

Moth rediscovered in Malaysia mimics appearance and behavior of bees to escape predators

by Mike Gaworecki on 12 January 2018



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- *The moths have legs like bees, bright blue bands on their abdomens (bees in Southeast Asia can be a variety of colors, including blue), and furry bodies that resemble those of bees— though the moths' "fur" is actually elongated scales.*
- *While the conservation status of the moths is unknown, Skowron Volponi found that the Oriental blue clearwing's preferred habitat seems to be the banks of clean watercourses flowing through the primary rainforests of Malaysia — a country with one of the highest deforestation rates in the world.*

Polish researchers have rediscovered a moth in Malaysia that was previously known only from a 130-year-old museum specimen collected in Indonesia.

The Oriental blue clearwing (*Heterosphecia tawonoides*) was rediscovered in Malaysia's Taman Negara National Park by Marta Skowron Volponi, a Ph.D. student at Poland's University of Gdansk and lead author of a paper about the moth recently published in the journal *Tropical Conservation Science*.

When Skowron Volponi first encountered the Oriental blue clearwing and noticed the blue sheen of the moth's wings as well as its reflective, metallic blue scales, she knew right away that the discovery was unique. She and co-author Paolo Volponi (Skowron Volponi's husband) have now observed 12 Oriental blue clearwing individuals in the wild.

Clearwing moths are known for their bee-mimicking appearances, and the Oriental blue clearwing is no exception. They have legs like bees, bright blue bands on their abdomens (bees in Southeast Asia can be a variety of colors, including blue), and furry bodies that resemble those of bees — though the moths' "fur" is actually elongated scales. By assuming the appearance of and fraternizing with bees, Skowron Volponi theorized, clearwing moths are probably better able to evade predators who fear getting a stinger in the mouth when what they're looking for is a good meal.

"You think about moths and you envision a grey, hairy insect that is attracted to light," Skowron Volponi said in a statement. "But this species is dramatically different — it is beautiful, shiny blue in sunlight and it comes out during the day; and it is a master of disguise, mimicking bees on multiple levels and even hanging out with them. The Oriental blue clearwing is just two centimeters in size, but there are so many fascinating things about them and so much more we hope to learn."

In fact, the Oriental blue clearwing not only looks and behaves like a bee, but may even buzz like a bee. In the *Tropical Science Conservation* paper, Skowron Volponi and her co-author detail a behavior known as "mud-puddling," which they observed male clearwing moths engaging in: While flying amongst groups of bees and wasps from rock to rock on a riverbank, the moths suck up water and sodium with their proboscises (which they give as a "nuptial gift" to females as part of their mating rituals). Skowron Volponi says she also witnessed Oriental blue clearwings imitating a bee's flight path by flying in zigzag patterns, and even heard them buzzing. This latter finding is still unconfirmed, but if additional research bears it out, it would be a first for clearwing moths.

"This is one of those rediscoveries that reminds us of how incredibly fascinating our wild world is and gives us the unique opportunity to learn about a species that would otherwise have been doomed to obscurity in the basement of a museum," Don Church, president of United States-based NGO Global Wildlife Conservation, said in a statement. "Now we get the chance to unlock this species' mysteries and help look at opportunities to protect it."

Church was not involved in the research, but Global Wildlife Conservation was mentioned in the Tropical Science Conservation study because *Heterosphecia tawonoides* fits the organization's description of a "lost species." Though it was described to science in 2003, the basis for that description was a single specimen collected in Sumatra, Indonesia in 1887 that has since been housed at the Natural History Museum in Vienna, Austria.

Global Wildlife Conservation, with the aid of experts from more than 100 IUCN Species Survival Commission Specialist Groups, launched a project called The Search for Lost Species that aims to rediscover and protect species that haven't been seen by scientists in a decade or more.

While the conservation status of the moths is unknown, Skowron Volponi found that the Oriental blue clearwing's preferred habitat seems to be the banks of clean watercourses flowing through the primary rainforests of Malaysia — a country with one of the highest deforestation rates in the world. And while she found the moth primarily in Taman Negara National Park, she did come across some individuals of the species outside of the protected area, as well.

"When they chop down the trees and the first monsoon rains come, there are mudslides and everything is flooded into the river, which brings mud and pollution into the national park," Skowron Volponi said. "While people at first may not think that a sandy bank of a river is a diverse habitat, the reality is that this is precious real estate for clearwing moths, bees, and wonderful day-flying butterflies that are often endangered. Once those riverbanks vanish, so too will all of these species, including my favorites, the clearwing moths."



The rediscovered Oriental blue clearwing. Photo Credit: Marta Skowron Volponi.

CITATION

- Skowron Volponi, M. A., & Volponi, P. (2017). A 130-Year-Old Specimen Brought Back to Life: A Lost Species of Bee-Mimicking Clearwing Moth, *Heterosphecia tawonoides* (Lepidoptera: Sesiidae: Osminiini), Rediscovered in Peninsular Malaysia's Primary Rainforest. *Tropical Conservation Science*, 10.

Article published by Mike Gaworecki