

CATALOGUE OF HERPETOLOGICAL TYPES IN THE COLLECTION OF THE RAFFLES MUSEUM OF BIODIVERSITY RESEARCH, NATIONAL UNIVERSITY OF SINGAPORE

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ABSTRACT. – The Raffles Museum of Biodiversity Research, which incorporates the Zoological Reference Collection at the National University of Singapore, contains the largest zoological reference collection in south-east Asia. Being the inheritor of the collections of the old Raffles Museum, and subsequently, the National Museum, it is a repository of historical specimens collected by pioneering south-east Asian biologists including R. Hanitsch, J. C. Moulton, F. N. Chasen and M. W. F. Tweedie. Name-bearing types of some of the older specimens appeared in papers authored by M. A. Smith and W. Hennig, among others. In the catalogue of herpetological types compiled here, types of seven amphibian and 13 reptile species are indicated, comprising a total of 48 type material (nine holotypes, 27 paratypes and 12 syntypes).

KEY WORDS. – Amphibians, reptiles, type catalogue, Zoological Reference Collection, Raffles Museum of Biodiversity Research, Singapore.

INTRODUCTION

The Zoological Reference Collection of Singapore was started in 1849 at the Raffles Museum, which was named after the founder of Singapore city, Sir Thomas Stamford Raffles (1781-1826). This collection was renamed the National Museum of Singapore in 1961. In 1972, when the National Museum decided to concentrate on its role as an ethnological, historical and art museum, the zoological collections, as well as library, were transferred to the National University of Singapore (NUS), where it incorporated the collections of the former University of Singapore and the Nanyang University. Due to problems of storage space, the collection was moved four times, till it finally settled, in 1987, at the present facility in the Science Library Building at the NUS's Kent Ridge Campus where it became the Zoological Reference Collection (ZRC). In 1998, the ZRC became part of the new Raffles Museum of Biodiversity Research (see Ng, 2000).

The early collections were mostly donations from the landed gentry (including Whampoa Hoo Ah Kay, Lim Boon Keng

and His Royal Highness, the Sultan of Johore). Eminent local and European naturalists who served as staff of the Museum include Karl Richard Hanitsch (1860-1940), the first Curator and Librarian between 1895-1919; John Coney Moulton (1886-1926), former Curator of the Sarawak Museum, and Director of the Raffles Museum between 1919-1923; Cecil Boden Kloss (1877-1949), Director between 1923-1932; Frederick Nutter Chasen (1897-1942), Assistant Curator between 1921-1932, becoming Director between 1932-1942; Michael Wilmer Forbes Tweedie (1907-1993), Assistant Curator in 1932, becoming Curator in the same year, until 1941, and Director between 1946-1971; Carl A. Gibson-Hill (1911-1963), Curator between 1947-1957, becoming Director in 1957 till 1963; and Eric R. Alfred, Curator between 1957-1967, and Director between 1967-1972.

The first expedition of the Museum was conducted by Hanitsch, in 1895, to the neighbouring islands of Pulau Brani and Pulau Blakang Mati (at present Sentosa Island). Subsequently, the Museum organized a major expedition to Mount Kinabalu in Borneo, from where important collections of virtually all groups of animals were made (see Hanitsch,

1900b, for a description). Since 1920, the collections have grown, with expeditions conducted to many neighbouring areas, including Malaysia, Thailand, Vietnam, Laos, Cambodia, Indonesia, Brunei Darussalam, and the Australian territories of Cocos-Keeling Islands and the Christmas Island.

The herpetological specimens at present number over 3,300 amphibians (representing about 100 species) and 3,500 reptiles (representing about 238 species). Herpetological types represented include seven amphibian and 13 reptile taxa (including 48 type specimens, comprising nine holotypes; 27 paratypes and 12 syntypes), and historical material include types of species named by Malcolm Arthur Smith (1875-1958) and Emil Hans Willi Hennig (1913-1976).

ABBREVIATIONS OF SYSTEMATIC INSTITUTIONS

Leviton et al. (1985) recommended USDZ as the abbreviation for the present collection, although most workers, including the museum itself, continues to use the ZRC prefix, which is what we have followed in the present catalogue. Other institutional abbreviations, where available, follow Leviton et al. (1985).

- AMS – Australian Museum, Sydney, Australia.
- BMNH – Natural History Museum, London, United Kingdom.
- FMNH – Field Museum of Natural History, Chicago, U.S.A.
- MCZ – Museum of Comparative Zoology, Harvard University, Cambridge, U.S.A.
- MNHN – Musée National d'Histoire Naturelle, Paris, France.
- MTKD – Staatliches Museum für Tierkunde, Dresden, Germany.
- NMB – Naturhistorisches Museum, Basel, Switzerland.
- RMNH – Nationaal Natuurhistorisch Museum, Leiden (formerly Rijksmuseum van Natuurlijke Historie, Leiden), the Netherlands.
- SMF – Natur-Museum und Forschungs-institut Senckenberg, Frankfurt am Main, Germany
- WHT – Wildlife Heritage Trust of Sri Lanka, Colombo, Sri Lanka.
- ZFMK – Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn, Germany.
- ZMA – Zoological Museum, Amsterdam, the Netherlands.
- ZMB – Zoologisches Museum Humboldt-Universität, Berlin, Germany.
- ZMH – Zoologisches Institut und Museum, Universität Hamburg, Hamburg, Germany.
- ZRC – Zoological Reference Collection, Raffles Museum of Biodiversity Research, National University of Singapore, Singapore.

LIST OF HERPETOLOGICAL TYPES

Amphibians

Bufonidae

Bufo kumquat Das & Lim, 2001. *Raffles Bull. Zool.* **49**(1):1-6; Figs. 1-2.

Types: ZRC 1.3137 (holotype), from “0.63 km from 35 km point on the Sungei Besar - Tanjung Malim Road, Sabak Bernam, North Selangor, West Malaysia”; ZRC 1.3138-3141 (4 paratypes), ZRC 1.3142 (1 paratype), from same locality as holotype; ZRC 1.3584 (1 paratype), from “Sabak Bernam, North Selangor, West Malaysia”.

Current status: *Bufo kumquat* Das & Lim, 2001.

Microhylidae

Microhyla annectans Boulenger, 1900. *Ann. & Mag. nat. Hist. ser. 7*, 5: 188.

Types: ZRC 1.125-26 (two syntypes), from “Larut Hills at 4000 feet” (in Perak State, West Malaysia).

Current status: *Microhyla annectans* Boulenger, 1900.

Remarks: Additional syntypes are BMNH 1900.6.14.34-35 (Parker, 1934: 130).

Ranidae

Amolops kinabaluensis Inger, 1966. *Fieldiana Zool.* 52: 266. Types: ZRC 1.205-06 (two paratypes), from “Mount Kina Balu” (in Sabah, East Malaysia; Borneo).

Current status: *Meristogenys kinabaluensis* (Inger, 1966).

Remarks: Reallocated to the genus *Meristogenys* by Yang (1991). The holotype is FMNH 109798. Additional paratypes are in the BMNH, FMNH, MNHN and NMB (see Inger, 1966).

Limnonectes kirtisinghei Manamendra-Arachchi & Gabadage, 1996. *J. south Asian nat. Hist.* 2(1): 32 ; Figs. 1, 3a, 4a, 5a, 6-8.

Types: ZRC 1.3274-75 (two paratypes), from “Sri Lanka: Koskulana near Panapola (Sinharaja Rain Forest), alt. 460 m (06°25'N, 80°27'E)”; ZRC 1.3276 (paratype), from “Sri Lanka: Waitalawa near Urugala (Knuckles), alt. 915 m, (07°19'N, 80°49'E)”; ZRC 1.3277 (paratype), from “Sri Lanka: Usgala, Ambagahakanda (near Maliboda), alt. 700 m (06°52'N, 80°26'E)”.

Current status: *Limnonectes kirtisinghei* Manamendra-Arachchi & Gabadage, 1996

Remarks: The holotype is AMS R 148272; additional paratypes are in AMS and WHT.

Rana nitida Smedley, 1931. *Bull. Raffles Mus.* 6: 107; Pl. II.

Type: ZRC 1.849 (syntype), from “Tanah Rata” (in the Cameron Highlands, Pahang, West Malaysia); ZRC 1.850 (syntype), from “Brinchang Rd” (in the Cameron Highlands, Pahang, West Malaysia).

Current status: *Limnonectes nitidus* (Smedley, 1931).

Remarks: Allocated to *Limnonectes* by Dubois (1987). The

following are additional syntypes: BMNH 1947.2.1.35 (formerly BMNH 1931.10.8.1) and BMNH 1931.10.8.2 (apparently not re-registered in 1947, but still extant, B. T. Clarke, pers. comm., 1999).

Rana pileata Boulenger, 1916. *J. nat. Hist. Soc. Siam* 2(2): 103.

Types: ZRC 1.852-53 (two syntypes), from “Khao Cebab, Chantabun, S. E. Siam” (in Chanthaburi Province, Thailand).

Current status: *Rana pileata* Boulenger, 1916.

Remarks: Additional syntypes include BMNH 1947.2.1.97-99 and BMNH 1947.2.2.1-9 (formerly BMNH 1917.5.14.25-34), BMNH 1947.2.2.10 (formerly BMNH 1917.5.4.35) and BMNH 1947.2.2.11 (formerly BMNH 1916.4.17.1).

Rana tweediei Smith, 1935. *Bull. Raffles Mus.* 10: 62; Pl. IV.

Type: ZRC 1.862-63 (two paratypes), from “..near the River Yum, Headwaters Plus River, alt. 2,000 feet” (in Perak State, West Malaysia).

Current status: *Rana tweediei* Smith, 1935.

Remarks: The species was based on an adult male (described as the “type”) and five “juveniles”; the entire type series, apart from the holotype (BMNH 1934.5.21.1; fide Frost, 1985: 519), must be considered paratypes. The fate of the remaining three syntypes is unknown. Considered synonymous with *Rana nitida* Smedley, 1931, by Kiew (1975), although Dring (1979) subsequently considered it valid.

Reptiles

Gekkonidae

Cnemaspis assamensis Das & Sengupta, 2000. *J. South Asian nat. Hist.* 5(1): 18; Figs. 1-2.

Types: ZRC 2.4673 (holotype), ZRC 2.4675-76 (two paratypes), “Mayeng Hill Reserve Forest (25° 48’-55’N, 91° 21’-32’E), alt. ca. 90 m above msl, Kamrup District, Assam State, north-eastern India”.

Current status: *Cnemaspis assamensis* Das & Sengupta, 2000.

Cnemaspis gordongekkoi Das, 1993. *Hamadryad* 18: 1; Pl. 1.

Types: ZRC 2.3380 (holotype), ZRC 2.3381 (paratype), from “..vicinity of Sendanggila Falls, circa 0.5 km south of Senaru village, Lombok, Nusa Tenggara District, Republic of Indonesia (8° 45’S, 116° 30’E)”.

Current status: *Cnemaspis gordongekkoi* Das, 1993.

Cnemaspis otai Das & Bauer, 2000. *Russian J. Herpetol.* 7(1): 18; Figs. 1-2.

Types: ZRC 2.4710 (holotype), from “Vellore Fort, Vellore (12° 56’N; 79° 09’E), North Arcot District, Tamil Nadu State, south-eastern India”; ZRC 2.4712 (paratype), from “Balamadi Hill, Vellore, North Arcot District, Tamil Nadu State, south-eastern India”; ZRC 2.4711 (paratype);

“Vellore, North Arcot District, Tamil Nadu State, south-eastern India”.

Current status: *Cnemaspis otai* Das & Bauer, 2000.

Cnemaspis yercaudensis Das & Bauer, 2000. *Russian J. Herpetol.* 7(1): 22; Figs. 4-5.

Type: ZRC 2.4709 (holotype), from “Yercaud Town (11° 48’N; 78° 14’E), in the Shevaroyan (Shevroy) Range, Salem District, Tamil Nadu, south-western India, altitude 1,515 m ASL”.

Current status: *Cnemaspis yercaudensis* Das & Bauer, 2000.

Cyrtodactylus tiomanensis Das & Lim, 2000. *Raffles Bull. Zool.* 48(2): 223-231; figs. 1-2.

Types: ZRC 2.3412 (holotype), ZRC 2.3413a-b (two paratypes), ZRC 2.3508-011 (three paratypes), from “Kampung Tekek-Juara trail, Pulau Tioman (02° 35’N; 104° 15’E), Pahang, Malaysia”; ZRC 2.3515 (paratype), Gunung Kajang, Pulau Tioman, Pahang, Malaysia”.

Current status: *Cyrtodactylus tiomanensis* Das & Lim, 2000.

Gonatodes nigradius Smith, 1925. *Sarawak Mus. J.* 3(8): 22. Material: ZRC 2.1114-115 (non-types; see ‘Remarks’); from “Mt. Gadin” (= Gunung Gading, Sarawak, East Malaysia; Borneo).

Current status: *Cnemaspis nigradius* (Smith, 1925).

Remarks: Reviewed by Das and Bauer (1998). The holotype is BMNH 1946.8.22.90 (formerly BMNH 1925.9.1.8). Smith (1925b) designated only a single ‘type’ (= holotype) of his new species, although his description was clearly based on several specimens: ZRC 2.1114-115 as well as MCZ 39024, which do not therefore have the status of types.

Agamidae

Draco formosus laetepictus Hennig, 1936. *Temminckia* 1: 217.

Types: ZRC 2.517 (paratype), from “Mentawai-Inseln (...S. Pagi..)” (in Sumatera Province, Indonesia); ZRC 2.518 (paratype), from “Mentawai-Inseln (Siberut..)” (in Sumatera Province, Indonesia).

Current status: *Draco obscurus laetepictus* (Hennig, 1936); but see ‘Remarks’.

Remarks: Tentatively considered a subspecies of *Draco obscurus* Boulenger, 1887, by Musters (1983), which Inger (1983) considered *D. formosus* Boulenger (1890) as synonymous with *D. obscurus* Boulenger (1887). The holotype (from “Mentawai-Inseln (Siberut..)”) (in Sumatera Province, Indonesia) was in MTKD 2574, which was destroyed during the bombing of Dresden during World War II (Obst, 1977). The whereabouts of a third paratype from “Mentawai-Inseln (Siberut..)”) (in Sumatera Province, Indonesia), is not known.

Draco quinquefasciatus longibarba Hennig, 1936. *Temminckia* 1: 193.

Types: ZRC 2.659 (holotype), from “Borneo, Baram, Sarawak” (in East Malaysia). According to the original description, there were two paratypes in this institution

from “Borneo, Samauang river, N. Sandakan” (in Sabah, East Malaysia) and “Borneo, Kiau, Mt. Kinabalu” (in Sabah, East Malaysia); these cannot be located at present. Current status: Subjective synonym of *Draco quinquefasciatus* Hardwicke & Gray, 1827. Remarks: Synonymised under *Draco quinquefasciatus* Hardwicke & Gray, 1827, by Musters (1983). Paratypes include ZMA 11022-23 (from Samarinda, Kalimantan, Indonesia; Borneo; Daan and Hillenius, 1966; van Tuijl, 1995) and RMNH 4996 (Musters, 1983). Hanitsch (1900) mentioned a specimen in the collection of the ZRC from Baram, one of the type localities.

Scincidae

Lygosoma trifasciatum Tweedie, 1940. *Bull. Raffles Mus.* 16: 83. Types: ZRC 2.1862 (syntype), from Tanah Rata, alt. 4500', Cameron Highlands, Pahang (in West Malaysia); ZRC 2.1864 (syntype), from Telom Valley at 5000', Pahang (in West Malaysia); ZRC 2.1865-66 (two syntypes), from Cameron Highlands at 4-5000', Pahang (in West Malaysia). Current status: *Larutia trifasciata* (Tweedie, 1940). Remarks: Reallocated to the genus *Larutia* by Böhme (1981). The species was based on eight syntypes.

Cylindrophiiidae

Cylindrophis engkariensis Stuebing, 1994. *Raffles Bull. Zool.* 42(4): 969; Figs. 1-2. Type: ZRC 2.3398 (field number RBS 8821; holotype), from “Nanga Segerak (1° 25'N 112° 00'E), 245 m asl, headwaters of the Engkari River, Lanjak-Entimau Wildlife Sanctuary, Lubok Antu District, Second Division, Sarawak, Malaysia” (in Borneo). Current status: *Cylindrophis engkariensis* Stuebing, 1994.

Colubridae

Collorhabdium williamsoni Smedley, 1931. *Bull. Raffles Mus.* 6: 120. Types: ZRC 2.2168-69 (two syntypes), from “Tanah Rata, Cameron Highlands, Malay Peninsula” (in Pahang State, West Malaysia). The ZRC register gives the altitude of collection of the two syntypes as 4,500 feet (ZRC 2.2168) and 4,600 feet (ZRC 2.2169). Current status: *Collorhabdium williamsoni* Smedley, 1931. Remarks: A third syntype is BMNH 1946.1.6.55 (formerly BMNH 1931.10.8.4). *Macrocalamus tweediei* Lim, 1963. *Bull. Natl. Mus. Singapore* 32: 99; Pl. 2. Type: ZRC 2.2174 (holotype; formerly Institute for Medical Research, Kuala Lumpur R57,656), from “Gunung Brinchang, Cameron Highlands, Pahang, at an elevation of 6,000 ft.” (in West Malaysia). Current status: *Macrocalamus tweediei* Lim, 1963. Remarks: The paratype (formerly Institute of Medical Research, Kuala Lumpur, R54,070) is FMNH 109868.

Macrocalamus schulzi Vogel & David, 1999. *Raffles Bull. Zool.* 47: 318; Pl. 1, 4, 5, 9-12; Figs. 1-2. Type: ZRC 2.3697 (paratype), from “Tanah Rata (ca. 4°29'N, 101°23'E), Cameron Highlands, Pahang, Malaysia”. Current status: *Macrocalamus schulzi* Vogel & David, 1999. Remarks: The holotype is ZFMK 51159; additional paratypes include MNHN 1997.3269, 39360, 3268, SMF 78368, ZFMK 65036 and ZMB 49143.

Crotalidae

Trimeresurus chaseni Smith, 1931. *Bull. Raffles Mus.* (5): 29. Type: ZRC 2.2173 (paratype), from “Kiau” (in Kinabalu Park, Sabah, East Malaysia; Borneo). Current status: *Ovophis chaseni* (Smith, 1931). Remarks: Allocated to the genus *Ovophis* by Hoge and Romano-Hoge (“1979” 1981). The sampling altitude at Kiau was “3,000 ft.”, according to the original description of Smith (1931: 6). The holotype is BMNH 1946.1.18.84 (Toriba, 1993).

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