because fisherman used the frogs as bait for pickerel fish. It is known for the square- or rectangular-shaped (if the squares blend together) markings on its back. The squares—usually a dark brown color against a beige, tan, or sometimes bronze body color—are what distinguish this frog from the similar leopard frog.

"A lot of people misidentify these frogs as leopard frogs," Gilmore says. "The biggest difference is that the pickerel frog has squares and the leopard frog has spots."

The mating call of the males is also completely different, Gilmore adds. The pickerel frog's call is a rough, rolling, high-pitched snore while the leopard frog's call is a slow and steady croak followed by what sounds like a hand dragging slowly across a balloon.

The male's call can be heard as early as April, when its mating season begins. Often, though, the pickerel frog's call is drowned out by the noisy Fowler's toads, American toads, spring peepers, and gray treefrogs. In the Philadelphia area, pickerel frogs can be found along streams and near ponds in Wissahickon Valley Park and the Schuylkill River Valley at Valley Forge Park, Gilmore says. Go out and find one today!


Doug Wechsler

Katie O. Clark/ANSP

Curatorial Assistant Kyle Luckenbill carefully places a specimen on the deck of the Inspex X-ray system. After leaving and securing the small room, Luckenbill captures an X-ray image of the specimen, with just a few clicks.

A Bony Process—Employing New Ways to Study Fishes

By Katie O. Clark

With the simple click of a mouse, a longer, richer, and increasingly valuable life is granted to the treasured dead things of the Academy. Using high-tech digital equipment, scientists in the Department of Ichthyology are permanently digitizing nearly 3,000 type specimens, those prized "originals" that give tremendous value to any natural history collection. The Academy is only the third institution on the East Coast capable of doing this kind of work.

A state-of-the-art machine called the Inspex 20i Digital X-ray Imaging System used by the Academy has changed the way we study fishes and how we protect and share our collection. This digital system replaces the department's outdated film and chemical setup used since the 1970s and reduces a once long process in the darkroom down to just a few seconds. The Academy is currently the only institution in Philadelphia using this digital X-ray system for non-medical purposes.

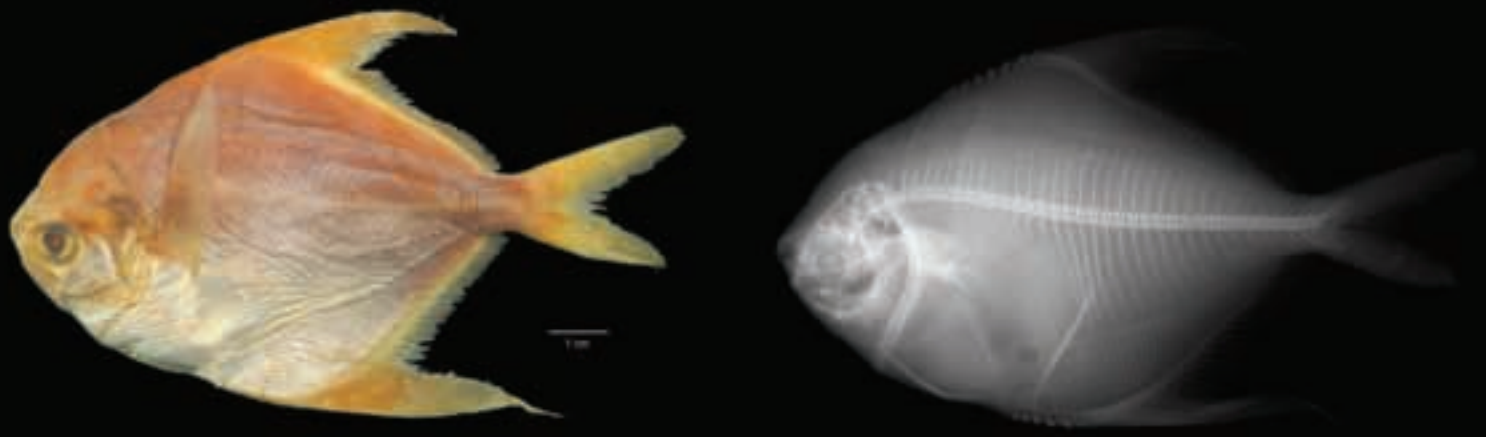
"We're definitely ahead of the curve," says Kyle Luckenbill, the department's curatorial assistant who has been trained to use the equipment and supporting software.

The machine was purchased with funds from the National Science Foundation and the Academy's Hattersley Family Collections Care and Upgrade Fund. The department has already digitized roughly 1,500 type specimens (a type is a specimen sample on which a species description is based).

Luckenbill—along with other staff and volunteers—digitally photographs each specimen and then uses the Inspex to create a high-quality radiograph of the fish, which allows researchers to view the specimen from the inside out. Every living thing on Earth possesses features, or "characters," used by scientists to discriminate or distinguish one species from another. In fishes, many of these characters occur in the skeleton, such as the bones of the fins or backbone. In order to physically examine the bones, scientists must first rely on the appetite of meat-eating dermestid beetles to pick clean a specimen, leaving only the skeleton, a rather lengthy process that leaves the fleshy parts of the specimen forever destroyed. The radiographs enable scientists to view the bones without all of this work.

"Digital images capture minute anatomical detail and increase the accuracy and precision of complex morphological description and understanding," says department Curator Dr. John Lundberg.

The benefits of these radiographs are many. An online database of these images allows researchers to study the specimens from anywhere in the world—a true plus for a scientist with a limited research budget. And, sending a digital file is preferred over



Images: Kyle R. Luckenbill/ANSP

*This type specimen of a silver pomphret (*Pampus simoprosopus*) has been digitally photographed and X-rayed by Ichthyology Department staff. Described in 1934 by Henry Weed Fowler, an early curator of the Department of Ichthyology, it is one of thousands of prized specimens in the Academy's type collection of fishes.*

the risks involved in loaning a specimen—especially type specimens—through the mail. "Type specimens are so special—you don't want to take a chance on losing them or damaging them," Lundberg says.

The Academy's Ichthyology Collection has one of the largest and most diverse collections of type specimens in the world. Highlights among the types are species described by some of the founding fathers of North American ichthyology, including Charles Alexander Lesueur, John Edwards Holbrook, Theodore Nicholas Gill, and Edward Drinker Cope. Also included are more than 400 types collected by Charles Lucien Bonaparte, nephew of Napoleon Bonaparte.

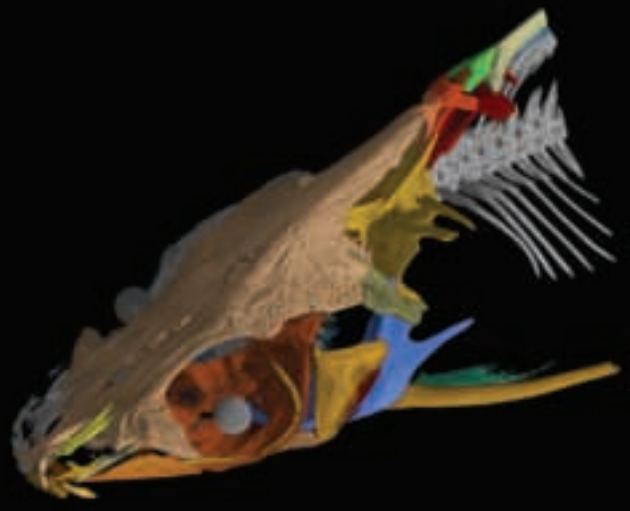
In addition to the type specimen digitization project, the department also uses the X-ray equipment for species identification requests from other departments. The Academy's Patrick Center for Environmental Research recently requested assistance in identifying a catfish. What was, at first, believed to be a particular species of catfish was X-rayed and determined to be an entirely different species.

"When you look at the X-ray you can count the vertebrae in the backbone and the fin rays and you can discriminate between closely related fish," says Lundberg.

Also scheduled for digitization are type specimens from other collections, including our Herpetology and Ornithology collections.

The department's digital research does not stop at two dimensions. Three-dimensional CT (computerized tomography) scan images have changed the way scientists and staff study fishes.

"With a CT scan, you can look not only at the surface but you can cut through and look at the interior," Lundberg says. "You can pull things apart—it's a virtual dissection."



*Creating a 3-D model, like this image of a Chinese catfish (*Cranoglanis bouderius*) from the Academy's collection, starts with the Ichthyology Department's Kyle Luckenbill, raw data generated by a CT scan from the University of Texas, and special software called VG Studio Max. The data are sent to the Academy, where Luckenbill uses the software to put the "slices" back together to create the model. This kind of research makes it possible for scientists to study fishes without having the physical specimen in hand.*

The Academy is unable to create CT scan images on site—our specimens are sent to institutions with the proper equipment, such as the Digital Morphology Lab at the University of Texas Department of Geology. The raw data is sent back to the Academy in "slices," which are loaded into special software to create a 3-D model. Once completed, the model can be rotated, manipulated, animated, and sliced into sections, almost like a loaf of bread. Areas of the anatomy can be isolated, in the instance that a researcher only has an interest in a particular area, like the jaw.

According to Luckenbill, studying fishes using CT scan images is the way of the future. "A researcher can look at a CT scan of a specimen and it's like it is right there in front of him," Luckenbill says.

An online resource available to researchers features CT scan images of the catfish specimens in the Ichthyology Collection, part of an ongoing, multi-institutional project to inventory the world's catfish species. See some of these amazing CT scan images at http://catfishbone.ansp.org/.

In May, the Academy presents *All Types of Fishes*, an art exhibit that showcases some of the high-quality, two-dimensional radiographs produced by our Ichthyology Department. These strangely beautiful images will be on display through August.

Ewell Sale Stewart Library/ ANSP

Brooke Dolan II, on expedition to Eastern Tibet, April 1943.

Exploring Extravagant Worlds: From China to the Academy Archives

By Katie O. Clark

On each label assigned to the Academy's 37 natural history dioramas is a short credit line, a sentence or two honoring the individual responsible for either collecting or donating the specimens frozen in timeless taxidermy on the other side of the glass. Credited for most of the Academy's Asian dioramas is Brooke Dolan II, one of the Academy's most important collectors. While he is listed only by name on the label, the fascinating—and sometimes frightening—details of his collecting adventures come to life in the Academy Archives.

Dolan led an unusually adventurous life of exploration and discovery. Born into a Philadelphia family of substantial means in 1908, he was educated at St. Paul's School and Princeton and Harvard universities. He became a trustee of the Academy in 1935, and on its behalf he organized two extraordinary expeditions to West China and Tibet in 1931 and 1934–36.

On these expeditions he and his colleagues collected the Asian mammals on exhibit in the dioramas, and thousands of study specimens of additional mammals, birds, and even mollusks. These specimens were incorporated into the Academy's evolutionary biology departments, where they are still regularly studied by scientists. George Schaller, one of the world's authorities on Asian mammals, has observed that "biologists interested in high-altitude mammals of China must still draw on the results of the Dolan expeditions, attesting to their lasting contribution to natural history."

In the early 20th century, large natural history museums like the Academy regarded it as their mission to collect specimens and

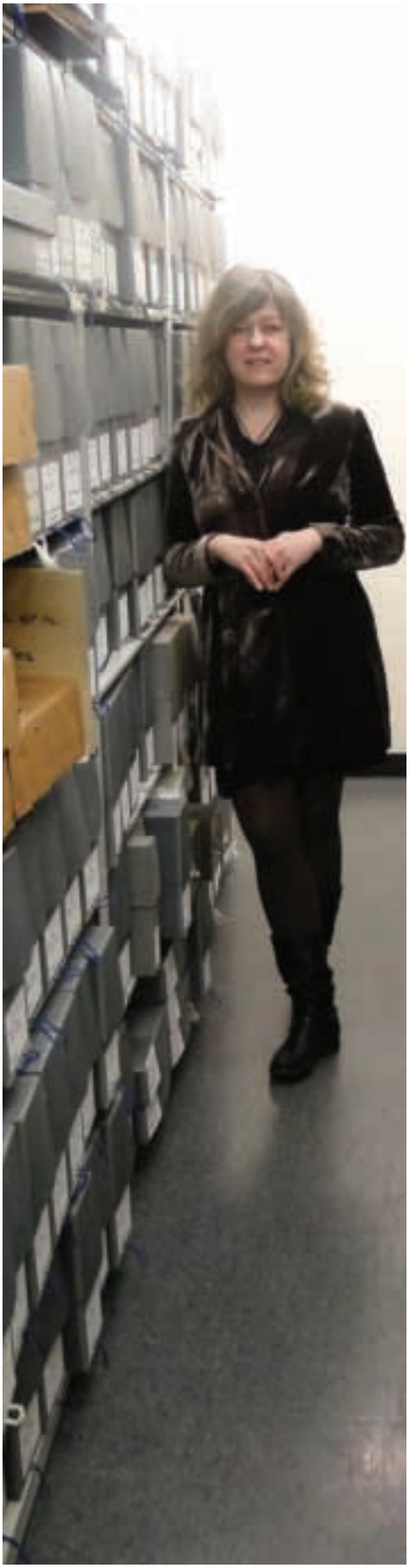
information about little-known species around the world. Dolan was part of this process. He returned from his first expedition to China in 1931 with hundreds of specimens, including the skins and skeletal remains of three giant pandas, among the first ever collected. At the time, very little was known about this species (described as "grotesque" in the media and "sluggish" and "extremely stupid" in the scientific literature of the day). Thanks to Dolan's efforts, the panda specimens were put on public display at the Academy, making them among the earliest educational exhibits in the world devoted to this species.

But these efforts took tremendous courage and stamina. Western China in the first half of the 20th century was an anarchic, dangerous place, run by competing warlords deeply suspicious of foreigners allegedly looking for natural history specimens. Dolan and his companions suffered from infectious diseases, quicksand, blizzards, lack of food, narrow escapes from "marauding nomads," and, of course, bureaucracy. Permits were denied or simply never issued; once they even had to offer their fellow team member, Marion Duncan, as a temporary hostage, in exchange for the chance to enter certain regions for collecting purposes.

In 1942, while serving in the Office of Special Services in World War II, Dolan traveled with Ilya Tolstoy (grandson of the Russian novelist) on an expedition to Tibet, where the two men represented the United States and President F. D. Roosevelt in a rare audience with the 7-year-old Dalai Lama. Dolan died while on assignment in China in August 1945.

The Academy Archives is home to Dolan's many adventures in the form of expedition field notebooks, correspondence, photographs, telegraphs, receipts, permits, and hand-drawn maps—altogether an important record of a remarkable man and his contributions to natural science. Keeper of these records and so much more is Clare Flemming, who joined the Academy last year as the Brooke Dolan Archivist, an endowed position named in honor of the adventurer.

The position was made possible thanks to a cadre of dedicated donors that includes members of Brooke Dolan's family. Flemming is a solid fit with her natural-history subject expertise and expeditionary experience.



Katie O. Clark/ANSP

Clare Flemming is keeper of the Academy Archives, serving as the Brooke Dolan Archivist.

In the early part of her career, Flemming worked at the American Museum of Natural History (AMNH) in New York on the scientific support staff in the Department of Mammalogy, where she contributed to collection care, bibliographic research, and fossil preparation, and she participated in dozens of field expeditions to the West Indies, High Arctic, and Antarctica to collect fossil remains of extinct mammals.

In her everyday work, Flemming consulted original, often ancient, documents: the handwritten ledgers and catalogues of museum specimens; glass-plate negatives of people, animals, fossil locales; and original field notebooks from collecting expeditions to places whose names no longer exist.

"I wondered who gets to take care of these things," Flemming recalls, and she eventually found out: archivists. Over time, her focus shifted from the study of fossil bones to the documents about those bones, from the tiny paper labels that accompanied each specimen to the enormous correspondence files of curators. In 2001 she left the AMNH after 10 years to earn a master's degree from Pratt Institute, where she studied archives management. A few years later and she landed her "dream job" in the Academy Archives.

At the Academy, Flemming stands guard over the documented history of the institution. She is committed to identifying, preserving, and making available the Academy's records of enduring value.

"It is a true privilege to be responsible for the care of collections as rich and diverse—both in time and content—as the Academy Archives," Flemming says. "I imagine Brooke Dolan and all of our other scientist-explorers would be pleased that these materials are treasured not just as historical records, but are actively and routinely consulted for new uses and interpretations."

Visit www.ansp.org/library/archives/index.php to digitally explore the Academy Archives.

Clare Flemming and Academy Senior Fellow Robert Peck contributed to this article.

No spring chicken

By Katie O. Clark

She's almost completely blind and starting to go gray. She takes medication for the arthritis that makes her limp. She's even got a hernia from all those years of laying eggs. But, these aches and ailments are to be expected when you're pushing 20.

Duckie the mallard (*Anas platyrhynchos*), the "boss" that keeps the other animals (and people) in line in the Academy's Florence R. Foerderer Live Animal Center, will celebrate her 20th birthday this summer. A mallard living this long is rather remarkable, according to Academy scientists and educators.

"Ducks don't really live to be 20 years old," says Jacquie Genovesi, senior director of education at the Academy. In the wild, the average life span of the mallard is seven to nine years, although more than half die before they reach two years of age. In captivity, it's rare for a mallard to live past 10 or 15 years of age, according to Dr. Nate Rice, collection manager in the Academy's Ornithology Department.

"It just shows that Duckie has had really good, consistent care in the Live Animal Center," says Rice.

Back in 1990, Duckie almost met her maker just a few weeks after being born. She was a lone duckling in a shipment of chicks scheduled to be fed to the birds of prey in the Live Animal Center. (All animals fed to the birds of prey are humanely euthanized first.)

"She was so cute; no one had the heart to feed her to the birds," says Genovesi.

Twenty years later, Duckie rules the roost and doesn't take any guff from the other animals. The same goes for people, too. According to Duckie's handlers, she decides who she likes, and who she doesn't like. A mealworm or cricket treat, however, could easily sway her.

Duckie is among the world's oldest living mallard ducks on record. The oldest duck, named Edwina from Hampshire, England, lived to be 29, but died in December 2009.

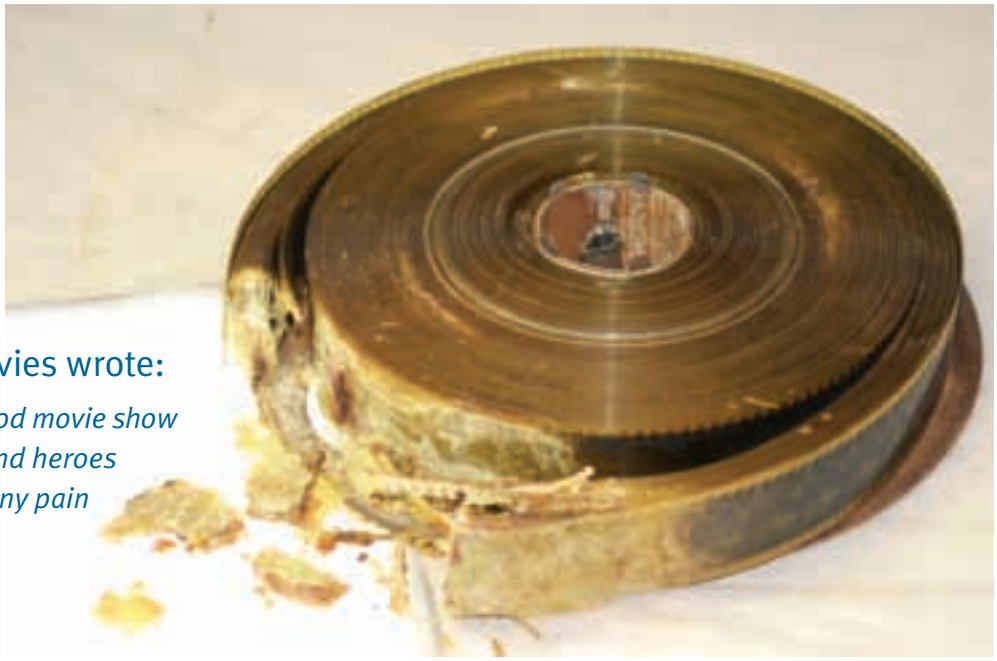
Despite her senior citizen status, Duckie is not the oldest resident in the Live Animal Center. There are a handful of birds and snakes in their mid- to late-20s, and turtles and tortoises in their 30s and 40s.

The Florence R. Foerderer Live Animal Center is home to nearly 100 live birds, mammals, reptiles, and invertebrates, both young and old. Most of the animals are injured or were born in captivity and would not survive on their own in the wild. Academy educators use these animals to help teach visitors about conservation and the environment. The animals play a central role in weekend festivals and educational programs throughout the museum, as well as outreach programs.

The next time you visit the Academy, be sure to stop by the Live Animal Center and wish Duckie a happy birthday. She'll be there, gliding along in the center's mini pond, living life.

Saving an Archival Treasure

By Clare Flemming, Brooke Dolan Archivist



Courtesy of ColorLab

In the 1970s, songwriter Ray Davies wrote:

I wish my life was a non-stop Hollywood movie show
A fantasy world of celluloid villains and heroes
Because celluloid heroes never feel any pain
And celluloid heroes never really die

Ewell Sale Stewart Library/ ANSP

Perhaps so, but the celluloid itself certainly dies—literally with a bang. Cellulose nitrate is the plastic material from which motion-picture film was made in the earliest days of movie production in the 1890s through the 1940s. Flexible, transparent, and strong, this nitrate film provided cinematographers and amateurs with the raw material that made their professions and vocations possible.

The catch is nitrate film is extremely hazardous in case of skin contact, eye contact, ingestion, or inhalation. Among other frightful situations that arise from nitrate film, the chemical industry's material safety data sheet describes it as an "unusually severe fire hazard," and, when dry, it ignites readily and burns explosively; is explosive in the presence of open flames and sparks; and it may undergo hazardous decomposition, condensation or polymerization, and may react violently with water to emit toxic gases, to name just a few of the deadly hazards.

So, nitrate film is not exactly the type of material we want in the Academy Archives.

But what about all of those historic films—those one-of-a-kind documents that record people, environments, events long gone—that are preserved in archives around the globe?

The Academy Archives is home to an extraordinary motion-picture collection of nearly 400 films that document Academy expeditions and collecting trips throughout the 20th century. One of those treasures is *Undersea Gardens*, one of the earliest underwater films made in 1938 by E. R. Fenimore Johnson, a former trustee of the Academy. Last year, the Academy received a grant from the National Film Preservation Foundation (NFPF) to rescue and restore Undersea Gardens, which was captured on nitrate film. The grant came just in time—the nitrate film reel of Undersea Gardens was eating itself alive, crumbling and disintegrating at a steady pace.

Thanks to the NFPF grant and the talented experts at ColorLab in Rockville, Maryland, this treasure has been saved. In honor of the newly restored film, there will be a screening of *Undersea Gardens* (the DVD version made from the new master film) at the Academy on Friday, June 4 as part of the special members' opening of the new exhibit *Creatures of the Abyss*. We hope you'll join us in celebrating this little gem of Academy history.

> "We feel that Cheryl would be very pleased with all of this."
>
> -Carol Silverman

The Cheryl Beth Silverman Memorial Fund

Art and Carol Silverman remember with a bittersweet fondness the assortment of animals cared for by their daughter, Cheryl Beth. There were rabbits, turtles, mice, gerbils—even a mockingbird. There was the white rat Cheryl saved minutes before it was fed to a pet store snake. And, there was that perpetual stray cat population outside the Silverman home. Cheryl had a fondness for animals of all kinds.

In 1987, Cheryl died suddenly in an auto accident at the age of 24. Several months after her death, Art and Carol began searching for a way to honor Cheryl's memory. It was important for them to find a memorial that matched her inherent passion for animals.

The Silvermans considered the Academy for Cheryl's memorial. Their connection to the institution began in the 1950s. Art, a retired physician, remembers visiting as a child, and purchasing a family membership in the 1960s, much to the delight of young Cheryl and brother, Bruce. Carol, an elementary school teacher from 1970 to 1992, recalls many trips to the museum with her students.

"We went to Outside In after she died and I sat there and watched the activity and the children and how the staff and volunteers treated the animals," says Carol. "We were very pleased—that's how our association with the Academy deepened."

The Cheryl Beth Silverman Memorial Fund provides a stipend to three interns a year in Outside In, the Academy's discovery center for children. The fund covers the cost of materials needed for the interns' various projects and an award ceremony held every fall. Additionally, the funds aid in the care and maintenance of the cowbird and rabbit exhibits.

Katie O. Clark/ANSP

"Through the Silverman's generosity, Outside In has had the opportunity to inspire and ignite curiosity for the natural world in countless students and families," says Director of Education Jacquie Genovesi. "We take pride in honoring Cheryl Beth's memory through selecting interns who share the same passion and dedication that she did."

In 2006, the Silvermans expanded the reach of the memorial fund and began to support an annual, environmentally-themed lecture, held at the Academy. This year's Cheryl Beth Silverman Memorial Lecture features oceanographer and deep sea diver Dr. Sylvia Earle. The lecture will be held at 6:30 p.m. on May 10 at the Academy.

"We feel that Cheryl would be very pleased with all of this," Carol says. Arts adds that they don't expect a thank you for their support of these Academy programs.

"We should really thank the Academy for giving us such a terrific place to honor Cheryl's memory," he says.

For more information on how to support the Cheryl Beth Silverman Memorial Fund—or to learn more about how to establish a memorial fund—contact the Office of Institutional Advancement at 215-299-1122 or friends@ansp.org.

Endowment – A Forever Gift to the Academy

A gift to endowment is a forever gift, one that remains permanently with the Academy to benefit untold future generations. Only a portion of the gift, and the earnings it generates, is spent each year, with the balance maintained in perpetuity. One such arrangement with the Academy is the Böhlke Memorial Endowment Fund.

James and Eugenia Böhlke were both prominent ichthyologists at the Academy of Natural Sciences. Jim, an expert in Bahamian fishes, served as curator of the Department of Ichthyology for 28 years and Genie, who specialized in the diversity of moray eels, was a researcher in the department for more than 40 years. Together they promoted the study of fishes and worked to make the Ichthyology Collection the best it could be.

For almost 30 years, the Böhlkes' passion for ichthyology and their work at the Academy has been recognized and amplified by a steady stream of graduate students and postdoctoral researchers that have come to work with the Ichthyology Collection and Library at the Academy. This is made possible through the Böhlke Fund, established in 1983 in Jim's memory. Since Genie's death in 2001, the fund honors both Jim and Genie and their contributions to ichthyology.

By supporting these scholars, the Böhlke Fund ensures that Jim and Genie's work continues, with new discoveries and advances made. And, because it is a named endowment fund, the Böhlkes will always be remembered by those at the Academy, by the scholars that the fund supports, and by others in their field.

In the case of the Böhlke Fund, the endowment fund covers travel and living expenses of the visiting students and researchers to the Ichthyology Collection. However, endowment gifts can be directed to any area of the Academy (there are more than 45 programs or positions to choose from) or it can be left to the discretion of the Academy to be used where most needed. Gifts of any size can be made to the Academy's general purpose endowment fund.

If you are interested in helping to build a stronger financial future for the Academy and possibly honoring your family or other loved ones, please contact Amy Miller Marvin in the Academy's Office of Institutional Advancement at 215-299-1122 or friends@ansp.org for more information.

Images: Ewell Sale Stewart Library/ ANSP

James and Genie Böhlke were both prominent ichthyologists at the Academy.

ACADEMY SUPPORT

On behalf of the Academy's Board of Trustees, we wish to recognize and thank those supporters who have contributed to the Academy between December 1, 2009 and February 28, 2010. Your generosity helps to fund the Academy's many programs of research and education, and we are tremendously grateful for your support.

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Carol and Art Silverman

Katie O. Clark/ANSP

Members and guests were offered a rare view of the Academy's Thomas Jefferson Fossil Collection at a kick off to the annual Paleopalooza festival in February.

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Donors and supporters of the lobby renovation project were invited to a special reception and viewing of the new lobby, inside the Academy's main entrance.

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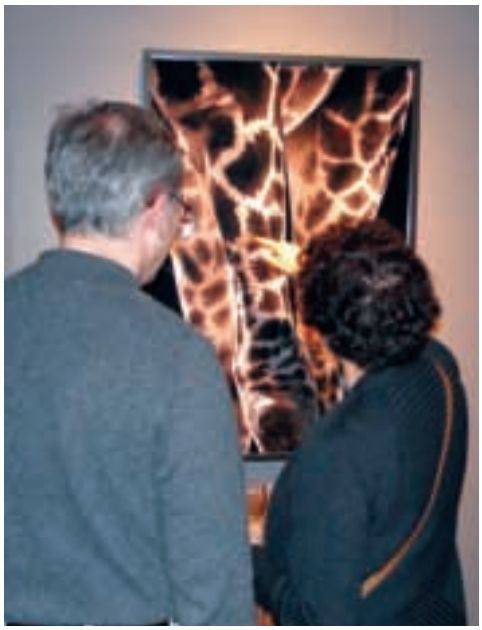

Katie O. Clark/ANSP

Members and supporters of the Academy enjoyed a special preview of the latest exhibit, Looking at Animals, *a collection of stunning photos by photographer Henry Horenstein. The exhibit runs through May 16.*

David Keller/ ANSP

In the Field

Fisheries biologist Shane Moser takes gradient measurements during a recent field study at Electric Brook in Schooley's Mountain, N.J. This specific measurement is taken at various points along a sampling area to determine the overall change in gradient from top to bottom. Gradient is one of many habitat measurements taken as part of the New Jersey Headwater project that began in 2009 and will be completed this year. The project is a stream assessment survey used to determine the health of various streams in regards to fish, crayfish, and salamander species collected, as well as the ability of the stream to support these organisms.

Behind the Scenes

Exhibit preparators Brandon Zimmerman (foreground) and Jason Farris prepare one of the walls that make up the new Art of Science Gallery, recently expanded to fill the space outside the Academy's *Butterflies!* exhibit. The entire area was closed off for several weeks while staff retired the *Living Downstream* exhibit—it had outdated technology that made it difficult to support—and built the gallery. This new space features work by contemporary artists, artwork from our Ewell Sale Stewart Library collection, and works created by our scientists.

Katie O. Clark/ ANSP

FLASHBACK

It was a plain, half-page ad in the March 1970 issue of *Frontiers*, the Academy's natural history magazine (published from 1936–1983). Advertised was an "Environmental Teach-In" at the Academy, and it offered an outlet, a meeting place, for people concerned about the growing issues of that time—pollution and the environment. None of the Academy scientists slated to speak at the event knew how many people might show up.

"It was packed—we really had a lot of people here," says Clyde Goulden, director of the Academy's Asia Center and a speaker at that first event, before it was officially known as Earth Day.

The event's April 22, 1970 brochure, pictured above, listed seven Academy scientists and their lecture topics including water and air pollution, habitat loss, ecological planning, and some of the very first tips to "go green."

"People were really interested in what we had to say," Goulden recalls. "There was a great deal of concern about what was going on and there were a lot of questions."

This year, the Academy celebrates the 40th anniversary of Earth Day. Over the past four decades, Earth Day has grown into a date recognized by more than 500 million people every year. At the Academy, we cater to several thousand people a year who look to the Academy as a forum to discuss environmental issues. Through our Town Square series and our Center for Environmental Policy, the Academy continues to build public awareness about important environmental topics. Learn more at www.ansp.org/environmental.

SUSTAINABILITY MATTERS

By Roland Wall, Director of the Center for Environmental Policy

The past winter here on the East Coast brought a record breaking season of snowstorms. Stuck with what seemed like endless days of power outages, closed schools and treacherous commutes, many people asked, "where's global warming when you need it?" In fact, some commentators saw the bad weather as "proof" that global climate change isn't occurring.

The inconvenient truth is that *weather* and *climate* are two entirely different things. A few weeks of unusually cold, snowy weather doesn't offset decades of rising temperatures.

Weather is what we find outside our door on a given day. It is short-term, local, and transient. *Climate* describes trends, not incidents. It moves on a much longer timescale (months to years to decades) and it is the sum of many weather events.

Even as we shoveled our walks and cursed the cold in Philadelphia, scientists around the world are still seeing the unmistakable signature of global warming. Researchers find that glaciers are still melting, sea levels are rising, and ice caps shrinking. And, 2009 is tied for the second warmest year ever recorded. In fact, many climate models specifically predict that there will be episodes of extreme weather events, like the recent blizzards, as a result of global warming.

For many years, some have been looking for a smoking gun that will "disprove" conclusions about climate change. Science, however, rarely involves a "Eureka!" moment where a newly discovered piece of evidence "proves" (or disproves) a particular phenomena. For climate change, though, evidence has been accumulated for decades from a variety of sources. The basic consensus on climate change has not been shaken by isolated weather events. As the snow starts to clear, we all eagerly look forward to warmer weather. None of us, however, should be eager for a warmer climate.

The Academy's Center for Environmental Policy will be presenting several public events this year that will look at the complex realities of climate change. We are looking forward to a presentation this fall by Bill McKibben, acclaimed author of *The End of Nature*. First published 20 years ago, it was one of the first popular works that warned society about climate change. For more information, visit the center's Web page at www.ansp.org/environmental.

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