

# Pacific wasp named as a new species more than a century after first being spotted

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DNA testing helped to confirm the the parasitoid wasp *Ooencyrtus pitosina* was a species in its own right. Credit: Mark Schmaedick

Improving our knowledge of the Samoan swallowtail butterfly, and the relationships it has with other species, is vital to stop the species from becoming extinct.

A [new species](#) of wasp has been hiding in plain sight for almost 140 years.

Living on the island of Tutuila in American Samoa, hints of *Ooencyrtus pitosina*'s existence to [western science](#) first came in 1885, when naval officer and entomologist Gervase Frederick Mathew first saw that the eggs of the Samoan swallowtail butterfly [were being attacked](#) by a minute insect.

While details of the behavior were published in a scientific journal, the wasp was never formally described. A team of researchers has now done this in the hope of encouraging more research into this little-known wasp.

Dr. Andrew Polaszek, an entomologist at the Natural History Museum who led the research, says, "This might be a record for the length of time between identifying a species, and it later being described. It goes to show that describing a species is not as simple as just pointing at something you don't recognize and giving it a name."

"When *Ooencyrtus pitosina* was seen in the 1880s, there would have been great difficulty in identifying whether or not it was a new species. Its host was only formally described about 20 years earlier, so a lack of understanding of the butterfly would have hindered finding out about the wasp."

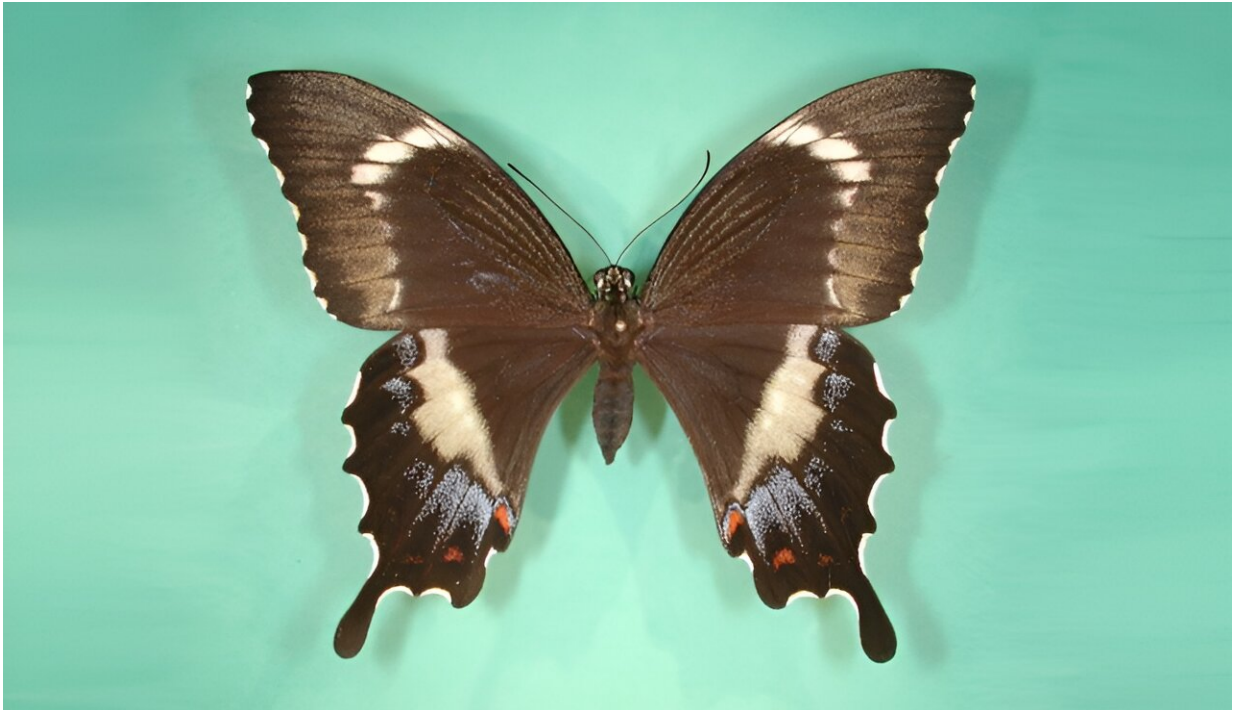
The findings of the study were published in the journal *PLOS One*.

## **Samoa's unique wildlife**

The Samoan islands are spread across more than 3,000 square kilometers of the Pacific Ocean. Their isolation means that they are home to a variety of animals and plants found nowhere else, such as the tooth-billed pigeon and Samoan starling.

The Samoan swallowtail butterfly, or *Papilio godeffroyi*, is another, and

is one of just three species of this type of butterfly known in this region of the Pacific. While it was once common to the largest Samoan islands, it's now only found on Tutuila, having become extinct on the archipelago's other islands at some point in the late 1970s or early 1980s.



The Samoan swallowtail now lives in just 5% of its former range. Credit: Mark Schmaedick

Today, it is found in just 5% of the range it lived in during the early 1970s. The causes of the insect's decline [aren't clear](#), but destruction of its forest habitat by humans and [tropical storms](#) are thought to have pushed the talafalu tree, which the Samoan swallowtail needs to lay its eggs on, into decline.

These plants are equally as important to the parasitic wasp *O. pitosina*,

which lays its own eggs inside those of the Samoan swallowtail. Its larvae hatch and eat the butterfly eggs from the inside, eventually giving rise to adult wasps.

While it may seem like the wasps are also contributing to the butterfly's decline, Andrew argues that they're performing a vital role.

"As the wasp is killing the butterfly, it initially seems like the wasp is the villain of the story," Andrew says. "Without the wasp, however, it's possible that the talafalu could be wiped out on the island by being consumed by high numbers of the swallowtail's caterpillars."

"In fact, it's helping to keep the ecosystem in balance by keeping the butterfly population in check. If the swallowtail larvae overwhelmed the trees, then they would lose their source of food and push themselves closer to extinction."

As a result of their close relationships, the fate of the three different species on Tutuila is locked together. With the Samoan swallowtail now classed as Endangered, it's assumed that its loss would probably also lead to the extinction of *O. pitosina*.

Dr. Mark Schmaedick, a co-author of the research, adds, "While it seems likely that Mathew's 1880s report of the egg parasitoid on *P. godeffroyi* in the Samoan islands and on the closely related *Papilio schmeltzi* in Fiji are both *O. pitosina*, there's no way to check on that at the moment."

"It's difficult to say whether it does parasitize on more than just the Samoan swallowtail and whether it might occur outside the swallowtail's range. We haven't yet found any evidence that it does, but it also appears that the wasp might not be readily detected by typical general collecting methods."

Were the wasp to become extinct, it would represent the loss of more than just one species. DNA sequencing suggests it isn't that closely related to any other known wasp species. While it's likely that closer relatives simply haven't been found yet, *O. pitosina* is currently the only example of this unique branch of the tree of life.

Fortunately, just as the threats to the Samoan swallowtail affect the wasp, it also gets a boost from anything that benefits it. [Proposals to reintroduce the butterfly](#) from Tutuila into islands of the neighboring nation of Samoa will need to take the wasp into account, which could help stabilize its population.

To ensure the success of the reintroduction, there will need to be a better understanding of the Samoan swallowtail and *O. pitosina* than there is now. The scientists hope to continue their research next year, aiming to avoid there being a sting in the tail for these two inextricably intertwined [species](#).

*This story is republished courtesy of Natural History Museum. Read the original story [here](#).*

Provided by Natural History Museum

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