Inside
Smithsonian Research

Smithsonian Institution

SCIENCE, HISTORY AND THE ARTS
NUMBER 6 • AUTUMN 2004

North American mammals. From the "oomingmak," or musk ox, of the frigid northern regions of Alaska and Canada to the Florida manatee, North America is home to a fascinating diversity of mammals. Now, a wealth of images, scientific names, descriptions and distribution maps for more than 400 North American mammals is accessible to everyone through a National Museum of Natural History Web site. This site is designed to appeal to budding naturalists of all ages and should be particularly useful to students and their teachers. A family tree identifies each mammal by its scientific grouping. When a user clicks on a highlighted group, the tree expands to show all animals in that group, making each species' genealogical relationships readily understandable. Searches can be made using both scientific and common animal names. A color map of North America offers a user the option of compiling a list of mammals indigenous to a specific region, such as a person's home state, that can be printed and carried into the field. A glossary of scientific terms is one more aspect of this site that makes it user-friendly and understandable.**—web4.si.edu/mna**

***Peromyscus polionotus,* or Oldfield mouse, of the southeastern United States**

Higgins, the house painter. In remodeling and renovation projects across the United States, designers, decorators and consumers are rediscovering the beauty of old-fashioned glazed, grained and marbled surfaces. Aiding in the revival of the craft of decorative painting, the Smithsonian Institution Libraries has digitized a rare 1841 manual from its collections. *The House Painter; or Decorator's Companion,* by William Higgins, is a valuable resource of painting techniques and materials that were used for centuries in Europe and America before large-scale paint production put the village colorman and varnish-maker out of business. Actual painted plates in the book are a guide for the re-creation of period effects in both faux stone and wood. Higgins gives detailed recipes and instructions for creating the look of jasper, Norwegian slate, agate, white-veined marble, rosewood, hare wood, dark oak, maple, cedar and other faux finishes. Other subjects covered in *The House Painter* include chemical composition and manufacture of paint colors, the manufacture of oils and varnishes, color qualities and their applications, and common errors in house painting.**—www.sil.si.edu/digitalcollections/art-design/higgins**

A hand-painted plate from *The House Painter* mimicking the look of jasper

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On the cover: "Raven Steals the Sun" (2003), a blown-glass sculpture by Tlingit artist Preston Singletary, is one of the contemporary Native American artworks on display in the Smithsonian's new National Museum of the American Indian in Washington, D.C. See story on Page 3. (Photo by Ernest Amoroso)

Smithsonian Institution

Contemporary Native art is key element of National Museum of the American Indian

Abstract puzzle pieces in earth-colored hues float above a landscape evocative of a lake shore. The horizon, where sky and water meet, serves as a serene point of reference in this untitled 1995 drawing by Grand Portage Chippewa artist George Morrison, on view in the Smithsonian's National Museum of the American Indian.

Throughout his career, Morrison maintained an interest in surrealism, adjusting its forms and practices to his own artistic approach. "I seek the power of the rock, the magic of the water, the religion of the tree, the color of the wind and the enigma of the horizon," Morrison said of his work.

Surrealism and abstraction may be far outside the expectations of most visitors to the Smithsonian's newest museum, which opened Sept. 21 in Washington, D.C.

Yet throughout the galleries of the National Museum of the American Indian, compelling contemporary artworks—humorous, ironic, serene, spiritual, scathing—bring into focus the varied and diverse realities of modern Native American life.

"Untitled," colored pencil on paper (1995), is one of dozens of artworks by Grand Portage Chippewa artist George Morrison on view in the American Indian Museum exhibition "Native Modernism: The Art of George Morrison and Allan Houser."

Modernism

"Native Modernism,"a retrospective of more than 200 drawings, paintings, sculptures and collages by George Morrison (1919-2000) and Chiricahua Apache artist Allan Houser (1914-1994), is one of the American Indian Museum's inaugural exhibitions.

"Working from the mid-1930s to the late 1990s, Morrison and Houser rebelled against ideas of what Native art must look like to evolve a personal and original style," Curator Truman Lowe (Ho-Chunk) explains.

Houser, often called the "father of contemporary Native American sculpture," blended Native subjects with a sleek modernist aesthetic. On display in the museum are a number of Houser's sculptures, including his well-known mother-and-child figures, through which he "aimed to convey the central role of family in Native culture," Lowe says. "He explored this theme through a variety of materials, making use of their special qualities of translucence, color and texture."

Identity

Nearly everywhere one turns in the American Indian Museum are contemporary artworks carefully chosen by Smithsonian curators to illustrate issues of Native American identity.

For example, a pair of red Converse high-top sneakers covered with traditional Native beadwork, by Kiowa artist Teri Greeves, can be seen in the gallery "Our Lives: Contemporary Life and Identities." On each shoe, Greeves has sewn beaded images of each of her two children dressed in Native clothing.

Her inspiration comes from a vivid childhood experience. "My mother owned a store on the Wind River Reservation in Wyoming, among the Shoshone and Northern Arapaho, where she sold beadwork made mostly by the people on

(continued)

Right: "Kiowa Ah-Day," beaded sneakers made in 2004 by Kiowa artist Teri Greeves (Photo by Walter Larrimore)

Below: "The American Indian" (1970), oil on linen, by Fritz Scholder (Photo by Walter Larrimore)

that reservation," Greeves recalls. "I used to watch my mom's store in the summer, sitting at the counter beading on something. Whenever one of the beadworkers came in to sell a piece, they would make comments to me like, 'Don't pull your stitches so tight.' Always, they gave me encouragement, though my beadwork was rough yet.

"When I was 9 or 10 years old, these old Sioux women brought in fully beaded tennis shoes with a geometric design. These were the coolest things my sister and I had ever seen," Greeves says.

Near the Greeves sneakers, a shimmering sculpture by Lawrence Beck, a Chnagmiut Eskimo, invites closer examination. Using dental mirrors, kitchen implements, wire, feathers, chrome and rubber, Beck created a modern version of a traditional Eskimo Yup'ik mask. In doing so, "Beck has put a face on the world of technology," explains Curator Jolene Rickard (Tuscarora), "just as the wood and bone masks of his ancestors established a connection to the natural world.

"Whereas Greeves attached Indian culture to an everyday American object, Beck assembled everyday objects to evoke Indian tradition," Rickard says. "Both pieces successfully merge cultural vocabularies in a testament to some of the conflicts of identity that many Indians face today."

Nationality

A third artwork in "Our Lives," "The American Indian," a 1970 painting by Fritz Scholder (Luiseño), confronts nationality, an issue full "of complexities and ironies, confrontations and negotiation" for Native Americans, Rickard says.

In the painting, "a flag draped over a smiling Native American man suggests the ongoing occupation of Native homelands," Rickard explains. "A pipe tomahawk reminds us that our survival was not freely given—we have had to defend it.

"Every nation in the Americas regards indigenous people as citizens of the countries that took over our lands," Rickard continues. "But many Native people consider themselves members of their own nations, and some see themselves as citizens of two nations."

Tradition

In a different exhibition in the museum, "Our Universes: Traditional Knowledge

Shapes Our World," visitors can admire the glass sculpture "Raven Steals the Sun," created in 2003 by Tlingit artist Preston Singletary (see cover). The sleek red-and-black sculpture of a raven holding the sun in its beak depicts a scene from a traditional Native American tale.

"All of my inspiration," Singletary explains, "comes from the stories, symbols and imagery of the Tlingit people," a Northwest Coast tribe.

According to Tlingit legend, Raven brought order to the world. When he learned that a greedy chief was keeping the stars, moon and sun locked away in three carved boxes, Raven plotted to steal them away.

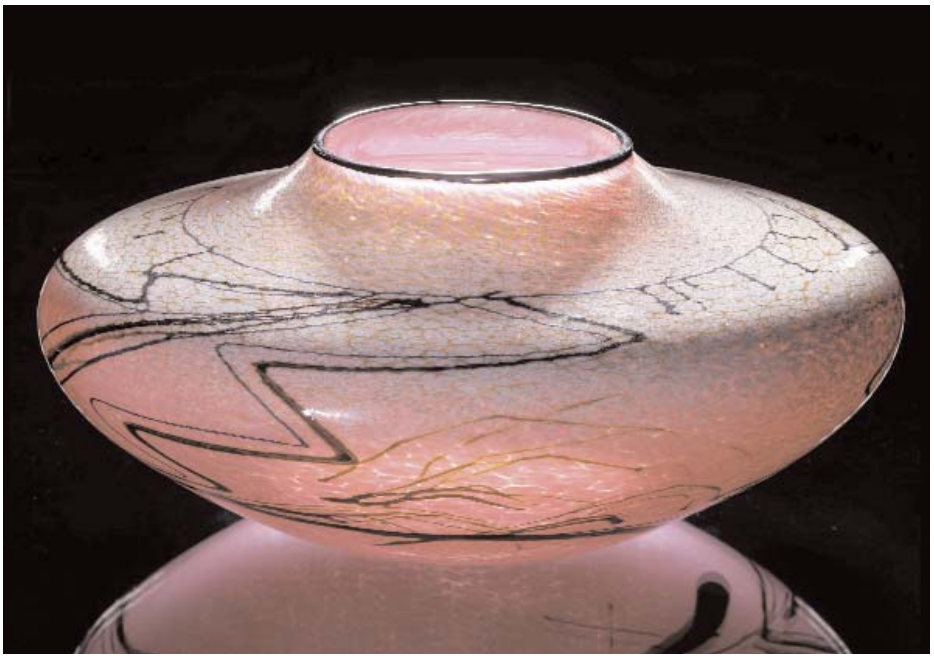
He transformed himself into the baby of the chief's daughter and became a beloved grandson. To keep his grandson happy, the chief allowed the boy to play with the precious boxes. One by one, the baby opened the boxes, releasing the stars, moon and sun into the sky. To escape the chief's wrath, Raven transformed himself back into a bird and flew away.

"Understanding the metaphors of the Native oral tradition gives insight to life and how to interact with it," Singletary says. "In releasing the sun, raven brought light to the world. I like to think that I am doing something similar in bringing a new material [glass] to Native artwork."

Using a very different material, Inuit sculptor Karoo Ashevak carved the surrealist "Spirit Drummer," also on exhibit in the museum, out of whalebone.

"Ashevak was often inspired by traditional stories about creatures from the spirit world," says Gerald McMaster (Plains Cree and member of the Siksika Nation), director of cultural resources for the museum and co-author of the book *Native Universe*. "His brilliantly surrealistic sculptures reflect a unique vision of extraordinary expressiveness—both frightening and humorous." Ashevak's sculptures brought him international acclaim before his death in a fire in 1974.

"Themes of shamanism and associated drum dancing and the relation between the physical and spiritual were central to Ashevak's art," McMaster adds. " 'Spirit Drummer,' with its whalebone form, transported expression and hands holding a removable drum and drum beater, seems at once comic and ecstatic."



"Lightning Strikes" (1990), blown glass, by Tony Jojola (Photo by Ernest Amoroso)

Tony Jojola (Isleta Pueblo) is another contemporary Native American artist whose art borrows from tradition. Jojola uses traditional Native American forms, such as seed jars, baskets and water containers, known as ollas, in the creation of his colorful contemporary blown-glass works. Jojola, born at the Isleta Pueblo in New Mexico, is creator of "Lightning Strikes," a translucent blown-glass bowl in the shape of a traditional seed jar.

In choosing the artworks on view in the American Indian Museum, curators collaborated with 24 tribes and Native communities from across the Western Hemisphere. Native voices shaped the look and feel of every display. For some visitors, the contemporary art in the museum may mark an awakening and first encounter with the world of modern-day Native Americans.

As Richard West (Southern Cheyenne and member of the Cheyenne and Arapaho Tribes of Oklahoma), director of the museum, says, "Visitors will leave this museum knowing that Indians are not just part of history. We are still here and making vital contributions to contemporary American culture and art." ❖

—Hope Cristol

"Reverie" (1981), bronze, by Allan Houser

Evasive maneuvers reveal that social insects constantly learn from bad experiences

Beside a one-lane unpaved road snaking through dense rain forest some 60 miles east of Panama City, William Wcislo is lying belly-down in the dirt for a close-up view of abduction and murder.

Lurking near the entrance to an underground nest of the soil-dwelling Panamanian sweat bee (*Lasioglossum umbripenne*), a leggy, big-eyed worker ant (*Ectatomma ruidum*) waits patiently in ambush.

Before long, a metallic-green female sweat bee, carrying a load of fresh pollen, comes in for a landing. She pauses at the nest entrance as a guard bee checks her credentials, using her scent as a chemical password.

Lunging, the ant plunges her mandibles into the bee's backside, curls her body beneath her victim and jabs her tail-stinger into the bee's throat. The sweat bee is then carried off—pollen and all—to the ant colony as a future meal.

Predator-prey strategies

"Ants are among the world's premier predators and the most important predators of other social insects," explains Wcislo, an evolutionary biologist at the Smithsonian Tropical Research Institute in Panama. "Throughout their long history, ants have evolved diverse predatory strategies." In turn, insects such as the sweat bee must continually develop new strategies to counter the ants' attacks.

During initial observations of interactions between *L. umbripenne* and *E. ruidum*, Wcislo—who has studied social insects for some two decades—noticed the bees using evasive tactics he had not seen or read about before.

By studying how sweat bees recognize ants and the stimuli that trigger their evasive behavior, Wcislo says, he is working to unlock the secrets by which "social insects use past experience and the circumstances of their environment to modify their behavior in precise ways." Such studies may someday help explain the role that psychology and the brain play in evolutionary biology among all animals.

Above: An ant of the species *Ectatomma ruidum* (Photo by C. Richart)

Top right: William Wcislo examines the comings and goings at a sweat bee nest near the Smithsonian Tropical Research Institute in Panama. (Photo by Marcos Guerra)

Bottom right: A Panamanian sweat bee returns to its nest. (Photo by William Wcislo)

Stimuli and response

With French ant expert Bertrand Schatz and support from the Smithsonian's Fellowship Program, Wcislo set up a simple experiment to study the reactions of sweat bees to ants—both dead ants and live ants—that the scientists placed near their nest entrances. The scientists conducted their study over the course of five years, focusing on some 1,500 different *L. umbripenne* nests.

Wcislo and Schatz wanted to know what senses—visual, olfactory or other—bees use to detect ants.

In normal circumstances, a returning bee will approach the nest entrance and immediately enter. When an ant was placed near a nest entrance, Wcislo explains, "a bee was significantly more likely

to abort the first approach flight and reapproach the nest on the side opposite the ant's position."

Other evasive strategies the bees use included flying up to the nest in a confusing zigzag pattern and landing a short distance away from the nest and walking to the entrance.

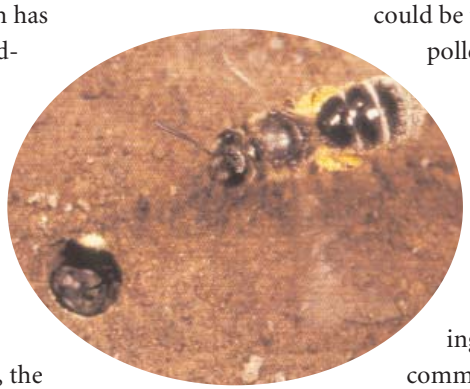
Dead ants that had their "scent" chemically removed by the scientists elicited the same evasive responses from bees as did live and dead ants with their scent intact. This proved the bees "saw" the ants.

Bees did not react strongly to ant-sized squares and rectangles of black paper the scientists placed near their nests. This indicated that the bees saw some aspect of the ant's morphology or profile that they associated with danger. "Just what aspect of the ant's body is recognized by the bees remains unknown," Wcislo says.

How bees share information with each other about predators also is a mystery. "Evasive bee behavior becomes even more difficult to understand when you consider that a bee that has a bad experience with an ant is usually killed and cannot learn from the experience," Wcislo says.

Counterattack

Among ants, ambush has long been a tried-and-true method of attack. During the study, Wcislo and Schatz observed ants using a strategy to counter the bees' evasive zigzag flying.



As a bee zigzagged, the ant rapidly and excitedly pirouetted across the top of the nest entrance, apparently surveying the 360-degree area surrounding the nest in an attempt to see the bee as it landed. This behavior occasionally resulted in ants capturing bees that had landed away from the nest and were walking in.

For the bees, evasive behavior can have an indirect cost to the hive, Wcislo points out. It decreases the pollen gathering efficiency of the entire nest. Walking in, aborted landings and flying in evasive ways burn up time and energy the bees could be using to gather more pollen and nectar.

"Predator recognition has been little studied in insects," Wcislo says, especially with regard to learned behavior.

"Our work is exciting in that it belies the common view that insects are miniature automatons with hard-wired brains and robotic behavior," he adds. "This is erroneous. The behavioral flexibility of sweat bees shows the complexity of this predator-prey relationship and illustrates the importance of information processing by both species involved." ❖

—Hope Cristol

"Our work belies the common view that insects are miniature automatons with hard-wired brains and robotic behavior," Wcislo says.

Studio furniture exhibition raises the question, 'Is it furniture or is it sculpture?'

After their dismay has subsided, a wry smile often settles upon the lips of people seeing "Ghost Clock" in the Smithsonian American Art Museum's Renwick Gallery for the first time.

Initially, it appears that someone has tossed a white muslin sheet over a grandfather clock and tied it with a rope. Closer inspection of this trompe l'oeil, or "fool the eye," sculpture reveals that there is no sheet and, in fact, no clock. Rochester, N.Y.-based woodworker Wendell Castle carved this piece of "furniture" in 1985 from a single piece of bleached Honduran mahogany.

"Ghost Clock" is one of the better-loved pieces in "Right at Home: American Studio Furniture," an exhibition at the Renwick offering a look at an eclectic and small field of American craft that is gaining in popularity. Many pieces in this exhibition occupy a realm halfway between functional furniture and fine art, leading some people to ask, "Is it furniture or is it sculpture?"

One-of-a-kind

Today, "ever so much of our furniture is mass-produced," exhibition Curator Kenneth Trapp points out. "Whether we purchase a cheap plastic chair or a carved bedstead in an expensive showroom, these pieces were made in a factory."

Studio furniture is the antithesis of factory furniture. It consists of highly stylized, one-of-a-kind chairs, tables, desks, chests and other pieces handmade by skilled craftsmen.

In the 1950s, the studio furniture movement's first practitioners—turned off by factory furniture—looked to Scandinavian designs for inspiration. They "sought clean lines and simple, natural forms with an emphasis on wood grains and colors," Trapp explains. "Fond of mahogany, walnut and rosewood, they produced functional furniture that was valued for its unique design and high-caliber craftsmanship."

Function was central to their creations—chairs were made to be comfortable; tables, cupboards, desks and bureaus were utilitarian, sturdy, beautiful and meant for daily use.

For decades, California furniture maker Sam Maloof has created timeless, classic pieces that embody this union of function and beauty. "I want to be able to work a piece of wood into an object that contributes something beautiful and useful to everyday life," Maloof once said.

Maloof's 1995 low-back side chair made of zircote wood is in "Right at Home," as is his double rocker and drop-leaf dining table. Comfort is a critical element of Maloof's chairs and rockers.

A 1950 desk by Wharton Esherick and a chair by George Nakashima, two other early innovators of the studio furniture movement, also are featured in the exhibition.

Pure form

A second generation of furniture makers following their creative inclinations began to create pieces that were more sculpture than furniture. Form rather than function began to take precedence.

Castle's "Ghost Clock," for example, Trapp says, "has no functioning parts—it is pure sculpture." Still, its form is that of a traditional grandfather clock.

Similarly, furniture maker Jacob Cress' chair "Oops!" is not made to be sat upon, even though it has all the characteristics of a fine Chippendale chair. A wooden ball fleeing the chair's front left claw foot transforms this work, Trapp says, "from seating into a sly joke."

Cress, who lives and works in Fincastle, Va., had a long career of making fine furniture and repairing antiques before he began making what he calls "funny furniture."

"Jacob Cress uses traditional woodworking techniques in the creation of fab-

ulous furniture sculptures," reads a sentence from Cress' Web site.

Jon Sutter's piece in the exhibition, "Under Continuous Monitor," Trapp says, "defies description as any type of furniture." It may best be described as an instrument consisting of a clock, thermometer and barometer atop a pedestal of birch, plywood, poplar, concrete, acrylic, aluminum and found objects.

Sutter's use of a variety of materials other than wood is representative of a new direction many studio furniture makers are now taking. Paul Freundt's "Troas," a three-legged chair, is made of patinated bronze that has the warmth of wood.

Small field

Not sold in furniture stores, studio furniture is primarily found in arts-and-crafts galleries, studio open houses and auction houses. Often, maker and buyer are acquainted.

"It is a small field, so pieces often sell without being offered to the general public," Trapp says. "People buy studio furniture in part to make a statement about who they are. Buyers often take care to find an artist whose ideas align with theirs and buy or commission works they want to live with."

If anything, the 58 pieces in "Right at Home" illustrate the creative vitality of the American studio furniture movement, as well as the Renwick's commitment to collecting crafts. All of the pieces in "Right at Home" are in the permanent collection of the Smithsonian American Art Museum.

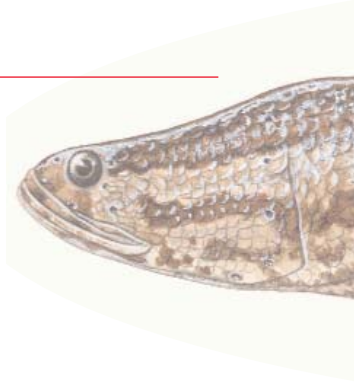
As Alphonse Mattia, a teacher at the Rhode Island School of Design whose work "Points of Reference: Atlas, Webster & Roget" is in "Right at Home," writes: "The decorative arts have always been a vital and compelling document of contemporary culture." ❖

—Robert Strohm

Left: "Ghost Clock" (1985), by Wendell Castle, has no functioning parts. Carved from a single piece of mahogany, it is pure sculpture. (Photo by Bruce Miller)

Above: "Points of Reference: Atlas, Webster & Roget" (1995), by Alphonse Mattia, does not easily fit into any furniture category. (Photo by Bruce Miller)

Right: "Oops!" (2001), a fine Chippendale chair, by Jacob Cress, was not made to be sat upon.



Genetic profiling of northern snakehead fish may help scientists track their spread in U. S. waters

By Rita Zeidner
Special to Inside Smithsonian Research

Most people have difficulty identifying different species of fish laid side-by-side in the fishmarket's display case, let alone distinguishing different siblings of the same species.

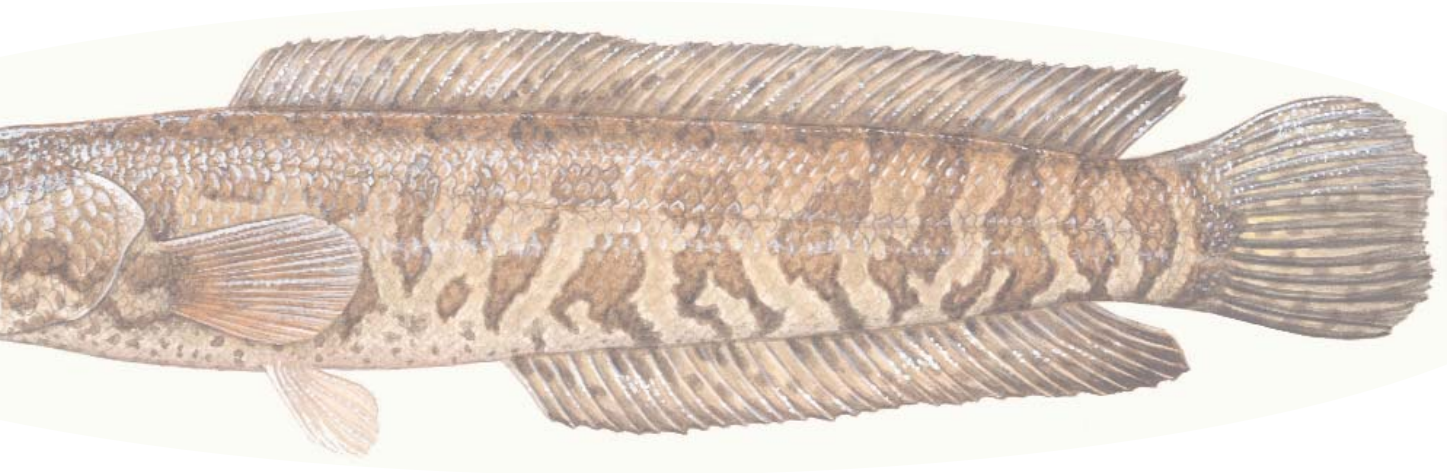
But Thomas Orrell, a research associate in the Division of Fishes at the Smithsonian's National Museum of Natural History, is using DNA technology to understand the population structure of the northern snakehead, *Channa argus*, that has been introduced into several waterways in the United States—most notably the Potomac River in Virginia and Maryland near Washington, D.C.

His mission: to determine whether individual northern snakehead fish caught at various points in and around the Potomac are genetically related and if there is evidence that they are breeding in the Potomac. Orrell is also using snakeheads caught in Massachusetts and Pennsylvania to examine the species' genetic diversity.

Orrell has coordinated with local state and federal fisheries agencies to have the fish delivered to him frozen—the best way to preserve the genetic material. Eventually, the specimens will be become part of the fish collection—the world's largest—at the Natural History Museum. With 3.5 million specimens, it is a center of collections-based taxonomic research on fishes.

Concern

The northern snakehead, native to Northern China and Korea, has the potential to



expand its range throughout most of the United States and into Canada, Orrell says. Proliferation of the snakehead in the United States is cause for alarm for several reasons. One is that these voracious eaters compete with native species for food.

As juveniles, they seek zooplankton, insect larvae, small crustaceans and the fry, or young, of other fishes. As adults (they can grow to nearly 5 feet and weigh as much as 13.5 pounds), they feed on other fishes, larger crustaceans, frogs, small reptiles and, sometimes, birds and mammals.

Other threats are their ability to live out of water for up to three days—the snakehead can breath oxygen in the air—and their tendency to "walk" over land by wriggling. Both abilities allow them to disperse widely.

"The northern snakehead presents a formidable environmental threat that has the potential to upset the natural balance of freshwater ecosystems in the United States," Orrell says.

Baseline genetic data

Determining whether individual snakeheads found in various rivers, streams and lakes are genetically related, Orrell says, may provide clues as to how this species was first introduced into the wild in the United States and if it is breeding in the Potomac River.

One juvenile snakehead was found in a Potomac tributary near Alexandria, Va., in September, proof that the fish are breeding, some say. Genetic data can provide additional evidence, even if no fertilized snakehead eggs or other juvenile fish are found.

Orrell is using mitochondrial DNA—the same genetic material used by anthropologists to track ancestral links in humans—to see if wild-caught snakeheads are related. Mitochondrial DNA is considered a valuable tool in genetics research as it is passed on only from the mother to all her offspring. This means that all of the DNA in the mitochondria of a particular fish is a copy of its mother's.

"It is also important to have baseline genetic data so, if the fish starts spreading, we can track it better," he says.

DNA sequences

"Mitochondrial DNA is particularly useful since some regions of the molecule are less likely than others to change from generation to generation," Orrell explains.

Orrell is studying DNA extracted from tiny pieces of tissue collected from 29 snakehead fish caught in Maryland, Virginia, Pennsylvania and Massachusetts in the last two years. He is comparing some 1,200 of the more than 16,500 base pairs that, in a unique sequence, make up the snakehead's DNA. Base pairs are the molecules that form DNA strands.

After isolating DNA from each fish, staff at the Genomics Core Facility of the Smithsonian's Laboratories of Analytic Biology helped Orrell make millions of copies of each gene. This allowed him to determine the sequence of nucleotides, the actual genetic code of the DNA, from each sample. "Once the genetic sequence for each fish is determined, we can compare the sequences of individual fish," he says. "If a mother has a particular sequence, then all offspring should share that sequence."

Fish with the same genetic sequence are considered closely related. This information will be useful in determining where the fish was first introduced in the Northeast and if its population is growing.

"If the samples from a particular area are determined to have the same genetic sequence and there is little variation within a particular water system, then this is potential evidence that the fish are breeding," Orrell explains. A second possibility for this scenario is that someone released a large quantity of sibling snakehead fish in the same area.

Two pathways

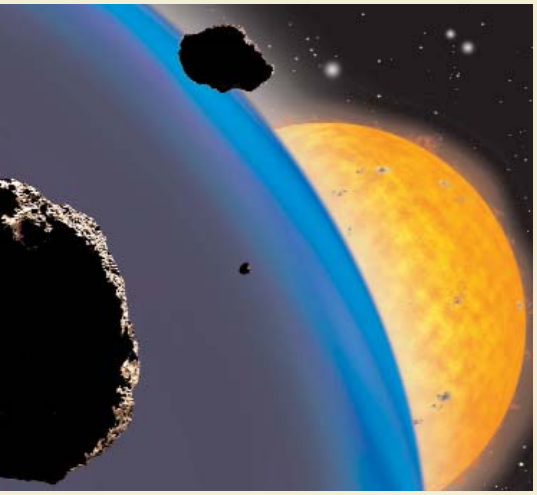
Experts agree that snakeheads entered the United States by either one or both of two pathways: release by aquarium owners—overwhelmed by the size of the snakehead as a pet—or release by someone who wants to catch snakeheads regularly in a local pond or stream for food.

Orrell's research may soon provide wildlife managers with a better idea of how and where snakeheads are being introduced. Although having the genetic data will not directly help eradicate the northern snakehead if they do become established, it will help managers track established populations in the event that they expand their range. ❖

Top: A northern snakehead fish (Illustration by Susan Trammell, courtesy of the U.S. Geological Survey)

Left: Thomas Orrell holds a northern snakehead specimen at the National Museum of Natural History. (Photo by John Steiner)

Planetary discovery. A Jupiter-size planet orbiting a star located about 500 light-years from Earth in the constellation Lyra was recently discovered by a team of astronomers using a network of small, inexpensive telescopes to search for star-orbiting planets. The new planet was detected by a 4-inch-diameter telescope when a dip in the star's brightness was observed as the planet crossed in front of it. Follow-up observations by large telescopes at the W.M. Keck Observatory in Hawaii confirmed the planet's existence. "Even humble telescopes can make huge contributions to planet searches," says Guillermo Torres of the Harvard-Smithsonian Center for Astrophysics, co-author of a paper announcing the new planet. Astronomers will continue to examine this planet and star closely.



A planet, in blue, crossing in front of a distant star, causes a brief dip in the star's brightness when seen from Earth. (Artist's conception by David Aguilar)

Marine mammal database. The Marine Mammal Program of the Smithsonian's National Museum of Natural History has received a grant from the U.S. Marine Mammal Commission to develop a Web-based system for accurately identifying species of stranded beaked whales. The Web site will serve as a center for species information, including data from museum specimens, images and bibliographic references. Each year, the Marine Mammal Program receives dozens of requests from scientists to identify beaked whales. Accurate species identification is critical for developing conservation and management strategies for these animals.

Materials research director. Robert Koestler, an entomologist and cell biologist, has been appointed director of the Smithsonian Center for Materials Research and Education. Koestler has more than 30 years of museum experience at the Metropolitan Museum of Art and the American Museum of Natural History, both in New York City, in the areas of natural history and art history, with a concentration in biology and conservation. Koestler is known for his advancements in art conservation research, including quantification of biodeterioration and early detection systems, assessment of visual changes in material surfaces and control of insect and fungal infestations.

Robert Koestler

Portrait competition. A new competition to recognize innovation in the art of contemporary portraiture is being launched by the Smithsonian's National Portrait Gallery. The Outwin Boochever Portrait Competition, to be held every three years, will provide a new opportunity for emerging artists to showcase their work. The competition, named after Virginia Outwin Boochever, a Portrait Gallery docent who donated $2 million to make it possible, is open to all artists living and working in the United States. Portrait submissions will be accepted beginning in June 2005. For details, send an e-mail to portraitcompetition@npg.si.edu.

Micronesian kingfisher (Jessie Cohen photo)

Kingfisher hatchling. A rare Guam Micronesian kingfisher hatched this summer at the Smithsonian National Zoo's Conservation and Research Center in Front Royal, Va. Artificial incubation and hand rearing were used after the chick's parents rejected the egg. After the egg hatched, National Zoo staff took turns feeding the chick seven to eight times a day at two-hour intervals. Few Guam kingfisher chicks have been hatched successfully from eggs receiving full-term artificial incubation. Guam's kingfishers were decimated by the brown tree snake, introduced to Guam from Melanesia after World War II. These birds now exist only in captivity.

Meteorite of Martian origin identified by Smithsonian geologists

A variety of crystals are visible in this magnified cross-section of the Martian meteorite MIL 03346.

By carefully analyzing the mineral composition and texture of a meteorite recently discovered in Antarctica, geologists from the Smithsonian's National Museum of Natural History have identified it as a rare specimen from Mars.

"The mineralogy, texture and oxidized nature of the rock are unmistakably Martian," says Tim McCoy, a geologist in the museum's Department of Mineral Sciences, who studied the specimen with Smithsonian geologists Cari Corrigan and Linda Welzenbach.

The new meteorite, known to scientists as MIL 03346, is only the seventh recognized member of a group of Martian meteorites called nakhlites, named after the first known specimen that fell in Nakhla, Egypt, in 1911. Nakhlites are thought to have originated in thick lava flows that crystallized on Mars 1.3 billion years ago.

MIL 03346 weighs 1.58 pounds and was found about 466 miles from the South Pole in December 2003 by the U.S. Antarctic Search for Meteorites program.

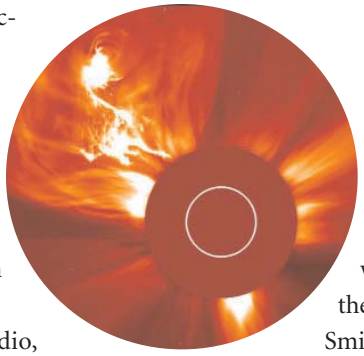
Using a special saw with a diamond-impregnated blade, the Smithsonian scientists cut an ultra-thin slice of the meteorite and ground it down to a thickness of 30 microns (thinner than a human hair). This cross-section was placed under a microscope and backlit.

Textures and colors visible within each of the minerals in the section reveal information about the cooling history of this igneous rock, McCoy explains. "This nakhlite is composed primarily of the mineral clinopyroxene," which consists of iron, magnesium, calcium, silica and oxygen. It is easily distinguishable from similar types of lava rocks found on Earth because, McCoy says, "it is much more iron-rich than we find in normal Earth compositions."

Scientists believe a large meteorite hit Mars 11 million years ago and ejected the nakhlites into space, where they wandered for several million years before landing on Earth. MIL 03346, McCoy says, is "lightly shocked," referring to tiny fractures inside the meteorite's mineral grains caused by the explosion that ejected it into space.

—John Barrat

Studying physics of solar storms may enable scientists to predict their intensity



The artificial solar eclipse created in this spectrometer image allows a clear view of a solar flare.

Solar flares and their relatives, coronal mass ejections, are under scrutiny by scientists at the Smithsonian Astrophysical Observatory in Cambridge, Mass., who hope someday to predict these events.

Both are powerful magnetic disturbances on the surface of the sun that unleash massive bursts of superheated gas, bombarding Earth with high-speed, high-energy particles. These particle "storms" overload electric power grids; disrupt radio, television and telephone signals; and cause excess radiation exposure to passengers in high-altitude aircraft.

Using the Earth-orbiting Ultraviolet Coronagraph Spectrometer, the scientists, led by SAO Solar Astrophysicist John Kohl, are studying shock waves and super hot sheets of electrified gas associated with mass ejections and solar flares. The spectrometer, an instrument developed at the Smithsonian Astrophysical Observatory, creates an artificial solar eclipse, allowing observations of the sun's faint corona.

According to Smithsonian Astrophysicist John Raymond, the spectrometer "provided the first direct evidence of the location, formation, speed, size and duration of shock waves formed in a coronal mass ejection." Explains Raymond, "The ultraviolet observations let us see cool gas being pushed aside by the shock wave, as well as the 50-million-degree Celsius gas the wave produces."

Smithsonian Astrophysicist Jun Lin and University of New Hampshire Astrophysicist Terry Forbes used the spectrometer to pinpoint a thin "sheet" of electrified gas created in a solar flare. Computer models predicted this sheet. Lin says he and Forbes were able to see "an extremely narrow region of a solar flare, where gas temperatures jumped from less than a million degrees Celsius to more than 6 million degrees." The current sheet acts as a particle accelerator, powering the initial fury of the solar storm.

"These observations are key to creating new computer models that can predict the intensity and duration of high-energy particle storms and when a particular storm will arrive at Earth," Kohl says.

—Sue Herzberg

How the Great Pyramid Was Built, by Craig B. Smith (Smithsonian Books, 2004, $27.95). A world-class engineer explains for the first time how the Great Pyramid of Giza was actually built.

The Whole Hog: Exploring the Extraordinary Potential of Pigs, by Lyall Watson (Smithsonian Books, 2004, $24.95). A lyrical, lively natural history and illustrated guide to the wonderful world of pigs.

Tequila, edited by Alberto Ruy Sanchez and Margarita de Orellana (Smithsonian Books, 2004, $25). An A-to-Z guide to the "burning river in a glass," complete with photographs, recipes and stories.

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Ballyhoo, Buckaroo and Spuds: Ingenious Tales of Words and their Origins, by Michael Quinion (Smithsonian Books, 2004, $19.95). An enchantingly entertaining romp through the English language by the Oxford English Dictionary's lexicographer.

Beautiful Beyond: Christian Songs in Native Languages (Smithsonian Folkways Recordings, 2004, $15). An anthology of hymns and songs sung by Native American communities throughout the United States.

Sí Soy llanero: Joropo Music from the Orinoco Plains of Colombia (Smithsonian Folkways Recordings, 2004, $15). Syncopated drive and top-of-the-lungs singing from the cattle-herding Mestizo people of the plains of eastern Colombia.

Classic Folk Music from Smithsonian Folkways (Smithsonian Folkways Recordings, 2004, $15). Classic performances by artists active during the great folk song revival of the 1940s through the 1960s.

Dave Van Ronk...and the Tin Pan Bended and the Story Ended... (Smithsonian Folkways Recordings, 2004, $15). This October 2001 recording of folk singer Dave Van Ronk's last concert features the "Mayor of MacDougal Street" at his lively best.

Books published by Smithsonian Books can be ordered from Smithsonian Books, c/o W.W. Norton & Co. Inc., National Book Co. Inc., 800 Keystone Industrial Park, Scranton, Pa. 18512. To order by phone, call 1 (800) 233-4830.

Recordings can be ordered from Smithsonian Folkways Mail Order, Smithsonian Folkways Recordings Dept. 0607, Washington, D.C. 20073-0607. To order by phone, call 1 (800) 410-9815 or (202) 275-1143.

Native Universe: Voices of Indian America

Edited by Gerald McMaster and Clifford E. Trafzer (National Geographic Books, 2004, $40)

Among the 300 images spread throughout the pages of *Native Universe: Voices of Indian America* is a single black-and-white photo of an impromptu jam session in the New York City subway. In the picture, six members of the Silver Cloud Singers are performing around a large Native American drum.

It may seem odd to passers-by that these Apache, Maya, Delaware, Ho-Chunk and Mohawk musicians have chosen a Manhattan subway station as their venue. But Dakota performing artist Floyd Red Crow Westerman points out that Manhattan is Indian land and an Indian word.

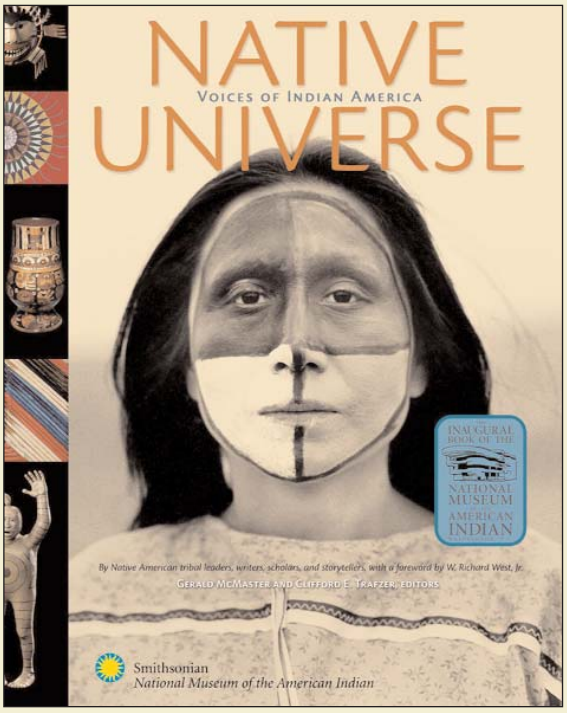
In fact, New York City is home to a vibrant urban Indian community whose more than 27,000 members are engaged in every sector of urban society. Native peoples have lived for some 12,000 years on land in what is now Manhattan.

Native Universe was published in celebration of the Sept. 21 opening of the Smithsonian's National Museum of the American Indian on the National Mall in Washington, D.C. This inaugural book, written exclusively by Native people, communicates firsthand the experiences, observations and intellectual concepts of the Western Hemisphere's indigenous people.

Both historical and modern, the book's many stunning images serve as a visual complement to the powerful voices and revealing essays of prominent Native Americans, such as Vine Deloria Jr., John Mohawk, Wilma Mankiller and N. Scott Momaday. The authentic voice of those who know Native culture and have lived it distinguishes *Native Universe* from other books on Indian traditions.

As *Native Universe* makes clear, Native American culture is vibrant, alive, relevant and infinitely broader than the cowboys-and-Indians images portrayed for decades in popular culture.

"It has been gratifying for me and many others to have lived long enough to witness all the old stereotypes stood on their heads," writes Richard West (Southern Cheyenne and member of the Cheyenne and Arapaho Tribes of Oklahoma), founding director of the National Museum of the American Indian, in his foreword to *Native Universe*. "Indians are not vanishing, we are multiplying; we are not stoic but abound in humor and play."



The book is divided into three sections—"Our Universes," "Our Peoples" and "Our Lives"—that correspond with opening exhibitions in the museum. Editors Gerald McMaster (Plains Cree and member of the Siksika Nation) and Clifford E. Trafzer (Wyandot ancestry) examine the lives of Native Americans, from the Mayan people of Mexico in 250 A.D. to modern-day Mohawk ironworkers who helped cut through the rubble of the World Trade Center towers after the Sept. 11, 2001, terrorist attacks.

"Our Peoples," for example, features the poignant words of Lakota Chief Sitting Bull, spoken in 1882: "White men like to dig in the ground for their food," Sitting Bull said. "My people prefer to hunt the buffalo as their fathers did. White men like to stay in one place. My people want to move their tipis here and there to the different hunting grounds. The life of white men is slavery. They are prisoners in towns or farms. The life my people want is a life of freedom. I have seen nothing that a white man has, houses or railways or clothing or food, that is as good as the right to move in the open country, and live in our own fashion...."

All of the essays and artwork found in *Native Universe* "contribute to a large and ever-expanding circle that we call the Native universe," editors McMaster and Trafzer write in their introduction. "Our circles today are based on ancient teachings, values and beliefs handed down through the oral tradition."

As West explains, "Native peoples want to remove themselves from the category of cultural relics and, instead, be seen and interpreted as peoples and cultures with a deep past that are very much alive today."

Native Universe achieves that goal.

—Daniel Friend

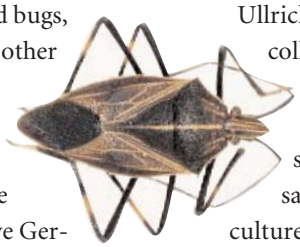
Some Contributing Members will receive Native Universe: Voices of Indian America *as a benefit of membership.*

True-bug collection comes to National Museum of Natural History's Entomology Department

Wolfgang Ullrich had an obsession with bugs. Not just any bugs, but what scientists call true bugs—stink bugs, water bugs, assassin bugs, bed bugs, wheel bugs, squash bugs and other members of the taxonomic suborder Heteroptera.

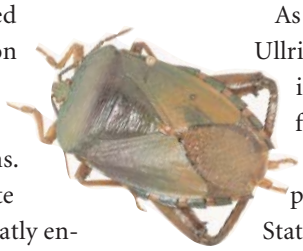
For decades, Ullrich traveled the world collecting true bugs. Back home in his native Germany, he spent hours with his specimens, classifying, labeling and mounting them and reading the latest scientific literature on new species.

Recently, the Entomology Department of the Smithsonian's National Museum of Natural History purchased Ullrich's bugs, a collection that includes 95,000 excellently prepared pinned specimens and 250,000 unmounted specimens. Like new books being merged into a library, Smithsonian staff have already incorporated Ullrich's pinned specimens into the well-organized collection of 35 million insects the Smithsonian's Entomology Department maintains.



Ullrich's exquisite collection greatly enhances the geographic and taxonomic depth of the Smithsonian's Heteroptera holdings, says U.S. Department of Agriculture entomologist Tom Henry, who works in the museum. "The Ullrich Collection is rich in specimens from the Asian tropics and the Near East and aquatic Heteroptera from Indochina, particularly Laos."

One common characteristic all true bugs share is needlelike mouthparts that they use to extract body fluids from plants and animals. Of about 80,000 species of true bugs worldwide, many are major agricultural pests.



As part of the Smithsonian's collection, Ullrich's bugs are already being put to use in the identification of foreign insects found in shipments of fruit, vegetables, flowers and other agricultural products imported into the United States.

Henry and other entomologists in the National Museum of Natural History frequently receive packages from border agents of the U.S. Customs Service that contain suspicious insects. Using the museum's insect collection as a reference, USDA entomologists can quickly identify a foreign "pest" and halt a shipment entering the country.

—John Barrat

From left, an Australian stink bug, a true bug from Myanmar with no common name and a Chinese shield bug (Jim Di Loreto photos)

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