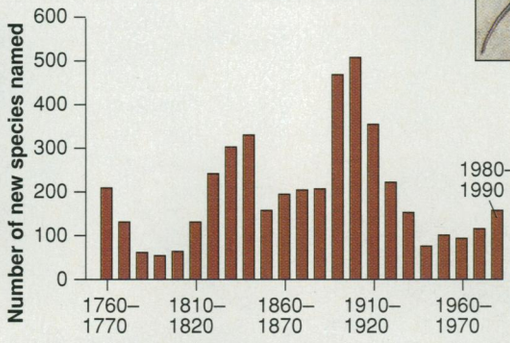
ECOLOGY

# New Mammals Discovered by Biology's New Explorers

Last July, evolutionary biologist James L. Patton took a brief reconnaissance trip to Colombia's central Andes, scouting a site for a student's doctoral thesis project. Just 2 weeks later, he rode out of the hills carrying six new species of mammals in his saddle bags: four mice, a shrew, and a marsupial. Six species in 2 weeks may be a record haul for mammalogists in the late 20th century. But although the biggest boom in biological exploration ended decades ago (see chart), there is now a renaissance in species discovery, not just of insects and microbes, but also of humans' closest relatives, mammals. "Because we're mammals, you'd think that we'd already know everything there is to know about other mammals," says Patton, a professor at the University of California, Berkeley. "But we don't."

R. MITTERMEIER

Maues marmoset




SOURCE FOR GRAPH: *MAMMAL SPECIES OF THE WORLD*

**Age of exploration.** The biggest burst of discovery is over, but the number of new mammals is rising again, with additions from mice to monkeys.

In the last decade, partly because of a new round of exploratory field surveys, scientists have turned up a surprising variety of new mammals, including a deer species, a wild ox, 10 new species of primates, several bats, a new genus of antelope, and several genera and species of rodents. When all of these new creatures are officially named and described, researchers estimate that the number of known mammals will jump by at least 15%. And the pace of discovery shows no signs of slowing. "Right now we're at a little more than 4600 mammalian species," says Lawrence R. Heaney, an evolutionary biogeographer at Chicago's Field Museum, who recently discovered 11 new mammals in the Philippine Islands. "But I think that number will ultimately go up to around 8000."

All that is more than just taxonomic scorekeeping. With each new mammal comes a set of associated organisms—parasites and pathogens—and new data for research in biogeography, evolution, and conservation. In particular, scientists say, the new species are giving them a far better understanding of mammalian diversity and distribution patterns. At the same time, each discovery is a victory in a race to get a relatively complete picture of mammalian diversity before it is swept away by habitat loss.

The new mammals have come to light in several ways. Some have emerged from detailed genetic analyses that split apart species once lumped together; others have been "found" in museum collections. One new species, the wild ox, was discovered in a Vietnamese marketplace—or at least its horns were; scientists have yet to see the animal in the wild. But many of the new mammals are "really new" species, as Patton calls them, which scientists have never seen before in any form. Most of these were found the old-fashioned way: on lengthy biological surveys, usually in the farther reaches of the globe. "The tropics are still so poorly known, even for mammals," says Heaney, "that just about anywhere you go, you'll find something new."

For example, the combination of a remote destination and a lengthy stay paid off handsomely for Patton in 1991, when he and a team of researchers from the Instituto Nacional de Pesquisas de Amazonia in Manaus, Brazil, spent an entire year surveying mammals along the Rio Juruá in the Amazon basin. Seven of the 52 species they collected were new. And one, a spiny mouse (recently named *Scolomys juaraense*), had no known relatives in this region: Mice of this genus previously had been known only from the Andean foothills in Ecuador, 1500 kilometers away. "It just shows how phenomenally little we know about mammalian geographical distributions," says Patton.

Similarly, Steven M. Goodman's survey of Madagascar has unveiled an unexpectedly diverse set of rodents. Goodman, a field biologist with the Field Museum, helped launch a Malagasy biodiversity survey with the World Wildlife Fund in 1991. Since then, he and his team have discovered several as-yet-undescribed species, including two new genera of rodents in the island's endemic subfamily Nesomyinae. In time, these finds may help "paint a whole new picture of how and when Madagascar was colonized" by rodents, he says, and give scientists a glimpse of the island's complicated history of biological invasions and radiations.

Even in the 20th century, uncovering new species, particularly tiny shrews and tenrecs (insectivores found only in Madagascar), is something of an art, researchers say. Goodman's technique is to bury 15-liter buckets in the ground, then wait for the littlest of the mammals to tumble in. "There's no other way to get these 3- to 4-gram tenrecs," each about the size of two grapes, he says. In South America, Patton and the Field Museum's curator emeritus, Philip Hershkovitz, place their traps in places such as rocky outcrops that they suspect may serve as microhabitats for more reclusive mammals. "I smell them out," says Hershkovitz, who has discovered two new genera and 16 new species of field mice in Brazil's Cerrado grasslands in the last 6 years.

J. L. PATTON

Spiny mouse

Other new species come to light courtesy of local people; that was the case for several of the six new species of Brazilian primates (tamarins, marmosets, and a capuchin monkey) found in the last 6 years, says Russell A. Mittermeier, a primatologist and president of Conservation International in Washington, D.C. Mittermeier predicts that 10 more primate species will be found in the next decade.

Finding a new mammal has secondary benefits too, such as leading biologists to new parasites and diseases infecting the mammalian host. "For every new species of mammal we find, we also discover a whole community of other organisms associated with it," explains mammalian systematist Terry L. Yates of the University of New Mexico. And because mammals are close to human hearts, the unveiling of a new mammal can help rally efforts to preserve an entire area, says Mittermeier. For example, government officials and residents of Camiguin Island in the Philippines invited Heaney and his team to search for new mammals in 1995. They turned up two new rodents, one a fluffy, long-haired moss mouse, the other resembling a deer mouse. Both are as yet undescribed, but already the government has recommended setting aside the island's remaining forests.

Such efforts aren't a moment too soon, says Heaney, for these mice, like many of the new mammals, are already on "the red list"—highly endangered, chiefly because of habitat loss. Even as scientists reach out to identify them, the world's mammals are vanishing.

**–Virginia Morell**