

Everglades Invasion

By Doreen Cubie

While taxpayers are spending billions of dollars to restore the Everglades, a deadly army of foreign species is undercutting the effort by pushing out native plants and animals

SKIP SNOW, a wildlife biologist at Florida's Everglades National Park, is staring intently into a Martha Stewart laundry bag before quickly reaching inside and pulling out a writhing 6-foot Burmese python. It is a powerful animal and a beautiful one, with the sun glinting off its chestnut, black and gold body. But this species is a native of Southeast Asia and doesn't belong in the Everglades. Snow believes that such pythons, popular in the pet trade, were first released into the state by their owners when the reptiles became too big to handle. One of the largest snakes in the world, it can grow to more than 20 feet long and weigh as much as 200 pounds.

Snow squeezes open the captive's mouth, revealing the long, dagger-sharp, backward-curving teeth that, along with its massive size, make it a formidable predator. Burmese pythons are ambush hunters and constrictors, lying in wait and suffocating their prey, which so far in Florida has included alligators, limpkins, white ibises, cotton rats, round-tailed muskrats, bobcats, great egrets, endangered Key Largo wood rats and even a magnificent frigate bird.

University of Florida associate professor Frank Mazzotti believes "it is safe to say there are tens of thousands" of wild Burmese pythons in the southern part of the state, with the core of the population centered in the park. "They're almost a textbook example of an invader species," Mazzotti says. "They're generalists and can live in different habitats. They have lots of young, and they grow very quickly." He and Snow have found python eggs in the Everglades and also have seen hatchlings, which start life 20 inches long and often reach 10 feet within three years.

"They're really a threat to this ecosystem, one that we're spending billions to restore," says Snow, who is based at the national park's Daniel Beard Research Center, formerly a Nike missile facility and now the command headquarters in this new battle against pythons and other invasives. At stake is the integrity of the greater Everglades, which stretches from Lake Okeechobee 100 miles south to Florida Bay. Exotics have the potential to alter greatly this landscape by pushing out native plants and animals, making control of these invaders one of the greatest challenges in Everglades restoration.

Unfortunately, the list of species introduced into subtropical Florida is a long one. Several other large alien snakes have been found, including yellow anacondas and reticulated pythons, although they are not yet believed to be breeding. Green iguanas and Nile monitors, however, are successfully reproducing and spreading. As adults, these reptiles top out at 6 to 7 feet long, with the iguanas devouring all kinds of vegetation, and

the monitors eating just about anything, including burrowing owls, gopher tortoises and domestic pets.

Nonnative birds and plants also can be harmful. Destructive plants include Brazilian pepper; Australian melaleuca, a member of the eucalyptus family; and Old World climbing fern. The latter, brought into this country as an ornamental plant sold in the nursery trade, spreads by airborne spores and is now blanketing 200,000 acres in the Everglades ecosystem. Biologists have reported more than 200 species of exotic bird in Florida. Some, like the sacred ibis, send shivers down the spines of wildlife managers. This African species preys on the young and eggs of wading birds and other creatures that gather in colonies and has begun nesting in the Everglades in small numbers.

In the struggle against the sacred ibis, which is actually a stork, scientists have only to look to France to know what could happen in this country. During the 1980s, a zoo in the south of France had a free-flying population of about 50 individuals of this species, says Garth Herring, a doctoral student at Florida Atlantic University who is studying both sacred ibises and native wading birds. The French ibises began to stray, eventually nesting outside of the facility. By 2005, their numbers had reached 3,000 birds, and today, current estimates are 5,000 individuals. "In France, sacred ibis have been documented in tern colonies, where they wreak havoc," Herring says.

In this country it is likely the original birds escaped from the Miami MetroZoo when Hurricane Andrew demolished their enclosures in 1992. Now the problem is how to stop them before their population explodes like the one in France. "There are three approaches to invasive species," Herring says. "You can keep them from coming into the country, remove them when they are at a very low level or manage them." Since there are fewer than 100 sacred ibises in South Florida, scientists and government officials believe the best approach is to try to eradicate them before they begin threatening the signature birds of the Everglades—native ibises, storks, spoonbills, herons and egrets. If all goes according to plan, U.S. Department of Agriculture (USDA) sharpshooters will begin eliminating sacred ibises—which are mostly concentrated in the wetlands at a waste management facility outside of West Palm Beach—within the next year.

Another way to combat invasives is to pit species against species. One of the reasons exotics spread so rapidly in new environments is that they leave behind their natural enemies. Old World climbing ferns, for example, are well-behaved plants in their native range of Africa, Australia and Southeast Asia. But without the caterpillars, mites and other tiny creatures that munch on the plants back home and keep them under control, this vine takes off in the United States like kudzu, says Robert Pemberton, an entomologist with the USDA's Invasive Plant Research Laboratory in Fort Lauderdale. Besides growing up and over small trees and shrubs, it also creates 3-foot-thick mats of foliage on the ground.

Until now, chemical herbicides have been the weapon of choice to combat this eco-invader, but those that worked usually killed native vegetation too. For more than a decade, Pemberton and his colleagues have been scouring the homelands of climbing

fern, looking for its natural enemies. So far, they've found two moths, one sawfly and one mite that might do the job. But first the animals must undergo years of rigorous testing and quarantine to make certain they will not cause biological problems of their own. One of them, a dark brown, thumbnail-sized moth discovered by Pemberton on an island in Hong Kong, has been cleared for release. In February 2008, entomologists began introducing it into Jonathan Dickinson State Park, just north of West Palm Beach, with the hope that it will begin to keep Old World climbing fern in check.

Figuring out ways to keep large snakes in check is an even greater challenge. For one thing, they're at the top of the food chain. Also, "they're extremely cryptic," Snow says, making them hard to locate. Researchers have turned to "snitch snakes," captured Burmese pythons that are implanted with radio transmitters and then released back into the wild. In the spring, when the reptiles come together in breeding aggregations, one radio-tagged snake can lead scientists to many others. Snow and Mazzotti are also experimenting with traps, trying to determine whether baits or pheromones, a type of chemical signal, are more effective at enticing the animals inside.

Regulating these giant reptiles in captivity is also critical. Florida now requires anyone who keeps Burmese pythons, Nile monitors, green anacondas or three other species of python—African rock, amethystine or reticulated—to buy a \$100 permit. They must also implant microchips, which identify the owner, in any pets bigger than 2 inches in diameter. It's now a first-degree misdemeanor to release an exotic into Florida. But biologists know the genie is out of the bottle as far as Burmese pythons are concerned, and the best they can ever hope to do is manage them. "Many people thought pythons would never get established here," Mazzotti says. "They were wrong."

"Right now, nonnatives are innocent until proven guilty," Snow says. "By that time it's too late to do anything about it. We need to change our mindset and be able to respond rapidly." The stakes are high. Eco-invaders could completely change the face of the Everglades. "Our biggest concern is the unknown," Snow says. "We don't know what is going to happen."

Doreen Cubie received NWF's 2007 magazine writing award for her article on [tribal lands conservation](#).