

The Wondrous Creature That Builds 6-Foot-Tall Nests

Wildlife biologist Mike Cove had his heart set on studying big cats in exotic locations, but instead, he and his team ended up championing a precious creature that engineers an entire ecosystem, complete with separate rooms. And not a day too soon, as these animals are rare and endangered.

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STORY AT-A-GLANCE

- The endangered Key Largo woodrat, at about a foot in length including the tail, is more like a giant mouse than a rat, with huge eyes, impressive whiskers, and a furry tail
- The woodrats are into personal grooming, and another of their unique features is the size of the stick nests they build, which can be six feet tall and four feet wide, with separate chambers for food storage, baby nurseries, and bathrooms
- Environmental threats and predators have kept the Key Largo woodrat on the verge of extinction for decades, but a pair of intrepid brothers and more recently, an equally impassioned wildlife biologist have been doing their best to preserve the population

In the Florida Keys, multiple environmental threats, including invasive predators, have pushed the **Key Largo woodrat** to near extinction. Thankfully, a small but determined team of scientists and volunteers isn't having it.

From Karuna Eberl, writing for Atlas Obscura, "the definitive guide to the world's hidden wonders:"

"Wildlife biologist Mike Cove envisioned a romantic career studying big cats in exotic locations. He ended up championing a rat. But not just any rat: one that engineers an entire ecosystem, builds elaborate, six-foot-tall nests in the thick forests of the Florida Keys, and is the leading character in an ongoing drama full of unexpected dangers and bittersweet triumphs, with an unlikely supporting cast of retirees gone rogue."¹

More Like Giant Mice Than Rats

Key Largo woodrats (*Neotoma floridana smalli*) have huge eyes, amazing whiskers, and furry tails, and are big on personal grooming. Sadly, these precious creatures are both rare and endangered, and according to Cove, "tragically misunderstood."

"Whenever I tell someone I study woodrats, all they hear is the rat part," Cove tells Atlas Obscura. "But woodrats are so distantly related to black rats it's like calling a tiger a hyena. We should have named them giant wood mice. People could get behind a giant mouse."

They're "giant" compared to mice because they're about a foot long, including their tails. This makes them over twice the length of an average field mouse, and 10 times the mass.

A 'Keystone Species'

Another of the Key Largo woodrat's unique features is the size of their **stick nests**, which they construct using thousands of sticks. When completed, these structures can be as large as six feet tall and four feet wide, with an interior that features separate compartments for groceries (seed caches), nurseries, and bathrooms.

Interestingly, Key Largo woodrat nests are also multi-functional. They serve as "insulated microclimate habitats for insects, lizards, amphibians, and many other species which live in and around the structures," and they provide a source of food for birds, snakes, and other predators. When the nests eventually fall apart, they "nourish the forest floor like a giant compost pile."²

Cove has been studying the woodrats for a decade and has been able to demonstrate that the Key Largo woodrat is a "keystone species" — an organism that helps hold the ecosystem together. Per National Geographic, "Without its keystone species, ecosystems would look very different. Some ecosystems might not be able to adapt to environmental changes if their keystone species disappeared."³

By swabbing the inside of a woodrat nest, Cove has also discovered around a dozen new species of bacteria that may at some point be used to develop new antibiotics for use in human medicine.

"So much of what we talk about in conservation is like, we should save the Amazon because the next cure for cancer is hidden there in some species of plant," Cove says. "But here is something like that in Key Largo."⁴

Endangered and Disappearing

The woodrats are exclusive to the northern tip of Key Largo, the northernmost island in the Florida Keys. Their four-square mile territory sits within the Crocodile Lake National Wildlife Refuge.

A hundred plus years ago, Key Largo woodrat stick nests were everywhere in their territory, but much of the habitat was replaced with pineapple plantations, and more recently, residential and commercial development. The woodrat was designated an endangered species almost 40 years ago in 1984, but the population has continued to dwindle. By 2004, there were only 100 or so left, and not a single stick nest to be found.

Thankfully, also in 2004, Ralph DeGayner, a Key Largo retiree and his brother Clay made it their mission to rescue the species. Their initial forest searches turned up no evidence of even a single woodrat, but eventually they began to spot the occasional skimpy stick nest under junked cars and boats and assorted garbage.

Since the junk piles seemed appealing to the woodrats as nesting sites, the brothers began "relocating" more junk to the forest, including discarded jet skis.

Over time, they started replacing the junk with plastic culverts covered with chunks of limestone and ultimately built over 1,000 supplemental nests. The brothers spent their own money and much of their retirement years working to reinvigorate the Key Largo woodrat population.

Facing the Next Challenge: Feral Cats

At a certain point, the DeGayner brothers' work caught the attention of Disney's Animal Kingdom zoologists, who in turn established a captive breeding program to prop up the woodrat population. Sadly, at least 33 of the 40 captive-bred animals released into the wild didn't make it. The brothers found their tracking collars buried with their remains, victims of an exploding feral cat population.

The DeGayners began trapping the cats and taking them to shelters, all the while pleading for help from local and federal authorities. Their pleas went unanswered, but the brothers continued undaunted, and were still "unofficially running the show" in 2012 when Cove arrived on the scene. He described them as "basically rogue volunteers that had keys to the office and were trapping cats and building nests."

As Cove told Atlas Obscura, "I think the folks with the U.S. Fish and Wildlife Service (USFWS) were nervous. They were like, this is insane, someone should go up there and tell them to stop." So, he went to the Crocodile Lake National Wildlife Refuge "to see if it was good or bad that these two retired hot tub salesmen from Flint, Michigan, were out putting junk in the forest." Cove quickly discovered it was all good.

The following is footage of a "nest walk" in the woods to see restoration efforts. The walk was led by Cove, with assistance from Ralph.

Warring Parties Call a Truce

Cove did his own research and ultimately agreed with the DeGayners that the feral cat population was the biggest threat to the woodrats. He also learned the woodrats were no longer building huge nests because dragging heavy sticks through the forest attracted the attention of the cats.

The USFWS supported Cove's plan to trap the free-roaming cats and take them to shelters to either be returned to their owners, adopted out, or if medically necessary, euthanized. As you might guess, this didn't go over well with local cat lovers, and there was a huge public outcry that unfortunately even included threats by angry citizens toward the DeGayners and other volunteers.

Ultimately, the different warring factions came together, somewhat grudgingly, to put a plan in place that included establishing what is now Florida's largest trap-neuter-release (TNR) program for feral cats.

Eventually, with the feral cat population under control, the woodrats began piling thousands of sticks atop the supplemental nests and started building some of their own stick nest mansions from scratch. Wild birds, including owls, reappeared as the ecosystem came back into balance.

The DeGayner brothers were thrilled to discover nursing woodrat mothers in the nests they helped create. They also hosted a visit from world-renowned conservationist Jane Goodall, who came to celebrate their success with them.

"Key Largo was Woodrat Town again," said Clay DeGayner. "At least for a few years."

Invasive Pythons Could Deliver the Final Blow

In 2019, Cove published a study in the journal *Biological Conservation* about the Key Largo woodrat recovery efforts.⁵ But by that time, a fast-spreading invasive python population had reached the Keys and had already wiped out almost all the small mammals in the Everglades, including raccoons and opossums. Reports were that one-third of necropsied pythons in Key Largo had woodrat remains in their stomach contents.

Today, teams of volunteers and a specially trained dog search for pythons in Key Largo, hoping to save not only the woodrat population, but also the endangered Key Largo cotton mouse and other small mammals.

All things considered, sadly, the survival of the Key Largo woodrat seems unlikely. However, Jeremy Dixon, manager of the Croc Lake refuge, remains hopeful and is working to improve predator management to give the woodrats a fighting chance.

Sources and References

^{1, 2, 4} [Atlas Obscura, August 5, 2022](#)

³ [National Geographic](#)

⁵ [Cove, M.V. et al. *Biological Conservation*, Volume 237, September 2019, Pages 423-429](#)
