SPIXIANA	48	1	83–90	München, November 2025	ISSN 0341-8391

Pterotopteryx akha sp. nov. from Chiang Rai region (Thailand) and first record of Alucitidae for Thailand

(Lepidoptera, Alucitidae)

Contribution to Alucitidae 4*

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Buchsbaum, U. & Chen, M.-Y. 2025. *Pterotopteryx akha* sp. nov. from Chiang Rai region (Thailand) and first record of Alucitidae for Thailand (Lepidoptera, Alucitidae). Contribution to Alucitidae 4. Spixiana 48 (1): 83–90.

The species *Pterotopteryx akha* sp. nov. is described from the Chiang Rai region (northern Thailand) and figured. With this species this family and genus is for the first time recorded from Thailand. The female holotype is figured and a photo of a living specimen on the screen is also attached. The new species differs from *P. nigrifasciata* (Byun & Park, 2007) in the wing markings as well as in the structures of the genitalia. The biotope at the light trap is a natural rainforest on the hillside beside the village Akha Hill.

Zusammenfassung: Die Art *Pterotopteryx akha* sp. nov. wird von der Chiang Rai-Region (Nordthailand) beschrieben und abgebildet. Mit dieser Art wird diese Familie und Gattung erstmals in Thailand nachgewiesen. Der weibliche Holotypus wird abgebildet und das Foto eines lebenden Tieres am Lichtfangtuch ist beigefügt. Die neue Art unterscheidet sich deutlich von *Pterotopteryx nigrifasciata* (Byun & Park, 2007) in der Flügelzeichnung wie auch in den Genitalstrukturen. Bei dem Biotop am Lichtfangplatz handelt es sich um einen natürlichen Regenwald am Berg nahe dem kleinen Dorf Akha Hill.

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Introduction

During an insect collection field excursion in the northern part of Thailand around Chiang Rai, insects were collected for faunistic research in that area over a time period of about two weeks in December 2022. The region around Chiang Rai is highly interesting for the insect fauna as it represents a faunal boundary between the South-Central Chinese, the Indo-Burmese region, and the northern part of the Sundaland fauna in the south, which makes this region to a biodiversity hotspot (de Lattin 1967, Mittermeier et al. 1998, Myers et al. 2000, Olson & Dinerstein 2002, Schintlmeister 2003, de Bruyn et al. 2014). In addition, it is defined as a region and centre with a high number of endemism (Turner et al 2001).

* Contribution to Alucitidae 3: Buchsbaum, U., Chen, M.-Y., Hsu, L.-P. & Chen, D.-J. 2025. A new species of Alucitidae from Lanyu Island, Taiwan (Lepidoptera, Alucitidae). Spixiana 47 (2): 251–258

Fig. 1. *Pterotopteryx akha* sp. nov. holotype.

Fig. 2. *Pterotopteryx akha* sp. nov. holotype, ventral side.

In the last decades, already many new species have been recorded and published from different places of Thailand. Most of these collections were made in the northern and central part of Thailand as well as in the south, close to the border to Malaysia (e. g. Schintlmeister 2003, 2009, 2013, Schintlmeister & Pinratana 2007, Černý & Pinratana 2009, Buchsbaum & de Freina 2012, Küppers & Buchsbaum 2015 and many more). Another new species has already been described from this location (Buchsbaum 2019).

The locality is an area on the priority list of ecoregions for global conservation (Myers et al. 2000, Brooks et al. 2002, Olson & Dinerstein 2002, Sodhi et al. 2004, Kier et al. 2009 and Woodruff 2010).

Alucitidae

With about 210 species in about 9 genera, the Alucitidae are a small family and are known from all over the world (Hannemann 1959, Gielis 2003, 2009, Ustjuzhanin & Kovtunovich 2014). Six species were listed of the genus *Pterotopteryx* (Gielis (2003, 2009). Hannemann (1959) erected the genus *Pterotopteryx* with the species *Pterotopteryx dodecadactyla* Hübner, [1813] as type-species. Buchsbaum & Chen (2019) and Buchsbaum et al. (2020) described two more *Pterotopteryx* species from Taiwan. They all are recorded from the southeast part of Taiwan in the Oriental region. Data on the biology are only known from very few species of the Asian Alucitidae (Byun 2006). Two species are published from Vietnam (Byun & Park 2007) and few more species from China (Byun et al. 2010). Taiwan has three species with *Pterotopteryx spilodesma* (Meyrick, 1908), *Pterotopteryx formosana* Buchsbaum & Chen, 2019 and *Pterotopteryx taoa* Buchsbaum, Chen & Chen, 2020 (Buchsbaum & Chen 2019, 2020). No species are recorded so far from Thailand until now. This new species is the first record for this family and genus from Thailand.

Material and methods

The holotype was collected with a 160 W mixed light lamp and UV LED lamps in front of a white screen. Collection time was from the evening dusk at about 07:00 pm to the morning dawn at about 06:00 am. Collection site is a rainforest beside a waterfall, direct in front was a small overgrown garden.

The collected specimens were put in poison glasses and were pinned after death and prepared for transport. Specimens were spread on a normal spreading board later at home.

Genitalia preparation was done with KOH 10 % and the genitalia mounted in Euparal. Photos were taken with Olympus Tough TG-5 and edited for publication with Adobe Photoshop (private licence). Genital photos

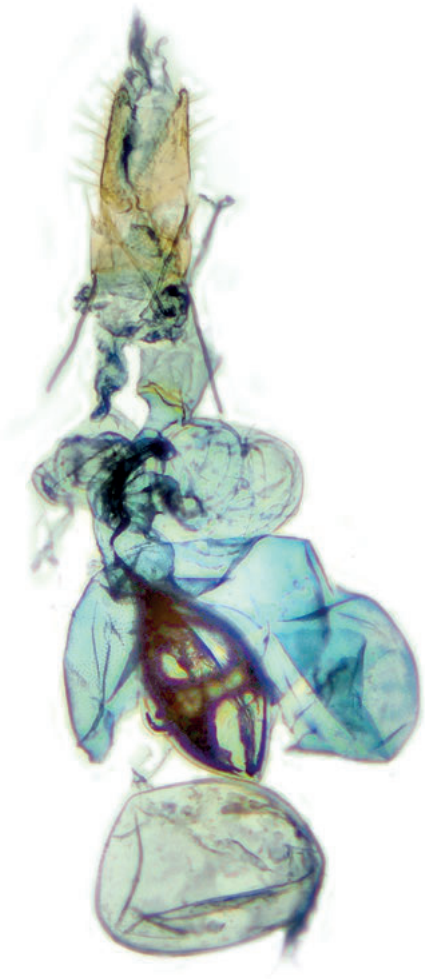

Fig. 3. *Pterotopteryx akha* sp. nov. holotype, female genitalia.

Fig. 4. *Pterotopteryx akha* sp. nov. holotype, head with labial palpi.

were taken with Olympus E-M1 on a Leica Microscope and edited for publication with Adobe Photoshop (private license). The map showing the type locality was made with MapCreator 3.0 (private license).

Pterotopteryx akha sp. nov.
Figs 1–8

Holotype: ♀, North Thailand, Chiang Rai Co., 625 m, Akha Hill village, 19°56'35"N 99°40'22"E, 11. Dec. 2022, LF, leg. U. Buchsbaum. Holotype in Coll. Ulf Buchsbaum (CUBK), later to be deposited in Coll. Zoologische Staatssammlung München (ZSM).

Etymology. The new species is named *Pterotopteryx akha* after the place where the species was collected. Akha Hill village is a small village in the hills around the Chiang Rai region.

Description and differential diagnoses

Wingspan: ♀, 15 mm, right forewing length: 7 mm.

Head, thorax, and abdomen brown. Abdominal segments ringed with black and white marks. In *Pterotopteryx nigrifasciata*, head and thorax pale brownish yellow and abdomen creamy white, with a line on all segments dorsally. In *Pterotopteryx formosana*, the abdomen is greyish brown with two large white dots. *Pterotopteryx taoa* is white, abdomen with orange brown marks. Labial palpus 2/3 larger than eye size, black and white marked, with black tip. In *P. nigrifasciata*, the labial palpus is much shorter, greyish brown, the labial palpus of *P. formosana* is of same length as eye size, yellowish white, in *P. taoa* it is white, with black rings, larger than eye size. Forewings with six lobes. Costal lobe is the longest one and black and brownish coloured, thicker. The five other lobes are shorter with subterminal greyish white part. Hindwings white with six lobes, partly brownish black marked. *P. nigrifasciata* is pale greyish brown, with four large blackish brown spots, first lobe rather thick. Hindwings similar to forewings. *P. formosana* has greyish brown forewings with interrupted small narrow white spots. Hindwings greyish, with some small brownish spots. In *P. taoa*, forewings are white, with orange marks and black lines, hindwings similar to forewings.

Female genitalia: Papillae anales triangle-shaped with rounded tip, weakly hairy and weakly sclerotized. Apophyses posteriors and anteriores of nearly same length. Bulla seminalis rounded, wide

Table 1. Differences in characteristics and distribution of the most similar *Alucita* species – adults.

	Ptertopteryx akha sp. nov.	*P. nigrifasciata*	*P. formosana*	*P. taoa*
Head, body, abdomen	Brown	Pale yellowish brown, abdomen with creamy white line	Greyish brown	White
Labial palps	Black and white marked, with black tip, 2/3 longer than eye size	Blackish grey, little longer than eye size	Greyish, with brown hair, 1/3 longer than eye size	White, with black rings, longer than eye size
Forewings	Six lobes, costal lobe longer, black brownish coloured, costal lobe thicker, the other five lobes shorter with subterminal greyish white part	Pale greyish brown, first lobe rather thick, ground colour pale yellowish brown, four large blackish brown spots	Greyish brown with interrupted small narrow white spots	White with orange marks and surrounded by small black lines
Hindwings	Six lobes, partly brownish black marked	Similar to forewings	Greyish with some small brownish spots	Similar to forewings
Female genitalia	Papillae anales triangle formed, with rounded tip, apophyses posteriores and anteriores nearly of same length. Bulla seminales rounded and weakly sclerotized. Ductus bursae short, wide. Bursa copulatrix round, weakly sclerotized, without signum	Papillae anales slighly rolled, apophyses posteriores and anteriores of same length, wider, less sclerotized. Bursa copulatrix ovate, membranous	Not available	Papillae anales narrow, tapering. Apophyses posteriores as long as ductus bursae. Corpus bursae ovate, rounded
Distribution	Chian Rai reg., Thailand	Vietnam	Southeast Taiwan	Lanyu Island, Taiwan

Fig. 5. Map with type locality of *Pterotopteryx akha* sp. nov.

Fig. 6. *Pterotopteryx akha* sp. nov. holotype, live resting on screen.

Fig. 7. Collection site of *Pterotopteryx akha* sp. nov. in the rainforest.

Fig. 8. Biotope at collection site of *Pterotopteryx akha* sp. nov. holotype.

and weakly sclerotized. Ductus bursae short, wide. Bursa copulatrix round, weakly sclerotized, without signum. In *Pterotopteryx nigrifasciata*, papillae anales slighly rolled, apophyses posteriores and anteriores of same length, wider, weakly sclerotized. Bursa copulatrix ovate, membranous. In *Pterotopteryx taoa*, papillae anales narrow, tapering. Apophyses posteriores as long as ductus bursae. Corpus bursae ovate rounded. Only males are available of *Pterotopteryx formosana*.

Discussion

As far as known, the family Alucitidae and especially the genus *Pterotopteryx* is unrecorded in Thailand, though it is known from the neighbouring countries like Vietnam and the southern parts of China (Byun & Park 2007, Byun et al. 2010). The type locality is a hillside between agricultural activities and small villages and close to a primary rainforest. Most of the Alucitidae species occur in the Palaearctic region (Sutter 1990, Byun 2006), some new species and new records can be expected from Papua (Indonesia) (Gielis 2009). The region in northern Thailand around Chiang Rai can be described as a border between Palaearctic and Oriental faunal elements (Schintlmeister 2003, 2009, 2013) which makes this place to a biodiversity hotspot, and, in addition, it is a region with many endemic species.

Acknowledgements

Many thanks to the owner of the Akha Hill village Hotel, Mr. Apae Amor, who gave the possibility to the first author for collecting at his beautiful nature place. The authors thank Dr. Wolfgang Speidel (Munich/Olching) for the review of the manuscript and the useful comments on it.

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