



**MULTIMEDIA—NONINTERACTIVE**

**BAT INTERCEPTS FLYING INSECT**  
 Cynthia F. Moss and Kaushik Ghose,  
 University of Maryland, College Park

Under infrared light, a large, winged object locks onto and overtakes a small blip while a radarlike display tracks the entire proceeding. This isn't a military exercise; it's an experiment designed to understand how bats use sonar to capture their prey.

Bats emit high-frequency sounds when hunting and navigating, but no one knew how they aimed these sonar beams until neuroethologist Cynthia Moss and graduate student Kaushik Ghose created a bat cave in their laboratory at the University of Maryland, College Park. The researchers padded a large room with acoustic foam and set up two high-speed infrared cameras and 16 strategically placed microphones. Then they introduced a large brown bat and a praying mantis.

The drama unfolds in a two-frame multimedia presentation. In the left frame, a slowed-down movie captures the visual action, complete with bat chirps and a crunch when the mantis meets its fate. On the right, an animated diagram traces the hunt from above and incorporates the microphone data to pinpoint the direction of the bat's sonar (represented by the darker bars on the gray-scale cone). The presentation reveals that a bat "locks its beam on a target" when hunting, says Ghose, who notes that the behavior is akin to baseball players keeping their eye on the ball.

"This is a unique visualization of an amazing event," says panel of judges member Thomas Lucas. He says the judges were impressed with the combination of video, sound, and sonar that puts the viewer in the bat's world. "This is something we never get to see," says Lucas. "It always happens in the dark."

**HONORABLE MENTION**

**THE ELBE RIVER FLOOD 2002**

Geographer Nils Sparwasser and colleagues at the German Aerospace Center in Oberpfaffenhofen send viewers on a bird's-eye journey over Eastern Europe in August 2002 as entire cities are consumed by the worst flooding to hit the region in more than 100 years. The group incorporated optical and radar data from 10 satellites to create the three-dimensional presentation. Disaster organizations may soon use similar displays to predict flood damage and evacuate endangered residents.



**SPATIOTEMPORAL ARBOVIRAL SURVEILLANCE IN FLORIDA DURING 2003**

A map of Florida comes to life in this animated video by biologist Gregory Ross and colleagues at the University of Florida, Gainesville. Clouds of red, yellow, and green transiently materialize over various regions of the state as antibodies against the West Nile and eastern equine encephalitis viruses appear in sentinel chicken flocks throughout the year. Mosquito-control agencies and health departments can use this animated map to track and combat the mosquitoes that carry these viruses.

