



On some bats (Chiroptera) from southern Cambodia with a preliminary checklist

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Abstract

A small number of bats obtained from Cambodia comprises two species new to the fauna of this country: *Megaderma lyra* and *Rhinolophus malayanus*. The occurrence of *Rousettus amplexicaudatus*, previously only generally known from Cambodia, is confirmed.

Taphozous melanopogon, *Hipposideros armiger*, and *Tadarida (Chaerephon) plicata* previously recorded for Cambodia are confirmed and their distribution in this country is detailed. A critical checklist of Cambodian Chiroptera recorded until present admits 30 species of seven families: Pteropodidae (10 species), Emballonuridae (3 species), Megadermatidae (2 species), Rhinolophidae (4 species), Hipposideridae (3 species), Vespertilionidae (7 species), and Molossidae (1 species). Six species recorded for Cambodia are rejected, because their collecting localities are not within the country, or their identity is doubtful: *Pteropus vampyrus*, *P. giganteus*, *Cynopterus horsfieldi*, *Rhinolophus rouxii*, *Hipposideros bicolor*, and *Pipistrellus macropus*.

Key words: Chiroptera, Cambodia, records, checklist

Introduction

The aim of this study is to contribute the knowledge of the bat fauna of Cambodia, one of the least explored countries. Specimens collected from caves of the coastal region of Cambodia's Kampot Province, investigated by the German Cambodia Expedition 1995/96 (ANONYMOUS 1996; LAUMANN 1996), augmented by a few bats occasionally found by interested collectors were donated to the collections of the Senckenberg Museum, Frankfurt a. M. The identification of these bat remains is presented and discussed. To evaluate the relative significance of these records, a checklist of the bats of Cambodia has been compiled from published data. This list is critically commented.

Material and methods

Several bat skulls were collected from two interconnected caves, Rong Dei Ho and Rong Thom Ken, of Phnom [Mount] Slaptaon. Additionally, few mummified carcasses collected by B. and G. ALBRECHT were received from Dr. K. DOBAT.

Results

Rousettus a. amplexicaudatus (Geoffroy, 1810)

Material: Caves at Phnom Loang, coastal region ca 20 km N Kampot, Kampot Prov., 14. III. 1998, SMF 89112 (female subad. skull, skeleton), G. ALBRECHT leg.

Measurements: Forearm 80.3, tibia 36.1; 35.0; 3rd metacarpal 51.2; 3rd digit 1st phalanx 34.3; 3rd digit 2nd phalanx 42.0; 4th metacarpal 49.7; 4th digit 1st phalanx 26.7; 4th digit 2nd phalanx 25.0; 5th metacarpal 48.5; 5th digit 1st phalanx 25.5; 5th digit 2nd phalanx 25.4. Skull: greatest length 36.2; occipito-canine length 34.4; condylobasal length 35.0; condylo-canine length 33.0; zygomatic width 21.5; crown length of upper tooth row C1-/M2/ 13.1; length of lower M/3 1.5.

Comparative material: Thailand: Khao Soi Dao Ai, 12°58' N–101°48' E, Pong Nam Ron, Distr., Chanthaburi Prov., SMF 83965 (skull). Kho Kran Yai, 12°43' N–100°48' E, Sattahip Distr., Chonburi Prov., SMF 83956–63 (8 skulls).

Rousettus l. leschenaultii (Desmarest, 1820): S-Thailand: Tha Yang Distr., 12°55' N–99°54' E, 17 km S of Phetchaburi, Phet Buri Prov., SMF 63166 (skull). Bang Saphan Noi, ca. 11°05' N–99°30' E, Bang Saphan, Prachuap Khiri Khan Prov., 84022–35 (14 skulls). Thale Noi, 07°47' N–100°07' E, Khuan Khanun, Patthalung Prov., SMF 65993 (skull). Kho Khob, 07°24' N–100°21' E, Sathing Phra, Songkhla Prov., SMF 84175–6 (2 skulls). West Malaysia, Selangor: Dark Cave, Batu Caves at Kuala Lumpur, SMF 87983–5, 87989, 88041–2, 88408, 88639–40 (9 skulls).

This fruit bat was mentioned for Cambodia by DOBSON (1878b) and has apparently never been recorded again. Skull and tooth dimensions of the present specimen agree with the data found by ROOKMAAKER and BERGMANS (1981) to be discriminating between *R. amplexicaudatus* and *R. leschenaultii* in areas of sympatry. The occurrence of this fruit bat in Cambodia is thus confirmed for the first time by a precise locality.

Taphozous (Taphozous) melanopogon Temminck, 1841

Material: Rong [Cave] Dei Ho and Rong Thom Ken, 10°36'55" N–104°14'55" E, Phnom Slaptaon, 10 km E Kampot, Kampot Prov., I. 1996, SMF 83623 (skull), M. LAUMANNs leg.

Comparative material: Thailand: Khao Wang Kot, Thai Mai Distr., 13°00' N–101°13' E, Chantaburi Prov., SMF 75420–1, 75424 (3 skulls). Ta Khli, 15°16' N–100°21' E, 30 km E Chainat, Nakhon Sawan Prov., SMF 53173–91 (19 skulls). Nan, 18°47' N–100°47' E, Nan Prov., SMF 53162–5 (4 skulls). Myanmar: Pagan, 21°12' N–94°54' E, Nyaung-Oo Township, Mandalay Division, SMF 71195 (1 skull). India: Madurai-Kamaraj, Tamil Nadu, SMF 46333–4 (2 skulls).

Taphozous (T.) longimanus Hardwicke, 1825: Thailand: Chainat, Chainat Prov., SMF 52645, 52648–9 (3 skulls). Bangladesh: St. Martin's Id., 20°37' N–92°19' E, Bay of Bengal, SMF 60133 (skull).

Taphozous (T.) theobaldi Dobson, 1872: Thailand, Lop Buri Prov.: Bullapha Cave, Wat Khao Thambon, 15.13. N–101.18. E, Chai Badan Distr., SMF 63101–3 (3 skulls). Khao Tha Kra, Muang Distr., SMF 87461–4 (4 skulls).

The single skull possesses all characters of this genus and species, being distinctly smaller than that of *T. theobaldi* (see HILL 1992). Additionally, the distance between lower margin of anterior orbita and upper tooththrow is narrow, 1.55–1.57 mm (broad in *T. longimanus*, 1.90 mm), and the basisphenoid triangularly rounded anteriorly (broadly rounded in *T. longimanus*). *T. melanopogon* is widespread in S. and SE. Asia (HILL 1992) and although reported for Cambodia it was not listed, but mapped as present throughout the country by HILL (1992). There is no indication that the specimens recorded by KLEIN (see checklist below) and those from his collection identified by HILL and THONGLONGYA

(1972) as *T. l. longimanus* were the same sample. The present material is insufficient for subspecies allocation.

***Megaderma lyra sinensis* (Andersen and Wroughton, 1907)**

Material: Rong [Cave] Dei Ho and Rong Thom Ken, 10°36'55" N–104°14'55" E, Phnom Slaptaon, 10 km E Kampot, Kampot Prov., I. 1996, SMF 83624–5 (2 skulls), M. LAUMANNs leg.

Measurements: Skull length from occiput to front of canines 29.2, 30.2; skull length from condyles to front of canines 26.0, 27.6; length of upper toothrow along crowns 11.6, 12.2.

Comparative material: *M. lyra lyra* Geoffroy, 1810: India: Madras, SMF 25472 (skull). Near Madurai, Tamil Nadu, SMF 59572, 86452 (2 skulls). Bangladesh: Dacca, Bangl. Agr. Res. Inst. BARI-VPS uncatalogued (skull). *M. lyra sinensis*: Thailand: Rong Kwang, 18°23' N–100°19' E, Phrae Prov., SMF 53277 (skull). Ban Tham Tap Tao, 19°42' N–99°07' E, Fang Distr., Chiang Mai Prov., SMF 53278 (skull). Tham Khi Nok Wildlife Sanctuary, Huai Kha Kang Distr., Uthai Thani Prov., SMF 83793–4 (2 skulls).

M. spasma (Linnaeus, 1758): Thailand: Prui Station, 12°32' N–102°10' E, 14 km E Chanthaburi, Chanthaburi Prov., SMF 53280 (skull). Nam Tok Ton Nga Chang Station, 6°50' N–100°30' E, Hat Yai Distr., Songkhla Prov., SMF 66102–3 (2 skulls). Nam Lod Phun Cave, ca. 12°38' N–102°15' E; Phu Wiang Mts., Khoen Kaen Prov., SMF 69572 (skull).

By their skull dimensions the specimens from Phnom Slaptaon represent *M. lyra*, a clearly larger species than *M. spasma*. Dimensions of the Cambodian specimens are larger than those of the nominate subspecies of India and agree with the definition of *M. l. sinensis* by ANDERSEN and WROUGHTON (1907), and with skull measurements given for this subspecies by SHAMEL (1942), SINHA (1977), HILL (1992), CSORBA and TOPÁL (1994), and specimens from Thailand identified as *M. l. sinensis*,

This species is recorded and mapped by HILL (1992) for most of Thailand, in parts of Laos and Vietnam, i.e. only W and N of Cambodia, respectively. Apparently no previous record for Cambodia has been published.

***Rhinolophus malayanus* Bonhote, 1903**

Material: Rong [Cave] Dei Ho and Rong Thom Ken, 10°36'55" N–104°14'55" E, Phnom Slaptaon, 10 km E Kampot, Kampot Prov., I. 1966, SMF 83627 (1 incomplete skull), M. LAUMANNs leg.

Measurements: Length from occiput to front of canines ca. 17.3; width across nasal swellings 5.0; least interorbital width 2.2; zygomatic width 8.9; crown length of upper tooth row C-M3/ 6.9; width across crowns of M3/ 6.7.

Comparative material: Thailand: Doi [Mt.] Pha Hom Pok, 20°08' N–99°10' E, Fang Distr., Chiang Mai Prov., SMF 66159 (skull). Doi Ang Khang, 19°53' N–99°04' E, Fang Distr., Chiang Mai Prov., SMF 66013–24 (12 skulls). Wat Suphan Kuha, Nongle, Chai Badan Distr., 15°13' N–101°18' E, Lop Buri Prov., SMF 63033–4 (2 skulls).

Rh. borneensis (Peters, 1861): Borneo, Sarawak: SE Kuching, SMF 52053 (skull). Sabah: Danum Valley, 04°50' N–117°30' E, Taurau Division, SMF 83404 (skull). Gomantong Caves, 05°31' N–118°04' E, Sandakan Division, SMF 83703 (skull). Tabin Wildlife Reserve, 05°05' N–118°40' E, Tawau Division, SMF 83704 (skull).

Rh. sedulus Andersen, 1905: Malaysia, Selangor: Bukit Lagong, Selangor, SMF 50509 (skull). Ulu Gombak, Selangor, SMF 69279–80, 87479 (3 skulls). Borneo, Sabah: Tabin Wildlife Reserve, 05°05' N–118°40' E, Tawau Division, SMF 83708 skull.

The single skull identified as *Rh. malayanus* agrees in its dimensions, its steep anterior profile of the rostrum and its shape of the rostral inflations not extending laterally with specimens from Thailand (as listed above). It differs from two related species of horse-

shoe bats similar in skull size to *Rh. malayanus* by the posterior emargination of the palatinum. This emargination is wider between the mesopterygoids than in *Rh. borneensis* (recorded for Cambodia by HILL and THONGLONGYA 1972), but is narrower than in *Rh. sedulus* (nearest known occurrence in West Malaysia; HILL 1992). Apparently *Rh. malayanus*, known from Thailand, Laos, and Vietnam (HILL 1992), is an addition to the bat fauna of Cambodia.

***Hipposideros armiger* (Hodgson, 1835)**

Material: Rong [Cave] Dei Ho and Rong Thom Ken, 10°36'55" N–104°14'55" E, Phnom Slaptaon, 10 km E Kampot, Kampot Prov., I. 1996, SMF 83628–30 (3 subad. skulls), M. LAUMANNs leg.

Measurements (ranges): Occipito-canine (to front of alveoles) length of skull 27.0–27.8 (n = 2); condylo-canine (alveolar) length 24.2–25.1 (n = 2); basilar length of skull 18.3–19.8 (n = 3); mastoid breadth 13.8–14.6 (n = 3); zygomatic breadth 16.1–17.3 (n = 3); palate length 4.6–5.3 (n = 3); upper tooththrow C-M3/ at crowns 13.1.

Comparative material: Thailand (all Fang Distr., Chiang Mai Prov.): 17 km NW Fang, 19°55' N–99°15' E, SMF 65828, –30, –32–35 (4 ad., 2 subad. skulls). Doi Ang Khang, 19°53' N–99°04' E, SMF 65816–18, –20–26 (1 ad., 9 subad. skulls). Ban Yang, 19°50' N–99°08' E, SMF 65843–4, –46–54 (7 ad., 4 subad. skulls).

H. turpis pendlebury Chasen 1936: Thailand: Klung Ching, Ta Sala Distr., Nakhon Si Thammarat Prov., SMF 83777, 84093 (2 skulls). Kkao Nor Chuchi Wildlife Sanctuary, Khlong Thom Distr., ca. 08°05' N–99°20' E, Krabi Prov., SMF 88499–500 (2 skulls).

The present skulls from Phnom Slaptaon are of a species of the *H. armiger*-group, characterised by the rostral chambers dorsally uninflated (consequently the rostrum having a characteristically flat profile), and by the roof of the narial canal separated from the roof of the mesopterygoid fossa by a step-like discontinuity (HILL 1963). By virtue of the few skull dimensions measurable and by the size of upper molars they are obviously larger than *H. turpis pendlebury*, but are smaller than of most SE. Asian *H. armiger*, including *H. a. debilis* Andersen, 1916, described as a slightly smaller taxon (but synonymized by HILL 1963). In adult *H. armiger* from Thailand the occipito-canine length (to alveoles of C1/) attains 29.3–31.7 and the zygomatic breadth 17.4–18.3, clearly larger than the Phnom Slaptaon specimens.

However, by direct comparison with series of *H. armiger*, these skulls from Phnom Slaptaon were found to agree in size with subadult female individuals (as listed above). Despite the sutures of the skulls being fused, the cristae sagittalia are only weakly developed and the upper PM4/ have their cingula not yet fully emerged from their alveoles, i. e. the tooth is not yet in its ultimate position. This developmental stage results in overall smaller skull measurements. Apparently, skull growth continues despite sutures being fused. A comparative modus of growth has been found in central European *Eptesicus serotinus* (Schreber, 1774) concerning a supposedly small-sized sibling species (Kock and BOGDANOWICZ 1998).

H. armiger, known from Cambodia (see checklist below), is mapped by HILL (1992) to occur throughout the country although it is not listed. This species seems to be rare in Cambodia, as only one or two specimens were found by KLEIN (1971, 1972).

***Tadarida (Chaerephon) plicata* (Buchanan, 1800)**

Material: Phnom Penh, V. 1998, SMF 89110–11 (1 male juv. mummy, 1 female juv. skull from discarded mummy), B. ALBRECHT leg.

Measurements (of juv. female): Tail 35; forearm 42.9; tibia 14.3; 3rd metacarpal 38.5; 4th metacarpal 35.7; 5th metacarpal 23.0.

Comparative material: Central Thailand, Lop Buri Prov.: Wat Khao Thambon, Chai Badan Distr., ca. 15°10' N–101°18' E, SMF 63108–24 (17 alcohol). Ban Mi, 19 km W of Khok Samrong, ca. 15°05' N–100°45' E, SMF 52572–3, 52575–80, 52582–86 (13 skulls). Indonesia: Lingsar, Lombok Is., SMF 74538 (skull). Bangladesh: Jalchatra Mission, 24°38' N–90°04' E, Madhupur Jungle, Tangail Distr., SMF 59122 (skull). India: Anamalai Hill, 20 km NE Madurai, Tamil Nadu, SMF 63712–31 (20 skulls).

Two mummies, found hanging on the outside wall of a house, did not differ in essential taxonomic characters from numerous specimens of *T. plicata* from distant parts of the species' range. However, the immaturity of the specimen does not permit subspecific allocation.

This species is an excellent example for the fragmentary knowledge of the Cambodian bat fauna. Although fleas, *Lagaropsylla putilla*, characteristic parasites of Molossidae, were known from the temples of Angkor Wat, Siem Reap, in the north of the country (SMIT 1958), *T. plicata*, the only molossid bat at this locality was only formally recorded for Cambodia by YOSHIYUKI (1966), KLEIN (1969b, 1971), and HILL and THONGLONGYA (1972). In Cambodia, *T. plicata* is not less common than in other regions of its vast distribution. A large group (n = 43) was found living under the roof of a house (KLEIN 1971), another colony comprised ca. 200 individuals (KLEIN 1971), and thousands of cave roosting *T. plicata* were mentioned by KLEIN 1969c, 1971).

Checklist of the bats of Cambodia

Species rejected for inclusion in the bat fauna of Cambodia are listed in square brackets in the present checklist. Their identification appears to be doubtful, or their collecting localities are incorrectly considered as being in Cambodian territory (due to change of boundary delimitation), or their mapped occurrence in this country is not documented by known reference specimens.

Pteropodidae (10 species):

Pteropus hypomelanus Temminck, 1853: "Cambodia" (GRAY 1861: sub *P. edwardsii* GEOFFROY 1828 = DOBSON 1880: sub *hypomelanus*). The occurrence of this species in Cambodia needs verification in view of its predilection for roosting only on islands in SE. Asia. Sight records by MATVEEV (1999), mistakenly thought to be *Pt. lylei*, are reported for Cambodia without indicating a locality.

[*P. vampyrus* (Linnaeus, 1758): Recorded from Phu Quoc Ild., Cochinchina, Vietnam by THOMAS (1929: sub *P. v. malaccensis* Andersen 1908), but listed for Cambodia by OSGOOD (1932). HILL (1992) mapped the distribution to include Cambodia, but did not list it].

P. lylei Andersen, 1908: Probably in the region of Phnom-Penh (MATVEEV 1999).

[*P. giganteus* (Brünnich, 1782): Prek Kadam, Phnom Penh region; Prek Prakong, Phnom Penh region (KLEIN 1970); Prek Phnau, Phnom Penh region (KLEIN 1972). This fruit bat is not known E of Myanmar and these records from Cambodia must represent instead one of the three species listed above, possibly the large *P. vampyrus*].

Rousettus leschenaultii (Desmarest, 1820): ? Angkor Wat (ROOKMAAKER and BERGMANS 1981: only tentatively identified). Accordingly, the species is listed for Cambodia by HILL (1992) with a question mark only, although the mapped distribution (map 28) includes this country.

R. a. amplexicaudatus (GEOFFROY, 1810): "Cambodia" (DOBSON 1878b, 1880; ANDERSEN 1912; HILL 1975; BERGMANS and HILL 1980; ROOKMAAKER and BERGMANS 1981). Phnom Loang caves, 20 km N Kampot, Kampot Prov. (this study).

Cynopterus sphinx (Vahl, 1798): Siem-Reap (THOMAS 1929; OSGOOD 1932). Barong, Phnom Penh region (KLEIN 1969a: sub *C. brachyotis angulatus* Miller 1898). Angkor Wat

(KLEIN 1969 b: sub *C. brachyotis angulatus*). Chruai Chang War, W-bank Mekong River, NE Phnom Penh (KLEIN 1970, 1971, 1972: sub *C. b. angulatus*). Prek Tasek, 8 km NW Phnom Penh (KLEIN 1970: sub *C. b. angulatus*; HILL and THONGLONGYA 1972: sub *C. sphinx angulatus* n. stat.). Arey Ksatr, E-bank Mekong River, NE Phnom Penh; Tuol Kork, Phnom Penh region; Angkor Forest, Siem Reap (KLEIN 1970: sub *C. b. angulatus*). 2 km SE Demrey Phong (PARADISO 1971: sub *C. s. angulatus*). Kean Khleang, Phnom Penh region; Prek Phnau, Phnom Penh region; Prek Phot, Phnom Penh region; Kantuot, Phnom Penh region; Angkor Forests, Siem Reap region; Prapéang Chan, Kompong Chhnang region; Kompong Som, Sihanoukville region, S-coast: Popork Village Forest; Bokor Mts., Mapot Prov. (KLEIN 1972: sub *C. brachyotis angulatus*). Phnom Penh region and/or islands in the Gulf of Thailand (MATVEEV 1999: sub *C. sphinx*).

Note : A specimen from Sipora Ild. examined by PARADISO (1971) is erroneously listed for Cambodia; Sipora Ild. is in the Mentawi Archipelago off W-Sumatra.

The correct identity of most of the above records of *C. brachyotis angulatus* should be verified. The subspecific epithet might have been used rather conventionally. See remarks below.

C. brachyotis (Müller, 1838): Mainland Cambodia was mapped for the range of this species, but not listed by HILL (1992), before it was collected on unspecified islands in the Gulf of Thailand (MATVEEV 1999). However, it seems likely that several of the above records of *C. brachyotis angulatus* may pertain to this species.

Cynopterus horsfieldii Gray, 1843: Taingkor, Kompong Thom region (KLEIN 1970). This species is not known nearer to Cambodia than in W-Thailand and W-Malaysia (HILL 1992). The record listed might have been a misidentified *C. sphinx*, which would be in support of the suspected identity of *C. brachyotis angulatus* listed above as *C. sphinx*.

Megaerops ecaudatus (Temminck, 1837): Popork Village Forest (KLEIN 1971). Cambodia is neither mapped as part of this species' range nor listed by HILL (1992). The identity of this record needs verification with regard to *M. niphanae* Yenbutra and Felten, 1982, not distinguished at the time of KLEIN's (1971) record.

Eonycteris spelaea (Dobson, 1871): "Cambodia" (BLANFORD 1891; FLOWER 1900).

[*Macroglossus sobrinus* Andersen, 1911: Cambodia is mapped as part of this species' range, but not listed by HILL (1992); no other reference known].

Macroglossus minimus (Geoffroy, 1810): Stung Chral Forest, Kompong Sela, SW Pompong Pseu (KLEIN 1971, 1972). Cambodia is mapped as part of the species' range by HILL (1992), although not listed.

Emballonuridae (3 species):

Taphozous (T.) melanopogon Temminck, 1841: "Cambodia" (POUSARGUES 1904). Angkor Wat, Siem Reap (KLEIN 1969 b, 1971: sub *T. m. bicolor* Temminck, 1841). Bayon, Siem Reap (KLEIN 1970, 1971: sub *T. m. bicolor*). Preah Khan Temple, Siem Reap (KLEIN 1970, 1971, 1972: sub *T. m. bicolor*). Phnom Penh region and/or islands in the Gulf of Thailand (MATVEEV 1999). Phnom Slaptaon caves, E of Kampot (this study).

T. (T.) longimanus Hardwicke, 1825: Prek Phnau; Phnom Penh; Phnom Penh Nord km 7; Taingkor, Kompong Thom region (KLEIN 1970: sub *T. l. longimanus*). "Cambodia" (HILL and THONGLONGYA 1972: sub *T. l. longimanus*). Takeo (HURKA 1997).

T. (Saccolaimus) saccolaimus Temminck, 1838: Phnom-Penh and/or islands in Gulf of Thailand (MATVEEV 1999).

Megadermatidae (2 species):

Megaderma spasma (Linnaeus, 1758): "Cambodia" (POUSARGUES 1904; ANDERSEN 1918: sub *M. s. minus* n. subsp.). Arey Ksatr, E-bank Mekong River, NE Phnom Penh; Trapeang Chan (KLEIN 1971). Koh Rong Ild. (MATVEEV 1999: vident).

M. lyra Geoffroy, 1810: Phnom Slaptaon caves, E of Kampot (this study: sub *sinensis* (ANDERSEN and WROUGHTON 1907)).

Rhinolophidae (4 species):

Rhinolophus shameli Tate, 1943: Bayon Temple, Siem Reap (KLEIN 1969 b: sub *Rh. coelophyllus* Peters, 1867). Preah Khan Temple, Siem Reap (KLEIN 1969 b, 1970, 1972: sub *Rh. coelophyllus*; HILL and THONGLONGYA 1972: sub *Rh. shameli*). Angkor temples, Siem Reap (KLEIN 1971: sub *Rh. coelophyllus*).

Rh. acuminatus Peters, 1871: Preah Khan, Siem Reap (HILL and THONGLONGYA 1972).

[*Rh. pusillus* Temminck, 1834: Cambodia is mapped as part of this species' range, but not listed by HILL (1992); no other reference known].

Rh. borneensis (Peters, 1861): Preah Khan, Siem Reap (HILL and THONGLONGYA 1972).

Rh. malayanus Bonhote, 1903: Phnom Slaptaon caves, E of Kampot (this study). NW-Cambodia is mapped as part of the species' range by Hill (1992).

[*Rh. affinis* Horsfield, 1823: Cambodia is mapped as part of this species' range, but not listed by HILL (1992); no other reference known].

[*Rh. rouxi* Temminck, 1835: Bayon Temple, Siem Reap (KLEIN 1969 b). Preah Khan Temple, Siem Reap (KLEIN 1969 b, 1970, 1972: sub *Rh. r. rouxi*). Angkor Wat, Siem Reap (Klein 1971: sub *Rh. r. rouxi*). Trapeang Chan, Kompong Chhnang Prov. KLEIN 1972: sub *Rh. r. rouxi*). The records are highly probable misidentifications, as this species ranges not nearer to Cambodia than N-Laos and N-Vietnam, and is listed for S-China, N-Vietnam, and Myanmar by HILL 1992].

Hipposideridae (3 species):

[*Hipposideros bicolor* (Temminck 1834): Phu Quoc Id. [presently Vietnam] (POUSARGUES 1904: sub *bicolor* var. *fulvus* Gray 1838). Possibly misidentified *H. pomona* Andersen 1918, which is the only smaller species mapped for Cambodia by HILL 1992 and recorded from Laos and Vietnam].

H. pomona Andersen, 1918: Preah Khan Temple, Siem Reap (KLEIN 1970, 1972: sub *H. bicolor sinensis* Andersen, 1918). Angkor temples, Siem Reap (KLEIN 1971: sub *H. bicolor sinensis*),

H. larvatus (Horsfield, 1823): "Cambodia" (POUSARGUES 1904). Bayon Temple and Preah Khan Temple, Siem Reap (KLEIN 1969 b: sub *H. l. grandis* G. M. Allen, 1936). Angkor temples, Siem Reap (KLEIN 1971: sub *H. l. grandis*). Phnom-Penh region and/or islands in Gulf of Thailand (MATVEEV 1999).

H. armiger (Hodgson, 1835): Preah Khan Temple, Siem Reap (KLEIN 1970, 1972: sub *H. a. armiger*). Angkor temples, Siem Reap (KLEIN 1971: sub *H. a. armiger*). Phnom Slaptaon caves, E of Kampot (this study). *H. armiger* is not listed for Cambodia by HILL (1992).

[*H. diadema* (Geoffroy, 1813): Cambodia is mapped as part of this species' range, but not listed by HILL (1992); no other reference known].

Vespertilionidae (7 species):

Myotis rosseti (Oey, 1951): "Cambodia" (OEY 1951: sub *Glischropus rosseti* n. sp.; GODAWA-STORMARK 1998: sub *M. rosseti*). Prek Phnau, 6 km NE Phnom Penh (HILL 1969: sub *Pipistrellus rosseti* n. stat. = KLEIN 1970: sub *P. rosseti*). Arey Ksatr, E-bank Mekong River, NE Phnom Penh (KLEIN 1970: sub *P. rosseti*).

M. (Selysius) muricola (Gray, 1846): Phnom-Penh region and/or on islands in Gulf of Thailand (MATVEEV 1999).

M. (Leuconoe) hasselti (Temminck, 1849): Prek Phnau, 6 km NW Phnom Penh (KLEIN 1970; HILL and THONGLONGYA 1972: sub *M. h. continentis* Shamel, 1942). Phnom-Penh region and/or islands in Gulf of Thailand (MATVEEV 1999).

[*Pipistrellus javanicus* (Gray, 1838): Cambodia is mapped as part of this species' range, but not listed by HILL (1992); no other reference known].

P. tenuis (Temminck, 1840): "Cambodia" (DOBSON 1878 a: sub *Vesperugo abramus* (Temminck, 1840); FLOWER 1900: sub *V. abramus* = THOMAS 1928: sub *P. coromandra trimatus* n. subsp. = HILL 1992: sub *P. tenuis*).

[*Pipistrellus macropus*: Angkor temples, Siem Reap (KLEIN 1971). This taxon is unidentifiable: The name *Vespertilio macropus* Dobson, 1872, for an Asiatic bat, is antedated by *V. macropus* Gould, 1854 (= *Myotis adversus macropus*) of Australia. *V. macropus* of DOBSON is synonymous with *Myotis longipes* (Dobson, 1873), occurring only far west in Pakistan and Afghanistan. If *P. macropus* is considered as a misspelling of *Vesperugo micropus* Peters, 1872, it would indicate a bat related to *P. coromandra* (Gray, 1838), known from N-Thailand; see HILL (1992)].

Scotophilus kuhlii Leach, 1821: School-farm Prek Leap near Phnom Phen (FERRIS and USINGER 1953: sub *S. temminckii castaneus* Gray, 1838). Prek Phnau, Phnom Penh region; Phnom Chiso, Takeo region (KLEIN 1969a: sub *S. temminckii* (Horsfield, 1824)). Prek Phnau, Phnom Penh region; Prek Takong, Phnom Penh region; Tonlé Bati, Takeo region; Ang Sdock, Takeo region (KLEIN 1970: sub *S. kuhlii gairdneri* Kloss, 1917). Chruï Chang War, Phnom Penh region (KLEIN 1970, 1972: sub *S. kuhlii gairdneri*).

[*S. heathi* Horsfield, 1831: Cambodia is mapped as part of this species' range, but not listed by HILL (1992); no other reference known].

[*Tylonycteris pachypus* (Temminck, 1840): Cambodia is mapped as part of this species' range, but not listed by HILL (1992); no other reference known].

[*T. robustula* Thomas, 1915: Cambodia is mapped as part of this species' range, but not listed by HILL (1992); no other reference known].

[*Miniopterus schreibersii* (Kuhl, 1817): Cambodia is mapped as part of this species' range, but not listed by HILL (1992); no other reference known].

[*Murina cyclotis* Dobson, 1872: Cambodia is mapped as part of this species' range, but not listed by HILL (1992); no other reference known].

Kerivoula hardwickii (Horsfield, 1824): "Cambodia" (MILLER 1906: sub *depressa* n. sp.). Not listed by HILL (1992), but Cambodia mapped as range of this species.

Kerivoula papillosa Temminck, 1840: "Cambodia" (DOBSON 1878a: sub *K. hardwickii* (Horsfield 1824) = POUSARGUES 1904: sub *K. hardwickei* = Thomas 1916: sub *K. papillosa*).

Molossidae (1 species):

Tadarida (Chaerephon) plicata (Buchanan, 1800): Angkor Wat (YOSHIYUKI 1966; KLEIN 1969b, 1970; HILL and THONGLONGYA 1972). Cave Phnom (Mt.) Samrap Reach, Battambang Prov. (KLEIN 1969c, 1970: sub *T. p. plicata*). Phnom Penh (KLEIN 1970: sub *T. p. plicata*; this study). Siem Reap; Tonlé Bati, Takéo Prov. (KLEIN 1970: sub *T. p. plicata*). Phnom-Penh region and/or islands in Gulf of Thailand (MATVEEV 1999).

Discussion

Two of six species recently collected in Cambodia were not definitely or previously known from Cambodia. The bat fauna of Cambodia is so insufficiently documented that a preliminary checklist presently comprises only 30 species, all pertaining to more common and widely distributed Oriental bats. Six species indicated for Cambodia are rejected, either because the localities recorded are outside the Cambodian territory or because the species identification appears highly doubtful. This short list of actually known bats merely indicates a nearly complete lack of field investigations. Presently the biogeographical relations of the Cambodian bat fauna cannot be assessed by the few data available.

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Zusammenfassung

Einige Fledermäuse (Chiroptera) aus dem südlichen Kambodscha mit einer vorläufigen Artenliste

Eine kleine Aufsammlung von Fledermäusen enthält zwei Arten, die neu für Kambodscha sind: *Megaderma lyra* und *Rhinolophus malayanus*. *Rousettus amplexicaudatus*, bisher nur generell für Kambodscha bekannt, wird bestätigt. Das bekannte Vorkommen von *Taphozous melanopogon*, *Hipposideros armiger* wird von weiteren Fundplätzen dokumentiert, und das von *Tadarida* (Ch.) *plicata* bestätigt. Eine kritische vorläufige Liste der für Kambodscha bekannten Fledertiere umfaßt bisher nur 30 Arten. Die Liste führt sechs Arten auf, die für Kambodscha verzeichnet wurden, deren Fundorte aber außerhalb der Landesgrenzen liegen oder deren Identität zweifelhaft ist: *Pteropus vampyrus*, *P. giganteus*, *Cynopterus horsfieldi*, *Rhinolophus rouxii*, *Hipposideros bicolor* und *Pipistrellus macropus*.

References

- ANDERSEN, K. (1912): Catalogue of the Chiroptera in the collection of the British Museum. **1**: Megachiroptera. London: Trust. Brit. Mus. nat. Hist.
- ANDERSEN, K. (1918): Diagnoses of new bats of the families Rhinolophidae and Megadermatidae. Ann. Mag. nat. Hist. (9) **2**, 347–384.
- ANDERSEN, K.; WROUGHTON, R. C. (1907): On the bats of the family Megadermatidae. Ann. Mag. nat. Hist. (7) **19**, 129–145.
- ANONYMOUS (1996): „Kambodscha '96“ erfolgreich. Mitt. Verband. dtsh. Höhlen- u. Karstforscher **42**, 11.
- BERGMANS, W.; HILL, J. E. (1980): On a new species of *Rousettus* Gray, 1821 from Sumatra and Borneo (Mammalia: Megachiroptera). Bull. Brit. Mus. nat. Hist. (Zool.) **38**, 95–104.
- BLANFORD, W. T. (1891): The fauna of British India including Ceylon and Burma. Mammalia. **2**. London, Calcutta, Bombay, Berlin: Taylor and Francis; Thacker, Spink and Co.; R. Friedländer and Sohn.
- CSORBA, G.; TOPÁL, G. (1994): First record and taxonomic status of *Megaderma lyra* from Vietnam (Mammalia, Chiroptera). Ann. hist.-nat. Mus. natn. Hungar. **86**, 125–132.
- DOBSON, G. E. (1878 a): Catalogue of the Chiroptera in the collection of the British Museum. London: Trust. Brit. Mus.
- DOBSON, G. E. (1878 b): Notes on recent additions to the collection of Chiroptera in the Muséum d'Histoire Naturelle at Paris, with description of new and rare species. Proc. zool. Soc. Lond. **1878**, 873–880.
- DOBSON, G. E. (1880): Report on accessions to our knowledge of the Chiroptera during the past two years (1878–80). Rep. 5th Meeting Brit. Assoc. Advancem. Sci. **1880**, 169–197.
- FERRIS, G. F.; USINGER, R. L. (1953): A new species of *Aphraniola* from Cambodia (Hemiptera, Cimicidae). Rev. franç. Entomol. **20**, 138–139.
- FLOWER, S. S. (1900): On the Mammalia of Siam and the Malay Peninsula. Proc. zool. Soc. Lond. **1900**, 306–379.
- GODAWA-STORMARK, J. (1998): Phenetic analysis of Old World *Myotis* (Chiroptera: Vespertilionidae) based on dental characters. Acta Theriol. **43**, 1–11.
- GRAY, J. E. (1861): List of Mammalia, tortoises and crocodiles collected by M. MOUHOT in Camboja. Proc. zool. Soc. Lond. **1861**, 135–140.
- HILL, J. E. (1963): A revision of the genus *Hipposideros*. Bull. Brit. Mus. nat. Hist. (Zool.) **11**, 1–129.
- HILL, J. E. (1969): The generic status of *Glischropus rosseti* Oey, 1951 (Chiroptera: Vespertilionidae). Mammalia **33**, 133–139.
- HILL, J. E. (1975): Taxonomic background, systematic section, summary of systematic work. In: The Bats and Bat's Parasites of Thailand. Ed. by CTNRC staff; J. E. HILL; J. A. MCNEELY. Bangkok: US Army Res. and Dev. Group, Far East. Report FE-516-1. Pp. 3–40.
- HILL, J. E. (1992): Order Chiroptera. In: The Mammals of the Indomalayan Region: A systematic review. Ed. by G. B. CORBET AND J. E. HILL. Oxford, New York: Oxford Univ. Press. Pp. 54–161.
- HILL, J. E.; THONGLONGYA, K. (1972): Bats from Thailand and Cambodia. Bull. Brit. Mus. (Nat. Hist.) **22**, 173–196.

- HURKA, K. (1997): New data on taxonomy and distribution of Palaearctic, Oriental and Neotropical Ischnopsyllidae (Siphonaptera), Nycteribiidae and Streblidae (Diptera). *Acta Societatis Zoologicae Bohemicae* **61**, 23–33.
- KLEIN, J. M. (1969 a): Nouvelles punaises du Cambodge: *Crasscimex apsarae* n. sp. et *Stricticimex khmerensis* n. sp. (Hem. Cimicidae). *Bull. Soc. entomol. France* **74**, 87–96.
- KLEIN, J. M. (1969 b): *Cimex angkorae* n. sp., une nouvelle punaise du Cambodge. *Bull. Soc. entomol. France* **74**, 139–145.
- KLEIN, J. M. (1969 c): Puces du Cambodge: description d'*Areopsylla phnomensis* n. sp. et de *Stivalius cambodius* n. sp. (Siphonaptera). *Bull. Soc. entomol. France* **74**, 248–254.
- KLEIN, J. M. (1970): Faune des Nycteribiidae du Cambodge (Dipt. Pupipara). *Bull. Soc. entomol. France* **75**, 46–53.
- KLEIN, J. M. (1971): La faune des puces du Cambodge (Siphonaptera). *Cahier ORSTOM (Ser. Entomol. medic. Parasitol.)* **9**, 223–238.
- KLEIN, J. M. (1972): Faune des Nycteribiidae du Cambodge (Dipt. Pupipara). 2e note. *Bull. Soc. entomol. France* **77**, 48–55.
- KOCK, D.; BOGDANOWICZ, W. (1998): Eine historische Fledermaus-Sammlung aus dem südlichen Polen (Mammalia: Chiroptera). *Senckenberg. biol.* **77**, 123–126.
- LAUMANN, M. (1996): Kambodscha 1996. Speläologische Untersuchungen im Karst von Kampot. *Mitt. Verband. dtsh. Höhlen- u. Karstforscher* **42**, 54–59.
- MATVEEV, V. A. (1999): New records of bats from Cambodia. *Plecotus et al.* **2**, 129–130.
- MILLER, G. S. (1906): Seven new Malayan bats. *Proc. biol. Soc. Washington* **19**, 61–65.
- OYE, Hong Peng (1951): A new species of bat from Cambodia, *Glischropus rosseti* sp. n. *Beaufortia* **1**, 1–6.
- OSGOOD, W. H. (1932): Mammals of the KELLEY-ROOSEVELT and DELACOUR; Asiatic expeditions. *Publ. Field Mus. nat. Hist. (Zool.)* **18**, 191–339.
- PARADISO, J. L. (1971): A new subspecies of *Cynopterus sphinx* (Chiroptera: Pteropodidae) from Serasan (South Natuna) Island, Indonesia. *Proc. biol. Soc. Washingt.* **84**, 293–300.
- POUSARGUES, E. DE (1904): Mammifères de l'Indo-Chine. In: Mission PAVIE Indo-Chine 1879–1895. Etudes diverses. III. Recherches sur l'histoire naturelle de l'Indo-Chine Orientale. Ed. by A. J. M. Pavie. Paris: Ernest Leroux. Pp. 510–549.
- ROOKMAAKER, L. C.; BERGMANS, W. (1981): Taxonomy and geography of *Rousettus amplexicaudatus* (Geoffroy, 1810) with comparative notes on sympatric congeners (Mammalia, Megachiroptera). *Beaufortia* **31**, 1–29.
- SHAMEL, H. H. (1942): A collection of bats from Thailand (Siam). *J. Mammalogy* **23**, 317–328.
- SINHA, Y. P. (1977): The Oriental bats of the genus *Megaderma* (Megadermatidae). *Geobios* **4**, 9–12.
- SMIT, F. G. A. M. (1958): Two new bat fleas from Cambodia. *Entomol. Ber.* **18**, 199–203.
- THOMAS, O. (1916): List of Microchiroptera, other than leaf nosed bats, in the collection of the Federated Malay States Museums. *J. Fed. Malay States Mus.* **7**, 1–16.
- THOMAS, O. (1928): The DELACOUR exploration of French Indochina. Mammals. II. On mammals collected during the winter of 1926–27. *Proc. zool. Soc. Lond.* **1928**, 139–150.
- THOMAS, O. (1929): The DELACOUR exploration of French Indochina. Mammals. III. Mammals collected during the winter of 1927–28. *Proc. zool. Soc. Lond.* **1928**, 831–841.
- YOSHIYUKI, M. (1966): On *Tadarida plicata plicata* newly collected from Cambodia. *J. Mammal Soc. Japan* **3**, 40–42.

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