

Sea-level rise threatens endangered rabbit far more than development, research finds

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(Phys.org)—When University of Florida researcher Robert McCleery and a graduate student began looking at why an endangered marsh rabbit's habitat was disappearing in the Florida Keys, they fully expected the blame would fall on development.

Instead, they were stunned to find that nearly half of the rabbit's [habitat loss](#) was due to [rising sea levels](#).

"We kind of look at sea level rise as this problem that's just starting, something that is going to be a real problem for conservation in the future. But what we're showing here is that it's already a problem," McCleery said. "We're not saying that development doesn't have an impact, but sea level rise is undoubtedly the main [culprit](#) and development helps exacerbate it."

The sea level findings raise concerns about the outlook for many coastal species, McCleery said, and he said there is no reason to believe that outlook won't worsen over time, as [ocean levels](#) are predicted to rise.

McCleery and Jason A. Schmidt, a former [graduate student](#) of McCleery's when he worked at Texas A&M University, began looking at the Lower Keys marsh rabbit because it was a federally [endangered species](#) known only to live in an isolated part of the Florida Keys.

Their findings were posted online this week by the journal *Global Change Biology*.

The Lower Keys marsh rabbit, known to scientists as *Sylvilagus palustris hefneri*—named for Playboy publishing magnate Hugh Hefner – is a small- to medium-sized rabbit with dark brown fur and a grayish-white belly. Once abundant in the lower [Florida keys](#), the rabbit has been on the federal endangered species list since 1990, and only a few hundred remain on just a few of the keys, such as Boca Chica, Sugarloaf and Big Pine.

The researchers analyzed aerial photographs from 1959 (when the rabbit was still plentiful) and 2006 and were able to show a 64 percent net loss of the marsh rabbit's habitat—48 percent of it due to sea level rise, said McCleery, a faculty member with UF's Institute of Food and Agricultural Sciences.

Only 8 percent of habitat loss was attributable to development, indicating that development's greatest threats are indirect, such as blocking the bunny's habitat from migrating inland in response to rising sea levels, the researchers said.

Jeff Gore, a statewide wildlife biologist with the Florida Fish and Wildlife Conservation Commission, said the study shows that sea level change that seems almost imperceptible to humans can still have a big impact on wildlife.

"Obviously, it's already having an effect on the marsh rabbit, but in a state like Florida with so much coastline and so many endangered species, it's going to be a major concern for decades to come," he said.

Since the mid-1800s, sea level has been rising. During the last century, sea level rose between 6 to 8 inches, although scientists believe the rate increased greatly in the last decade and many expect that trend to continue.

While sea level was shown to be the endangered rabbit's biggest threat, McCleery said development wasn't without blame.

The team found a strong correlation between the amount of development and how much new habitat was created. Keys where less than 8 percent of their land area was developed from 1959 to 2006 were shown to have new areas of marsh vegetation, but islands with more than 8 percent of their land area developed during the same time span saw little to no [rabbit](#)-suitable habitat formed.

"So for these rabbits, not only is [sea level](#) rise bad, but we're showing that development is working synergistically with that [sea level rise](#), by preventing the vegetation on these islands from adjusting or 'migrating' inland," McCleery said.

Provided by University of Florida

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