

The bat specimens in the family megadermatidae (Chiroptera) deposited in the Natural History Museum of the National Science Museum Thailand

Dome Pratumthong¹, Amonphong Klaipet¹ and Jutarat Sritheamngern²

¹ Office of Natural Science Research, National Science Museum Thailand, 39, Moo 3, Khlong 5, Khlong Luang, Pathum Thani, 12120, Thailand

² Faculty of Science, Mahasarakham University, 41/20, Kham Riang, Kantharawichai, Maha Sarakham, 44150, Thailand

Article history

Received: 24 October 2025

Accepted: 5 January 2026

Published online: 28 February 2026

Corresponding author

Dome Pratumthong

E-mail: karchera61@gmail.com

Editor

Tadsanai Jeenthong

E-mail: tadsanai@nsm.or.th

ABSTRACT

The Megadermatidae is a family of insectivorous bats belonging to the suborder Yinpterochiroptera. Worldwide, the family currently comprises six extant species classified into six genera. In Thailand, three species across three genera: *Megaderma*, *Lyroderma*, and *Eudiscoderma* have been recorded. This study documents the specimens of the family Megadermatidae preserved in 70% ethanol at the Natural History Museum Thailand (THNHM). The examined collection, spanning from 1951 to 2023, represents all 77 provinces nationwide. All specimens were examined following THNHM permission and curation protocols. Examination of 156 non-type specimens revealed two species across two genera: *Megaderma spasma* (Linnaeus, 1758) with 132 specimens (85%) and *Lyroderma lyra* (Geoffroy Saint-Hilaire, 1810) with 24 specimens (15%). The distribution of the two genera varied: *M. spasma* was found in all regions, while *L. lyra* was restricted to only three regions (Central, Western, and Southern Thailand). This disparity suggests that the number of specimens preserved in museums can serve as an indicator of the distribution range for bats in the family Megadermatidae. However, this specimen data may not be sufficient to determine the complete or true distribution range of these two bat species in Thailand. Nevertheless, it provides an important database for identifying key historical and current habitats, which is valuable for future research.

Keywords: bats, false vampire, specimens

INTRODUCTION

Bats are the second most biodiverse order of mammals in the world, with over 1,500 species currently recognized (Simmon and Cirranello, 2025). Due to their diverse roles as predators that help control insect populations and as seed dispersers, bats are crucial to the balance of ecosystems (Karapan *et al.*, 2023; Simmon and Cirranello, 2025). The family Megadermatidae is a relatively ancient group of bats belonging to the suborder Yinpterochiroptera. This family is believed to have a long lineage dating back to the Eocene, approximately 40 million years ago, sharing a common ancestor with bats in the family Craseonycteridae before diverging later in evolution. Currently, six species across six genera of bats in this family are known to be living worldwide: *Lavia frons* (Geoffroy Saint-Hilaire, 1810), *Cardioderma cor* (Peters, 1872), *Megaderma spasma* (Linnaeus, 1758), *Lyroderma lyra* (Geoffroy Saint-Hilaire, 1810), *Macroderma gigas* (Dobson, 1880), and *Eudiscoderma thongareeae* Soisook, Prajakjit, Karapan, Francis and Bates, 2015 (Simmon and Cirranello, 2025).

Bats in this family are characterized by an erect nasal plate, large ears that connect above the forehead, and are divided into two lobes. They also possess a wide interfemoral membrane. The family name is derived from the Greek words mega (large) and derma (skin), alluding to their expansive wing and tail membranes. Anatomical examination shows they have one or two small caudal vertebrae (tail bones). Their wing structure includes a second digit with one phalanx and a third digit with two phalanges. The fur is typically long and soft. Females have two true mammary glands in the axillary region and a pair of pseudo-mammary glands in the inguinal region.

The Greater False Vampire Bat (*L. lyra*) and Lesser False Vampire Bat (*M. spasma*) were formerly classified under the same genus (*Megaderma*) due to their striking similarities, despite morphological differences. For instance, *L. lyra* is slightly larger, possesses a flattened, semicircular nasal lamina, and has a deeply grooved first molar. Conversely, *M. spasma* is smaller, features a narrower and longer nasal lamina, and is distinguished by a short, bifurcated baculum. However, molecular phylogenetic analyses over the past two decades have confirmed that *L. lyra* is more closely related to *M. gigas* than to *M. spasma*. This finding led to the official separation of *L. lyra* into its own genus (Simmon and Cirranello, 2025; Francis, 2019).

Both bat species are distributed throughout tropical Asia, with *M. spasma* having a broader range that extends from India to Indonesia and the Philippines. Both species use echolocation for navigation and share similar foraging behaviors. Their diet consists primarily of small mammals, birds, lizards, frogs, toads, fish, and large insects. The breeding season is from March to May, with single young born per reproductive event. Furthermore, co-roosting has been reported in some cases (Simmon and Cirranello, 2025; International Union for Conservation of Nature and Natural Resources, 2025).

Thailand is recognized as a biodiversity hotspot and a zoogeographical crossroads between the Indochinese and Sunda regions. For administrative and ecological purposes, the country is divided into six regions: the North, the Northeast, the Central, the East, the West, and the South. Each region possesses unique characteristics in terms of its geography, population density, and available resources (Marod and Kutintara, 2009; Royal Forest Department, 2009). Regarding the bat fauna, three genera of Megadermatidae bats: *Megaderma*, *Lyroderma*, and *Eudiscoderma* are found in Thailand (Karapan *et al.*, 2023; Soisook, 2011; Francis, 2019). The main objective of this study is to examine the sample inventory of Megadermatidae bats preserved at the Thailand Natural History Museum (THNHM), National Science Museum Thailand (NSM). This dataset comprises specimens collected from 1951 to 2023, with collection areas spanning all six regions and 77 provinces across Thailand.

MATERIALS AND METHODS

Instead of a primary field survey, this study presents a checklist based on 156 Megadermatidae specimens deposited in the THNHM mammal collection. These specimens, preserved in 70% ethanol, were collected between 1951 and 2023. Examination was conducted under formal permission following THNHM's curation protocols. Morphological verification focused on essential diagnostic traits to ensure accurate species identification within the family.

The study encompasses six regions and 77 provinces throughout Thailand: North (9 provinces), West (5 provinces), Northeast (20 provinces), Central (22 provinces), East (7 provinces), and South (14 provinces). Specimens of the Greater False Vampire Bat (*L. lyra*) and Lesser False Vampire Bat (*M. spasma*) were examined. The methodology began with a detailed morphological examination of the specimens, along with the verification of accession numbers and data labels on the specimen jars. All crucial information was recorded in a master database, and complete photographic documentation was performed for each specimen. Subsequently, the collected specimen data were analyzed to ensure accuracy.

Data analysis procedures involved collecting relevant metadata: such as location, collection date, and collector's name and then sorting the specimens based on taxonomic and phylogenetic principles. This classification was performed by referencing established works (Soisook, 2011; Francis, 2019; and Karapan *et al.*, 2023). The resulting list presents the currently accepted scientific name, along with the author and year of publication, English and Thai common names, and accompanying images. This checklist therefore provides complete distribution information for bat species in Thailand, utilizing the dataset housed at the museum.

RESULTS AND DISCUSSION

This study examined 156 specimens of two megadermatid bat species: *L. lyra* and *M. spasma*. These specimens, spanning a collection period from 1951 to 2023 and covering all regions of Thailand, are cataloged in the THNHM database. The sample set consisted of 24 *L. lyra* (15%) and 132 *M. spasma* (85%) specimens. Distribution analysis revealed a notable disparity: while *M. spasma* was recorded across all geographic regions, *L. lyra* was restricted to the Central, Western, and Southern regions.

The disproportionate representation of *M. spasma* specimens in the collection suggests their greater abundance, accessibility, or higher sampling potential compared to *L. lyra*. This finding aligns with reports of *M. spasma*'s wider global distribution (spanning from India to Indonesia and the Philippines) versus the more restricted range of *L. lyra* in South Asia and Indochina (Simmon and Cirranello, 2025).

These findings underscore the critical role of the THNHM as a repository for taxonomic data. This checklist of specimens provides a crucial foundation for future taxonomic, biogeographic, and conservation studies of Megadermatidae bats in Thailand. Specifically, this work supports the planning of future field surveys to address existing distributional data gaps for both *L. lyra* and *M. spasma* species.

Table 1. Megadermatidae specimens deposited in the Thailand Natural History Museum (THNHM), National Science Museum Thailand.

Species	Common Name (English)	Common Name (Thai)	Number of Specimens
<i>Megaderma spasma</i> (Linnaeus, 1758)	Lesser False Vampire Bat	ค้างคาวแวมไพร์ แปลงเล็ก	132
<i>Lyroderma lyra</i> (Geoffroy Saint-Hilaire, 1810)	Greater False Vampire Bat	ค้างคาวแวมไพร์ แปลงใหญ่	24
Total			156

Checklist of species**Family Megadermatidae Allen, 1864****Genus *Megaderma* Geoffroy Saint-Hilaire, 1810*****Megaderma spasma* (Linnaeus, 1758)**

(Figures 1–2)

Common name: Lesser False Vampire Bat**Thai name:** ค้างคาวแวมไพร์ปลงเล็ก**Non-type material examined (n = 132)****Northern Thailand:**

Three males (THNHM-M-00007456–00007458), Mae Hong Son Province, Pai District, Mae Na Tieng Subdistrict, Ban Mae Na, 10–12 Jan 1983, DEB Team leg. Two females (THNHM-M-00005146–00005147), Chiang Rai Province, Mae Sai District, Ban San Ko Pui, 8 Nov 1972, K. Thonglongya leg. Two sex unknowns (THNHM-M-00010086–00010087), Lampang Province, Chae Hom District, Ban Sa, 5 Mar 1992, Surachit and Vichain leg. Three sex unknowns (THNHM-M-00010949–00010951), Chiang Mai Province, San Sai District, Ban Huai Kaeo, 8–12 Aug 1981, PL–PN leg.

Northeastern Thailand:

One female (THNHM-M-00006661), Nong Khai Province, unknown locality, 16 Dec 1990, ERD leg. One male (THNHM-M-00006662), Nong Khai Province, unknown locality, 17 Dec 1990, ERD leg. One female (THNHM-M-00005148), Ubon Ratchathani Province, Khong Chiam District, Ban Dan Kao, 14 Dec 1972, K. Thonglongya leg. Four males (THNHM-M-00005152–00005155), Surin Province, Sangkha District, Ban Ta Tum, 28 Sep 1973, K. Thonglongya leg. Five females (THNHM-M-00005156–00005160), Surin Province, Sangkha District, Ban Ta Tum, 28 Sep 1973, K. Thonglongya Team; Five females (THNHM-M-00005161–00005165), Nakhon Ratchasima Province, Pak Thong Chai District, Sakaerat, 8 May 1973, K. Thonglongya leg. Six males (THNHM-M-00005166–00005171), Nakhon Ratchasima Province, Pak Thong Chai District, Sakaerat, 8 May 1973, K. Thonglongya leg. One female (THNHM-M-00005177), Nakhon Ratchasima Province, Pak Chong District, Ban Tha Ma Phang, Khao Yai National Park, 27 July 1974, CTNRC Team leg. One female (THNHM-M-00005178), Nakhon Ratchasima Province, Pak Chong District, Ban Tha Ma Phang, Khao Yai National Park, 27 Jul 1974, CTNRC Team; 1 male (THNHM-M-00005179), Nakhon Ratchasima Province, Pak Chong District, Ban Tha Ma Phang, 28 Jul 1974, CTNRC Team leg. One female (THNHM-M-00005184), Nakhon Ratchasima Province, Pak Chong District, Ban Tha Ma Phang, 21 Sep 1975, TISTR Team leg.

Central Thailand:

One male (THNHM-M-00005141), Saraburi Province, Kaeng Khoi District, Tap Kwang Subdistrict, Phu Nam Tok, 25 May 1972, B. Lekagul leg.

Eastern Thailand:

One sex unknown (THNHM-M-00000870), Trat Province, Ko Kut District, unknown locality, unknown date. One male (THNHM-M-00006660), Chanthaburi Province, Tha Mai District, Khao Wong Kot, 21 Jun 1974, CTNRC Team leg.

Western Thailand:

One male (THNHM-M-00005143), Ratchaburi Province, Chom Bueng District, Tham Khao Bin, 30 Jul 1972, P. Luecha and P. Nunpakdi leg. One female (THNHM-M-00005144), Ratchaburi Province, Chom Bueng District, Tham Khao

Bin, 30 Jul 1972, P. Luecha leg. One female (THNHM-M-00005145), Ratchaburi Province, Chom Bueng District, Tham Khao Bin, 30 Jul 1972, P. Luecha leg. One sex unknown (THNHM-M-00010645), Ratchaburi Province, Chom Bueng District, Tham Khao Bin, 15 Nov 1981, unknown collector. Two males (THNHM-M-00005180–00005181), Kanchanaburi Province, Thong Pha Phum District, Ban Rai Subdistrict, 23 Mar 1975, CTNRC Team leg. Two females (THNHM-M-00005182–00005183), Kanchanaburi Province, Thong Pha Phum District, Ban Rai Subdistrict, 18–23 Mar 1975, CTNRC Team leg. Two females (THNHM-M-00005172, 00005174), Kanchanaburi Province, Thong Pha Phum District, Ban Chan Dee, 14 Dec 1973, K. Thonglongya leg. Two males (THNHM-M-00005173, 00005175), Kanchanaburi Province, Thong Pha Phum District, Ban Chan Dee, 14–15 Dec 1973, K. Thonglongya leg. One female (THNHM-M-00005176), Kanchanaburi Province, Sai Yok District, Ban Pak Saeng, 19 Dec 1973, K. Thonglongya leg. Fifteen sex unknowns (THNHM-M-00010001–00010015), Kanchanaburi Province, Thong Pha Phum District, Ong Thi, 13 Dec 1973, K. Thonglongya leg.

Southern Thailand:

One sex unknown (THNHM-M-00010099), Surat Thani Province, Ko Samui District, Ko Tan, 23 Aug 1994, unknown collector. Two sex unknowns (THNHM-M-00010900–00010901), Surat Thani Province, Ko Samui District, Ko Tan, 30 Nov 1994, ERD Team leg. One sex unknown (THNHM-M-00010100), Songkhla Province, Laem Samila, 9 May 1994, unknown collector. One sex unknown (THNHM-M-00010640), Nakhon Si Thammarat Province, Cha-uat, Luan Yao, 10 Feb 1980, unknown collector. Two sex unknowns (THNHM-M-00000226–00000227), Trang Province, 5 May 2001, T. Chanard and Y. Chuaykern leg. One sex unknown (THNHM-M-00000228), Trang Province, 5 May 2001, T. Chanard and Y. Chuaykern leg. One male (THNHM-M-00005810), Pattani Province, Khok Pho District, Ma Krud, 11 Mar 1983, ERD Team leg. Two females (THNHM-M-00005809, 00005944), Pattani Province, Khok Pho District, Ma Krud, 11 Mar 1983, ERD Team leg. Two sex unknowns (THNHM-M-00008560–00008561), Pattani Province, Khok Pho District, Ma Krud, unknown date and collector. One male (THNHM-M-00005149), Krabi Province, Mueang Krabi District, Ban Tap Plick, 7 Jun 1973, K. Thonglongya leg. Two females (THNHM-M-00005150–00005151), Krabi Province, Mueang Krabi District, Ban Tap Plick, 7 Jun 1973, K. Thonglongya leg. One male (THNHM-M-00006663), Krabi Province, Plai Phraya District, Khao Ying Mee, 14 Oct 1994, ERD Team leg. One male (THNHM-M-00005142), Ranong Province, Kapoe District, Khlong Nakha, 25 May 1972, B. Lekagul leg. One sex unknown (THNHM-M-00010818), Phang-nga Province, Ko Yao District, Ko Yao Yai, 13 Mar 1976, CTNRC Team leg.

Unknown locality (Thailand):

Thirty-five sex unknown (THNHM-M-00010088–00010110, THNHM-M-00010639). Five females (THNHM-M-00000818, 00000831, 00000890, 00000904, 00008202). One male (THNHM-M-00000729), 10 Aug 1992, RFD and JWRC leg. One female (THNHM-M-00000730), 11 Aug 1992, RFD and JWRC leg. One female (THNHM-M-00000773), 8 Feb 1993, RFD and JWRC leg. One male (THNHM-M-00006001), unknown date and collector.

Distribution (voucher-based):

Mae Hong Son, Chiang Rai, Lampang, Chiang Mai, Nong Khai, Ubon Ratchathani, Surin, Nakhon Ratchasima, Saraburi, Trat, Chanthaburi, Ratchaburi, Kanchanaburi, Surat Thani, Songkhla, Nakhon Si Thammarat, Trang, Pattani, Krabi, Ranong and Phang-nga.

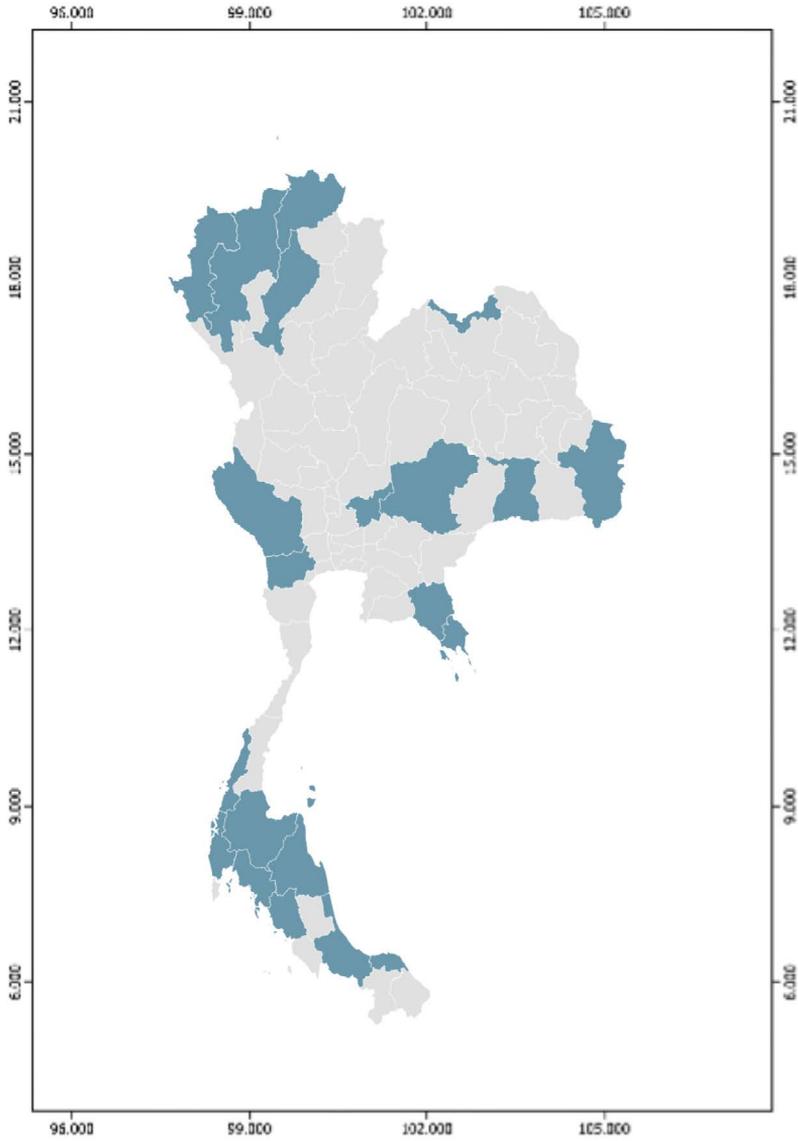


Figure 1. Geographic distribution of *Megaderma spasma* (Linnaeus, 1758) in Thailand (based on specimens deposited in THNHM).

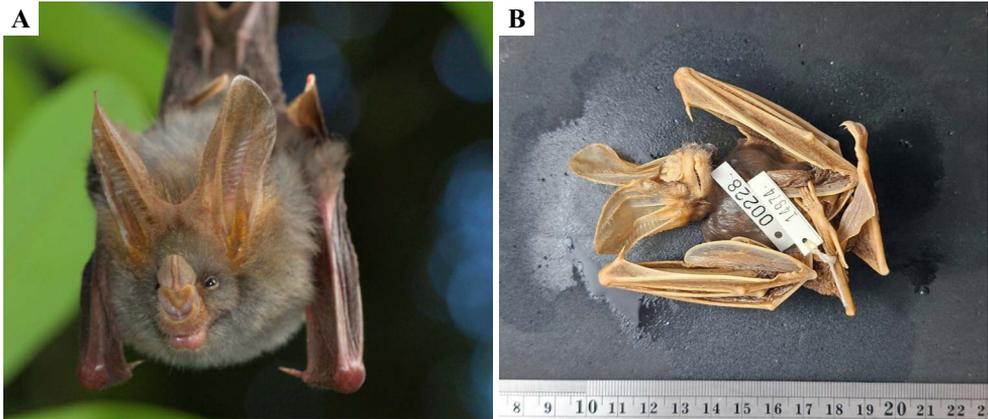


Figure 2. *Megaderma spasma* (Linnaeus, 1758). A, living specimen; B, spirit specimen deposited in THNHM.

Genus *Lyroderma* Peters, 1872

Lyroderma lyra (Geoffroy Saint-Hilaire, 1810)

(Figures 3–4)

Common name: Greater False Vampire Bat **Thai name:** ค้างคาวแวมไพร์แปลงใหญ่

Non-type material (n = 24)

Central Thailand:

Two sex unknowns (THNHM-M-00006658–00006659), Saraburi Province, Tap Kwang District, Phu Nam Tok, unknown date, B. Lekagul leg.

Western Thailand:

One sex unknown (THNHM-M-00010642), Ratchaburi Province, Chom Bueng District, Tham Khao Bin, 15 Nov 1981, PL, PN, PC leg. One female (THNHM-M-00007702), Kanchanaburi Province, Thong Pha Phum District, Tha Kha Noon, 12 Dec 1973, K. Thonglongya leg.

Southern Thailand:

One male (THNHM-M-00005808), Pattani Province, Khok Pho District, Ma Krud, 18 Jan 1988, DEB leg. One sex unknown (THNHM-M-00008559), Pattani Province, Khok Pho District, Ma Krud, unknown date and collector. One male (THNHM-M-00007697), Ranong Province, Kra Buri Province, Ban Lam Liang, 30 Mar 1973, K. Thonglongya leg. One females (THNHM-M-00007698–00007699), Ranong Province, Kra Buri District, Ban Lam Liang, 30 Mar 1973, K. Thonglongya leg. Two females (THNHM-M-00007700–00007701), Ranong Province, Kra Buri District, Ban Lam Liang, 1 Apr 1973, K. Thonglongya leg. Three males (THNHM-M-00007703–00007705), Ranong Province, Kra Buri District, Tham Pa Yang, 23 Dec 1973, S. Pongsaphiphat and N. Nadee leg. Five females (THNHM-M-00007706–00007710), Ranong Province, Kra Buri District, Tham Pa Yang, 23 Dec 1973, DEB Team leg.

Unknown locality (Thailand):

Two females (THNHM-M-00000523, 00000581), 11 Aug 1992, RFD and JWRC leg. Two males (THNHM-M-00000591, 00008242). Two sex unknown (THNHM-M-00009597–00009598).

Distribution (voucher-based):

Saraburi, Ratchaburi, Kanchanaburi, Pattani and Ranong.

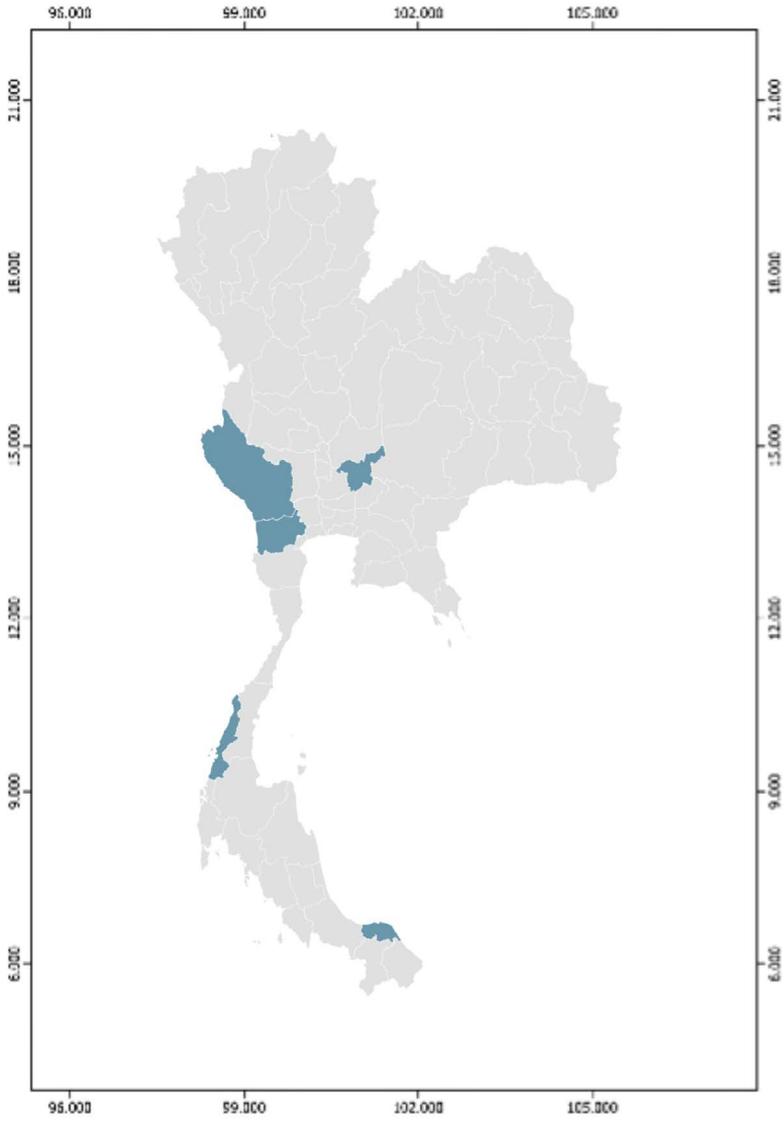


Figure 3. Geographic distribution of *Lyroderma lyra* (Geoffroy Saint-Hilaire, 1810) in Thailand (based on specimens deposited in THNHM).

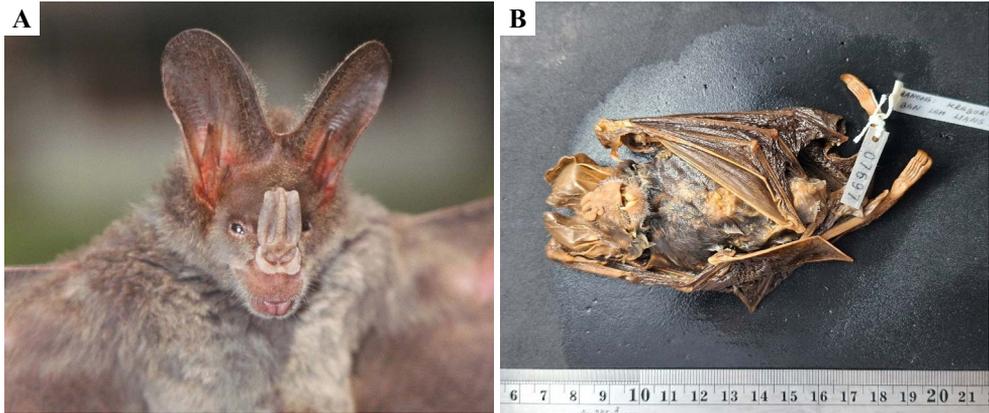


Figure 4. *Lyroderma lyra* (É. Geoffroy Saint-Hilaire, 1810). A, living specimen; B, spirit specimen deposited in THNHM.

ACKNOWLEDGMENTS

The authors would like to express their sincere gratitude to the Thailand Science Research and Innovation (TSRI) and National Science Museum Thailand (NSM) under the project “Diversity and Distribution of Bats (Order Chiroptera) in Thailand.” Special appreciation is extended to Assoc. Prof. Dr. Sakbaworn Tumpeesuwan and Dr. Pipat Soisook for their invaluable assistance and continuous support throughout this study.

REFERENCES

- Francis, C.M. 2019. *A field Guide to the Mammals of Thailand and South-East Asia 2nd Edition*. Bloomsbury Publishing., London. 416 pp.
- International Union for Conservation of Nature and Natural Resources. 2025. *The IUCN Red List of Threatened Species. Version 2025-2*. Downloaded from <https://www.iucnredlist.org> on 15 September 2025.
- Karapan, S., A. Wongwai and P. Soisook. 2023. *Cave-Dwelling Bats of Thailand*. Wildlife Research Division, Wildlife Conservation Office, Department of National Parks, Wildlife and Plant Conservation, Bangkok. 131 pp.
- Marod, D. and U. Kutintara. 2009. *Forest Ecology*. Aksornsiam Printing House. Bangkok. 540 pp.
- Royal Forest Department. 2009. *Forestry in Thailand*. Thai Royal Forest Department. Bangkok. 48 pp.
- Simmon, N.B. and A.L. Cirranello. 2025. *Bat Species of the World: A taxonomic and geographic database. Version 1.9*. Downloaded from <https://batnames.org/> on 10 December 2025
- Soisook, P. 2011. A checklist of bats (Mammalia: Chiroptera) in Thailand. *Journal of Wildlife in Thailand* 18(1): 121–151.
- Wilson, D.E. and R.A. Mittermeier. 2019. *Handbook of Mammals of the World. Volume 9. Bats*. Lynx Edicions. Barcelona. 1008 pp.

