In trouble. Deforestation of Brazil's Atlantic forest has greatly reduced the distribution of endemic birds, such as the pin-tailed manakin.

na that occupies much of central South America in northeast Paraguay, eastern Bolivia, and western and central Brazil. "These areas have been ravaged, but they are just as important as the Amazon," says ornithologist Joel Cracraft of the American Museum of Natural History in New York City.

When the first European settlers began to colonize the land that would later become Brazil, the Atlantic Forest, known locally as the Mâta Atlantica, stretched over 1306 million square kilometers. But as landscape ecologist João Paulo Capobianco of the Instituto Socioambiental in São Paulo reported, it has since been nearly wiped out by human activity, including the sprawl of São Paulo, one of the world's largest cities. One recent study that charted land use change between 1990 and 1995 found that more than 500,000 hectares of forest were destroyed in states that encompass about 90% of what is left of the Brazilian Mâta Atlantica. "This is a destruction proportionally three times greater than that recorded for Amazonia within the same period," says Capobianco. Today, only 6% of the original forest is left, and it's still under threat.

Even so, the remaining Mâta Atlantica is well worth saving. It has, Capobianco says, one of the richest collections of ecosystems on the planet. They contain numerous endemic species found nowhere else, including 73 species of mammals, of which 21 species and subspecies are primates, 160 species of birds, and 165 species of amphibians.

Equally endangered is the Cerrado, the world's largest tropical savanna. It covers about 1.86 million square kilometers, mostly in Brazil, although parts extend into Paraguay and Bolivia. As recently as 50 years ago, the Cerrado was almost pristine. But José Maria Cardoso da Silva of Conservation International do Brasil in Belém told the meeting participants that intense colonization over the 40 years since construction of Brasília, Brazil's new national capital, changed at least 70% of the region. Most of the changes were due to soybean and rice farming that "has not followed the most basic principles of conservation," says Cardoso da Silva. He notes, for example, that habitats are often fragmented, resulting in loss of biologic diversity, and farmers often do not protect topsoil from erosion. Still, the Cerrado's biodiversity remains impressive with 10,000 plant species, 120 reptile species, 161 mammal species, 837 bird species, and 150 amphibian species.

The dryland Caatinga has also been so strongly disturbed, Cardoso da Silva says, mainly by fire, timber exploration, and cattle ranching, that it is almost impossible to describe what original vegetation thrived there 500 years ago. Current estimates suggest that at least 60% of Caatinga has already been converted to agriculture and other types of land use.

For the past 10 to 15 years, Bolivia and Paraguay have made notable efforts to conserve their bits of the Cerrado with the establishment of preserves, but Brazil's efforts to conserve the Cerrado, Caatinga, and Mâta Atlantica date only to the last 5 years or so. Cardoso da Silva and ornithologist John Bates of the Field Museum support the establishment of more Brazilian reserves and of conservation corridors to connect them. They also suggest increasing productivity on lands already under agricultural cultivation to reduce pressure on areas in these three biomes still covered by natural vegetation—a doable project, given Brazil's current commitment to conservation.

–ANNE SIMON MOFFAT

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ASTRONOMY

Hubble Gets New IR Eyes

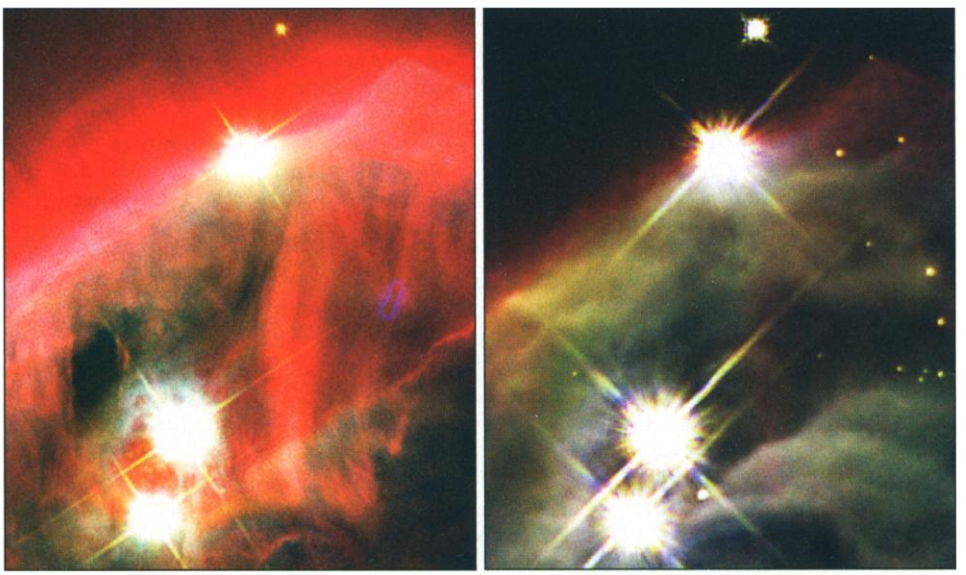
ALBUQUERQUE, NEW MEXICO—The Hubble Space Telescope's infrared vision has been restored, and it's better than ever. At an American Astronomical Society meeting here,* excited astronomers presented the first images taken by Hubble's Near-Infrared Camera and Multi-Object Spectrometer (NICMOS) after it was outfitted with a new cooling system in March. "It's absolutely fantastic that we now have infrared eyes back on Hubble," says NICMOS principal investigator Rodger Thompson of the University of Arizona, Tucson.

Observing in the infrared enables Hubble to peer into dusty star-forming regions and to study the extremely distant universe. NICMOS was installed in February 1997, but the solid nitrogen used to cool the sensitive infrared detectors to 62 kelvin was depleted just 2 years later, much faster than anticipated. Now, with a new refrigerator-like cooling system, the camera should be back in business indefinitely. NICMOS is between 30% and 40% more sensitive than it used to be, says astronomer Daniela Calzetti of the Space Telescope Science Institute in Baltimore, Maryland, because its detectors work more efficiently at the new system's 77-kelvin operating temperature. "This will enable us to look deeper, or to do the same science in less time," Calzetti says.

–GOVERT SCHILLING

Govert Schilling is an astronomy writer in Utrecht, the Netherlands.

* 200th meeting, 2–6 June.



Dust buster. In side-by-side pictures of the Cone Nebula, stars and other details that Hubble's Advanced Camera for Surveys misses (*left*) pop into view in the dust-penetrating infrared NICMOS image (*right*).