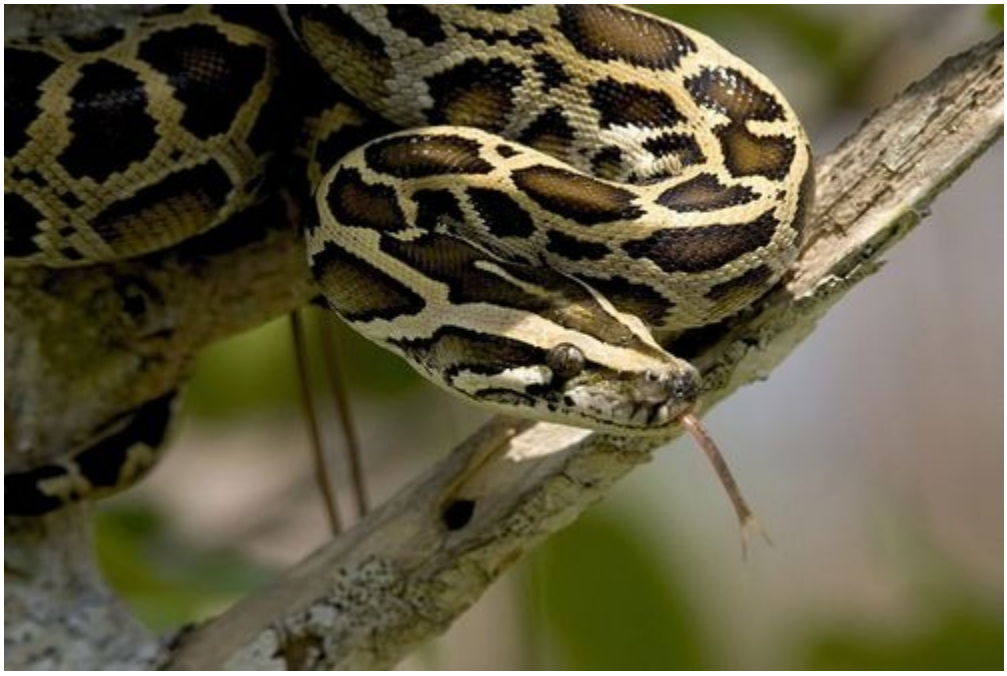
Pythons Invade the Florida Everglades

by ReadWorks



When Tommy Owen, a tour guide in the Everglades National Park, saw the animal, he immediately went after it. Owen was giving a tour of Florida's famous national park wetlands. He and a group of tourists were floating in a boat through the shallow water that makes up the Everglades. One of the women in the boat he was steering saw a snake in the water. She got Tommy's attention and pointed the snake out to him. When Tommy saw the snake, he acted fast. He reached into the water and grabbed the animal by the head. He got a good grip and didn't let go. Tourists in the boat were worried when the snake wrapped itself around Tommy's arm. After several minutes, he got control of the animal and removed it from the water. The snake was a ten-foot-long Burmese python. It was a snake not native to Florida and, quite simply, it didn't belong there.

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The Florida Everglades teems with life. Situated at the southern end of the state, between Lake Okeechobee and the Gulf Coast, the Everglades is the largest wilderness east of the Mississippi River. Migratory and wading birds tiptoe through marshy grasslands. Orchids and ferns dot the hardwood forests. Alligators lounge in the shallows and on muddy riverbanks. Mangrove leaves rustle in the wind as the brackish water laps at their roots.

All of this life is made possible by the presence of water. The Everglades is a natural region of subtropical wetlands**.** Water flows from the Kissimmee River into the wide, shallow Lake Okeechobee. From there the lake drains south, into the Everglades marsh and the Florida flats. The Everglades is sometimes called the "River of Grass" after a book of the same name by author Marjory Stoneman Douglas. The phrase illustrates the fact that the Everglades is basically a very wide and shallow river.

The Florida Everglades once covered 11,000 square miles across the southern end of the state. Wetlands are an important ecosystem. For centuries, however, humans thought of wetlands as unhygienic swamps. Draining the Everglades was suggested in the late 19th century. As soon as Florida became a state in 1845, its legislature asked permission from Congress to drain the Everglades. Canals were dug to remove or redirect the water. Land that dried out was reclaimed for agriculture or building purposes. This reclamation allowed for significant development in south Florida. Sugar farmers moved into the area and prospered. The city of Miami took root.

Approximately 50% of the Everglades was reclaimed for agricultural or urban use. Much of the northern area was polluted with phosphorus. This phosphorus was agricultural runoff from the farms near the Everglades.

Concerned Floridians began advocating for saving the area in the 1930s. Their efforts paid off in 1947 when Congress created the Everglades National Park. Starting in the late 1970s, environmental concerns at both the national and international levels refocused attention on the Everglades. The area was designated as one of the world's most important wetland areas.

Since then efforts have been underway to safeguard the park and return the Everglades to health. Water levels are monitored, as are nutrient levels in both water and soil samples.

Much of the conservation project was designed to reverse-engineer the canal system that was built in the 19th and mid-20th centuries. By the mid-2010s, ecological indicators showed some improvements. For example, the crayfish population was up. Wading and migratory birds improved their nesting habits.

Despite conservation efforts, the Everglades ecosystem began facing another threat in the early 2000s.

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Burmese pythons were breeding in the Everglades, and they reached numbers that designated them as an invasive species. They were classified as an invasive species when their population swelled to a large size.

Pythons are eating machines. They can eat animals of different sizes, from mice to deer. They especially enjoy dining on small mammals and birds. Studies have shown that since the appearance of Burmese pythons in the Everglades, the numbers of small mammals in the area dropped significantly. This population loss was not observed in areas where the Burmese python had not established itself.

The Burmese python is native to tropical and subtropical zones in Southeast Asia. In their native habitat, Burmese pythons are nocturnal carnivores. When they live close to human habitations, Burmese pythons eat rats, mice, and rabbits that are attracted to human dwellings and farms. They can also eat small farm animals like chickens. When they live away from human habitations, Burmese pythons eat birds and small wild mammals. The Burmese python is a solitary animal. It kills by constricting its body around its prey. Python eggs and hatchlings are a food source for other animals. In the wild, Burmese pythons grow to be on average 12 feet long. (Habitat loss and the exotic pet trade in Asia are depleting the Burmese python's numbers in the Asian wild.)

The first Burmese python was found in the Florida Everglades in 1979. It's presumed the animal was originally kept as a pet and then released by its owner. It was removed, but that wasn't the last of Burmese pythons in south Florida. It's thought that numerous Burmese pythons escaped pet stores and cages damaged in Hurricane Andrew in 1992. Since then, the numbers of Burmese pythons grew at a fast rate. The escaped Burmese pythons weren't the only cause of the most recent population increase of Burmese pythons.

In the United States the Burmese python was a popular exotic pet. Docile and beautifully patterned in brown and gold diamond shapes, these snakes could be purchased at pet stores or reptile shows. Owners kept them in cages or tanks and fed them rats or mice. Most people bought Burmese pythons when they were small. Burmese pythons grow very quickly. For many pet owners, the pet Burmese pythons became too big to manage. So they released them into the wild.

When the Burmese python was designated as an invasive species, many agencies and individuals began trying to put a stop to the python invasion. The National Park Service started a program to study these animals in the Florida Everglades. Park Service scientists implanted tracking devices into seventeen large pythons that were later re-released into the wild. They provided scientists with information regarding python behavior.

In January 2013 to February 2013, the Florida Fish and Wildlife Conservation Commission ran a contest called the 2013 Python Challenge. The Commission issued permits to hunt the snakes within state wildlife-managed areas of the Everglades. Sixty-eight Burmese pythons were captured.

Later in 2013, Jason Leon was driving in a rural area near Florida City when he spotted a Burmese python's head protruding from the brush. The man was a biologist, and he was familiar with pythons. He approached the snake and pulled it out of the bush. The animal was bigger than he expected. After a struggle with the animal, Leon killed it. The Burmese python was 128 pounds and longer than 18 feet. Leon contacted the Florida Fish and Wildlife Conservation Commission, which agreed to pick up and examine the snake. The snake was found to be the largest ever in the state of Florida.

The state later issued a statement:

> Jason Leon's nighttime sighting and capture of a Burmese python of more than 18 feet in length is a notable accomplishment that set a Florida record. The Florida Wildlife Commission is grateful to him both for safely removing such a large Burmese python, and for reporting its capture.

Despite these efforts, the population of Burmese pythons continued to grow. The Florida Fish and Wildlife Conservation Commission held another contest in 2016 called the 2016 Python Challenge.

All the Pieces Matter

by A.P. Raj

Jason stared at the whiteboard at the front of the classroom, trying to make sense of what he saw there. Mr. Freamon had drawn a complicated diagram of all the creatures living in the nearby Ho Tep Wildlife Reserve. Every type of living thing, from trees and insects to mammals and birds, was written down and circled on the board. Arrows snaked around the board, connecting the circles, showing which creatures depended on which other creatures to survive.

Though he had been hiking out in Ho Tep plenty of times, Jason had never given much thought to the animals and other wildlife he had seen out there. He'd never thought about how the amount of rainfall affected the amount of moisture in the soil, which affected how well plants could grow, which affected the ability of the animals that ate those plants to survive. It was enough to make his head swim a little.

Jason wasn't the only one who was confused. Mr. Freamon could tell that his students were all struggling to make sense of the mess of connections drawn out on the board. He smiled and stopped drawing for a moment to speak to the class.

"Take a deep breath," Mr. Freamon said. "You don't need to memorize what's on the board. If you're going to take away one thing from this lesson, let it be this: All the pieces matter. Every ecosystem on Earth depends on a delicate balance among all of the different forms of life within it."

Adriana raised her hand and asked why that was.

"Well," Mr. Freamon said, "in any ecosystem, all of the creatures within it are competing for the same resources: food, water and shelter-the basic needs of every living thing. There's only so much to go around, so creatures have to compete with other creatures to get what they need. And since they all go about it in a unique way, all of the creatures in an ecosystem end up depending on one another. Let me give you an example.

"Remember that video we watched last week? With the wolves killing the elk at Yellowstone National Park?"

Everyone nodded.

"And how many of you thought that the wolves were mean for killing those elk?"

About half the students raised their hands, but Jason kept his hand down. Wild animals will do what they do, he thought. The idea of meanness never enters into it. They act on instinct.

"Consider this, then," Mr. Freamon continued. "Without the wolves in the park to keep the elk population in check, the elk would have eaten all of the aspen and willow in the park. Not only would those plants be gone, but the other animals that depend on them to survive, would have been out of luck too. All the pieces matter."

After class that day, Jason went home and looked up "ecosystem resilience" on the Internet. He found a lot of interesting links about different ecosystems that had changed rapidly because one of the pieces had been taken out of the puzzle, as Mr. Freamon would have put it.

In Africa, people hunted lions and leopards and reduced their population, leading to higher populations of a certain type of baboon. That had led, somehow, to higher rates of parasites in baboons and people. And along some coasts, human activity had reduced the sea otter population. The sea otters ate sea urchins that ate kelp from massive kelp forests. Without the sea otters to keep them in check, the kelp started to disappear.

The whole idea was starting to make sense to Jason. It was basically like dominoes-all the pieces lined up, and if you knocked one down, it would knock down the next one, which would

knock down the one after that, until they all went down. Of course, it was a lot more complicated than that, but that was the basic idea.

The next time Jason went to Ho Tep Wildlife Reserve, on a camping trip with his dad, he made a point of observing the wildlife. He spent twenty minutes watching a copperhead snake slither across the forest floor, wondering about its role in the larger system. Through his binoculars, he watched a robin build its nest near the top of an oak tree. He imagined the robin catching insects to bring back to the nest to feed her chicks. He thought about how the roots of the tree reached way down into the soil to drink the moisture there. It really was fascinating how everything fit together.

Later, when he was back at school, he asked Mr. Freamon about the ecosystem at Ho Tep. He mentioned how he thought about the trees and how they were rooted in the soil.

"It's funny you should mention that, Jason," Mr. Freamon said. "You know, without those trees to anchor the soil, Ho Tep would still be a desert, like it was thousands of years ago."

"You mean Ho Tep hasn't always been a forest?"

"No, it hasn't. For a long time it was a desert-a totally different ecosystem. But over time, things changed," Mr. Freamon said.

"What things?" Jason asked.

"Weather patterns, for one. There probably wasn't a lot of rain falling on that area for a long time. But as that changed, there was more moisture in the soil. Enough for flowering plants to begin to take root, and eventually trees," replied Mr. Freamon.

"And once there are trees, there's shelter for birds and other animals," Jason said.

"Exactly right," Mr. Freamon said. "You've got the idea."

"Does that mean that we can deliberately change an ecosystem? Turn a desert into a forest, or something like that?"

Mr. Freamon smiled. "Well, it isn't that simple. Nature has a way of changing itself, but it takes a very long time, and it doesn't have an end goal in mind. Ecosystems fall apart, and then eventually find a new way to rebuild. But that's not quite the same as planning out a change.

"There are so many variables to consider- not only things like trees and birds, but the bacteria and other creatures you can only see with a microscope. Not to mention, we haven't exactly figured out how to change the weather."

"So we've never changed an ecosystem?" Jason asked.

"Oh, I wouldn't say that," Mr. Freamon said. "We've changed plenty of ecosystems all right. Except when humans change an ecosystem, it's usually not deliberate. Usually it's because clearing out land to build things drives out other creatures."

"Well, it's like you always say: humans are a part of nature too, right?"

"Exactly right, Jason," Mr. Freamon said. "That's exactly right."