

# Exhibits Alive!



**On July 28**, the Museum's new exhibition *Spiders Alive!* will offer visitors access to the hidden worlds of arachnids, from red-kneed tarantulas and burrowing trapdoor spiders to the feared black widow and gargantuan goliath bird eater.

The latest in a series of special live-animal exhibitions, which in the last few years have included the amphibian favorite *Frogs: A Chorus of Colors*, reptilian showcase *Lizards and Snakes: Alive!*, and the ever-popular *Butterfly Conservatory*, *Spiders Alive!* is a powerful illustration of the biodiversity of a specific animal group and an opportunity for a rich learning experience. "When we present live-animal exhibitions, we're giving people a way to personally connect to science," says Museum Curator Darrel Frost, who oversaw the 2010 *Lizards and Snakes* exhibition.

While live animal exhibitions offer visitors a unique chance to experience nature, animals are much less predictable than fossils to display. When selecting species for shows—whether for all-live exhibits focused on particular groups of animals or for major exhibitions where live animals highlight particular concepts—curators and exhibition staff must consider lighting, placement, temperature, and in some cases, an animal's age or sleeping habits. "Animals have personalities and preferences," says Frost. "There are some fascinating animals that can't be shown because they don't do well with people or the exhibition environment. To put them on display, you'd have to put them in an uncomfortable situation."

For animals that do acclimate, creative display solutions are required. In 2009, *Extreme Mammals* featured sugar gliders, small marsupials with a membrane between their front and back legs that allows them to coast between trees. The animals were included in the exhibition in large part because of this trait, which is highly unusual among mammals. Since they are nocturnal, however, their internal clocks had to be reset so that they would be active during Museum hours. "We essentially switched their day and night so that people would be able to see them," explains Manager of Living Exhibits Hazel Davies. Her team created two boxes that mimicked natural nests where the sugar gliders could sleep during the night under bright lights calibrated to approximate the Sun, while during the day, the dim enclosure in the gallery imitated the night.

Spiders present their own difficulties in a live exhibition. For one, they're hardwired to hide. "A spider's instinct is to be

## Spotting Dangerous Species

Visitors to *Spiders Alive!* will have a chance to see trained staff members handle several species of spiders, which are generally not dangerous to humans. As Curator Emeritus Norman Platnick explains, spiders are rather shy: they tend to avoid people and bite only as a last resort. Even then, their fanglike chelicerae are often too small to pierce human skin, and, while almost all produce venom, in most cases it is too weak or too scant to pose a threat to humans. The exhibition will include a few potentially harmful species—behind glass, of course—in part to help visitors learn when to keep their distance.

### Brown Recluse

Also known as fiddleback spiders for the violin-shaped pattern on their backs, *Loxosceles reclusa* spiders have three pairs of eyes rather than the usual four. Common in the southern and lower midwestern U.S., these small (1/4 inch to 3/4 inch) brownish spiders are rarely aggressive. Their bite, however, can be serious, in some cases causing lesions, fever, muscle pain, and other symptoms. While the bite is seldom fatal, skin lesions can be slow to heal and leave deep scars.

### Black Widow

These spiders of the genus *Latrodectus* include more than 30 species, five of which are common in North America and some of which can be found in New York State. Females are about 1/2 inch long and black with a red hourglass marking or red spots on their underside. They produce neurotoxic venom, which attacks the nervous system of bite victims and can cause headache, nausea, stomach cramps, tremors, chest pain, and even death in humans (although healthy adults usually recover from bites). The much smaller gray or brown males are not dangerous.

### Others to Avoid

Although they won't be part of the exhibition, worldwide the most dangerous species include Australian funnel-web and Brazilian wandering spiders, which have high levels of lethal neurotoxic venom that attacks the nervous system of bite victims.

as far away from you as possible," says Curator Norman Platnick, who is Peter J. Solomon Curator Emeritus in the Division of Invertebrate Zoology and the Museum scientist who oversaw the exhibition. "You have to work to be bitten. It's a last resort for them." Most spiders blend into their habitats and spend much of their time lying in wait for prey, their stillness making them even more difficult to spot.

The Exhibition Department has a few strategies planned to maximize the number of spiders visitors will see while keeping the animals within their comfort zone. All of the habitats will be custom made for maximum visibility and ease for the particular species.

For example, since tarantulas enjoy dark, protected spaces, many of their enclosures will include a piece of bark to serve as shelter. The cages will be oriented so that visitors will be able to see the underside of the wood, as well as the "hidden" spider, who will still feel safe and secure. Some of the tunneling arachnids, such as desert hairy scorpions, will be displayed in a matrix of individual "condos." And the branches in the enclosures of web-building spiders will be positioned to encourage them to build webs in visible locations—so that even if a spider is hiding, its out-of-body artwork can still be on show.

Creating a display-friendly habitat is just one important ingredient in a live exhibition. Sometimes, human presenters are the other solution. In *Spiders Alive!*, staff explainers will use handheld microscopes that project onto a large screen to point out minuscule features of spider anatomy, such as their fine hairs and fangs. They will also demonstrate, through careful handling, that reasons for fearing arachnids are greatly exaggerated. Spider venom, after all, evolved to work on small insects rather than humans.

Interacting with animals calls for precise timing and breaks. Spiders in the demo areas will be alternated to allow them time for rest, and explainers will also use spider molts as an illustration tool. Similarly, the glowing dinoflagellates in the Museum's current exhibition *Creatures of Light* need breaks from their bright blue light shows (previous page, bottom left). These microorganisms, famous for creating the luminous "bio bays" in Puerto Rico, only flash when the surrounding water is in motion. While the Exhibition Department solved this problem by using a device to blow bubbles into the water, there's a limit to the commotion dinoflagellates can take. "The animals can't flash constantly since they'll use up their bioluminescent chemicals," explains Davies. "So we keep the bubbles intermittent." Three canisters that bubble at different intervals ensure visitors can see the glow.

As with any live show, there will always be an element of the unexpected. There's no guaranteeing that the orb weavers in *Spiders Alive!* won't build their webs on the cage doors, which will have to be opened at night for feeding. And while the Exhibition Department hopes to coax the trapdoor spider to build its burrow along the glass to showcase its underground, web-lined home, the animal may not cooperate.

Lessons learned about exhibiting live spiders may someday come into play in the Discovery Room, a hands-on hall for all ages to explore nature, science, and culture. Located on the first floor, the room is home to live frogs, lizards, and tarantulas, as well as to some of the stars of former special exhibitions, including the mudskipper from the 2007 exhibition *Water: H2O = Life*. The Discovery Room plans to take on additional spiders to coincide with the upcoming exhibition.

"The more people look, the more they question, the more they see," says Discovery Room Manager Daniel Zeiger. "These animals are launching points for rich conversations about science." 🦋

See live arachnids in *Spiders Alive!* starting on Saturday, July 28, or visit *Creatures of Light* to view flashlight fish and glowing dinoflagellates.

Photos on page 6: Top row: © AMNH/D. Finnin (l), R. Mickens (r); Center row: © AMNH/D. Finnin (l, c), R. Mickens (r); Bottom row: D. Finnin (l, c), Courtesy of Clyde Peeling's Reptiland (r)

Photos on page 9: © AMNH/D. Finnin (top, center) and R. Mickens (bottom)

## You're Invited MEMBER PREVIEW: JULY 27

For centuries, spiders have inspired storytellers from Ovid to E.B. White to the creators of the eponymous superhero. No wonder: these incredibly versatile animals inhabit every continent except Antarctica and can survive in environments that range from deserts to rain forests to crowded cities.

*SPIDERS ALIVE!* will offer visitors a close look at the fascinating world of arachnids and features 20 species that include the goliath bird eater, one of the largest spiders in the world, and the venomous black widow.

Members are invited to see this exciting new exhibition on **FRIDAY, JULY 27**, before it opens to the public. Explore the gallery at your leisure between 10:30 am and 5 pm.

This exclusive Member benefit is **FREE**, but timed-entry tickets must be picked up that day at any Membership Desk. Call 212-759-5606 for additional information.

## Objects May Be Closer Than They Appear

The stars of any Museum exhibition must be photographed for the gallery's graphic panels, promotional materials, and more. This can be a delicate process when the model is a jumping spider or a deadly spitting cobra.

While shooting this venomous African snake for *Lizards and Snakes*, for example, the Museum's Photography Studio Director Denis Finnin used a long lens. But much like a rear-view mirror, this gave him a false sense of where the cobra was even as the animal inched closer. "I had to keep one eye on the camera and one eye on the snake," Finnin recalls. Once the cobra was in its enclosure in the exhibition, Senior Photographer Roderick Mickens was able to get even closer for a portrait (right).

Timing was also an issue when photographing the *Spiders Alive!* models. Though spiders spend most of their time standing still waiting for prey, they move quickly when on the hunt or agitated. "You have to shoot up close, which means you don't have much depth of field," says Finnin. "And if they keep moving, it's hard to stay in focus." As a solution, Finnin used the spiders' heads as a focus point.

When Finnin recently photographed the regal jumping spider, known for its quick movements, three people stood around the table with cups, ready to catch it. The photo team also used strobe lights instead of hot lights, which would have agitated the spider and made it move even faster. All arachnid models received a break every five minutes, giving the photographers a chance to review the shots on the computer and decide whether more would be needed.

