

# A Checklist of the Small Mammals of Family Soricidae (Soricomorpha) in Thailand

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## Abstract

Based on an examination of museum specimens and published records, a comprehensive and critical species list of the Thai small mammals of the family Soricidae is created. Currently, 14 valid species in four genera are known from Thailand. A total of 38 specimens of Soricidae in six species (three genera) are housed in the Natural History Museum of the National Science Museum, Thailand.

## Keywords

Specimens, Natural History Museum, National Science Museum, Shrew, Thailand

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## Introduction

Thailand, with an area of 513,120 km<sup>2</sup>, is located in the center of mainland Southeast Asia, extending from 5°45'N to 20°30'N and from 97°30'E to 105°45'E. One thousand five hundred kilometers separate the northernmost and southernmost parts of the country, while the maximum width is ca. 800 km. Thailand is bordered to the north by Myanmar and Laos, to the east by Laos and Cambodia, to the west by Myanmar and the Andaman Sea, and to the south by Malaysia and the Gulf of Thailand (Khachonpisitsak *et al.*, 2020; Jeenthong *et*

*al.*, 2021). Thailand has been divided into six geographical regions: northern, northeastern, central, eastern, western, and southern; with each region being unique in terms of geography, human population size, and available resources (Royal Forest Department, 1985; Jeenthong *et al.*, 2013; Khachonpitsak *et al.*, 2020). Thailand has been described as a natural gateway or zoogeographical crossroads to Indochina in the north and the Sundaic region in the south (Luangjame *et al.*, 1997) and is considered as a biodiversity hotspot due to its rich diversity and high endemism (Plant, 2014; The Sustainability Consortium WRI, 2019; Myers *et al.*, 2000).

The small mammal family Soricidae belongs to the order Soricomorpha. Its members can be found throughout the world, with the exceptions of the polar regions, Australia, and southern South America (Animal Diversity Web, 2021). In Thailand, most of the species were recorded from Northern Thailand (Lekagul and McNeely, 1977; Francis, 2008; Duengkae, 2011; IUCN, 2020), with over 300 species in 23 genera have been recorded in the world. Among those species, 14 have been recorded in Thailand (Lekagul and McNeely, 1977; Francis, 2008; Duengkae, 2011), representing four genera. Three species have type localities in Thailand. The study of the diversity of Soricidae has been piecemeal. This study is the first comprehensive checklist of Soricidae in Thailand. The list of species together with illustrations for each species, and biogeographical distribution of the Thai species of the family are provided.

## Materials and Methods

A checklist was compiled from the data of museum records, literature, and collections made during field trips from 1951 to 2020, covering six geographical regions and 77 provinces of Thailand (northern region: nine provinces, northeastern region: 20 provinces, central region: 22 provinces, eastern region: seven provinces, western region: five provinces, and southern region: 14 provinces). This list presents all known Thai shrews described and recorded from 1951 to 2020, covering current valid names, distributions, and references.

Extensive collections, made from various localities in Thailand during the past three years, now deposited in the Natural History Museum of National Science Museum, Thailand (THNHM), were examined. The present list was arranged alphabetically by family, genus, and species. Binominal species names are followed by author name(s) and publication year. Brief synonymic lists, including the history of taxonomic treatments and distribution, are also given. Material examined and images, if available, are provided.

## Results and Discussion

This checklist contains 14 shrew species from Thailand belonging to four genera (*Anourosorex* Milne-Edwards, 1872; *Chodsigoa* Kastchenko, 1907; *Crocidura* Wagler, 1832; and *Suncus* Ehrenberg, 1832) (Table 1). The most speciose genus, *Crocidura* compris-

es 64.28% of all species, followed by *Suncus* (21.23%), *Anourosorex* (7.14%), and *Chodsigoa* (7.14%), respectively. Worldwide, over 300 extant species are recognized in Soricidae (Animal Diversity Web, 2021). Thus, to date, the number of species known from Thailand accounts for 4.67% of the global total.

Lekagul and McNeely (1977) recorded *Crocidura dracula* Thomas, 1912 in Thailand. This name might be previously misidentified because *C. dracula* is distributed in Northern Europe (IUCN, 2020). Thus, *C. dracula* is excluded from the checklist of Soricidae in Thailand. Francis (2008), Duengkae (2011), and IUCN (2020) also excluded the species from their lists. Recently, Duengkae (2011) recorded 13 shrew species from Thailand. This checklist adds one species, *Crocidura monticola* Peters, 1870 from Duengkae (2011).

A total of 38 shrew specimens in six species (three genera) are housed in the Natural History Museum of the National Science Museum, Thailand (THNHM). It is composed mainly *Suncus* Ehrenberg, 1832, 23 specimens (76.67% of all specimens housed in THNHM). The specimens were collected in Thailand from 1951 to 2021.

**Table 1.** Number of genera, species, and specimens of Soricidae in Thailand

Genera	Number of species	Number of specimens
<i>Anourosorex</i>	1	3
<i>Chodsigoa</i>	1	0
<i>Crocidura</i>	9	11
<i>Suncus</i>	3	24
Total	14	38

## Checklist of species

### Family Soricidae

#### Genus *Anourosorex* Milne-Edwards, 1872

##### *Anourosorex squamipes* Milne-Edwards, 1872

Chinese Mole Shrew หนูผีป่าทางจู้ (Figure 1)

*Anourosorex squamipes* Milne-Edwards, 1872:264. Type locality: China, Sichuan Province, probably Moupin (= Baoxing).

**Non-type material examined. THAILAND:** 1 male (THNHM-M-03959), N Thailand, Chiang Mai Prov., Mae Ai Dist., Doi Pha Hom Pok N.P., 22.IV.1987, P. Luecha leg., PL 120., 1 Unsexed (THNHM-M-08171), N Thailand, Tak Prov., Umphang Dist., Doi Mo Ko Ju., 08.II.2014., Y. Chongsomchai leg., 1Unsexed (THNHM-M-08172), N Thailand, Tak Prov., Umphang Dist., Doi Mo Ko Ju., 08.II.2014., Y. Chongsomchai leg.



Figure 1. Male *Anourosorex squamipes* THNHM-M-03959.

**Distribution in Thailand.** Chiang Mai and Tak Province.

**References.** Milne-Edwards, 1872; Lekagul and McNeely, 1977; Francis, 2008; Wilson and Russell 2011; Duengkae, 2011; IUCN, 2020.

### Genus *Chodsigoa* Kastchenko, 1907

#### *Chodsigoa parca* Allen, 1923

Lowe's Shrew หนูผีหางยาวพื้นแดง

*Chodsigoa parca* G.M. Allen, 1923:6. Type locality: Chaina, Ho-mu-shu Pass, Western Yunnan, 2,438 m a.s.l.

**Non-type material examined.** None.

**Distribution in Thailand.** This species is found in the North.

**Remarks.** This species was previously identified as *Soriculus salenskii* Kastschenko, 1907 by Lekagul and McNeely (1977).

**References.** Milne-Edwards (1872); Lekagul and McNeely (1977, cited as *Soriculus salenskii*); Francis (2008); Wilson and Russell (2011); Duengkae (2011); IUCN (2020).

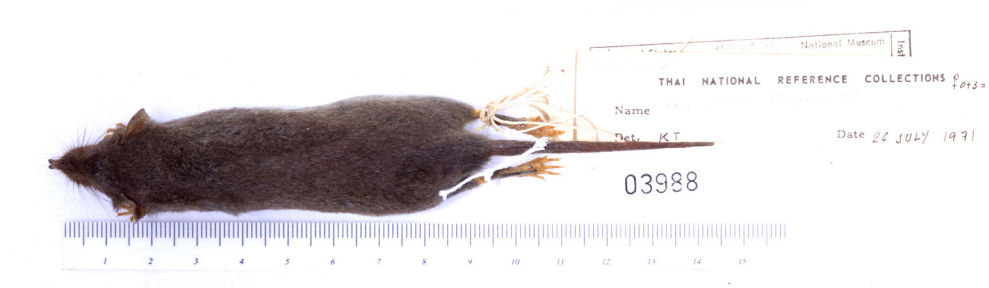
### Genus *Crocidura* Wagler, 1832

#### *Crocidura attenuata* Milne-Edwards, 1872

Asian Grey Shrew หนูผีเทาทางสั้น (Figure 2)

*Crocidura attenuata* Milne-Edwards, 1872: 263. Type locality: China, Szechuan, Moupin (= Sichuan, Baoxing).

**Non-type material examined. THAILAND:** female (THNHM-M-03987), NE Thailand, Udon Thani Prov., Mueang Udon Thani, Ban Tat, 21.II.1969, J. Marshall; female (THNHM-M-03988) NE Thailand, Nakhon Phanom Prov., That Phanom Dist., Ban Na Yai Noi, 02.VII.1969. SEATO Team leg., SP 415.



**Figure 2.** Female *Crocidura attenuata* THNHM-M-03988.

**Distribution in Thailand.** Found throughout Thailand.

**References.** Milne-Edwards (1872); Lekagul and McNeely (1977); Francis (2008); Wilson and Russell (2011); Duengkae (2011); IUCN (2020).

### *Crocidura fuliginosa* (Blyth, 1856)

South-east Asian White-toothed Shrew หนูผีนา (Figures 3A–B)

*Sorex fuliginosa* Blyth, 1856: 362. Type locality: Myanmar, Schwe Gyin, near Pegu.

**Non-type material examined. THAILAND:** female (THNHM-M-03983), S Thailand, Nakhon Si Thammarat Prov., Khao Luang N.P., 05.VI.1965, SEATO Team leg., NCN 2001; female (THNHM-M-03984), N Thailand, Chiang Mai Prov., Fang Dist., Doi Pha Hom Pok N.P. 01.XI.1965, SEATO Team leg., SMRL 6514, SK 3510; male (THNHM-M-03985), N Thailand, Chiang Mai Prov., Hot Dist., Ban Bo Luang, 12.XI.1969, Wande leg., V142; male (THNHM-M-03986), N Thailand, Chiang Mai Prov., Hot Dist., Ban Bo Luang. 12.XI.1969. Wande leg. V143.

**Distribution in Thailand.** Found throughout Thailand.

**References.** Blyth (1856); Lekagul and McNeely (1977); Francis (2008); Wilson and Russell (2011); Duengkae (2011); IUCN (2020).

### *Crocidura hilliana* Jenkins and Smith, 1955

Hill's Shrew หนูผีเมืองเลย หนูผีฮิลล์

*Crocidura hilliana* Jenkins and Smith, 1955: 103. Type locality: NE Thailand, Loei Province, 48 km South of Loei, Ban Nong Hin, Wat Tham Maho Lan, 575 m a.s.l.

**Non-type material examined.** None.

**Distribution in Thailand.** Upper parts of northern Thailand.

**References.** Jenkins and Smith (1955); Lekagul and McNeely (1977); Francis (2008); Wilson and Russell (2011); Duengkae (2011); IUCN (2020).



**Figure 3A–B.** Specimens of *Crocidura fuliginosa*. A female, THNHM-M-03983; B male, THNHM-M-03985.

### *Crocidura indochinensis* Robinson and Kloss, 1922

Indochinese Shrew หนูผีเล็กขนเกรียน หรือหนูผีอินโดจีน (Figures 4)

*Crocidura indochinensis* Robinson and Kloss, 1922: 88. Type locality: Vietnam, Langbian Plateau, Dalat.

**Non-type material examined. THAILAND:** female (THNHM-M-03989), N Thailand, Chiang Mai Prov., Chiang Dao Dist., 16.XI.1962, SEATO Team leg., SMRL 1975; 1 Unsexed (THNHM-M-08168), N Thailand, Chiang Mai Prov., Fang Dist. Doi Ang Khang, 26.XII.2014, D. Pratumthong leg.; 1 Unsexed (THNHM-M-08169), N Thailand, Chiang Mai Prov., Chiang Dao Dist., 20.XIII.2014, D. Pratumthong leg.; 1 Unsexed (THNHM-M-08170), N Thailand, Chiang Mai Prov., Chiang Dao Dist., 208.XIII.2014, D. Pratumthong leg.; 1 Unsexed (THNHM-M-03990), NE Thailand, Nakhon Ratchasima Prov., Pak Chong Dist., Khao Yai N.P., V.1967, J. Marshall leg., # 6416.

**Distribution in Thailand.** Chiang Mai and Nakhon Ratchasima Provinces.

**References.** Robinson and Kloss (1922); Lekagul and McNeely (1977, cited as subspecies of *C. horsfieldi* (Tomes, 1856)); Francis (2008); Duengkae (2011); IUCN (2020).

### *Crocidura malayana* Robinson and Kloss, 1911

Malayan Shrew หนูผีมาเลย์

*Crocidura malayana* Robinson and Kloss, 1911: 243. Type locality: Malaysia, Perak, Maxwell's Hill.

**Non-type material examined.** None.

**Distribution in Thailand.** Southern Thailand.

**References.** Robinson and Kloss (1922); Lekagul and McNeely (1977); Francis (2008); Wilson and Russell (2011); Duengkae (2011); IUCN (2020).



**Figure 4A–B.** Specimens of *Crocidura indochinensis*. A male, THNHM-M-03989; B unsexed, THNHM-M-03990.

***Crocidura monticola* Peters, 1870**

Sunda Shrew หนูผีภูเขา

*Crocidura monticola* Peters, 1870: 588. Type locality: Indonesia, Java, Mount Lawu, near Surakarta.

**Non-type material examined.** None.

**Distribution in Thailand.** Southern Thailand.

**References.** Peters (1870); Lekagul and McNeely (1977); Francis (2008); Wilson and Russell (2011); Duengkae (2011); IUCN (2020).

***Crocidura negligens* Robinson and Kloss, 1914**

Peninsular Shrew หนูผีใต้

*Crocidura negligens* Robinson and Kloss, 1914: 232. Type locality: Thailand, Koh Samui.

**Non-type material examined.** None.

**Distribution in Thailand.** Southern Thailand.

**References.** Robinson and Kloss (1914); Lekagul and McNeely (1977); Francis (2008); Duengkae (2011); IUCN (2020).

***Crocidura pullata* Miller, 1911**

Kashmir White-toothed Shrew หนูผีอ่างกา

*Crocidura pullata* Miller, 1911: 241. Type locality: N India, Pakistan, Kashmir and Ladak.

**Non-type material examined.** None.

**Distribution in Thailand.** Chiang Mai Province.

**References.** Miller (1911); Lekagul and McNeely (1977); Francis (2008); Wilson and Russell (2011); Duengkae (2011); IUCN (2020).



***Crocidura vorax* Allen, 1923**

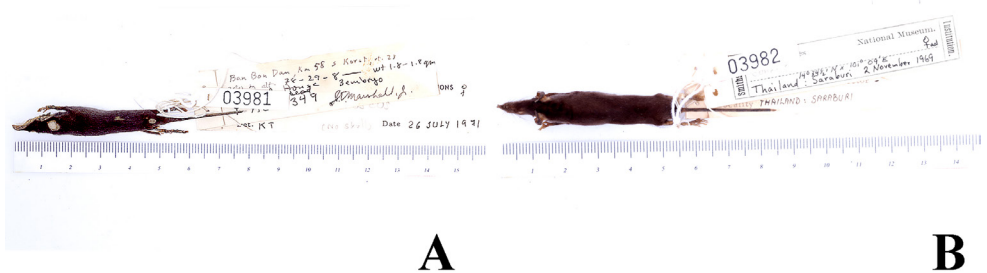
Voracious Shrew หนูผีเหินือ

*Crocidura vorax* Allen, 1923: 8. Type locality: China, Yunnan, Li-Kiang (= Lijang) Valley.**Non-type material examined.** None.**Distribution in Thailand.** Northern part of Thailand.**References.** Allen (1923); Lekagul and McNeely (1977); Francis (2008); Wilson and Russell (2011); Duengkae (2011); IUCN (2020).**Genus *Suncus* Ehrenberg, 1832*****Suncus etruscus* (Savi, 1822)**

Etruscan Shrew หนูผีจิว (Figures 5A–B)

*Sorex etruscus* Savi, 1822: 60. Type locality: Italy, Pisa

**Non-type material examined. THAILAND:** 1 Unsexed (THNHM-M-03980), E Thailand, Chon Buri Prov., Bang Lamung Dist., Khao Mai Kao (=Huai Khai Nao), 23.VI.1963, SEATO Team leg.; female (THNHM-M-03981), NE Thailand, Nakhon Ratchasima Prov., Pak Thong Chai Dist., Ban Bah Dan (Km. 58 Rd. 23), 14.XII.1966, J. Marshall leg., 6349; female (THNHM-M-03982), C Thailand, Saraburi Prov., Kaeng Khoi Dist., Phu Nam Tok Tap Kwang, 02.XI.1969, Non leg., 6708. 1 Unsexed (THNHM-M-08167), 1 Unsexed THNHM-M-08167, C Thailand, Pathum Tani Prov., Khlong Laung Dist., Khlong 5, 01.II.2014, D. Patumthong leg.

**Distribution in Thailand.** Found throughout Thailand.**References.** Savi (1822); Lekagul and McNeely (1977); Francis (2008); Wilson and Russell (2011); Duengkae (2011); IUCN (2020).**Figure 5A–B.** Specimens of *Suncus etruscus*. A male, THNHM-M-03981; B female, THNHM-M-03982.

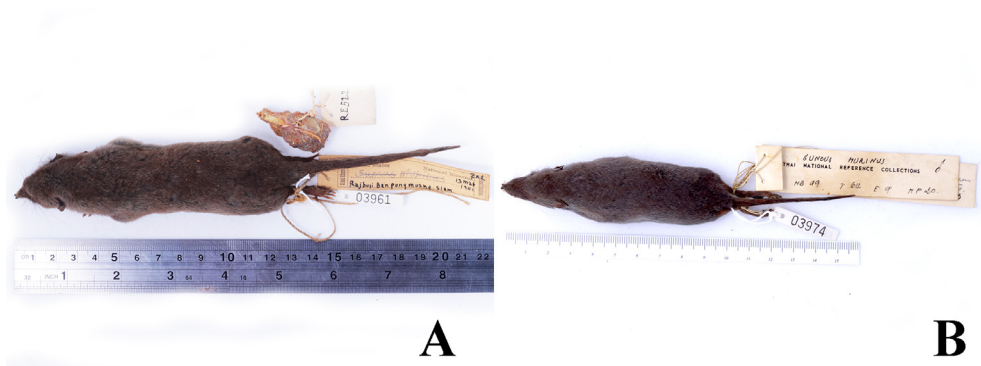


***Suncus malayanus* (Kloss, 1917)**

Malayan Pygmy Shrew หนูผีปอ่า

*Pachyura malayana* Kloss, 1917: 282. Type locality: Thailand, Pattani, Bang Nara [Peninsular Siam].**Non-type material examined.** None.**Distribution in Thailand.** Pattani Province.**References.** Kloss (1917); Lekagul and McNeely (1977); Francis (2008, as subspecies of *Suncus etruscus* (Savi, 1822)); Wilson and Russell (2011); Duengkae (2011); IUCN (2020).***Suncus murinus* (Linnaeus, 1766)**

House Shrew หนูผีบ้าน (Figure 6A–B)

*Sorex murinus* Linnaeus, 1766: 74. Type locality: Indonesia, Java.**Non-type material examined. THAILAND:** female (THNHM-M-03964), N Thailand, Chiang Mai Prov., Hot Dist., Huai Mae Sanam.02.XI.1962. SEATO Team leg., JES 1670, B 63531; female (THNHM-M-03965), N Thailand, Chiang Mai Prov., Hot Dist., Huai Mae Sanam, 09.XI.1962, SEATO Team leg., SMRL 1808, B 63610; female (THNHM-M-03967), N Thailand, Chiang Mai Prov., Chiang Dao Dist., Ban Tham, 22.IX.1964, SEATO Team leg., SK 782; male (THNHM-M-03975), N Thailand, Chiang Mai Prov., Fang Dist., Tham Tap Tao, 18.I.1974, K. Thonglongya leg., KT 5903; female (THNHM-M-03971), N Thailand, Mae Hong Son Prov., Mae Sariang Dist., 18.II.1969, Non leg., II 1093; female (THNHM-M-03972), W Thailand, Tak Prov., Rahaeng, 25.I.1970, I.T. Marshall leg., JTM 6731; female (THNHM-M-03960), W Thailand, Ratchaburi Prov., Ban Pong Dist. 12.III.1952,**Figure 6A–B.** Specimens of *Suncus murinus*. A female, THNHM-M-03961; B male, THNHM-M-03974.

R.E. Elbel and Y. Gandee leg., RE 524; female (THNHM-M-03961), W Thailand, Ratchaburi Prov., Ban Pong Dist., 13.III.1952, R.E. Elbel and Y. Gandee leg., RE 522; female (THNHM-M-03962), W Thailand, Ratchaburi Prov., Ban Pong Dist., 14.III.1952, R.E. Elbel and Y. Gandee leg., RE 517; male (THNHM-M-03963), W Thailand, Ratchaburi Prov., Ban Pong Dist., 29.III.1952, R.E. Elbel and Y. Gandee leg., RE 595; female (THNHM-M-03966), C Thailand, Bangkok Prov., 21.IX.1964, SEATO Team leg., SP 89; male (THNHM-M-03968), C Thailand, Bangkok Prov., Trop Med Hospital, 22.IX.1965, SEATO Team leg., 117; 1 Unsexed (THNHM-M-03969), C Thailand, Bangkok Prov., Lumpini, 06.X.1965, SEATO Team leg., SC 161; female (THNHM-M-03976), C Thailand, Lop Buri Prov., Mueang Dist., Khok Samrong Rice Experimental Station, 17.II.1975. Z. Branch leg., 5; 1 Unsexed (THNHM-M-03977), C Thailand, Lop Buri Prov., Mueang Dist., Khok Samrong Rice Experimental Station, 17.II.1975, Z. Branch leg., 8; female (THNHM-M-03978), C Thailand, Chainat Prov., Sankhaburi Dist., 28.III.1984, Non leg.; male (THNHM-M-03979), S Thailand, Pattani Prov., Khok Pho, Na Pra Du, 20.I.1988. DEB Team leg; female (THNHM-M-03970), E Thailand, Prachin Buri Prov., Aranyaprathet Dist., Market, 14.XI.1965, SEATO Team leg., 117, SMRL 6544, SK 3540; female (THNHM-M-03973), S Thailand, Pattani Prov., Khok Pho, Na Pra Du, 23.III.1973, K. Thonglongya leg., KT 4188; male (THNHM-M-03974), S Thailand, Pattani Prov., Khok Pho, Na Pra Du, 23.III.1973, K. Thonglongya leg., KT 4191.

**Distribution in Thailand.** Chiang Mai, Mae Hong Son, Tak, Ratchaburi, Lop Buri, Chainat, Bangkok, Prachin Buri, and Pattani Provinces.

**References.** Linnaeus (1766); Lekagul and McNeely (1977); Francis (2008); Duen-gkae (2011); Wilson and Russell (2011); IUCN (2020).

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