

# New ant species from Borneo explodes to defend its colony

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Exploding behavior of *C. explodens* in experimental setting with a weaver ant.  
Credit: Alexey Kopchinskiy

Amongst the countless fascinating plants and animals inhabiting the tropical rainforests of Southeast Asia, there are the spectacular "exploding ants", a group of arboreal, canopy dwelling ants nicknamed for their unique defensive behaviour.

When threatened by other insects, minor workers can actively rupture their body wall. Apart from leading to the [ants'](#) imminent death, the "explosion" releases a sticky, toxic liquid from their enlarged glands, in order to either kill or hold off the enemy.

Curiously enough, while these ants' peculiar behaviour was first mentioned in distant 1916, no [new species](#) have been formally described since 1935, due to insufficient evidence. Instead, scientists used to simply refer to them as the members of a remarkable [species](#) group - *Colobopsis cylindrica*, better known as "the exploding ants".

That was until an interdisciplinary research team from Austria, Thailand and Brunei came together led by their shared fascination with these insects and their extraordinary mechanism of self-sacrifice (also called autothysis) in 2014. Thus, entomologists, botanists, microbiologists, and chemists from the Natural History Museum Vienna, Technical University Vienna, IFA Tulln and Universiti Brunei Darussalam together identified roughly 15 separate species of exploding ants, with one of them now described as new to science in the open access journal *ZooKeys*.



Minor worker of *C. explodens* with posterior body raised in a defensive pose.  
Credit: Alexey Kopchinskiy

Aptly named *Colobopsis explodens*, previously nicknamed "Yellow Goo" for its bright yellow gland secretion, the new species has been picked as the model species of the group, after the scientists deemed it to be "particularly prone to self-sacrifice when threatened by enemy arthropods, as well as intruding researchers".

Being a "model species" means that the ant will serve as an important navigation point in future studies on exploding ants. Publications regarding their behaviour, chemical profile, microbiology, anatomy and evolution are currently in preparation, say the authors. In addition, there are several more new species expected to be described in the near future.



While minor workers exhibit the ability to "explode", the other castes have specialities of their own. For example, major workers (also called "doorkeepers") have big, plug-shaped heads used to physically barricade the nest entrances against intruders.

During a sampling trip to Brunei in 2015, project members Alexey Kopchinskiy and Alice Laciny even managed to observe queens and males on a mating flight. They sampled the first males of these ants ever to be seen.



Major worker of *C. explodens* with characteristically enlarged head. Credit: Heinz Wiesbauer

The same expedition was used to record the ants' activity schedule and conduct the first experiments on food preferences and exploding behaviour.

While the exploding ants play a dominant role in rainforests, their biology still holds a number of secrets. The observations and experiments conducted on the newly described species have laid important groundwork for future research that will uncover even more details about these enigmatic explosive insects.

Watch [this video](#) to observe the behaviour of the exploding ants in various settings.

**More information:** Laciny A, Zettel H, Kopchinskiy A, Pretzer C, Pal A, Salim KA, Rahimi MJ, Hoenigsberger M, Lim L, Jaitrong W, Druzhinina IS (2018) *Colobopsis explodens* sp. n., model species for studies on "exploding ants" (Hymenoptera, Formicidae), with biological notes and first illustrations of males of the *Colobopsis cylindrica* group. *ZooKeys* 751: 1-40. [doi.org/10.3897/zookeys.751.22661](https://doi.org/10.3897/zookeys.751.22661)

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