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Type catalogue of amphibians in the Zoologische Staatssammlung München

Frank Glaw & Michael Franzen

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We provide a first complete list of the present and lost amphibian type specimens of the Zoologische Staatssammlung München (ZSM) and discuss various problems involved. The collection currently houses primary types of 61 taxa (45 holotypes, eight lectotypes, three neotypes, and five taxa based on syntype series), 41 of them currently considered as valid. Furthermore, 72 taxa are exclusively represented by secondary types (paratypes, paralectotypes), resulting in type material of 133 taxa.

The ZSM collection strongly suffered from losses during World War II. Primary type specimens of approximately 65 amphibian taxa have been obviously destroyed during that time.

The historical focus of the collection was South America and was primarily based on material collected by Spix and Martius during their expedition to Brazil from 1817 to 1820. 50 amphibian taxa are based on material collected during this expedition, but currently specimens of only 14 taxa are still present in Munich. Subsequently, herpetological research in South America was continued during the first half of the 20th century by L. Müller und W. Hellmich, who designated type material of 24 anuran taxa in the ZSM, 11 of them still represented by primary types. Recently, the focus of the taxonomic work on amphibians has shifted to Madagascar. This has resulted in the presence of 19 holotypes and additional 50 taxa represented by paratypes from that country.

An extensive search in the herpetological collection resulted in the rediscovery of type material of *Caecilia annulata* Wagler, 1824 and *Hyla lateristriga* Spix, 1824, which formerly was presumed to be lost.

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Introduction

The Zoologische Staatssammlung München (ZSM) is one of the major natural history museums in Germany. The first important herpetological collections were obtained by an expedition of Johann Baptiste Ritter von Spix to Brazil during the years 1817-1820. A short history of the herpetological collection is given by Gruber (1992) and Glaw & Fuchs (2001).

During World War II large parts of the collection including many type specimens have been destroyed. After the war there was significant uncertainty about the survival of the type specimens. This led to the

situation that several types were considered or assumed to be lost although being extant whereas other types considered present were actually lost (e.g. Frost 1985). In 1983 Hoogmoed & Gruber published a detailed catalogue of the type specimens of the Spix collection (species described by Spix and Wagler). This work removed much of the uncertainties which hindered the taxonomic research of Brazilian species.

However, the types of the other amphibian and reptile taxa of the ZSM were never reviewed and their status (extant or lost) remained unknown in many cases. In 1998, we therefore undertook a first attempt to clarify the situation of the herpetological



Fig. 1. The herpetological type material of the ZSM.

types in the ZSM. We removed all type specimens from the main collection and transferred them into a closed area of the collection, and continuously searched for cryptic types. However, it soon became clear that a complete revision of the type material is a time consuming task that could not be finished without additional man power. It was therefore good luck that in 2003 the Global Biodiversity Information Facility (GBIF) started a programme to create a database of the type specimens in German research museums (Glaw & Franzen 2003, 2004, Naumann & van den Elzen 2004). This programme provided the funding to work intensively on the electronic type catalogue and therefore was an important basis for the written type catalogue presented here. The second part, the type catalogue on the reptiles, will be published in a forthcoming paper.

The numbering systems of the herpetological ZSM collection

Until 1997, the herpetological ZSM material was listed in a total of 11 handwritten catalogues. Since 1998, the catalogue is continued as an electronic database (Access). Until 1997 a catalogue number either included a single specimen or a series of specimens (generally) from the same locality and

with same collection data. Since 1998 each specimen has an individual catalogue number and bears an individual tag.

Old numbering system. Old numbers consist of a running number, followed by a “/0” (e.g. ZSM 1021/0, the holotype of *Brachycephalus ephippium*). Catalogue I includes ZSM 1/0 to 1824/0 (pp. 172–192, 130–162), catalogue II ZSM 1825/0 to 2753/0 (pp. 155–182), and catalogue III ZSM 3000/0 to 3218/0 (pp. 189–196). In addition, there is a small skeleton collection (catalogue II, page 132) with the numbers ZSM 2506/0a–2536/0a. The material with the old numbering system includes much of the collections of Spix, old specimens without collection dates, and other material collected until 1907. To identify individuals of a series, each specimen is numbered as shown in the following example: ZSM 2710/0 (2 specimens) is now labeled ZSM 2710/0/1 and ZSM 2710/0/2.

Current numbering system. In 1907, a new catalogue was started and a new numbering system was introduced. It consists of a running number, followed by a “/” and the year in which they were catalogued (example ZSM 1/1964, the holotype of *Chthonerpeton hellmichi*). This system is still in use. Catalogue I includes the years 1907–1921, catalogue II the years 1922–1946, catalogue III the years 1947–1967, and catalogue IV the years 1968–1997. To identify individuals of a series catalogued before 1998, each specimen is numbered as shown in the following example: ZSM 54/1914 (2 specimens) is now labeled ZSM 54/1914/1 and ZSM 54/1914/2. In several cases old individual markings indicated by letters are changed to numerals (e.g. ZSM 2691/0 A and ZSM 2691/0 B are changed to ZSM 2691/0/1 and ZSM 2691/0/2).

Sammlung Lorenz Müller. Parallel to the numbering systems outlined above, the collection Lorenz Müller (SLM) was catalogued separately in running numbers. This collection exclusively includes specimens from Europe, Africa north of the Sahara, and western Asia. The Lorenz Müller collection comprises three separate catalogues: Catalogue I includes the numbers I–1469, catalogue II the numbers 1470–2920, and catalogue III the numbers 2921–5179. Finally, there is a further (fourth) catalogue (Sammlung Lorenz Müller 1962–1973) with the same numbering system that is used for the regular ZSM collection, i.e. a running number followed by “/” and the year in which the specimens were catalogued (e.g. 1/1962). Since this numbering system is easily confused with the regular ZSM numbers, we intend to re-number these specimens (Sammlung Lorenz Müller 1962–1973) in future.

Specimens from the Lorenz Müller collection are indicated by the acronym SLM in parentheses (e.g. ZSM (SLM) 3399). To identify individuals of a series, each specimen is numbered as shown in the following example: ZSM (SLM) 3401 (2 specimens) is now labeled ZSM (SLM) 3401/1 and ZSM (SLM) 3401/2.

The amphibian type specimens of the ZSM collection

In the following accounts families are listed alphabetically within each order. Within each family genus and species names are ordered alphabetically according to their original names. We generally follow the classification of Frost (2004) with recent modifications, especially the work of Faivovich et al. (2005). The informations on each taxon are provided in the following order: (1) original name including author and year of original description, (2) abbreviated reference of the original description, (3) listing of the type specimens, followed by informations on the type localities (literally from the original description if given between quotation marks), collector(s), and collection dates, (4) remarks, (5) present name. If the section "present name" is absent, the original name is still in use.

In many cases, the type material of a given taxon was only partially destroyed during WWII. We therefore decided to present information on extant and lost type material together. Extant type material is underlined to emphasize its presence whereas "(lost)" immediately after a catalogue number indicates its absence.

For taxa described by Spix and Wagler we generally follow the opinions and conclusions of Hoogmoed & Gruber (1983) who provide detailed and convincing discussions on each taxon which are not repeated here. This is especially true for the identity of the type material which sometimes can not be interpreted unambiguously.

Abbreviations

The following institutional abbreviations are used:

BMNH	The Natural History Museum, London
KU	University of Kansas, Museum of Natural History, Lawrence
MCZ	Museum of Comparative Zoology, Harvard University, Cambridge
MNHN	Museum national d'Histoire naturelle, Paris
MRSN	Museo regionale di Scienze Naturali, Torino
MSNG	Museo Civico di Storia Naturale di Genova
MTD	Museum für Tierkunde, Dresden

MVZ	Museum of Vertebrate Zoology, Berkeley
MZUF	Università di Firenze, Museo Zoologico de la Specola, Firenze
MZUT	Museo Zoologico dell'Università di Torino; specimens currently in MRSN
NHRM	Naturhistoriska Riksmuseet, Stockholm
NMBE	Naturhistorisches Museum, Bern
NMW	Naturhistorisches Museum, Wien
SMF	Senckenberg Museum, Frankfurt
RMNH	Rijksmuseum van Natuurlijke Historie, Leiden
UADBA	Université d'Antananarivo, Département de Biologie Animale, Antananarivo
UMMZ	University of Michigan Museum of Zoology, Ann Arbor
ZFMK	Zoologisches Forschungsmuseum Alexander Koenig, Bonn
ZIL	Zoological Institute Leningrad, St. Petersburg
ZIUW	Zoologisches Institut, Universität Wien
ZMA	Zoologisch Museum, Amsterdam
ZMB	Museum für Naturkunde, Berlin
ZMH	Zoologisches Museum, Hamburg
ZSM	Zoologische Staatssammlung, München

Further abbreviations used:

coll.	collected by
don.	donated by
orig.	original

Order Gymnophiona

Caeciliidae Rafinesque, 1814

Caecilia annulata Wagler, 1824

Serp. Brasil. Spec. Nov. Hist. Nat. Nouv. Serpens.: 74

Paralectotype: ZSM 1323/0, adult, "Habitat numerosa in provincia Bahiae, in paludum vicinitate" [Brazil, former province of Bahia, part of the present state of Bahia] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: The specimen was presumed to be lost by Hoogmoed & Gruber (1983), but is present in the Munich collection. Hoogmoed & Gruber (1983) designated RMNH 2419 as lectotype.

Present name: *Siphonops annulatus* (Mikan, 1820) fide Frost (2004).

Caecilia elongata Dunn, 1942

Bull. Mus. Comp. Zool. 91: 527

Holotype: One of two specimens originally catalogued as ZSM 1327/0 (lost), adult(s), "Panama", coll. Amon, no date.

Paratype(s): ZSM 1324/0 (lost), two specimens according to the catalogue, one specimen according to the card index, same data as ZSM 1327/0.



Fig. 2. *Caecilia marculsi* Wake, 1984, holotype (ZSM 79/1982).

Present name: *Oscacaecilia elongata* (Dunn, 1942) according to Taylor (1968: 605-607), see also Lahanas & Savage (1992) for further remarks.

***Caecilia marculsi* Wake, 1984**

Amphibia-Reptilia 5: 215

Holotype: ZSM 79/1982, male, "Villa Tunari, 400 m, via San Antonio on Rio Chapare", Cochabamba, Prov., Bolivia", coll. H. Marcus, collection date unknown, probably early 1940's.

Paratypes: ZSM 82/1982, adult, ZSM 83/1982, adult, same collection data as holotype.

Remarks: The registry number of the holotype was erroneously given as 70/1982 by Duellman (1993: 312) and Frost (2004).

***Nectocaecilia ladigesii* Taylor, 1968**

Caecilians of the world: 275

Holotype: ZSM 245/1925, adult, "Bocca do Mojú, Staat Pará, Brasilien" (label data), coll. O. A. Farias, 10.1911.

Remarks: Holotype erroneously mentioned to be housed in ZMH ("ZMH 1925/245") by Frost (1985: 640) and Frost (2004).

Present name: *Typhlonectes compressicauda* (Duméril & Bibron, 1841) according to Wilkinson (1991).

Ichthyophiidae Taylor, 1968

***Chthonerpeton hellmichi* Taylor, 1968**

Caecilians of the world: 305

Holotype: ZSM 1/1964 (cited as "ZSM Temporary No. 1-1964" in caption of Fig. 160 of the original description), adult, locality uncertain, according to the original description: "Punta Lara [...] I suspect it is in the vicinity of the Rio de la Plata" and in caption of Fig. 160 "Brasil". According to the card index and jar labels "Punta Lara, Rio La Plata, Argentina". Exact collection date uncertain: one jar label states September 1963, the other November 1963, coll. R. Foerster.

Present name: Uncertain, according to Nussbaum & Wilkinson (1987) presumably a synonym of *C. indistinctum* (Reinhard & Lütken, 1861).

Order Urodela

Plethodontidae Gray, 1850

***Spelerpes Dofleini* Werner, 1903**

Abh. K. Bayer. Akademie Wiss. II. Kl. 22: 352

Holotype: ZSM 1288/0 (lost), adult, "Coban, Guatemala" (catalogue and card index), coll. Sapper, no date.

Remarks: McCranie et al. (1996) discussed the identity of the lost holotype and designated a neotype (MVZ 161627).

Present name: *Bolitoglossa dofleini* (Werner, 1903), see McCranie et al. (1996).

***Spelerpes palmatus* Werner, 1897**

Zool. Anz. 20: 266

Paralectotypes: ZSM 1272/0 (lost), 2 adults, "Ecuador", coll. M. Wagner, no date.

Remarks: NMW 22862, formerly ZIUW q43 (Häupl et al. 1994) was designated as lectotype by Brame & Wake (1962: 173).

Present name: *Bolitoglossa palmata* fide Brame & Wake (1962: 173-176).

Salamandridae Goldfuss, 1820

***Euproctus asper* f. *castelmouliensis* Wolterstorff, 1925**

Abh. Ber. Mus. Magdeburg 4: 66

Paralectotype: ZSM (SLM) 3399, female, "Torrent de Castelmouly bei Bagnères de Bigorre, Pyrenaeen, Frankreich" according to the catalogue, collector not indicated, but most probably L. Lantz, don. W. Wolterstorff, 1926.

Remarks: Lectotype designation (SMF 1167) by Mertens (1967: 37).

Present name: *Euproctus asper* (Dugès, 1852) is currently regarded monotypic (see Clergue-Gazeau 1999: 258).

***Molge alpestris* var. *Reiseri* Werner, 1902**

Verh. Zool.-Bot. Ges. Wien 52: 7

Syntypes: ZSM (SLM) 3401/1-2, 1 male, 1 female, "in einem 1636 m hoch gelegenen, kleinen Gebirgssee: Prokosko jezero (westlich von der bosnischen Ortschaft Fojnica)" (original description), "Vranika-Gebirge, Bosnien" (label data), collector and date not indicated on the label, but probably collected in August 1901 by O. Simony.

Present name: Regarded as a synonym of the nominate subspecies (Roček et al. 2003: 625).

***Molge italica* Peracca, 1898**

Boll. Mus. Zool. Anat. Comp. Univ. Torino 13 (317): 1

Paralectotypes: ZSM (SLM) 937/1-3, 2 males, 1 female, "Potenza, Süd-Italien" (label), collector unknown, Peracca don., 04.1898; ZSM (SLM) 942/1-6, 3 males, 3 females, "Potenza, Süd-Italien", coll. Peracca, 1898.



Fig. 3. *Salamandra salamandra almanzoris* Müller & Hellmich, 1935, holotype (ZSM [SLM] 2046). This taxon is one of several fire salamander subspecies from Spain.

Remarks: ZSM (SLM) 873, three specimens labeled "Potenza, Frühjahr 1902, Dr. Peracca" were obviously collected or donated in spring 1902. If they were collected in 1902, they are clearly no paralectotypes. However, if they were donated in 1902 they possibly represent paralectotypes. Gavetti & Andreone (1993: 127) designated MZUT An590.1 as lectotype and noted the existence of further paralectotypes in MZUT, BMNH, NMW and MZUF, but did not mention the ZSM paralectotypes.

Present name: *Triturus italicus* (Peracca, 1898), see Sparreboom (2003).



Fig. 4. *Bufo ephippium* Spix, 1824 (holotype ZSM 1021/0), now *Brachycephalus ephippium*, is the type species of the genus *Brachycephalus* and was the first described species of the family Brachycephalidae.

***Salamandra salamandra almanzoris*
Müller & Hellmich, 1935**

Zool. Anz. 112: 49

Holotype: ZSM (SLM) 2046, male, "Laguna Grande de Gredos (2027 m)" (original description, label), coll. W. Hellmich, 04.06.1935.

Paratypes: ZSM (SLM) 2047 (lost, 1 male, 1 female), ZSM (SLM) 2048 (lost, 4 juveniles), same data as holotype.

Present name: Valid subspecies according to Thiesmeier & Grossenbacher (2004: 1076).

***Triturus helveticus punctillatus* Schmidler, 1969**

Abh. Ber. Naturkd. Vorges. Magdeburg 11: 221

Paratypes: ZSM 28/1998-33/1998, 6 adults, "Pozo Negro ('Schwarzer Brunnen'), 1770 m, Karssee in der Sierra de la Demanda, s. Fresneda de la Sierra (Burgos)" (original description), coll. J. J. & J. F. Schmidler, 30.04.1962 and 15.05.1964.

Remarks: The original type series consisted of 30 specimens according to the original description. The holotype (without registry number) was sent to KMM (= Kulturhistorisches Museum Magdeburg =

MM), where it was probably lost (J. F. Schmidler, pers. comm.). The collection date of the holotype ("1. [= legit] 15.5.64") was erroneously interpreted as registry number by Frost (2004). Some of the paratypes, which were still alive when the original description was prepared, should be deposited in the SMF according to Schmidler (1969). However, G. Köhler (pers. comm.) did not find any specimens in the SMF collection.

Present name: The validity of this taxon is questioned by Schlüppmann & van Gelder (2004: 798).

Order Anura

Brachycephalidae Günther, 1858

***Bufo ephippium* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 48

Holotype: ZSM 1021/0, adult, "Habitat in Provincia Bahiae" [Brazil, former province of Bahia, part of the present state of Bahia] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Present name: *Brachycephalus ephippium* (Spix, 1824) fide Frost (2004).

***Ephippiphier spixii* Cocteau, 1835**

Mag. Zool. Anat. 5: 12

Holotype (according to Hoogmoed & Gruber 1983: 374): ZSM 1021/0, adult, Province of Bahia [Brazil, former province of Bahia, part of the present state of Bahia] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: Considered as replacement name for *Bufo ephippium* Spix, 1824 (see Hoogmoed & Gruber 1983: 374 for comment).

Present name: *Brachycephalus ephippium* (Spix, 1824) fide Frost (2004).

Bufonidae Gray, 1825

***Atelopus cruciger vogli* Müller, 1934**

Zool. Anz. 108: 151

Holotype: ZSM 3/1933, adult female, "Obere Wasserfälle des Rio Juey 'Las Peñas', nahe der Hacienda 'La Trinidad', Maracay (700 m), Venezuela" [label], "Schlucht 'Las Peñas' (600 m), unweit von Maracay" [original description], coll. C. Vogl, 1933.

Paratypes: ZSM 285/1933/1-8 (5 males, 3 females, all cleared & stained), ZSM 285/1933/9-317, ZSM

350/1999-464/1999, 432 specimens, same data as holotype.

Remarks: Solano (1969) mentioned only 316 specimens. Lötters et al. (2004) discussed the number of paratypes. Paratype ZSM 285/1933/320 has been exchanged (now ZMA 20335). Paratypes ZSM 285/1933/318-319 have been exchanged with ZFMK. Paratype ZSM 285/1933/317 has been exchanged with NMBE. Rivero (1961: 173) lists UMMZ 92431 (1 specimen) and MCZ 20923-5 (3 specimens) as paratypes. Additional paratypes are mentioned by Cochran (1961: 30). *Atelopus vogli* is considered as extinct (Global amphibian assessment, <http://www.globalamphibians.org>).

Present name: *Atelopus vogli* according to Lötters et al. (2004).

***Bufo acutirostris* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 52

Holotype: ZSM 1147/0, male, "Habitat ad flumen Amazonum" [Brazil, Rio Amazonas] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Present name: *Bufo acutirostris* Spix, 1824 (re-established by Hoogmoed 1990). For photographs of the holotype (dorsal and ventral view) see Lötters & Köhler (2000).

***Bufo albicans* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 47

Lectotype: ZSM 1140/0 (designated by Hoogmoed & Gruber 1983), subadult, "Habitat ad flumen Nigrum" [Brazil, Rio Negro] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: Paralectotype RMNH 2191.

Present name: *Bufo marinus* (Linnaeus, 1758) fide Frost (2004).

***Bufo bufo gredosicola* Müller & Hellmich, 1935**

Zool. Anz. 112: 54

Holotype: ZSM (SLM) 2049 (lost), male, "Laguna Grande de Gredos, 2027 m" [Spain], coll. W. Hellmich, 04.06.1935.

Paratypes: ZSM (SLM) 2050 (lost, 7 males), ZSM (SLM) 2051 (lost, 7 males, 1 female), all with the same data as holotype.

Present name: Considered as valid subspecies (Mertens & Wermuth 1960: 46).



Fig. 5. *Atelopus cruciger vogli* Müller, 1934, holotype (ZSM 3/1933). This taxon is now considered a distinct species that has gone extinct.

***Bufo dorsalis* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 46

Lectotype: ZSM 1141/0/3 (ZSMH 1141/0 A in Hoogmoed & Gruber 1983), female, "Habitat [...] in Provincia Rio de Janeiro" [Brazil, state of Rio de Janeiro] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Paralectotypes: ZSM 1141/0/1-2 (ZSMH 1141/0 B, C in Hoogmoed & Gruber 1983), 1 male, 1 subadult, same data as lectotype.

Remarks: Spix (1824) originally mentioned the existence of five syntypes. Three of them are still extant in the ZSM and RMNH 2189 is a further paralectotype. The fifth specimen has not been located. Frost (2004) erroneously stated that Hoogmoed & Gruber (1983) designated RMNH 2189 as lectotype.

Present name: *Bufo ornatus* Spix, 1824 according to Baldissera et al. (2004).

***Bufo globulosus* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 49

Holotype: ZSM 41/0 (lost), juvenile?, "Habitat ad flumen Itapicuru" [Brazil, Rio Itapicuru, probably between Caxias (04°50'S, 43°21'W) and Arraiar (02°37'S, 44°41'W) according to Vanzolini 1981], coll.



Fig. 6. *Bufo granulosus major* Müller & Hellmich, 1936, one of the two remaining syntypes (ZSM 202/1929/1).

Spix and Martius expedition to Brazil, 1817-1820.

Remarks: Müller & Hellmich (1936: 7-8) noted that *Bufo granulosus* has priority over *Bufo globulosus* under the Principle of First Revisor. Frost (2004) did not list *Bufo globulosus* in the synonymy of *B. granulosus*.

Present name: *Bufo granulosus* Spix, 1824 fide Hoogmoed & Gruber (1983).

Bufo granulosus Spix, 1824

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 51

Holotype: ZSM 40/0 (lost), "Habitat in Provincia Bahiae" [Brazil, former province of Bahia, part of the present state of Bahia] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: Müller & Hellmich (1936: 7-8) noted that *Bufo granulosus* has priority over *Bufo globulosus* under the Principle of First Revisor.

Present name: *Bufo granulosus granulosus* Spix, 1824.

Bufo granulosus major Müller & Hellmich, 1936

Wiss. Ergebn. Deutsch. Gran Chaco-Exped., Amph. Rept., 1: 12

Syntypes: ZSM 147/1928 (lost, 18 specimens), ZSM 153/1928 (lost, 1 specimen), and ZSM 202/1929/1-2 (originally ZSM 202/1929, 5 specimens, 3 of them lost), "San José de Chiquitos, Prov. Santa Cruz" [Bolivia], coll. Deutsche Chaco Expedition, 10. 1926.

Remarks: The original description does not clearly indicate which of the mentioned specimens are to be considered as type material. We here consider all specimens from the locality "San José de Chiquitos" listed in the table on page 7 as syntypes. This includes ZSM 147/1928, ZSM 153/1928 and 5 individuals without given catalogue number. These latter specimens apparently have the catalogue number ZSM 202/1929 as all collection data are fully identical with the data given in the table on page 7 in Müller & Hellmich (1936). ZSM 202/1929 originally included 5 specimens. We were not able to locate three of these specimens whereas the remaining two are still extant, ZSM 202/1929/1 (adult) and ZSM 202/1929/2 (juvenile).

Present name: *Bufo granulosus major* (Cei 1980: 189-190; De la Riva et al. 2000: 26-27).



Fig. 7. *Bufo proboscideus* Spix, 1824, holotype (ZSM 1145/0).

***Bufo kelloggi* Taylor, 1936**

Univ. Kansas Sci. Bull. 24 (20): 510

Paratypes: ZSM 70/1947/1-2 (E. H. Taylor collection numbers 27, 33), 2 adults, "two miles east of Mazatlán, Sinaloa" [Mexico], coll. E. H. Taylor, 21.07.1934.

Present name: *Bufo kelloggi* Taylor, 1936 (see Flores-Villela 1993: 15).

***Bufo laevis* Werner, 1897**

Sitzungsber. math.-physik. Cl. k. bayer. Akad. Wiss. 27: 212

Syntypes: ZSM 148/1989/1-2 (2 juveniles), "Kamerun" (original description, label), collector unknown, no date; ZSM 1113/0 (lost), adult female, same data as ZSM 148/1989.

Remarks: Frost (2004) erroneously reports a "holotype" to be housed in "ZMH". However, it is clear from the original description that no type or holotype was designated. Therefore we regard all three specimens as syntypes. "ZMH" is most probably an error for ZSM.

Present name: *Bufo superciliaris* Boulenger, 1888 according to Andersson (1905: 26-28).

***Bufo Lazarus* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 45

Syntypes: ZSM 2513/0 (lost), 2 specimens, "Habitat in sylvis fluvii Amazonum" [Brazil, Rio Amazonas] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Present name: *Bufo marinus* (Linnaeus, 1758) fide Frost (2004).

***Bufo maculiventris* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 43

Syntypes: Uncatalogued (lost), 4 specimens, "Habitat [...] in sylvis et aquis paludosis ad ripam fluminis Solimoëns" [Brazil, Rio Solimões] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Present name: *Bufo marinus* (Linnaeus, 1758) fide Frost (2004).

***Bufo naricus* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 49

Holotype: Uncatalogued (lost), female, "Habitat ad flumen Amazonum" [Brazil, Rio Amazonas] (according to the original description and Vanzolini 1981),

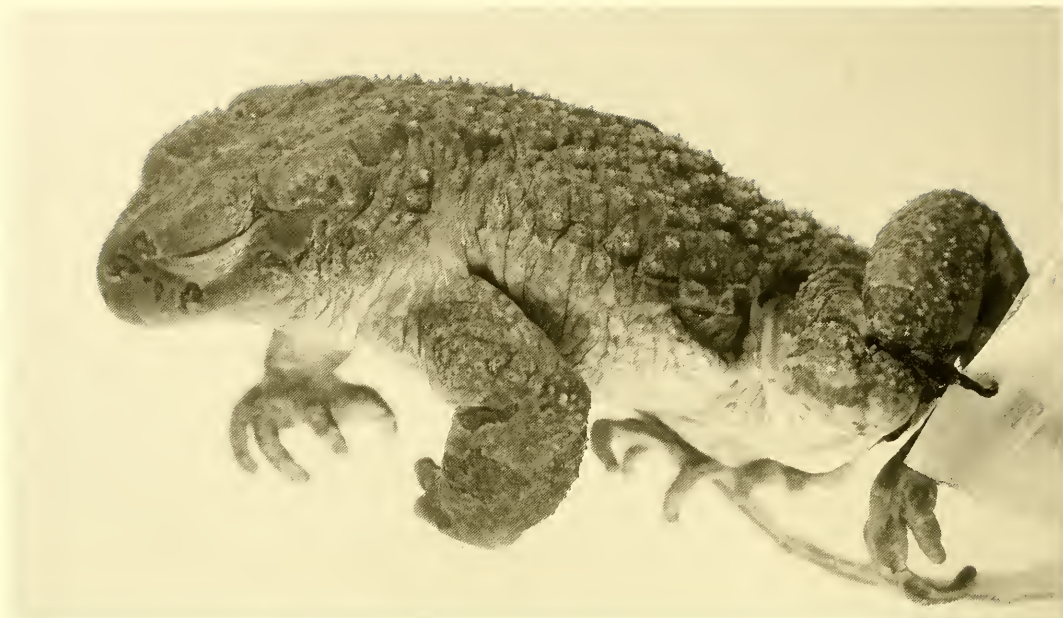


Fig. 8. *Bufo pseudoraddei baturae* Stöck, Schmid, Steinlein & Grosse, 1999, holotype (ZSM 103/1998). The Batura toad is hitherto the only known bisexual vertebrate species with populations of exclusively triploid individuals.

coll. Spix and Martius expedition to Brazil, 1817-1820.

Present name: Listed under *Bufo margaritifer* (Laurenti, 1768) by Frost (2004), but considered as a nomen dubium by Lötters & Köhler (2000).

***Bufo ornatus* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 45

Lectotype: ZSM 2691/0/1 (ZSMH 2691/0 A in Hoogmoed & Gruber 1983), subadult, "Habitat in Provincia Rio de Janeiro" [Brazil, state of Rio de Janeiro] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Paralectotype: ZSM 2691/0/2 (ZSMH 2691/0 B in Hoogmoed & Gruber 1983), subadult, same data as lectotype.

Remarks: Spix (1824) originally mentioned the existence of two syntypes. However, Hoogmoed & Gruber (1983) mention three type specimens, the lectotype and two paralectotypes (ZSMH 2691/0 and RMNH 2157). Cochran (1955) considered ZSM 2691/0 as the two syntypes of *B. ornatus*. Hoogmoed & Gruber (1983) did not provide evidence why RMNH 2157 should be considered as one of the type specimens. Frost (2004) erroneously stated that Hoogmoed & Gruber (1983) designated RMNH 2157 as lectotype.

Present name: *Bufo ornatus* Spix, 1824. Until recently considered as a synonym of *Bufo crucifer* Wied., 1821, the species was resurrected by Baldissera et al. (2004).

***Bufo polycerus* Werner, 1897**

Sitzungsber. math.-physik. Cl. k. bayer. Akad. Wiss. 27: 211

Holotype: ZSM 45/0 (lost), female, "Kamerun" (original description & card index) [Cameroon], coll. Zimmerer, no date.

Present name: Synonym of *Bufo tuberosus* (Günther, 1858) according to Parker (1936: 155).

***Bufo proboscideus* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 52

Holotype: ZSM 1145/0, male, "Habitat ad flumen Solimoens" [Brazil, Rio Solimões] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Present name: *Bufo proboscideus* Spix, 1824 was re-established by Hoogmoed (1990).

***Bufo pseudoraddei baturae* Stöck, Schmid, Steinlein & Grosse, 1999**

Ital. J. Zool. 66: 221

Holotype: ZSM 103/1998, male, "plain above the right bank of the Hunza river, near the mouth of the Batura glacier, opposite the mouth of the Shimshal river, north of the village of Pasu, 2700 m a.s.l., Karakoram, Pakistan" [original description], coll. M. Stöck & H. Veith, 06.1997.

Paratypes: ZSM 104/1998, male, ZSM 105/1998, young female, ZSM 113/1998, female, same data as holotype; ZSM 101/1998, male, ZSM 102/1998, female, "Sust, from the valley slope above the settlement on the left bank of the Hunza river, 2950 m a.s.l., Karakoram, Pakistan" (original description), coll. M. Stöck, 06.1996.

Remarks: The paratype ZSM 114/1998 (now ZFMK 74229) has been exchanged.

***Bufo semilineatus* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 51

Holotype: ZSM 1331/0, juvenile, "Habitat ad flumen Itapicuru" [Brazil, Rio Itapicuru, probably between Caxias (04°50'S, 43°21'W) and Arrarial (02°37'S, 44°41'W) according to Vanzolini 1981], coll. Spix and Martius expedition to Brazil, 1817-1820.

Present name: *Bufo crucifer* Wied, 1821 fide Frost (2004) and Baldissera et al. (2004).

***Bufo simus* Schmidt, 1857**

Sitzungsber. Akad. Wiss. Wien, math. naturwiss. Kl. 24: 10

Paralectotype: ZSM 543/1920 (lost), 1 specimen, "Chiriqui, Costarica" (card index), "Neu-Granada" (original description), no information on collector and date in the catalogue, but most probably collected by J. v. Warszewics and received from Kraukau Museum in 1898.

Remarks: The paralectotype was erroneously given as 593/20 by Savage (1972). The type locality was later restricted to "Rio Chiriqui River near Bocas del Toro" [Panama] by Schmidt (1858), but this seems to be also erroneous according to Savage (1972). Lectotype (BMNH 1947.2.21.18) designated by Savage (1972).

Present name: *Bufo simus* Schmidt, 1857 according to Savage (1972).

***Bufo Spixii* Fitzinger, 1826**

Neue Classific. Rept. natürl. Verwandtschaften: 65

Lectotype: ZSM 1343/0 (designated by Hoogmoed & Gruber 1983), male, "Habitat in Provincia Rio de

Janeiro" [Brazil, state of Rio de Janeiro] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: *Bufo Spixii* Fitzinger, 1826 is a replacement name for *Bufo scaber*. RMNH 2190 is the paralectotype.

Present name: *Bufo ornatus* Spix, 1824 according to Baldissera et al. (2004).

***Bufo stanlaii* Lötters & Köhler, 2000**

Spixiana 23 (3): 295

Paratype: ZSM 144/1999, adult, "La Hoyada (17° 54'S, 64°08'W), Provincia Florida, Departamento Santa Cruz, Bolivia, 1700 m above sea level", coll. J. Köhler & S. Lötters, 16.11.1998.

***Bufo stellatus* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 46

Holotype: Not designated although including animal figured on pl. 18, fig. 1 of the original publication (lost); presumably originally in ZSM or RMNH (Frost 2004). "Habitat in Provincia Bahiae" [Brazil, former province of Bahia, part of the present state of Bahia] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Present name: *Bufo crucifer* Wied, 1821 fide Frost (2004) and Baldissera et al. (2004).

***Bufo surdus annulatus* Schmidtler & Schmidtler, 1969**

Salamandra 5: 118

Holotype: ZSM 4/1968, subadult, "5 km nördlich Mekuh, 1400 m ü. M. (70 km südlich Schiras), auf dem nördlichen Fahrtweg zur Straße Schiras-Firuzabad" (original description), coll. J. J. & J. F. Schmidtler, 10.04.1968.

Present name: *Bufo surdus surdus* Boulenger, 1891 according to Stöck et al. (2001).

***Bufo viridis turanensis* Hemmer, Schmidtler & Böhme, 1978**

Zool. Abh. Staatl. Mus. Tierk. Dresden 34: 378

Paratypes: ZSM 34/1998 (originally MTD 11181), male; ZSM 35/1998 (originally MTD 11192), female, "Duschanbe (Stadttrand), Tadshikische SSR/UdSSR" (original description), coll. F. J. Obst, 25.-27.09. 1975.

Remarks: Holotype MTD 11195; further paratypes in MTD, ZFMK and ZIL according to the original description and Böhme & Bischoff (1984).

Present name: *Bufo viridis turanensis* (see Stöck et al. 2001).



Fig. 9. *Phrynidium crucigerum* Lichtenstein & Martens, 1856, neotype (ZSM 93/1947/10). *Atelopus cruciger* is considered as critically endangered.

***Bufo viridis zugmayeri* Eiselt & Schmidtler, 1973**

Ann. Naturhist. Mus. Wien 77: 206

Holotype: ZSM 211/1911/2 (given as ZSM 211/11-2 in the original description), female, "Pishin [...], Pakistan" (original description), coll. E. Zugmayer, 22.-26.11.1911.

Paratypes: ZSM 211/1911/1, ZSM 211/1911/3-18 (given as ZSM 211/11-1 & 211/11-3-18 in the original description), 17 adults and subadults, same data as holotype; ZSM 212/1911 (given as ZSM 212-11), 1 female, "Kelat" (original description), coll. E. Zugmayer, 22.-26.11.1911.

Remarks: Holotype erroneously mentioned to be housed in ZMH ("ZMH 211/11-2") by Frost (2004).

Present name: *Bufo (viridis) zugmayeri* (see Stöck et al. 2001) although its status is still under discussion.

***Phrynidium crucigerum* Lichtenstein & Martens, 1856**

Nomenclat. Rept. Amph. Mus. Zool. Berlin.: 41

Neotype: ZSM 93/1947/10, female, "vicinity of Rancho Grande on the road from Maracay to Ocumare de la Costa (approximately 1000 m above sea level), Estado Aragua, Venezuela" [approximately



Fig. 10. *Hyla uranoscopa* Müller, 1924, holotype (ZSM 81/1921), now *Hyalinobatrachium uranoscopum*. This is a representative of the Neotropical Centrolenidae which have a transparent ventral side.

10°22'01"N, 67°41'01"W according to Lötters et al. 2004], coll. C. Vogl, 11.11.1930.

Remarks: Proposed neotype designation of Lötters & La Marca (2001) was accepted by the ICZN (Anonymus 2002, Opinion 2013).

Present name: *Atelopus cruciger* (see Lötters et al. 2004).

Centrolenidae Taylor, 1951

***Hyla (Hylella) uranoscopa* Müller, 1924**

Zool. Anz. 59: 234

Holotype: ZSM 81/1921, male, "Humboldt (Flußgebiet des Rio Novo), Staat Santa Catharina, S. O. Brasilien" (original description) [= Corupá, Santa Catarina, Brazil according to Bokermann 1966], coll. W. Ehrhardt, 11.1919.

Present name: *Hyalinobatrachium uranoscopum* according to Ruiz-Carranza & Lynch (1991).

Dendrobatidae Cope, 1865

Epipedobates rubriventris Lötters, Debold, Henle, Glaw & Kneller, 1997

Herpetofauna 19 (110): 26

Paratype: ZSM 550/1999 (originally ZFMK 39859), 1 specimen, "El Boqueron del Padre Abad, am Rande der Carretera Central F. Basadre von Tingo María nach Pucallpa [...], ca. 1000 m NN, Departamento Ucayali, Perú, coll. K. Henle & A. Ehrl between 09. 1978 and 03.1983.

Remarks: Holotype and numerous paratypes in ZFMK.

Hyla nigerrima Spix, 1824

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 36

Paralectotype: ZSM 44/0 (lost), 1 specimen, "Habitat [...] juxta pagum Ecgá" [Brazil, near Tefé (03°21'S, 64°42'W)] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: RMNH 1799 was designated as lectotype by Hoogmoed & Gruber (1983).

Present name: *Epipedobates trivittatus* (Spix, 1824) fide Frost (2004).

Hyla trivittata Spix, 1824

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 35

Paralectotypes: ZSM 43/0, adult, "Habitat in sylvis humidis juxta flumen Teffé" [Brazil, Rio Tefé] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820; ZSM 42/0 (lost), same data as ZSM 43/0.

Remarks: RMNH 1836 was designated as lectotype by Hoogmoed & Gruber (1983). These authors also discuss the original number of involved type specimens.

Present name: *Epipedobates trivittatus* (Spix, 1824) fide Frost (2004).

Hyloxalus vergeli Hellmich, 1940

Zool. Anz. 131: 122

Holotype: ZSM 110/1937, male, "Bachlauf an der Finca El Vergel, nahe Fusagasugá, Ostkord. Kolumb., ca. 1800 m" (original description), coll. W. Hellmich, 15.04.1937.

Paratypes: ZSM 111/1937 (lost), 24 adults, 16 sub-adults and juveniles, same data as holotype, but collected 15.-18.04.1937 (catalogue).

Present name: *Colostethus vergeli* (Silverstone 1976: 6).



Fig. 11. *Hyloxalus vergeli* Hellmich, 1940, holotype (ZSM 110/1937), now *Colostethus vergeli*.

Hylidae Rafinesque, 1815

Hyla affinis Spix, 1824

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 33

Holotype: ZSM 2495/0, male, "Habitat ad ripam fluminis Amazonum" [Brazil, Rio Amazonas] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Present name: *Scinax x-signatus x-signatus* (Spix, 1824) according to Hoogmoed & Gruber (1983) and Köhler & Böhme (1996).

Hyla albomarginata Spix, 1824

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 33

Holotype: ZSM 2370/0 (lost), "Habitat in Provincia Bahiae" [Brazil, former province of Bahia, part of the present state of Bahia] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Present name: *Hypsiboas albomarginatus* (Spix, 1824) according to Faivovich et al. (2005).

***Hyla albopunctata* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 33

Holotype: Uncatalogued (lost), no locality data given in the original description, but most probably Brazil by implication, coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: Neotype (KU 100000) designated by Duellman (1971).

Present name: *Hypsiboas albopunctatus* (Spix, 1824) according to Faivovich et al. (2005).

***Hyla auraria* Peters, 1873**

Mber. Königl. Akad. Wiss. Berlin 1873 (Oktober): 615

Holotype: ZSM 1175/0, presumably female, "angeblich aus Südamerika, ohne nähere Bezeichnung des Fundortes" (original description), "Nord-Amerika" (card index), "Süd-Amerika" (label), collector and collecting date unknown.

Present name: The identity of this species is still unknown (Faivovich et al. 2005) although it is in relatively good state of preservation.

***Hyla bipunctata* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 36

Syntypes: ZSM 2497/0 (lost), 1 male, 1 female, "Habitat in Provincia Bahiae, foemina mare parum maior" [Brazil, former province of Bahia, part of the present state of Bahia] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Present name: *Dendropsophus bipunctatus* (Spix, 1824) according to Faivovich et al. (2005).

***Hyla bufonia* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 42

Holotype: Uncatalogued (lost), "Habitat prope Ecga in sylvis" [Brazil, near Tefé (03°21'S, 64°42'W)] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Present name: *Trachycephalus venulosus* (Laurenti, 1768) according to Faivovich et al. (2005).

***Hyla cinerascens* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 35

Syntypes: ZSM 2498/0 (lost), 2 specimens, "Habitat ad pagum Ecga prope flumen Tefé" [Brazil, at Tefé near Rio Tefé (approximately 03°21'S, 64°42'W)] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Present name: *Hyla cinerascens* Spix, 1824 (see Frost 2004) although Hoogmoed & Gruber (1983) suggested to suppress this name in favour of the well established name *Hyla granosa* Boulenger, 1882. However, most recently Faivovich et al. (2005) again used the name *granosus* (under the genus name *Hypsiboas*).

***Hyla coerulea* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 37

Lectotype: ZSM 2710/0/1 (ZSMH 2710/0 A in Hoogmoed & Gruber 1983), female, "Habitat sub foliis prope pagum Ecga ad flumen Solimoëns" [Brazil, near Tefé (03°21'S, 64°42'W) at Rio Solimões] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Paralectotype: ZSM 2710/0/2 (ZSMH 2710/0 B in Hoogmoed & Gruber 1983), male, same data as lectotype.

Present name: *Scinax x-signatus x-signatus* (Spix, 1824) according to Hoogmoed & Gruber (1983) and Köhler & Böhme (1996).

***Hyla delarivai* Köhler & Lötters, 2001**

Salamandra 37 (3): 176

Paratypes: ZSM 1/1999, female, ZSM 2/1999, male, "Provincia Chapare, Departamento Cochabamba, Bolivia [...], approximately 24 km south of Paracito on the road via El Palmar to Cochabamba (17°06'28"S, 65°33'52"W), 900-1000 m a.s.l." (original description), coll. J. Köhler & G. Suarez, 19.12.1998; ZSM 3/1999, male, "approximately 6.7 km south of Paracito on the road to El Palmar (17°03'54"S, 65°28'34"W), 500 m a.s.l." (original description), coll. J. Köhler & G. Suarez, 13.12.1998.

Present name: *Dendropsophus delarivai* (Köhler & Lötters, 2001) according to Faivovich et al. (2005).

***Hyla ehrhardti* Müller, 1924**

Zool. Anz. 59: 233

Holotype: ZSM 80/1921, male, "Humboldt (Flußgebiet des Rio Novo), Staat Santa Catharina, S. O. Brasilien" [= Corupá, Santa Catarina, Brazil; according to Bokermann 1966], coll. W. Ehrhardt, 09. 1919.

Remarks: Faivovich et al. (2002) provided a detailed account on *Hyla ehrhardti*.

Present name: *Aplastodiscus ehrhardti* (Müller, 1924) according to Faivovich et al. (2005).



Fig. 12. *Hyla ehrhardti* Müller, 1924, holotype (ZSM 80/1921), now *Aplastodiscus ehrhardti*.

***Hyla geographica* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 39

Holotype: ZSM 35/0 (lost), "Habitat in sylvis prope flumen Teffé" [Brazil, Rio Tefé] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Present name: *Hypsiboas geographicus* (Spix, 1824) according to Faivovich et al. (2005).

***Hyla geographica* var. *sive semilineata* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 40

Holotype: ZSM 47/0 (lost), "Habitat in arboribus Provinciae Rio de Janeiro" [Brazil, state of Rio de Janeiro] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Present name: *Hypsiboas semilineatus* (Spix, 1824) according to Faivovich et al. (2005).

***Hyla lateristriga* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 32

Holotype: ZSM 48/2005, no locality data given in the original description, but most probably Brazil by implication, coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: Holotype reported to be lost by Müller (1927: 267) and Hoogmoed & Gruber (1983). We found the uncatalogued specimen with a label handwritten by Hellmich "Hyla rubra Daud. – lateristriga Spix, Brasilien Spix" indicating that Spix was its collector. The specimen is in poor condition.

Present name: *Scinax ruber* (Laurenti, 1768) according to Hoogmoed & Gruber (1983) and Köhler & Böhme (1996).

***Hyla lindneri* Müller & Hellmich, 1936**

Wiss. Ergebn. Deutsch. Gran Chaco-Exped., Amph. Rept., 1: 63



Fig. 13. *Hyla lateristriga* Spix, 1824, rediscovered holotype (ZSM 48/2005).

Holotype: ZSM 169/1929a (lost), adult female (snout-vent length 19 mm), "Junca viejo, Gob. Formosa" [Argentina], according to the original description, coll. Deutsche Chaco-Expedition, 01.1926.

Paratype: ZSM 169/1929b (lost), female (snout-vent length 16 mm), same data as holotype.

Present name: *Scinax squalirostris* (Lutz, 1925) according to Cei (1980: 556) and Duellman & Wiens (1992).

Hyla nebulosa Spix, 1824

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 39

Syntypes: ZSM 2531/0 (lost), 2 specimens, "Habitat in sylvis prope flumen Tefé" [Brazil, Rio Tefé] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: Neotype (4055 of Museu Nacional, Rio de Janeiro, also holotype of *Hyla egleri* Lutz, 1968) designated by Hoogmoed & Gruber (1983).

Present name: *Scinax nebulosus* (Spix, 1824) according to Hoogmoed & Gruber (1983) and Köhler & Böhme (1996).

Hyla papillaris Spix, 1824

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 34

Holotype: Uncatalogued (lost), "Habitat sub foliis in sylvis prope Ecgam ad flumen Solimoens" [Brazil, near Tefé (03°21'S, 64°42'W) at Rio Solimões] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: The number of type specimens is not indicated in the original description, therefore most probably based on one specimen (holotype) according to Hoogmoed & Gruber (1983: 322). Frost (2004) erroneously listed ZSM 2496/0 as syntypes of *Hyla papillaris*. These specimens, however, actually are the syntypes of *Hyla variolosa* (see below).

Present name: Synonymy with *Hyla punctata* Schneider, 1799 (currently named *Hypsiboas punctatus*: Faivovich et al. 2005) is uncertain (Hoogmoed & Gruber 1983).

***Hyla pardalis* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 34

Lectotype: ZSM 2499/0 (lost, 50 mm snout-vent length according to Peters 1872), “Habitat in Provincia Rio de Janeiro” [Brazil, state of Rio de Janeiro] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Paralectotype: ZSM 2499/0 (lost, 60 mm snout-vent length according to Peters 1872), same data as holotype.

Remarks: According to Peters (1872) the two former syntypes included two species. This led to a lectotype designation by implication (see Hoogmoed & Gruber 1983, and Frost 2004). The paralectotype is probably a *Hypsiboas circumdatus* (Hoogmoed & Gruber 1983).
Present name: *Hypsiboas pardalis* (Spix, 1824) according to Faivovich et al. (2005).

***Hyla raddiana andina* Müller, 1924**

Mitt. Zool. Mus. Berlin 11: 77

Holotype: ZSM 5/1922 (lost), adult male, “Caspinchango, Valle Calchaqui (Prov. Catamarca), Argentinien” (original description), coll. Weiser, 1922.

Paratypes: ZSM 18/1922/1-3, 3 adults, “Nacimien-to (Catamarca), Argentinien”, coll. Weiser, 11.1921; ZSM 21/1922 (lost), 1 specimen, “Caspinchango (Catamarca), Argentinien”, coll. Weiser, 03.1921; ZSM 22/1922 (lost), 7 specimens, “Famabalasto (Catamarca), Argentinien”, coll. Weiser, 03.1922; ZSM 23/1922 (lost), 3 specimens, “Caspinchango (Catamarca), Argentinien”, coll. Weiser, 03.1921.

Remarks: The catalogue, the card index and the jar label of the only remaining series (ZSM 18/1922) list the above mentioned paratypes as “Cotyten”. However, they were not mentioned in the original description. All specimens have the same collector, similar collection dates (1921-1922), and were collected in the same general area (Catamarca region). The registration dates and the catalogue entries (presumably handwritten by Müller) indicate that Müller obviously had these specimens at hand when describing the new taxon. We therefore consider them as paratypes.

Present name: *Hypsiboas andinus* according to Duellman et al. (1997: 19) and Faivovich et al. (2005).

***Hyla rosenbergi* Boulenger, 1898**

Proc. Zool. Soc., London 1898: 123

Syntype: ZSM 1183/0 (lost), adult, “Cacha, N.-W. Ecuador, Coio-Country” (catalogue), coll. W. F. H. Rosenberg, 1896-1897.

Remarks: The type locality is given as Cachabé,

Provincia Esmeraldas, Ecuador, in the original description.

Present name: *Hypsiboas rosenbergi* according to Faivovich et al. (2005).

***Hyla rueppelli* Boettger, 1895**

Zool. Anz. 18: 137

Paralectotypes: ZSM 45/1913 (originally SMF 1389, 3a), 1 adult, “Nord-Halmahaira” [Indonesia, northern Halmahera], coll. Kükenthal, 1895; ZSM 22/1907 (lost, originally from SMF, number unknown), 1 specimen, “Halmahera”, collection data unknown.

Remarks: Lectotype designation (SMF 2614) by Mertens (1967).

Present name: *Nyctimystes rueppelli* (Boettger, 1895) according to Zweifel (1958).

***Hyla stercoracea* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 38

Holotype: Probably ZSM 1044/0 (lost), “Habitat in sylvis fluminis Teffé” [Brazil, Rio Tefé] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Present name: *Incertae sedis*, possibly a species of *Hyla* sensu lato (Hoogmoed & Gruber 1983).

***Hyla strigilata* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 38

Holotype: ZSM 2369/0 (lost), “Habitat in Provincia Bahiae” [Brazil, former province of Bahia, part of the present state of Bahia] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: For discussion of the type material see Hoogmoed & Gruber (1983: 369).

Present name: *Scinax strigilatus* (Spix, 1824) according to Hoogmoed & Gruber (1983) and Köhler & Böhme (1996).

***Hyla trachythorax* Müller & Hellmich, 1936**

Wiss. Ergebn. Deutsch. Gran Chaco-Exped., Amph. Rept. 1: 77

Syntypes: ZSM 156/1933 (lost), 1 male, 1 female, “Apa-Bergland (San Luis)” [Paraguay], coll. III. Chaco-Expedition, 16.09.-05.11.1931; ZSM 152/1933 (lost, 2 specimens), ZSM 153/1933 (missing, absent from loan since 1972, 7 specimens), “Apa-Bergland, Centurión (San Luis)” [Paraguay], coll. III. Chaco-Expedition, 16.09.-05.11.1931.

Remarks: Frost (2004) listed only ZSM 156/1933 (2 specimens) as syntypes. In contrast, we regard all specimens listed in the table on page 77 of the



Fig. 14. *Hyla vogli* Müller, 1938, holotype (ZSM 671/1937), now *Gastrotheca ovifera*. This is another endangered species that was recently transferred from the family Hyliidae to the Leptodactylidae.

original description under "Typen" as syntypes.

In the caption of fig. 27 of Müller & Hellmich (1936) ZSM 154/1933 is indicated as "Typus". This is obviously a lapsus for 156/1933 as the number 154/1933 is not listed for *Hyla trachythorax* in the catalogue. Instead ZSM 156/1933 is indicated as type in the text on page 78 and also in the catalogue.

Present name: *Scinax fuscovarius* (Lutz, 1925) according to Faivovich et al. (2005), although Fouquette & Delahoussaye (1977) and Duellman & Wiens (1992) considered the species as valid.

Hyla variabilis Boulenger, 1896

Ann. Mag. Nat. Hist., Ser. 6, 17: 20

Syntypes: ZSM 1182/0/1-3 (originally ZSM 1182/0), 3 adults, "Cali (Columbien), 3200 Fuß" (label), coll. W. E. H. Rosenberg, 1894.

Remarks: Synonym of *Hyla columbiana* Boettger, 1892 according to Duellman & Trueb (1983).

Present name: *Dendropsophus columbianus* (Boulenger, 1896) according to Faivovich et al. (2005).

Hyla variolosa Spix, 1824

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 37

Paralectotype: ZSM 2496/0 (lost), "Habitat in sylvis fluminis Amazonum" [Brazil, Rio Amazonas] (ac-

cording to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: Hoogmoed & Gruber (1983) designated RMNH 1879 as lectotype. Duellman (1977: 90) erroneously mentioned ZSM 2495/0 (sic) as holotype (sic) of *Hyla variolosa* (see also Frost 2004).

Present name: *Hypsiboas punctatus* (Schneider, 1799) according to Frost (2004) and Faivovich et al. (2005).

Hyla wilsoniana krausi Hellmich, 1940

Zool. Anz. 129: 8-12

Holotype: ZSM 102/1937, adult male, "Laguna de Guitarra (Paramo de Sumapaz), 3460 m" [Colombia], coll. W. Hellmich, 10.03.1937.

Paratypes: ZSM 103/1937 (lost), 7 males, 1 female, 1 subadult, same data as holotype but collected by W. Hellmich & E. Kraus.

Present name: *Dendropsophus labialis* (Peters, 1863) according to Frost (2004) and Faivovich et al. (2005).

Hyla labialis krausi according to Cochran & Goin (1970: 254-256, including a drawing of the holotype), but the subspecific distinctness was rejected by Duellman (1989).

Hyla vogli Müller, 1938

Zool. Anz. 121: 284

Holotype: ZSM 67/1937, male, "Avila (Hazienda 'Los Venados'))" [Venezuela], coll. C. Vogl, 1937.

Paratype: ZSM 68/1937 (lost), female, same data as holotype.

Remarks: Frost (2004) mentions the incorrect number "ZSM 67/38" as holotype.

Present name: *Gastrotheca ovifera* (Lichtenstein & Weinland, 1854) according to Rivero (1961: 143).

Hyla x-signata Spix, 1824

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 40

Holotype: ZSM 2494/0 (lost), "Habitat in Provinciae Bahiae" [Brazil, former province of Bahia, part of the present state of Bahia] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Present name: *Scinax x-signatus x-signatus* (Spix, 1824) according to Hoogmoed & Gruber (1983) and Köhler & Böhme 1996).

Hyla zonata Spix, 1824

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 41

Holotype: ZSM 48/0 (lost), "Habitat in arboribus ad flumen Teffé" [Brazil, Rio Tefé] (ac-

cording to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: Placed on the Official List of Rejected and Invalid Specific Names in Zoology (Frost 2004). In the original description (Spix 1824, pl. 12, fig. 1) the species is figured under the name *Hyla zonalis*.

Present name: *Trachycephalus venulosus* (Laurenti, 1768) according to Faivovich et al. (2005).

Hyperoliidae Laurent, 1943

Acanthixalus sonjae Rödel, Kosuch, Veith & Ernst, 2003

J. Herpetol. 37 (1): 44

Paratype: ZSM 980/2001, young female, "SRET station, transect X, large water-filled tree stump, secondary forest, 5°50'N, 7°20'W, Tai National Park, Ivory Coast", coll. R. Ernst & M.-O. Rödel, 16.09.2000.

Heterixalus andrakata Glaw & Vences, 1991

Acta Biol. Benrodis 3(2): 198

Paratype: ZSM 551/1999 (originally ZFMK 52560), female, "Sambava-Flughafen", Madagascar, coll. F. Glaw & M. Vences, 25.03.1991.

Remarks: Holotype and 3 paratypes in ZFMK.

Heterixalus punctatus Glaw & Vences, 1994

Fieldguide Amph. Rept. Madagascar, 2nd ed.: 78

Paratype: ZSM 552/1999 (originally ZFMK 57414), male, "Andasibe", Madagascar, coll. F. Glaw & M. Vences, 01.01.-04.01.1994.

Remarks: Holotype and 1 paratype in ZFMK.

Kassina schioetzi Rödel, Grafe, Rudolf & Ernst, 2002

Copeia 2002(3): 801

Paratype: ZSM 353/2001, from "Comoé National Park, Aussichtsbergtümpel 1, 8°45'N, 3°49'W, Ivory Coast", coll. T. U. Grafe, March-April 1997.

Leptodactylidae Werner, 1896

Borborocoetes kriegi Müller, 1926

Zool. Anz. 65: 195

Holotype: ZSM 141/1925 (lost), male, "Valdivia, Chile", coll. H. Krieg, 05.1924.

Present name: *Alsodes nodosus* (Duméril & Bibron, 1841), see Cei (1980: 294-298).

Bufo albifrons Spix, 1824

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 48

Paralectotypes: ZSM 49/0 (lost, 1 specimen) and ZSM 50/0 (lost, 1 specimen), "Habitat in Provincia Bahiae" [Brazil, former province of Bahia, part of the present state of Bahia] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: The only remaining syntype (RMNH 2272) was designated as lectotype by Hoogmoed (1986).

Present name: *Physalaemus albifrons* (Spix, 1824).

Craspedoglossa Santae-Catharinae Müller, 1922

Bl. Aquar.-Terrarienkunde 33: 168

Syntypes: ZSM 658/1920 (lost, 10 specimens), ZSM 662/1920 (lost, 1 specimen), "Humboldt, Staat Santa Catharina, Brasil" (card index), "Flußgebiet des Rio novo, Sta Catharina, Brasilien" (original description) [Corupá, Santa Catarina state, Brazil], coll. W. Ehrhardt, 11.-12.1917.

Present name: Synonym of *Cycloramphus bolitoglossus* (Werner, 1897) according to Bokermann (1966: 16) and Heyer (1983: 287).

Crossodactylus aeneus Müller, 1924

Senckenbergiana 6: 171

Holotype: ZSM 2/1924 (lost), male, "Barreira (Wasserstation an der Bahn nach Therezopolis in 500 m Höhe am Südosthang der Serra dos Orgaes), Staat Rio de Janeiro" [Brazil], coll. E. Bresslau, 14.03.1914.

Remarks: According to Müller (1924c: 177) paratypes are present in SMF.

Crossodactylus bresslaui Müller, 1924

Senckenbergiana 6: 169

Holotype: ZSM 1/1924 (lost), male, "Gorduras (Fazenda in der Serra do Curral, s. w. von Villa Nova da Lima [Morro Velho]), Staat Minas Geraes" [Brasil], coll. E. Bresslau, 04.10.1913.

Paratypes (?): ZSM 31/1947/1-6 (originally 9 specimens, two of them exchanged with BMNH, one apparently lost), same locality, date and collector as holotype.

Remarks: According to Müller (1924c: 177) additional paratypes are present in SMF. The paratype status of ZSM 31/1947/1-6 is uncertain. The specimens were not explicitly mentioned in the original description, and their type status is neither indicated in the catalogue nor on the jar label. Müller (1927: 273) mentioned the existence of 10 specimens



Fig. 15. *Hemiphractus fasciatus* Peters, 1862, holotype (ZSM 36/0). Until 2005 the hemiphractine frogs were considered as belonging to the family Hyliidae, but were now found to be more closely related to the Leptodactylidae.

(one of them being the type), all from the same locality, collected by Bresslau, 04.10.1913 with the provisional number 66. Since ZSM 31/1947 also has a provisional jar label with the number 66 this series is identical with that mentioned by Müller (1927).

Present name: According to Frost (2004) a synonym of *Crossodactylus trachystomus* (Reinhardt & Lütken, 1862).

Elosia aspera Müller, 1924

Senckenbergiana 6: 173

Holotype: ZSM 3/1924 (lost), male, "Barreira (am Südosthange der Serra dos Orgaes in 500 m Meereshöhe), Staat Rio de Janeiro" [Brazil], coll. E. Bresslau, 11.03.1914.

Remarks: According to Müller (1924c: 177) additional paratypes are present in SMF.

Present name: *Hylodes asper* (Müller, 1924) fide Frost (2004).

Elosia lateristrigata Baumann, 1912

Zool. Jahrb., Abt. Syst., Jena 33: 89

Syntype: ZSM 24/1923 (lost), 1 specimen, "Orgel-Gebirge, [in] der Umgebung von Parà" (original description), "Sierra dos Orgaes (St. Rio de Janeiro), S. O. Brasilien" (catalogue), coll. E. A. Goeldi, no date, received in 1923 from Bern Museum (NMBE).

Remarks: The specimen has been examined by Cochran (1955: 287). Güntert et al. (1993: 155) mention 7 syntypes in NMBE.

Present name: *Hylodes lateristrigatus* (Baumann, 1912) fide Frost (2004).

Eupemphix paraensis Müller, 1923

Zool. Anz. 57: 38 [in the journal] respectively 39 [in the reprint]

Holotype: ZSM 139/1911 (lost), female, "Peixeboi (an der Bragançabahn), Staat Parà, Nord-Brasilien", coll. L. Müller, 05.1910.

Present name: *Physalaemus petersi* (Jiménez de la Espada, 1872) according to Lynch (1970).

Hemiphractus fasciatus Peters, 1862

Monatsber. Preuss. Akad. Wiss. Berlin 1862: 149

Holotype: ZSM 36/0, adult, "Pastassa-Thal an der Ostseite der Anden in Ecuador" [Ecuador, Pastaza valley] (according to the original description), coll. M. Wagner, no date.

Remarks: Type locality erroneous according to Trueb (1974). Very recently, *Hemiphractus* was removed from the family Hyliidae and included in the family Leptodactylidae by Faivovich et al. (2005).

Hemiphractus Spixii Wagler, 1828

Isis (Oken) 21: 744

Holotype: ZSM 37/0 (lost), "Habitat in sylvis fluvii Solimoëns" [Brazil, Rio Solimões] (according to Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: Also holotype of *Rana scutata* Spix, 1824. Very recently, *Hemiphractus* was removed from the family Hyliidae and included in the family Leptodactylidae by Faivovich et al. (2005).

Present name: *Hemiphractus scutatus* (Spix, 1824) according to Wagler (1830: 205) and Trueb (1974).



Fig. 16. *Leptodactylus dominicensis* Müller, 1923 (now *Leptodactylus fallax* Müller, 1926), holotype (ZSM 258/1909). This is a very large frog, endemic to a few Caribbean islands. The species is critically endangered, since it is consumed by humans, suffers from habitat destruction and the outbreak of the fungal disease chytridiomycosis.

Hyla abbreviata Spix, 1824

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 41

Type(s): Status unclear, perhaps holotype, uncatalogued (lost), "Habitat in sylvis fluminis Amazonum" [Brazil, Rio Amazonas; probably erroneous] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Present name: *Eleutherodactylus binotatus* (Spix, 1824) fide Frost (2004).

Hyla ranoides Spix, 1824

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 32

Syntypes: ZSM 1043/0 (lost), 3 specimens, "Habitat in Provincia Bahiae" [Brazil, former province of Bahia, part of the present state of Bahia] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Present name: This taxon is a composite. Two specimens refer to *Hylodes nasus* (Lichtenstein, 1823) and one specimen [pl. 6, fig. 3] of the original description is probably an *Eleutherodactylus* or *Thoropa miliaris* (fide Hoogmoed & Gruber 1983).

Leptodactylus andreae Müller, 1923

Zool. Anz. 57: 40 [in the journal] respectively 41 [in the reprint]

Holotype: ZSM 136/1911 (lost), male, "Peixeboi (a.d. Bragançabahn), Staat Parà, Brasilien", coll. L. Müller, 05.1910.

Neotype: ZSM 145/1911/4, juvenile female, "Peixeboi (a.d. Bragançabahn), Staat Parà, Brasilien" (label), coll. L. Müller, 05.1910.

Paratypes: ZSM 146/1911 (lost), 2 females, "Utinga b. Bélem (Parà), Brasil." (catalogue), coll. L. Müller. 25.12.1909; ZSM 145/1911/1-3, 3 specimens, "Peixeboi (a.d. Bragançabahn), Staat Parà, Brasilien" (label), coll. L. Müller, 05.1910.

Remarks: Heyer (1973: 27-28) designated ZSM 145/1911/4 as a lectotype which however actually appears to be a neotype designation since the original description is based on a type and cotypes ("Typusexemplar" and "Cotypen"). Heyer (1973) himself stated that the holotype was lost.

Present name: *Adenomera andreae* according to Heyer (1974: 42, see also Angulo et al. 2003 for comments).

***Leptodactylus dominicensis* Müller, 1923**

Zool. Anz. 57: 49 [in the journal], respectively 43 [in the reprint]

Holotype: ZSM 258/1909, female, "Dominica", coll. Othmer, 1903.

Paratype: ZSM 259/1909, female, same data as holotype.

Remarks: A redescription of the types, the taxonomic history and information on the reproductive mode are provided by Lescure (1979).

Present name: *Leptodactylus fallax* Müller, 1926, which is a replacement name for *Leptodactylus dominicensis*.

***Leptodactylus fallax* Müller, 1926**

see *Leptodactylus dominicensis* Müller, 1923

***Leptodactylus nanus* Müller, 1922**

Bl. Aquar.-Terrarienkunde 33: 168

Lectotype: ZSM 661/1920/3, female, "Colonie Hansa, Flußgebiet des Itapocufusses, Brasilien" (label), coll. W. Ehrhardt, 1919.

Paralectotypes: ZSM 661/1920/1-2, 2 specimens, same data as lectotype; ZSM 659/1920 (lost), 1 specimen, "Humboldt, Flußgebiet des Rio novo, Brasilien" (card index, original description), coll. W. Ehrhardt, 1919; ZSM 660/1920 (lost), 3 specimens, same data as ZSM 659/1920.

Remarks: Lectotype designated by Heyer (1973: 27). The number of syntypes and their corresponding numbers is not given in the original description. We here follow Heyer (1973) who considered the three specimens ZSM 661/1920 as types. According to the catalogue ZSM 659/1920 (1 specimen) was considered as holotype ("Typus"). ZSM 660/1920 (4 specimens) and ZSM 661/1920 (3 specimens) were considered as paratypes ("Cotypen"). One of the four "cotypes" under ZSM 660/1920 was exchanged with the British Museum in 1930.

According to the original description, all specimens came from the general region of the Rio Novo ("Flußgebiet des Rio novo, Sta Catharina, Brasilien"). According to the catalogue ZSM 659/1920 and 660/1920 are from another locality than ZSM 661/1920 (see above). However, according to Bokermann (1966) both names ("Humboldt" and "Hansa") refer to the same locality (today named Corupá, at the confluent of the Rio Novo and Japucu).

Present name: *Adenomera marmorata* (Steindachner, 1867) according to Heyer (1974: 43).

***Paludicola bresslaui* Müller, 1924**

Senckenbergiana 6: 175

Holotype: ZSM 4/1924 (lost), female, "Therezopolis (in der Serra dos Orgaes), Staat Rio de Janeiro" [Brazil], coll. E. Bresslau, 04.1924.

Present name: *Physalaemus signifer* (Girard, 1853) according to Cochran (1955: 354).

***Paludicola fernandezae* Müller, 1926**

Zool. Anz. 65: 193

Holotype: ZSM 137/1925 (lost), male, "Christiano muerto (zwischen Neochaea und Bahia Blanca), Prov. Buenos Aires, Argentinien", coll. Merkle, 07.1921.

Remarks: Additional eight specimens are listed in the catalogue as paratypes under the number ZSM 222/1925. However, they are not mentioned in the original description and are all lost.

Present name: *Physalaemus fernandezae* (Müller, 1926) according to Cei (1980: 406-409).

***Paludicola kriegi* Müller, 1926**

Zool. Anz. 65: 194

Holotype: ZSM 138/1925 (lost), female, "Fuß der Sierra Grande von Cordoba, Provinz Cordoba, Argentinien", coll. H. Krieg, 1924.

Present name: *Pleurodema kriegi* (Müller, 1926) according to Cei (1980: 374-376).

***Phyllobates chalceus* Peters, 1873**

Mber. Königl. Akad. Wiss. Berlin, 1873 (Oktober): 609

Syntypes: ZSM 1045/0 (lost), 2 specimens, "Pastasathal" [Pastaza valley, Ecuador], coll. M. Wagner, no date.

Remarks: In the original description three (type) specimens are mentioned, but only two listed in the ZSM catalogue. The third specimen is apparently ZMB 7814 according to Bauer et al. (1995: 46).

Present name: *Eleutherodactylus chalceus* (Peters, 1873), see account in Lynch & Duellman (1997: 79-81).

***Plectromantis Wagneri* Peters, 1862**

Monatsber. Königl. Akad. Wiss. Berlin, 1862 (April): 232

Holotype: ZSM 1080/0 (lost), adult, "an der Westseite der Anden in Ecuador" (original description), "Pastassathal" [Pastaza, Ecuador] (catalogue), coll. M. Wagner, no date.

Remarks: Neotype designation (NHRM unnumbered, holotype of *Eleutherodactylus leptodactyloides*)



Fig. 17. *Rana megastoma* Spix, 1824, lectotype (ZSM 1056/0), a synonym of *Ceratophrys cornuta*.

by Heyer (1970: 19) considered to be invalid by Heyer (1994: 78).

Present name: *Leptodactylus wagneri* (Peters, 1862) according to Heyer (1970, 1994).

***Rana binotata* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 31

Holotype: ZSM 2695/0, female, no locality data given in the original description, but Brazil by implication, coll. Spix and Martius expedition to Brazil, 1817-1820.

Present name: *Eleutherodactylus binotatus* (Spix, 1824) fide Hoogmoed & Gruber (1983).

***Rana coriacea* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 29

Holotype: ZSM 2502/0 (lost), male, "Habitat in aquis lacustribus fluvii Amazonum" [Brazil, Rio Amazonas] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Present name: *Leptodactylus pentadactylus* (Laurenti, 1768) fide Hoogmoed & Gruber (1983).

***Rana gigas* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 25

Holotype: ZSM 89/1921 (lost), female, "Habitat in locis paludosis fluminis Amazonum" [Brazil, Rio Amazonas] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Present name: *Leptodactylus pentadactylus* (Laurenti, 1768) fide Hoogmoed & Gruber (1983).

***Rana labyrinthica* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 31

Holotype: ZSM 2501/0 (lost), "Habitat in Provincia Rio de Janeiro" [Brazil, state of Rio de Janeiro] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: Bokermann (1966: 89) considered the type

locality to be in error and instead suggested that it was more probably “Paraíba, já próximo da divisa com São Paulo”, Brazil (see also Frost 2004).

Present name: *Leptodactylus labyrinthicus* (Spix, 1824) fide Hoogmoed & Gruber (1983).

Rana megastoma Spix, 1824

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 27

Lectotype: ZSM 1056/0, female, “Habitat [...] in Brasiliae sylvis sub arboribus cavis. Specimen depictum juxta flumen Solimoens prope pagum Avalêns repertum est” [Brazil, at Rio Solimões near Amaturá (03°29'S, 68°06'W)] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Paralectotype: Uncatalogued, same data as lectotype, presumably lost between 1872 and the early 20th century (Hoogmoed & Gruber 1983).

Remarks: Peters (1872) identified the two former syntypes as *Ceratophrys cornuta* and *C. dorsata* (see Hoogmoed & Gruber 1983).

Present name: *Ceratophrys cornuta* (Linnaeus, 1758) according to Peters (1872) and Hoogmoed & Gruber (1983).

Rana miliaris Spix, 1824

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 30

Holotype: ZSM 2493/0 (lost), “Habitat ad ripam fluminis Amazonum” [Brazil, Rio Amazonas; erroneous, see Hoogmoed & Gruber 1983] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: Bokermann (1966: 89) and Hoogmoed & Gruber (1983) considered the type locality to be in error.

Present name: *Thoropa miliaris* (Spix, 1824) fide Hoogmoed & Gruber (1983).

Rana mystacea Spix, 1824

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 27

Lectotype: ZSM 2504/0 (lost), male, “prope flumen Solimoens” [Brazil, Rio Solimões] (according to the catalogue, see also Hoogmoed & Gruber 1983), coll. Spix and Martius expedition to Brazil, 1817-1820.

Paralectotype: ZSM 2505/0 (lost), female, “Bahia” [Brazil, city of Salvador (13°00'S, 38°30'W)] (according to the catalogue, see also Hoogmoed & Gruber 1983), coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: The paralectotype belongs to *Leptodactylus spixi* Heyer, 1983.

Present name: *Leptodactylus mystaceus* (Spix, 1824) fide Hoogmoed & Gruber (1983).

Rana pachypus Spix, 1824

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 26

Lectotype: ZSM 122/0/1 (ZSMH 122/0 A in Hoogmoed & Gruber 1983), male, “Habitat in locis humidis Provinciae Rio de Janeiro” [Brazil, state of Rio de Janeiro] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Paralectotype: ZSM 122/0/2 (ZSMH 122/0 B in Hoogmoed & Gruber 1983), female, same data as lectotype; ZSM 117/0 (lost), same data as lectotype.

Remarks: In the original description (Spix 1824, pl. 3, fig. 2) the species is figured under the name *Rana pagypus*. Of the ten specimens mentioned in the original description, only two, a male and a female are still extant (Hoogmoed & Gruber 1983). Frost (2004) erroneously mentioned ZMH 122/0-A as lectotype.

Present name: *Leptodactylus ocellatus* (Linnaeus, 1758) fide Hoogmoed & Gruber (1983).

Rana pachypus Variet. 1 Spix, 1824

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 26

Holotype: ZSM 2503/0 (lost), juvenile, “Habitat in locis humidis Bahiae” [Brazil, city of Salvador (13°00'S, 38°30'W)] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: The nomenclatural availability of this taxon appears to be questionable. It could be considered as a homonym of *Rana pachypus*.

Present name: *Leptodactylus ocellatus* (Linnaeus, 1758) fide Hoogmoed & Gruber (1983).

Rana pachypus Variet. 2 Spix, 1824

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 26

Holotype: Uncatalogued (lost), “Habitat in locis aquosis Parae” [Brazil, probably Belém (01°26'S, 48°29'W)] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: The nomenclatural availability of this taxon appears to be questionable. It could be considered as a homonym of *Rana pachypus*.

Present name: *Leptodactylus fuscus* (Schneider, 1799) according to Peters (1872) and Hoogmoed & Gruber (1983).

Rana pygmaea Spix, 1824

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 30

Holotype (?): Uncatalogued (lost), juvenile, “Habitat in Provincia Bahiae” [Brazil, former province of

Bahia, part of the present state of Bahia] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.
Present name: *Leptodactylus ocellatus* (Linnaeus, 1758) fide Hoogmoed & Gruber (1983).

***Rana scutata* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 28

Holotype: ZSM 37/0 (lost), "Habitat in sylvis fluvii Solimoëns" [Brazil, Rio Solimões] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: Also holotype of *Hemiphractus spixii* Wagler, 1828. Very recently, *Hemiphractus* was removed from the family Hylidae and included in the family Leptodactylidae by Faivovich et al. (2005).

Present name: *Hemiphractus scutatus* (Spix, 1824) according to Wagler (1830: 205) and Trueb (1974).

Mantellidae Laurent, 1946

***Aglyptodactylus laticeps* Glaw, Vences & Böhme, 1998**

J. Zool. Syst. Evol. Res. 36: 18

Paratype: ZSM 581/1999 (originally ZFMK 59971), adult male, "Kirindy forest (20°03'S, 44°39'E; at less than 100 m above sea level), western Madagascar", coll. F. Glaw, 21.01.1995.

Remarks: Holotype and 7 paratypes in ZFMK.

***Aglyptodactylus securifer* Glaw, Vences & Böhme, 1998**

J. Zool. Syst. Evol. Res. 36: 27

Paratype: ZSM 46/2005 (originally ZFMK 59976), adult (cleared and stained), "Kirindy forest (20°03'S, 44°39'E; at less than 100 m above sea level), about 60 km north of Morondava, western Madagascar", coll. F. Glaw, N. Rabibisoa & O. Ramilison, 06.01.1995.

Remarks: Holotype in ZFMK.

***Boophis albilabris occidentalis* Glaw & Vences, 1994**

Fieldguide Amph. Rept. Madagascar, 2nd ed.: 90

Paratype: ZSM 559/1999 (originally ZFMK 57384), subadult male (?), "Isalo National Park (Namazaha valley, forest ca. 4 km W of Ranohira, western central Madagascar)", coll. F. Glaw & M. Vences, 29.01.1994.

Remarks: Holotype in ZFMK.

Present name: *Boophis occidentalis* Glaw & Vences, 1994 according to Andreone et al. (2002).

***Boophis albipunctatus sibilans* Glaw & Thiesmeier, 1993**

Salamandra 28(3/4): 264

Paratype: ZSM 560/1999 (originally ZFMK 53619), subadult (?), "Andasibe" [Madagascar], coll. F. Glaw, 11.01.1992.

Remarks: Holotype in ZFMK.

Present name: *Boophis sibilans* Glaw & Thiesmeier, 1993 according to Glaw & Vences (1994).

***Boophis andreonei* Glaw & Vences, 1994**

Fieldguide Amph. Rept. Madagascar, 2nd ed.: 96

Paratype: ZSM 561/1999 (originally ZFMK 57392), male, "Benavony (near Ambanja, NW-Madagascar)", coll. F. Glaw, N. Rabibisoa & O. Ramilison, 08.03.1994.

Remarks: Holotype and one paratype in ZFMK.

***Boophis axelmeyeri* Vences, Andreone & Vietes, 2005**

Trop. Zool. 18: 239

Holotype: ZSM 627/2001, adult male, "Manarikoba forest, Camp I (Antsahamanara), Tsaratanana Mas-sif, Marovato Fivondronana, Antsiranana Faritany (Diégo Suarez Province), northwestern Madagascar, 14°02'42"S, 48°47'04"E, ca 1000 m above sea level", coll. F. Andreone, F. Mattioli, J. Randrianirina & M. Vences, 03.02.2001.

Paratypes: Six adult males. ZSM 626/2001, same collection data as holotype; ZSM 628-631/2001, same collecting data as holotype except later collecting date (04-09.02.2001); ZSM 837/2003, "Manongarivo Special Reserve, northwestern Madagascar, 13°58'32"S, 48°25'36"E, 688 m", coll. F. Glaw, R.-D. Randrianiaina & M. Vences on 02.02.2003.

Remarks: Nine further paratypes in MRSN.

***Boophis blommersae* Glaw & Vences, 1994**

Fieldguide Amph. Rept. Madagascar, 2nd ed.: 103

Paratype: ZSM 562/1999 (originally ZFMK 57400), male, "Montagne d'Ambre National Park, N-Madagascar", coll. F. Glaw, N. Rabibisoa & O. Ramilison, 14.-17.03.1994.

Remarks: Holotype and one paratype in ZFMK.

***Boophis boehmei* Glaw & Vences, 1992**

Fieldguide Amph. Rept. Madagascar: 273

Paratype: ZSM 563/1999 (originally ZFMK 53643), male, "Andasibe" [Madagascar], coll. F. Glaw & J. Müller, 11.01.1992.

Remarks: Holotype and three paratypes in ZFMK.

***Boophis bottae* Vences & Glaw, 2002**

Trop. Zool. 15: 150

Holotype: ZSM 678/2001, adult male, "close to Andasibe (at a bridge on the road between National Road 2 and the Andasibe village), central-eastern Madagascar, 18°56'S, 48°25'E, ca. 900 m elevation", coll. M. Vences & D. Vieites, 16.02.2001.

Paratype: ZSM 344/2000, adult male, same locality as holotype, coll. F. Glaw & M. Vences, 09.02.2000.

Remarks: Paratype ZSM 679/2001 has been exchanged (now ZMA 20334). Remaining paratypes in ZFMK and UADBA.

***Boophis burgeri* Glaw & Vences, 1994**

Fieldguide Amph. Rept. Madagascar, 2nd ed.: 107

Paratype: ZSM 564/1999 (originally ZFMK 57406), male, "Andasibe, CE-Madagascar", coll. F. Glaw, N. Rabibisoa & O. Ramilison, 24.-28.02.1994.

Remarks: Holotype and one paratype in ZFMK.

***Boophis englaenderi* Glaw & Vences, 1994**

Fieldguide Amph. Rept. Madagascar, 2nd ed.: 93

Paratype: ZSM 565/1999 (originally ZFMK 57389), male, "Marojezy massif at low altitude, NE-Madagascar", coll. F. Glaw, N. Rabibisoa & O. Ramilison, 29.03.1994.

Remarks: Holotype and one paratype in ZFMK.

***Boophis feonnyala* Glaw, Vences, Andreone & Vallan, 2001**

Zool. J. Linn. Soc. 133 (4): 520

Holotype: ZSM 585/1999 (originally ZFMK 60003), adult male, "Andasibe (18°56'S; 48°25'E, about 900 m above sea level), central eastern Madagascar", coll. F. Glaw & D. Vallan, 01.04.1995.

Remarks: Three paratypes, all in ZFMK.

***Boophis haematopus* Glaw, Vences, Andreone & Vallan, 2001**

Zool. J. Linn. Soc. 133 (4): 515

Holotype: ZSM 583/1999 (originally ZFMK 53632), adult male, "Nahampoana southeastern Madagascar", coll. F. Glaw & J. Müller, 04.01.1992.

Remarks: Six paratypes in MRSN (4) and ZFMK (2).

***Boophis liami* Vallan, Vences & Glaw, 2003**

Amphibia-Reptilia 24: 307

Paratypes: ZSM 310-311/2000, 2 adult males, "Vohidrazana (18°57'57"S, 48°30'37"E, 731 m elevation)"

[central-eastern Madagascar], coll. F. Glaw, 10.04.2000; ZSM 673/2001, adult male, "Vohidrazana (18°57'58"S, 48°30'35"E, 810 m elevation)" [central-eastern Madagascar], coll. M. Vences, D. R. Vieites & F. Mattioli, 17.02.2001.

Remarks: Paratype ZSM 674/2001 has been exchanged (now ZMA 20333). Holotype in ZFMK, further paratypes in NMBE, UADBA and ZFMK.

***Boophis luteus septentrionalis* Glaw & Vences, 1994**

Fieldguide Amph. Rept. Madagascar, 2nd ed.: 92

Paratype: ZSM 566/1999 (originally ZFMK 57387), female, "Montagne d'Ambre National Park, N-Madagascar", coll. F. Glaw, N. Rabibisoa & O. Ramilison, 21.03.1994.

Remarks: Holotype and one paratype in ZFMK.

Present name: *Boophis septentrionalis* Glaw & Vences, 1994 according to Andreone (1996) and Andreone & Randriamahazo (1997).

***Boophis mandraka* Blommers-Schlösser, 1979**

Bijdr. Dierk. 49 (2): 267

Paratype: ZSM 359/2004 (originally ZMA 7119B), male, "Madagascar [...] Mandraka valley (highroad R.N. 2 at km 67), alt. 1200 m", coll. R. M. A. Blommers-Schlösser, 04.03.1973.

***Boophis marojezensis* Glaw & Vences, 1994**

Fieldguide Amph. Rept. Madagascar, 2nd ed.: 104

Paratype: ZSM 567/1999 (originally ZFMK 57402), male, "Marojezy massif at low altitude, NE-Madagascar", coll. F. Glaw, N. Rabibisoa & O. Ramilison, 27.03.1994.

Remarks: Holotype in ZFMK.

***Boophis picturatus* Glaw, Vences, Andreone & Vallan, 2001**

Zool. J. Linn. Soc. 133(4): 518

Holotype: ZSM 584/1999 (originally ZFMK 60078), adult male, "An'Ala (about 840 m above sea level), central eastern Madagascar", coll. F. Glaw, 11.02.1995.

Remarks: Five paratypes, all in ZFMK.

***Boophis pyrrhus* Glaw, Vences, Andreone & Vallan, 2001**

Zool. J. Linn. Soc. 133 (4): 513

Holotype: ZSM 582/1999 (originally ZFMK 53634), adult male, "Andasibe (18°56'S; 48°25'E, about 900 m above sea level), central eastern Madagascar", coll. F. Glaw & J. Müller, 09.01.1992.



Fig. 18. *Boophis picturatus* Glaw, Vences, Andreone & Vallan, 2001, holotype (ZSM 584/1999). This is one of the many new frog species of the family Mantellidae which were recently discovered in Madagascar.

Remarks: 11 paratypes in MRSN (1), ZFMK (3) and ZMA (7).

***Boophis reticulatus* Blommers-Schlösser, 1979**

Bijdr. Dierk. 49 (2): 294

Paratype: ZSM 360/2004 (originally ZMA 7101B), male, "Madagascar [...] near Perinet (highroad R.N. 2 at km 142), alt. 1100 m", coll. R. M. A. Blommers-Schlösser, 13.11.1972.

***Boophis rufiocularis* Glaw & Vences, 1997**

Salamandra 32 (4): 228

Paratype: ZSM 568/1999 (originally ZFMK 60081), adult male, "Regenwald bei An' Ala (zur Kolonialzeit Haltestelle "La forêt" der Eisenbahn), etwa 9 km östlich von Andasibe (= Perinet), östliches Zentral-Madagaskar, ca. 840 m über NN", coll. F. Glaw, 11.02.1995.

Remarks: Holotype and three paratypes in ZFMK.

***Boophis sambirano* Vences & Glaw, 2005**

African J. Herpetol. 54(1): 79

Holotype: ZSM 811/2003, adult male, "small settlement called 'Camp Norbert' by our guides, 13°56' 53"S, 48°27'28"E, ca. 280 m above sea level, Manongarivo Special Reserve, northwestern Madagascar", coll. F. Glaw, M. Vences & R.-D. Randrianiaina, 31.01.2003.

Paratypes: ZSM 810/2003, adult male, same collecting data as holotype; ZSM 995-996/2003, 2 adult males, same collectors and same locality as holotype, 05.02.2003; ZSM 815/2003, "undetermined site several kilometres upstream from the type locality", same collectors as holotype, 01.02.2003.

***Boophis schuboeae* Glaw & Vences, 2002**

Spixiana 25(2): 174

Paratype: ZSM 1086/2001 (originally ZFMK 62285), adult male, "Vohiparara (Ranomafana National Park, at ca. 1000 m above sea level), south eastern Madagascar", coll. F. Glaw, D. Rakotomalala & F. Ranaivojaona, 28.02.1996.

Remarks: Holotype and two paratypes in ZFMK.

***Boophis solomaso* Vallan, Vences & Glaw, 2003**

Amphibia-Reptilia 24: 311

Paratype: ZSM 47/2005 (originally NMBE 1046008), adult male, "site called Analambalotra near Ambavaniasy, 18°57'36"S, 48°30'00"E, about 880 m elevation, Moramanga Fivondronana, Toamasina Province, central eastern Madagascar", coll. D. Vallan, 10.02.1997.

Remarks: Holotype in NMBE.

***Boophis tasymena* Vences & Glaw, 2002**

Trop. Zool. 15: 150

Holotype: ZSM 1085/2001 (originally ZFMK 62224), adult male, "Andasibe, central-eastern Madagascar, 18°56'S, 48°25'E, ca. 900 m elevation", coll. F. Glaw 04.02.1996.

Remarks: Six paratypes, all in ZFMK.

***Boophis viridis* Blommers-Schlösser, 1979**

Bijdr. Dierk. 49 (2): 272

Paratype: ZSM 361/2004 (originally ZMA 7100B), male, "Madagascar [...] near Perinet (highroad R.N. 2 at km 142), alt. 900 m", coll. R. M. A. Blommers-Schlösser, 14.11.1972.

***Boophis vittatus* Glaw, Vences, Andreone & Vallan, 2001**

Zool. J. Linn. Soc. 133 (4): 522

Holotype: ZSM 586/1999 (originally ZFMK 59889), adult male, "Reserve Intégrale Marojejy, Camp 3, about 700 m above sea level, northeastern Madagascar", coll. F. Glaw & O. Ramilison, 01.03.1995.

Remarks: Five paratypes, all in ZFMK.

***Boophis xerophilus* Glaw & Vences, 1997**

Copeia 1997 (3): 572

Paratype: ZSM 569/1999 (originally ZFMK 59989), adult male, "Kirindy forest (20°03'S, 44°39'E; below 100 m above sea level), about 60 km north of Morondava, western Madagascar", coll. F. Glaw, 21.01.1995.

Remarks: Holotype and two paratypes in ZFMK.

***Mantella crocea* Pintak & Böhme, 1990**

Salamandra 26 (1): 58

Paratype: ZSM 570/1999 (originally ZFMK 45008), male, "Andasibé (= Périnet), mittleres Ostmadagaskar", coll. native collector, 1986.

Remarks: Holotype and numerous paratypes in ZFMK (see Vences et al. 1999).

***Mantella expectata* Busse & Böhme, 1992**

Rev. fr. Aquariol. 19 (1/2): 58

Paratype: ZSM 571/1999 (originally ZFMK 53541), 1 specimen, "20 km southeast of Toliara (= Tulear), W-Madagascar", coll. G. Gottlieb, 1991.

Remarks: Holotype and five paratypes in ZFMK (see Vences et al. 1999).

***Mantella madagascariensis haraldmeieri* Busse, 1981**

Amphibia-Reptilia 2: 34

Paratype: ZSM 572/1999 (originally ZFMK 21807), 1 specimen, "Fort Dauphin, Süd-Madagaskar", coll. H. Meier, 1978.

Remarks: Holotype and three paratypes in ZFMK. **Present name:** *Mantella haraldmeieri* Busse, 1981 according to Vences et al. (1999).

***Mantidactylus ambohitra* Vences & Glaw, 2001**

Alytes 19 (2-4): 120

Holotype: ZSM 1084/2001 (originally ZFMK 57418), adult male, "Montagne d'Ambre" [northern Madagascar], coll. F. Glaw, N. Rabibisoa & O. Ramilison, 14.-17.03.1994.

Remarks: Paratypes in MNHN, MTD and ZFMK.

***Mantidactylus charlotteae* Vences & Glaw, 2004**

J. Nat. Hist. 38 (1): 101

Paratype: ZSM 934/2000 (originally ZFMK 47219), adult, "Nosy Mangabe" [Madagascar], coll. F. Glaw, 24.-25.10.1987.

Remarks: Holotype in ZMA.

***Mantidactylus cornutus* Glaw & Vences, 1992**

Fieldguide Amph. Rept. Madagascar: 272

Paratype: ZSM 573/1999 (originally ZFMK 53690), male, "Andasibe" [Madagascar], coll. F. Glaw & J. Müller, 11.01.1992.

Remarks: Holotype and three paratypes in ZFMK.

***Mantidactylus corvus* Glaw & Vences, 1994**

Fieldguide Amph. Rept. Madagascar, 2nd ed.: 146

Paratype: ZSM 574/1999 (originally ZFMK 57431), male, "Isalo National Park (Namazaha valley, forest ca. 4 km W of Ranohira), western central Madagascar", coll. F. Glaw & M. Vences, 29.01.1994.

Remarks: Holotype in ZFMK.

***Mantidactylus enki* Glaw & Vences, 2002**

Amphibia-Reptilia 23: 294

Paratype: ZSM 1083/2001 (originally ZFMK 62274), adult male, "Vohiparara (close to Ranomafana), south-eastern Madagascar, 21°13'S, 47°22'E, at ca. 1050 m above sea level", coll. F. Glaw, D. Rakotomalala & F. Ranaivojaona, 03.-04.03.1996.

Remarks: Holotype and one paratype in ZFMK.

***Mantidactylus fimbriatus* Glaw & Vences, 1994**

Fieldguide Amph. Rept. Madagascar, 2nd ed.: 142

Paratype: ZSM 575/1999 (originally ZFMK 57440), male, "Andasibe, CE-Madagascar", coll. F. Glaw & M. Vences, 01.01.1994.

Remarks: Holotype in ZFMK.

***Mantidactylus flavobrunneus* Blommers-Schlösser, 1979**

Beaufortia 29(352): 54

Paratype: ZSM 362/2004 (originally ZMA 7172), female, "Madagascar [...] along the road from Moramanga to Anosibe at km 25, alt. 900 m", coll. R. M. A. Blommers-Schlösser, 25.08.1971.

***Mantidactylus kathrinae* Glaw, Vences & Gossmann, 2000**

J. Nat. Hist. 34: 1136

Paratype: ZSM 576/1999 (originally ZFMK 62263), adult male, "rainforest near An'Ala (18°56'S, 48°28'E, 840 m above sea level), eastern Madagascar", coll. F. Glaw, 03.02.1996.

Remarks: Holotype and one paratype in ZFMK.

***Mantidactylus madinika* Vences, Andreone, Glaw & Mattioli, 2002**

Copeia 2002(4): 1058

Holotype: ZSM 601/2001, adult male, "a plantation at the edge of the Sambirano River, approximately 200 m upstream from Antsirasira (on the river side opposite to the larger village of Marovato), Marovato Fivondronana, Antsiranana Faritany (Diégo Suarez Province), north-western Madagascar (13°56' 22"S, 48°33'16"E, less than 100 m above sea level)", coll. M. Vences, F. Andreone, F. Mattioli & J. E. Randrianirina, 30.01.2001.

Paratypes: ZSM 600/2001, adult female, same locality and collecting data as holotype; ZSM 604/2001-607/2001, 3 adult males, 1 adult female, from the type locality, coll. M. Vences, 12.02.2001.

Remarks: One further paratype in MRSN. The paratypes ZSM 602/2001 (now ZFMK 76103) and ZSM 603/2001 (now ZMA 20331) have been exchanged.

***Mantidactylus massi* Glaw & Vences, 1994**

Fieldguide Amph. Rept. Madagascar, 2nd ed.: 143

Paratype: ZSM 577/1999 (originally ZFMK 57443), male, "Benavony (near Ambanja, NW-Madagascar)", coll. F. Glaw, N. Rabibisoa & O. Ramilison, 08.03.1994.

Remarks: Holotype in ZFMK.

Present name: *Mantidactylus massorum* Glaw & Vences, 1994 according to Michels & Bauer (2004).

***Mantidactylus moseri* Glaw & Vences, 2002**

J. Herpetol. 36(3): 373

Holotype: ZSM 935/2000 (originally ZFMK 60024), adult male, "Andasibe (18°55'3"S, 48°25'22"E; approximately 850 m above sea level)" [central-eastern Madagascar], coll. F. Glaw & N. Rabibisoa, 18.12.1994.

Remarks: Two paratypes in ZFMK.

***Mantidactylus phantasticus* Glaw & Vences, 1997**

Salamandra 32(4): 246

Paratype: ZSM 578/1999 (originally ZFMK 62208), adult male, "Regenwald bei Andasibe (= Perinet), ca. 900 m über NN", coll. F. Glaw, D. Rakotomalala & F. Ranaivojaona, 09.03.1996.

Remarks: Holotype and one paratype in ZFMK.

***Mantidactylus punctatus* Blommers-Schlösser, 1979**

Beaufortia 29(352): 51

Paratype: ZSM 363/2004 (originally ZMA 7170), adult, "Madagascar [...] Tampoketsa d'Ankazobe, forest station ('highroad R.N. 4' Tananarive-Majunga), alt. 1600 m", coll. R. M. A. Blommers-Schlösser, 12.09.1971.

***Mantidactylus rivicola* Vences, Glaw & Andreone, 1997**

Alytes 14(4): 138

Paratype: ZSM 579/1999 (originally ZFMK 59898), male, "near Camp 1, Marojezy Strict Nature Reserve (Réserve Naturelle Intégrale), northeastern Madagascar, altitude about 300 m above sea level", coll. F. Glaw & O. Ramilison, 25.-28.02.1995.

Remarks: Holotype and 4 paratypes in ZFMK.

***Mantidactylus sarotra* Glaw & Vences, 2002**

Herpetol. J. 12: 14

Holotype: ZSM 351/2000, adult male, "Mandraka (18°54'44"S, 47°54'52"E, 1425 m altitude), central eastern Madagascar", coll. F. Glaw & M. Vences, 08.02.2000.

Paratype: ZSM 354/2000, adult male, same data as holotype.

Remarks: 2 paratypes in UADBA and ZFMK.

***Mantidactylus schilfi* Glaw & Vences, 2000**

Spixiana 23(1): 74

Paratype: ZSM 587/1999 (originally ZFMK 59886), male, "Réserve Naturelle Intégrale Marojezy, Camp 4 (ca. 1250 m above sea level), northeastern Madagascar", coll. F. Glaw & O. Ramilison, 28.02.1995.

Remarks: Holotype in ZFMK, one paratype in UADBA and one paratype in MNHN.

***Mantidactylus striatus* Vences, Glaw, Andreone, Jesu & Schimmenti, 2002**

Contrib. Zool. 70(4): 203

Holotype: ZSM 938/2000 (originally ZFMK 57436), adult male, "Marojejy massif, Campsite 1 (ca. 300 m altitude)", [north-eastern Madagascar], coll. F. Glaw, N. Rabibisoa & O. Ramilison, 27.-31.03.1994.

Remarks: Paratypes in MRSN and ZFMK.

***Mantidactylus tandroka* Glaw & Vences, 2001**

Spixiana 24(2): 185

Paratype: ZSM 937/2000 (originally ZFMK 59895), female, "Marojezy, Campsite 4 (ca. 1300 m altitude)", coll. F. Glaw & O. Ramilison, 28.02.1995.

Remarks: Holotype and 7 paratypes in MNHN, 1 paratype in ZFMK.

***Mantidactylus thelenae* Glaw & Vences, 1994**

Fieldguide Amph. Rept. Madagascar, 2nd ed.: 156

Paratype: ZSM 580/1999 (originally ZFMK 57425), male, "Andasibe, CE-Madagascar", coll. F. Glaw, N. Rabibisoa & O. Ramilison, 26.-28.02.1994.

Remarks: Holotype and two paratypes in ZFMK.

***Mantidactylus timidus* Vences & Glaw, 2005**

Herpetol. J. 15: 40

Paratype: ZSM 364/2004 (originally ZMA 19492), male, "less than 10 km north of Toamasina, eastern Madagascar (18°03'51"S, 49°22'39"E, 8 m above sea level), coll. M. Vences, 10.02.2003.

Remarks: Holotype in ZSM.

***Mantidactylus tschenki* Glaw & Vences, 2001**

Spixiana 24(2): 181

Holotype: ZSM 936/2000 (originally ZFMK 62298), adult male, "along the road between Ambatolahy and Ranomafana, south-eastern Madagascar", coll. F. Glaw, D. Rakotomalala & F. Ranaivojaona, 28.2.1996.

Remarks: Two paratypes in ZFMK and one in MRSN.

***Mantidactylus zavona* Vences, Andreone, Glaw & Randrianirina, 2003**

African Zool. 38(1): 71

Holotype: ZSM 648/2001, adult male, "Antsahamanagera (14°02'42"S / 48°47'04"E; c. 1100 m above sea level) in the Manarikoba forest, Réserve Naturelle Intégrale de Tsaratanana, central northern Madagascar", coll. M. Vences, F. Andreone, F. Mattioli & J. Randrianirina, 02.02.2001.

Paratype: ZSM 649/2001, adult male, same locality as holotype, coll. M. Vences, F. Andreone, F. Mattioli & J. Randrianirina, 02.-13.02.2001.

Remarks: The paratypes ZSM 647/2001 (now ZFMK 76104) and ZSM 650/2001 (now ZMA 20332) have been exchanged. Further paratypes in MRSN, MSNG and UADBA.

***Mantidactylus zipperi* Vences & Glaw, 2004**

J. Nat. Hist. 38(1): 97

Paratype: ZSM 1216/2001 (originally ZFMK 60091), adult male, "An'Ala, eastern Madagascar (18°56'S, 48°28'E, 840 m above sea level)" [erroneously stated as 180°56'S in the original description], coll. F. Glaw, 11.-12.02.1995.

Remarks: Holotype in ZFMK.

***Mantidactylus zolitschka* Glaw & Vences, 2004**

Spixiana 27(1): 87

Paratypes: ZSM 939/2000 (originally ZFMK 60111), adult male, "rainforest near An'Ala (18°56'S, 48°28'E, 840 m above sea level), eastern Madagascar", coll. F. Glaw & D. Vallan, 21.03.1995; ZSM 184/2003, female, same locality as holotype, coll. G. Aprea, F. Glaw, M. Puente, L. Raharivololoniana, R. D. Randrianiana & M. Thomas, 02.03.2003.

Remarks: Holotype and five paratypes in ZFMK.

Microhylidae Günther, 1858

***Anodonthyla moramora* Glaw & Vences, 2005**

Spixiana 28 (2): 183

Holotype: ZSM 744/2003, adult male, “next to Kisonafo bridge, Vohiparara near Ranomafana, south-eastern Madagascar (21°13'S, 47°22'E, ca. 1000 m above sea level)”, coll. F. Glaw, M. Puente, M. Thomas, L. Raharivololoniaina & D. R. Vieites, 20.01.2003.

Paratypes: ZSM 705-706/2003, 2 adult males, same collecting data as holotype.

***Anodonthyla nigrigularis* Glaw & Vences, 1992**

Fieldguide Amph. Rept. Madagascar: 273

Paratype: ZSM 553/1999 (originally ZFMK 53746), male, “Nahampoana”, Madagascar, coll. F. Glaw & J. Müller, 04.01.1992.

Remarks: Holotype and two paratypes in ZFMK.

***Austrochaperina derongo* Zweifel, 2000**

Bull. Amer. Mus. Nat. Hist. 253: 27

Paratype: ZSM 109/1999, “Papua New Guinea [...] Southern Highlands Prov. [...], at Didessa, north slope of Mt. Bosavi”, coll. T. Schultze-Westrum, 09.1966.

***Breviceps mossambicus* var. *occidentalis* Werner, 1903**

Abh. K. Bayer. Akad. Wiss. II. Kl. 22: 383

Type status unclear: uncatalogued (lost), 1 specimen (?), “Deutsch-Südwestafrika” [Namibia], coll. Kuhn, no date.

Present name: *Breviceps adpersus* Peters, 1882 according to Parker (1931: 193). Frost (2004) erroneously listed this taxon as *Breviceps mossambicus* var. *mossambicus* (sic) in the synonymy of *Breviceps mossambicus* which however does not occur in Namibia.

***Cophyla berara* Vences, Andreone & Glaw, 2005**

African Zool. 40 (1): 144

Holotype: ZSM 410/2000, adult male, “site locally called Berara, located within Anabohazo forest, Sahamalaza Peninsula, north-western Madagascar (14°18.55'S, 47°54.92'E, 170 m above sea level)”, coll. F. Andreone, J. E. Randrianirina & M. Vences, 18.02.2000.

Remarks: Five paratypes in MRSN.

***Engystoma ovale* var. *puncticulatum* Steindachner, 1901**

Anz. Akad. Wiss. Wien, 38: 194-196 [abstract], Denkschr. K. K. Akad. Wiss., Math.-Naturwiss. Cl., Wien (1902), 72: 110 [description]

Holotype: Not traced, “Bodega Central am Rio Magdalena”, coll. Prinzessin Therese von Bayern, collection date unknown.

Remarks: In contrast to the other taxa collected by Therese von Bayern (e.g. *Urotheca coronata*, *Tropidurus theresiae*) and described by Steindachner (1901) no material of *Engystoma ovale* var. *puncticulatum* could be traced in the ZSM. We found neither any catalogue entry for this taxon nor an uncataloged specimen in the collection. Probably the specimen got lost between the description and the registration of the Therese von Bayern collection in 1926 in the ZSM or is still present in the NMW collection although it is not mentioned in Häupl et al. (1994).

Present name: Unknown. This taxon is not listed by Cochran & Goin (1970) and Frost (2004).

***Platypelis occultans* Glaw & Vences, 1992**

Fieldguide Amph. Rept. Madagascar: 274

Paratype: ZSM 554/1999 (originally ZFMK 53736), male, “Nosy Be”, Madagascar, coll. F. Glaw & J. Müller, 22.01.1992.

Remarks: Holotype and one paratype in ZFMK.

***Plethodontohyla coronata* Vences & Glaw, 2003**

Copeia 2003 (4): 789

Paratype: ZSM 694/2001, adult male, “Mandraka, Fivondronona of Manjakandriana, Faritany of Antananarivo, central eastern Madagascar (18°55'S / 47°56'E, 1220 m above sea level)”, coll. M. Vences & D. R. Vieites, 16.02.2001.

Remarks: Holotype in ZFMK.

***Plethodontohyla mihanika* Vences, Raxworthy, Nussbaum & Glaw, 2003**

J. Herpetol. 37 (4): 630

Paratypes: ZSM 1087/2001 (originally ZFMK 60008), adult male, “Andasibe” [Madagascar], coll. F. Glaw, 14.-18.01.1995; ZSM 5/2002, adult male, “Andasibe”, coll. M. Vences, I. Somorjai & L. Raharivololoniaina, 12.2001.

***Scaphiophryne boribory* Vences, Raxworthy,
Nussbaum & Glaw, 2003**

Herpetol. J. 13: 75-77

Paratypes: ZSM 7-8/2000, 2 adults, ZSM 644-645/2000, 2 adults, "Fierenana region" [Madagascar], coll. local collectors, 2000; ZSM 153/2002, adult male, "Fierenana region" [Madagascar], coll. local collectors, 01.2002.

Remarks: Paratype ZSM 643/2000 has been exchanged (now ZFMK 76102).

***Scaphiophryne gottlebei* Busse & Böhme, 1992**

Rev. fr. Aquariol. 19(1/2): 60

Paratype: ZSM 555/1999 (originally ZFMK 53544), juvenile, "Montagne de l'Isalo: Vallée des Singes, W-Madagascar", coll. G. Gottlebe, 1991.

Remarks: Holotype and four paratypes in ZFMK.

***Scaphiophryne menabensis* Glos, Glaw & Vences, 2005**

Copeia 2005(2): 253

Holotype: ZSM 186/2003, adult male, "Kirindy Forest C.F.P.F. (forest pond CS5), district of Morondava, province of Toliara, western Madagascar (44°39'E, 20°03'S; 18-40 m above sea level)", coll. J. Glos, 05.02.2002.

Paratypes: ZSM 187-188/2003, ZSM 193/2003, three adult females, ZSM 189-190/2003, ZSM 192/2003, three adult males, "Kirindy Forest C.F.P.F. (forest pond CS5), district of Morondava, province of Toliara, western Madagascar", coll. J. Glos, 05.02.2002; ZSM 191/2003, adult male, "Kirindy Forest C.F.P.F. (forest pond CS7)", coll. J. Glos, 13.01.2001.

***Stumpffia gimmeli* Glaw & Vences, 1992**

Fieldguide Amph. Rept. Madagascar: 273

Paratype: ZSM 556/1999 (originally ZFMK 52538), 1 specimen, "Ambanja" [Madagascar], coll. F. Glaw & M. Vences, 27.03.1991.

Remarks: Holotype and 13 paratypes in ZFMK.

***Stumpffia pygmaea* Vences & Glaw, 1991**

Acta Biol. Benrodis 3(2): 215

Paratype: ZSM 557/1999 (originally ZFMK 52543), male, "Nosy Be, Madagascar", coll. F. Glaw & M. Vences, 28.-29.03.1991.

Remarks: Holotype and two paratypes in ZFMK.

***Stumpffia tetradactyla* Vences & Glaw, 1991**

Acta Biol. Benrodis 3(2): 216

Paratype: ZSM 558/1999 (originally ZFMK 52546), male, "Foret d'Ambohidena, nahe dem Ort Ambohidena, an der Ostküste von Nosy Boraha" [Madagascar], coll. F. Glaw & M. Vences, 07.03.1991.

Remarks: Holotype and one paratype in ZFMK.

***Xenobatrachus multisica* Blum & Menzies, 1989**

Alytes 7 ("1988"): 150

Paratypes: ZSM 105/1987/1-6 (cited as 105/87 in the original description), 6 specimens, "Munggona, Eipomek Valley of Irian Jaya, Jayawijaya Division, altitude 1800 m", coll. J. P. Blum, 04.-06.1976.

***Xenobatrachus scheepstrai* Blum & Menzies, 1989**

Alytes 7 ("1988"): 151

Paratype: ZSM 103/1987 (cited as 103/87 in the original description), adult female, "Angguruk, Irian Jaya, Jayawijaya Division, altitude 1400 m", coll. G. Scheepstra, 06.1979.

***Xenobatrachus schiefenhoeveli* Blum & Menzies, 1989**

Alytes 7 ("1988"): 143

Paratypes: ZSM 104/1987/1-3 (cited as ZSM 104/87a-c in the original description), 3 specimens, "Munggona in the Eipomek Valley of Irian Jaya, Jayawijaya Division, altitude 1800 m", coll. J. P. Blum, 04.-06.1976.

***Xenorhina eiponis* Blum & Menzies, 1989**

Alytes 7 ("1988"): 154

Paratype: ZSM 106/1987/1-2 (cited as 106/87 in the original description), 2 specimens, "Munggona, Eipomek Valley, Irian Jaya, Jayawijaya Division, altitude 1800 m", coll. J. P. Blum, 04.-06.1976.

Pipidae Gray, 1825

***Pipa aspera* Müller, 1924**

Zool. Anz. 58: 291

Holotype: ZSM 19/1923 (lost), adult male, "Albina (Unterlauf des Maroni), Surinam", collector and collection date unknown.

Remarks: AMNH 107864 was designated as neotype by Trueb & Cannatella (1986).

***Pipa cururu* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 53

Syntypes: uncatalogued (lost), 3 specimens, "Habitat in fundo aquarum lacustrum prope Bahiam et ad flumen Amazonum" [Brazil, near the city of Salvador (erroneous) and Rio Amazonas] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: In the original description (Spix 1824: pl. 22, fig. 1, 2) the species is figured under the name *Pipa Curucuru* (see also Hoogmoed & Gruber 1983: 377 for the various misspellings of this name).

Present name: *Pipa pipa* (Linnaeus, 1758) fide Hoogmoed & Gruber (1983).

***Pipa snethlageae* Müller, 1914**

Ann. Mag. nat. Hist. 14: 102

Holotype: ZSM 1/1914 (lost), adult female, "Utinga near Pará (Belém), State of Pará, N. E. Brazil", coll. Dr. Emilia Snethlage, 13.02.1913.

Neotype: ZSM 54/1914/1 (former paratype), brooding female, same data as holotype, designated by Trueb & Cannatella (1986).

Paratype: ZSM 54/1914/2, male, same data as holotype.

Remarks: Trueb & Cannatella (1986: 449) mentioned the specimens MCZ 17734 and CAS-SU 16409 both from Utinga, near Belem as paratypes. This is obviously incorrect since Müller (1914) mentioned only three specimens in the original description ("I have before me one male and two females, the latter with empty egg-capsules on the back, consequently fully adult"). These three specimens are the lost holotype and the two original paratypes (ZSM 54/1914/1-2) one of them subsequently designated as neotype. According to Müller's (1924a) counts there were 39 "Waben" on the back of the holotype, and 25 on the female cotype. The specimen designated as neotype (ZSM 54/1914/1, figured in Trueb & Cannatella 1986) has 25 distinct (plus some indistinct) "Waben" and therefore obviously is the original female paratype.

The collection date of the types is not mentioned in the original description, but was given as 13.02.1903 by Müller (1924a). This is obviously wrong since both the catalogue entry and jar labels mention 13.02.1913.



Fig. 19. *Pipa snethlageae* Müller, 1914, neotype (ZSM 54/1914/1). In this species, the eggs develop in the female's back.

Ranidae Rafinesque, 1814

***Batrachylodes elegans* Brown & Parker, 1970**

Breviora 346: 14

Paratypes: ZSM 1-5/1998, ZSM 8-27/1998, 25 adults (originally MCZ), "Bougainville Island, Solomon Islands [...] Mutahi, between 1800 and 3600 feet elevation", coll. F. Parker, 10.-20.05.1966.

***Cornufer beauforti* van Kampen, 1913**

Bijdr. Dierk. 19: 91

Syntype: ZSM 268/1975 (originally ZMA), 1 adult, "Majalibit-Bucht, Waigau" [Papua, Indonesia], coll. R. F. de Beaufort, 1910.

Present name: *Platymantis punctata* Peters & Doria, 1878 (fide Zweifel 1969: 12-16).

***Phrynobatrachus phyllophilus* Rödel & Ernst, 2002**

J. Herpetol. 36(4): 563

Paratype: ZSM 354/2001, male, "Thai National Park, Ivory Coast, SRET station, swampy area in primary



Fig. 20. *Rana japonica* var. *ornativentris* Werner, 1903, holotype (ZSM 962/0), now *Rana ornativentris*. This is a close relative of the European common frog (*Rana temporaria*).

rain forest, 5°50'N, 7°20'W", coll. Ernst & Rödel, 28.09.1999.

***Rana japonica* var. *ornativentris* Werner, 1903**

Abh. K. Bayer. Akad. Wiss. II. Kl. 22: 383

Holotype: ZSM 962/0, female, "bei Nikko auf Nippon" [Japan], coll. Haberer, no date.

Present name: *Rana ornativentris* Werner, 1903 (see Okada 1966: 81-90).

***Rana palmipes* Spix, 1824**

Animal. Nova Spec. Nov. Test. Ran. Brasil.: 29

Syntypes: ZSM 963/0 (lost), 2 specimens, "Habitat [...] in aquis stagnantibus fluminis Amazonum" [Brazil, Rio Amazonas] (according to the original description and Vanzolini 1981), coll. Spix and Martius expedition to Brazil, 1817-1820.

Remarks: The original description was based on four specimens but only two specimens (ZSM 963/0) were catalogued.

Present name: *Rana palmipes* (Spix, 1824) fide Hoogmoed & Gruber (1983).

***Tomopterna maskeyi* Schleich & Anders, 1998**

Veröff. Fuhlrott-Mus. 4: 63

Holotype: ZSM 106/1991/2 (cited as ZSM 106/91-2 in the original description), female, "Chitwan Jungle Lodge, Royal Chitwan National Park, Central Nepal, at an altitude of approx. 300 m", coll. H. Schleich, D. Fuchs & T. M. Maskey, 08.07.1989 (coll. H. Schleich & T. M. Maskey, 08.07.1991 according to the original description).

Paratypes: ZSM 106/1991/1, ZSM 106/1991/3, ZSM 106/1991/5-7, 4 females, 1 male, "S-Nepal, Chitwan-National-Park, Kasara", same collectors and collection date as holotype (given as ZSM 106/91-1, 3, 5-7, no locality data, coll. Schleich & Maskey, no collection date in the original description).

Present name: *Sphaerotheca maskeyi* (Schleich & Anders, 1999) fide Vences et al. (2000).

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