The first bioluminescent click beetle discovered in Asia represents a new subfamily

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Male (left) and female (right) specimens of the newly described species and genus *Sinopyrophorus schimmeli*. Credit: Mr Wen-Xuan Bi

A remarkable bioluminescent click beetle was discovered in the subtropical evergreen broadleaf forests in southwest China. Scientists Mr. Wen-Xuan Bi, Dr. Jin-Wu He, Dr. Xue-Yan Li, all affiliated with the Chinese Academy of Sciences (Kunming), Mr. Chang-Chin Chen of Tianjin New Wei San Industrial Company, Ltd. (Tianjing, China) and Dr. Robin Kundrata of Palacký University (Olomouc, Czech Republic) published their findings in the open-access journal *ZooKeys*.

Even though the family of click beetles (*Elateridae*) contain approximately 10,000 species worldwide, it is only about 200 species able to emit light, and they inhabit Latin America and Oceania. Interestingly, the position of the luminous organs varies amongst the different click beetle lineages. In some, they are found on the foremost of the three thoracic segments of the body (prothorax), in others—on both the prothorax and the abdomen, and in few—only on the abdomen.

"In 2017, during an expedition to the western Yunnan in China, we discovered a dusk-active bioluminescent click beetle with a single luminous organ on the abdomen, " recalls lead scientist Mr. Wen-Xuan Bi.

Since no bioluminescent click beetle had previously been recorded in Asia, the team conducted simultaneous morphological and molecular analyses in order to clarify the identity of the new species and figure out its relationship to other representatives of its group.

Co-author Dr. Xue-Yan Li explains:

"The morphological investigation in combination with the molecular analysis based on 16 genes showed that our taxon is not only a new species in a new genus, but that it also represents a completely new subfamily of click beetles. We chose the name Sinopyrophorus for the new genus, and the new subfamily is called *Sinopyrophorinae*."

In conclusion, the discovery of the new species sheds new light on the geographic distribution and evolution of luminescent click beetles. The authors agree that as a representative of a unique lineage, which is only distantly related to the already known bioluminescent click beetles, the new insect group may serve as a new model in the research of bioluminescence within the whole order of beetles.

More information: Wen-Xuan Bi et al, Sinopyrophorinae, a new subfamily of Elateridae (Coleoptera, Elateroidea) with the first record of a luminous click beetle in Asia and evidence for multiple origins of bioluminescence in Elateridae, *ZooKeys* (2019). DOI: 10.3897/zookeys.864.26689

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