

Wilhelm Ehrhardt and an evaluation of his amphibians and reptiles held in the Herpetological Collection of the Museum für Naturkunde, Berlin

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Abstract

Wilhelm Ehrhardt was a Guyana-born German animal collector and an excellent taxidermist. He operated in Brazil from 1897 until about 1935 and supplied several museums and scientific institutions with important items of various animal groups. The herpetological collections of W. Ehrhardt, stored in the Museum für Naturkunde, Berlin (ZMB) currently include 2416 specimens of 128 species, representing most of the native Brazilian groups of amphibians and reptiles. About 70% of the material was not determined and catalogued before, and all Ehrhardt specimens have been determined or re-examined, respectively. Here we present for the first time biographical data on W. Ehrhardt, and provide a complete catalogue of his herpetological collections held in the Museum für Naturkunde, Berlin. When necessary, brief remarks were given on the condition of the specimens, their taxonomy, systematics, and localities.

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Introduction

Wilhelm Ehrhardt was an enthusiastic traveller, and he operated as professional animal collector and taxidermist in Brazil around the early 20th century. Ehrhardt collected thousands of specimens of various animal groups, among them some new and well known amphibian, fish, and mammal species. For many years, he supplied several museums and scientific institutions, such as the British Museum of Natural History London and the Zoologisches Museum München, with important and well-labelled zoological material, that mostly was and often still is in excellent condition. More than a dozen of species across different taxa carry the patronym *ehrharti* honouring W. Ehrhardt, but he never published any scientific paper. Ehrhardt also was in contact with the Zoologisches Museum Berlin (ZMB; now part of the Museum für Natur-

kunde, Berlin), and, aside from mammal, fish and invertebrate material, he was one of the most important collectors and contributors of herpetological material between the First and the Second World War (Günther 2001). However, major parts of this relatively large herpetological material were, up to now, not determined and therefore not listed in the ZMB catalogue. In the present paper, we have re-examined or determined for the first time all specimens from the Ehrhardt collection. So far, only little information has been published about the life of W. Ehrhardt, apart from his name as collector, but during the preparation of this compilation, we have detected some details on his life in several archives.

The intentions of the present paper are to improve the knowledge on the historical biodiversity and distribution of Brazilian Herpetofauna, and to provide material for future taxonomic revisions.

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Additionally, we give a first biographical overview on the life and work of Wilhelm Ehrhardt.

Biographical sketch of Wilhelm Ehrhardt's life

Wilhelm Ehrhardt was born on 17 November 1860 in Berbice, British-Guiana (SArchH 18307/1920), now New Amsterdam, Guyana. He most likely descends from German immigrants that settled along the climatic propitious coastline, shortly after this Dutch settlement became a British colony (1831).

It is still unknown, when W. Ehrhardt left British-Guiana, however, on 22 May 1897 he emigrated from Hamburg back to South America on the steamship "Byzanz" together with his first wife Johanna (SArchH VIII A1, Bd. 96). Their destination was the state of Santa Catharina in South Brazil, where several ethnic colonies, e.g. German, Italian, and Belgian, had been established by immigrants. After his arrival at the port of São Francisco do Sul (30 June 1897), Ehrhardt bought land from the 'Hanseatische Kolonisationsgesellschaft mbH' – a German commercial immigration and estate agency – and was one of the pioneer settlers at the 'Colonia Hansa Humboldt' (Kormann 1985). Ehrhardt's job history was changeful. He stated 'locksmith' as profession on the immigration list, but, after arriving in Hansa Humboldt (now Corupá), he opened the first general store there. As early as 1897, he also began a career as animal collector and taxidermist (ZMB S II, Ehrhardt, W., Bl. 15). His background for this profession appears unclear. It seems plausible, that a contact or even kinship to A. Ehrhardt (forename unidentified) – a professional German animal collector in British-Guiana (sic), Surinam, and Barbados around 1860 (ZMB S II, Ehrhardt, A., Bl. 1–3) – may have triggered W. Ehrhardt's professional skills and career in Brazil.

In the following years, Ehrhardt travelled and collected – often accompanied by his second wife Dorothea – intensively across the 'Colonia Hansa Humboldt', which extended roughly from the Rio Negro to the Rio Itapocú in north-southern direction and from Joinville to the Rio Humboldt in east-western direction (fide Ambrosius 1914). Largely on demand of various museums, he collected a wide variety of specimens across vertebrate and invertebrate groups, e.g. fishes, amphibians, reptiles, mammals, arachnids, insects, and annelids. Furthermore, he supplied zoological items such as bird nests, or complete termite nests (up to a weight of 800 kg; Weidner 1967), and also prepared cross-sections of mammal and bird skulls, *Didelphis* pouches with juveniles, and entrails with parasites. These materials were generally well-labelled, in excellent condition, and the specimens were typically prepared in the near-natural looking 'Ehrhardt style' (Figure 1): "Die Reptilien sind nach dem Leben

gespannt, ebenso die Amphibien ..." [The reptiles as well as the amphibians are mounted in a natural style'] (ZMB S III, Ehrhardt, W., Bl. 31–32).

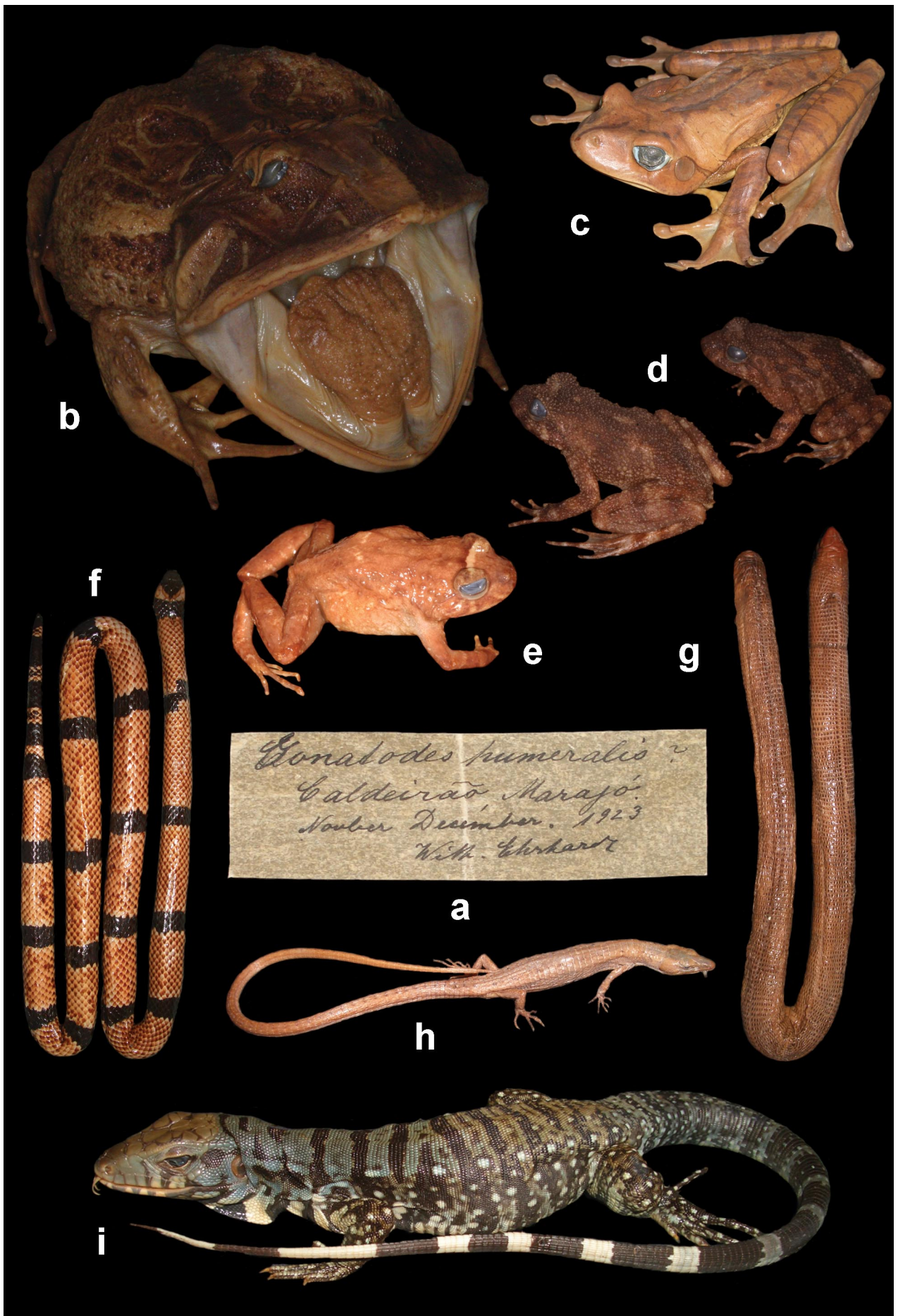
Because of Ehrhardt's reputation as reliable collector, excellent taxidermist, and inexpensive dealer, he was in contact to numerous museums and scientific institutions, such as the British Museum of Natural History London, the Senckenberg Museum Frankfurt am Main, the Zoologisches Museum München, the Zoologisches Museum Hamburg, the Universität Göttingen, and the Königliche Nervenlinik Tübingen (e.g. NMH DF400/7/20; Panning 1958; SUB Cod. Ms. E. Ehlers 416, Bl. 1). The contacts with the Zoologisches Museum Berlin began in 1907 (ZMB S III, Ehrhardt, W., Bl. 2–3). Initially, caused by a lack of funding, and a Brazilian assortment that already existed in the collections, the purchase of material by the museum was chary. After 1920, between the First and the Second World War, improved financial assets of the museum and personal interventions of the herpetologist Ernst Ahl, made Ehrhardt an important supplier of herpetological material (Günther 2001).

But even before the beginning of the First World War in 1914, Ehrhardt was several times on business travels in Hamburg and other German cities. At the age of 60 (1920), Ehrhardt left Brazil on health reasons, and opened a store for zoological items, beer, wine, tinned food etc. in Hamburg (SArchH 18307/1920). Moreover, between 1923 and 1927 he traded with specimens collected by the Hungary-born Carl Lako in the Amazon basin (ZMB S III, Lako, C., Bl. 4, 9). Only few specimens in the Ehrhardt collections are labelled with 'leg. Lako', but it seems likely that all of the Amazon material was originally collected by Lako, and afterwards prepared and sold by Ehrhardt.

Despite of his heart problems, probably forced by financial worries, Ehrhardt started new collection trips to Santa Catarina in 1927. The following years were bitter for him, often being destitute due to the world economic crisis. Thus, for instance, he had to pay a ship passage to Germany with a debenture bond (ZMB S III Ehrhardt, W., Bl. 107). On 17 February 1933, at the age of 73, he started his last travel from Hamburg to Brazil (SArchH VII A2, Bd. 177).

As yet, date and place of Ehrhardt's death are still unidentified. Based on the last collection dates (1935), and an – apparently posthumous – inquiry of the 'Reichsministerium für Wissenschaft, Erziehung und Volksbildung' ['German ministry for science, education and national education'] at the Zoologisches Museum Berlin about the person W. Ehrhardt (ZMB S III, Ehrhardt, W., Bl. 130), he might have died around 1936 in Brazil.

Ehrhardt's contributions as collector and taxidermist were valuable for zoological science. Inter alia, he supplied the types of several new species, e.g. the torrent frog *Hylodes perplicatus* (Miranda-Ri-



beiro, 1926), and the titi monkey *Callicebus purinus* Thomas, 1927. In addition, more than a dozen of new species were named *erhardti* honouring W. Ehrhardt, e.g. the treefrog *Aplastodiscus ehrhardti* Müller, 1924; the catfish *Corydoras ehrhardti* Steindachner, 1910; the bat *Trachops cirrhosus ehrhardti* Felten, 1956; and the bee *Lestrimelitta ehrhardti* Friese, 1931. Furthermore, a stony votive stele (abolished during the 1940s) was erected at Hansa Humboldt to pay tribute to W. Ehrhardt's social commitments during the early period of the colony (Kormann 1985).

Wilhelm Ehrhardt's Herpetological Collections

The herpetological collections of W. Ehrhardt in the Museum für Naturkunde, Berlin currently include 2416 specimens representing 22 families with 128 species. The collection represents most of the native Brazilian groups of amphibians and reptiles: Gymnophiona (1 family, 1 species), Anura (5 families, 57 species), Amphisbaenia (1 family, 1 species), Crocodylia (1 family, 2 species), Sauria (7 families, 23 species), Serpentes (4 families, 39 species), Testudines (3 families, 5 species). About 70% of the complete material has been determined and catalogued for the first time during our studies, and all Ehrhardt specimens present in the collection have been re-examined, and if necessary, re-determined. Most of the specimens are stored in ethanol, except noted. Six of the specimens that were once catalogued in the ZMB collection could not be re-located and might have been lost.

The relatively large herpetological collection of W. Ehrhardt contains only one type specimen: *Elaps herthae* Ahl, 1927: ZMB 30547 = *Atractus latifrons* (Günther, 1868). The low number of types and the poor state of determination of the collection might result from the fact that Ernst Ahl, who served as curator at the Zoologisches Museum Berlin between 1921–1941, was notoriously overstrained to determine and catalogue the amount of material arrived during his period of work (Paepke 1995).

The ZMB catalogue also lists 12 specimens of amphibians and reptiles collected by 'Ehrhardt' in Surinam, e.g. the holotype of *Hyla conirostris* Peters, 1863 (ZMB 4917, probably lost). However, these specimens were sent to the Berlin Museum by the German collector A. Ehrhardt, who was mentioned above. Aside from specimens in the Ehrhardt collection labelled with 'leg. Lako', some

specimens from Hansa Humboldt are labelled with 'leg. Globig', which means Ernst Globig, a local snake hunter, who also supplied snakes to the famous Brazilian Butantan Serumtherapy Institute at São Paulo (Jorge Wolfgang Globig, pers. comm. 2006; Kormann 1985).

Both the taxonomy and nomenclature in this catalogue follows the most recent literature available (compare references). We have already adapted the systematic arrangements for hylid frogs by Faivovich et al. (2005) which are mainly accepted, but we did not adapt the new taxonomy of all living amphibians by Frost et al. (2006), however, since this classification is still in discussion. For each specimen the ZMB registration number is provided, along with information derived from the specimen or jar label or the catalogue entries. Localities as given in the specimens list are based on the original names on the labels or in the catalogue. Note that because of some changes in the diction of local names, misspellings, or incorrect names on the labels or catalogue entries, current names and meanings were listed in alphabetical order.

Ayapua	Aiapuá, small city near Lago Aiapuá, State of Amazonas
Canabonca	also labelled as Canobonca or Canabouca, maybe local name, State of Amazonas
Mundurucu	name for the settlement area of the Mundurucu Indians, an Amerindian tribe, that inhabits the area between the Rios Madeira and Tapajós, about 200–400 km far from the other given locality Rio Manacapuru
Sta. Catharina Hansa-Humboldt	State of Santa Catarina the former German 'Colonia Hansa', and the small city Humboldt, now Municipality Corupá, State of Santa Catarina
Rio Humboldt	tributary that confluences with the Rio Novo to the Rio Itapocú
Rio Novo	tributary that confluences with the Rio Humboldt to the Rio Itapocú
Rio Tonantins	small tributary into the Rio Solimões (now Rio Amazonas) at the city of Tonantins (2°46' S, 67°45' W), State of Amazonas
Paraná do Jacaré	small river (Rio Paraná do Jacaré) and tributary to Rio Solimões (now Rio Amazonas), located within the resort 'Área de Proteção Ambiental de Nhamundá', State of Amazonas
Rio Jutatri	Rio Jutai, tributary into the Rio Amazonas, State of Amazonas
Santa Rita	probably small town at the left margin of Rio Japurá (Lago Paricá), Município de Maraã, State of Amazonas
Kastaneiro Miri	Castaneiro Miri, near Manacapuru

Fig. 1. Amphibians and reptiles from the Wilhelm Ehrhardt collections in the Museum für Naturkunde, Berlin, showing the typical 'Ehrhardt style' of preparation. **a** – Original label; **b** – *Ceratophrys aurita* (Raddi, 1823); **c** – *Hypsiboas faber* (Wied-Neuwied, 1821); **d** – *Cycloramphus izecksohni* Heyer, 1983; **e** – *Cycloramphus diringshofeni* Bokermann, 1957; **f** – *Micrurus corallinus* (Merrem, 1820); **g** – *Leposternon microcephalum* Wagler, 1824; **h** – *Placosoma glabella* (Peters, 1870); **i** – *Tupinambis merianae* (Duméril & Bibron, 1839). Photos: Axel Kwet (b, d, e), Alexander Gutsche (a, c, f–i; digital processing and graphic design).

- Kaporu Fonteboa** (3.3° S, 60.6° W), State of Amazonas
Rio Itapocú, State of Santa Catarina
Fonte Boa (02°30' S, 66°05' W), State of Amazonas
- Anatyparana** Auatí-Paraná, a small river and tributary to Rio Solimões (now Rio Amazonas), Município de Fonte Boa, State of Amazonas
- Caldeirão, Marajo** local name, or incorrect given locality; Caldeirão is located at Manaus (State of Amazonas), where most of the Amazonian material was collected, however, Ehrhardt also mentioned in a letter material from the "Amazonasmündungsgebiet" [mouth of the Amazonas], which might suggest the Ilha de Marajó

List of W. Ehrhardt's amphibians and reptiles in the Herpetological Collection

Amphibia

Gymnophiona

Caeciliidae

Typhlonectes compressicauda (Duméril & Bibron, 1841)

ZMB 30991: Ayapua, Rio Purus, Solimões, Amazonas.
Remarks: Specimen could not be located in the collection and is presumably lost.

Anura

Bufonidae

Bufo abei Baldissera, Caramaschi & Haddad, 2004

ZMB 67795: Brasilien;
ZMB 67803–806, 67812: Sta. Catharina;
ZMB 32013, 67695: Sta. Catharina, Hansa;
ZMB 68079–080: Sta. Catharina, Rio Humboldt-Gebiet;
ZMB 67807–811, 69084–085: Sta. Catharina, Hansa-Humboldt.

Remarks: The *Bufo crucifer* species group was currently revised, and the specimens presented here are conspecific with the newly described *B. abei* (Baldissera et al. 2004).

Bufo ictericus Spix, 1824

ZMB 32000, 55061–068, 68215: Sta. Catharina, Hansa.

Bufo margaritifer-group

ZMB 30416, 67486–487: Mundurucu, Rio Manacapuru, Amazonas;
ZMB 30979, 67820: Rio Tonantins, Oberer Amazonas;

ZMB 30305, 30316, 30986, 67825–845, 67848, 67877–886: Canobonca, Paraná do Jacaré, Solimões, Amazonas;
ZMB 30302, 67849, 68325: Ayapua, Rio Purus, Solimões, Amazonas.

Remarks: These specimens certainly belong to the *B. margaritifer*-group, but are difficult to determine. Several authors have indicated that there are a number of sibling species distributed throughout South America and are confused under this name (see additional remarks in Frost 2006).

Bufo marinus (Linnaeus, 1758)

ZMB 30304, 30315, 67444: Canobonca, Paraná do Jacaré, Solimões, Amazonas.

Centrolenidae

Cochranella oyampiensis (Lescure, 1975)

ZMB 31079, 55028–030: Manacapuru, Solimões, Amazonas.

Dendrobatidae

Allobates femoralis (Boulenger, 1884)

ZMB 30990: Canobonca, Paraná do Jacaré, Amazonas.

Epipedobates trivittatus (Spix, 1824)

ZMB 30985, 67850–858: Canobonca, Paraná do Jacaré, Amazonas.

Remarks: ZMB 30985 leg. Carl Lako.

Hylidae

Hylidae

ZMB 68248–249: Canabonca, Paraná do Jacaré, Solimões, Amazonas.

Remarks: These specimens certainly belong to the family Hylidae, however, a more definite determination was not possible because of their poor state of preservation.

Bokermannohyla hylax (Heyer, 1985)

ZMB 68260, 68346–357: Sta. Catharina;
ZMB 68141: Sta. Catharina, Hansa-Humboldt.

Dendropsophus leucophyllatus (Beireis, 1783)

ZMB 68246: Canabonca, Paraná do Jacaré, Solimões, Amazonas.

***Dendropsophus microps* (Peters, 1872)**

ZMB 68410: Sta. Catharina, Rio Novo-Gebiet.

***Dendropsophus minutus* (Peters, 1872)**

ZMB 67921, 67950–952: Sta. Catharina, Rio Humboldt-Gebiet.

***Dendropsophus nahdereri* (Lutz & Bokermann, 1963)**

ZMB 68318: Sta. Catharina, Rio Humboldt-Gebiet.

***Dendropsophus wernerii* (Cochran, 1952)**

ZMB 67746–777, 68154–155: Sta. Catharina;
 ZMB 68121–134: Sta. Catharina, Hansa-Humboldt;
 ZMB 67895–920, 67949: Sta. Catharina, Rio Humboldt-Gebiet;
 ZMB 68095: Sta. Catharina, Rio Novo-Gebiet;
 ZMB 68118: Sta. Catharina, Rio Novo-Gebiet, Quellfluß des Kaporu.

***Hypsiboas albomarginatus* (Spix, 1824)**

ZMB 67817: Sta. Catharina, Rio Novo-Gebiet;
 ZMB 68231: Sta. Catharina, Hansa-Humboldt.

***Hypsiboas albopunctatus* (Spix, 1824)**

ZMB 68258–259: Brasilien.

***Hypsiboas bischoffi* (Boulenger, 1887)**

ZMB 67796–797: Brasilien;
 ZMB 66957–966, 67798–802, 67943–945, 68156–163, 68358–365, 68507–520, 68571–579, 69089: Sta. Catharina;
 ZMB 32017, 67472–483: Sta. Catharina, Hansa;
 ZMB 67940, 68222–225, 68230: Sta. Catharina, Hansa-Humboldt;
 ZMB 67859–876: Sta. Catharina, Quellfluss des Kaporu;
 ZMB 67946–948, 68396–406: Sta. Catharina, Rio Humboldt-Gebiet.

***Hypsiboas boans* (Linnaeus, 1758)**

ZMB 30306: Rio Purus;
 ZMB 30981: Ayapua, Rio Purus, Solimões, Amazonas;
 ZMB 30982: Santa Rita, Rio Solimões, Amazonas.

***Hypsiboas faber* (Wied-Neuwied, 1821)**

ZMB 31998, 67821–824, 69081–083: Sta. Catharina, Hansa;
 ZMB 67937–939: Sta. Catharina, Hansa-Humboldt;
 ZMB 55070–087: Sta. Catharina, Rio Humboldt-Gebiet;

ZMB 68336: Sta. Catharina, Nova Teutônia;
 ZMB 66821–826: Sta. Catharina, Rio Novo-Gebiet, Quellfluss des Kaporu.

Remarks: The taxidermy of the specimen ZMB 68336 differs clearly from the typical 'Ehrhardt style', and the locality is beyond of Ehrhardt's collection area in Hansa-Humboldt. We therefore assume that this specimen was probably collected and sent to W. Ehrhardt by Fritz Plaumann (1902–1994), a naturalist and entomologist who lived in Nova Teutônia.

***Hypsiboas fasciatus* (Günther, 1858)**

ZMB 68252: Rio Purus, Amazonas;
 ZMB 30980: Rio Tonantins, Oberer Amazonas;
 ZMB 30988, 67780–783: Canabonca, Paraná do Jacaré, Amazonas;
 ZMB 68250–251: Canabonca, Paraná do Jacaré, Solimões, Amazonas.

***Hypsiboas granosus* (Boulenger, 1882)**

ZMB 68326–334: Canabonca, Paraná do Jacaré, Solimões, Amazonas.

***Hypsiboas lanciformis* Cope, 1871**

ZMB 68247: Canabonca, Paraná do Jacaré, Solimões, Amazonas;
 ZMB 68253: Ayapua, Rio Purus, Solimões, Amazonas.

***Hypsiboas semilineatus* (Spix, 1824)**

ZMB 68206–209, 68254–257: Brasilien;
 ZMB 66951, 68767–770: Sta. Catharina;
 ZMB 67484–486, 68135–140, 68227, 68232–238, 68319: Sta. Catharina, Hansa-Humboldt;
 ZMB 68078, 68407: Sta. Catharina, Rio Humboldt-Gebiet;
 ZMB 68408–409: Sta. Catharina, Rio Novo-Gebiet, Quellfluß des Kaporu.

***Osteocephalus taurinus* Steindachner, 1862**

ZMB 29492: Manacapuru, Solimões.

***Phyllomedusa bicolor* (Boddaert, 1772)**

ZMB 30984: Rio Jutatri, Amazonas;
 ZMB 30987: Canabonca, Paraná do Jacaré, Amazonas.

***Phyllomedusa distincta* Lutz, 1950**

ZMB 67791–792: Brasilien;
 ZMB 55060, 66871–948, 66974–975, 68273–274: Sta. Catharina;

ZMB 33602, 67434–443, 68394–395: Sta. Catharina, Hansa;
 ZMB 67786–788: Rio Novo-Gebiet;
 ZMB 55142–152: Sta. Catharina, Rio Humboldt-Gebiet;
 ZMB 55138–141, 55154–155: Sta. Catharina, Hansa, Rio Humboldt-Gebiet.

Scinax cf. alter (Lutz, 1973)

ZMB 68265–271, 68494, 68521–525, 68694–752, 68927–957: Sta. Catharina;
 ZMB 68176–181, 69023–060: Sta. Catharina, Hansa-Humboldt;
 ZMB 68188: Sta. Catharina, Rio Novo-Gebiet.

Remarks: These specimens are allied to *S. alter*, but represent a new (or perhaps two new) species clearly differing in morphology and call characteristics. Various authors agree that there are considerable variation in colouration, size (Lutz 1973; Pombal et al. 1995a) and vocalization (Pombal et al. 1995b) among different populations attributed to *S. alter*. Additionally, Pombal et al. (1995a) noted, that there may be several species covered by the name *S. alter*.

Scinax argyreornatus (Miranda-Ribeiro, 1926)

ZMB 68766: Sta. Catharina.

Scinax fuscovarius (Lutz, 1925)

ZMB 68495, 68753–760: Sta. Catharina.

Scinax garbei (Miranda-Ribeiro, 1926)

ZMB 69092: Rio Purus, Valdeara, Marajó.

Scinax perereca Pombal, Haddad & Kasahara, 1995

ZMB 68262–264, 68311–312, 68493, 68580–634, 68812–926, 68969–69022: Sta. Catharina;
 ZMB 68142, 69061–080: Sta. Catharina, Hansa-Humboldt;
 ZMB 68190: Sta. Catharina, Rio Novo-Gebiet;
 ZMB 67980–68059: Sta. Catharina, Hansa, Rio Humboldt-Gebiet;
 ZMB 69093–095: Sta. Catharina, Hansa, Rio Novo-Gebiet.

Scinax perpusillus (Lutz & Lutz, 1939)

ZMB 67794: Brasilien;
 ZMB 68444–445: Sta. Catharina, Hansa-Humboldt.

Scinax rizibilis (Bokermann, 1964)

ZMB 68526–570, 68635–693, 68790–811, 68958–968: Sta. Catharina;

ZMB 68239: Sta. Catharina, Hansa-Humboldt;
 ZMB 55153: Sta. Catharina, Rio Humboldt-Gebiet;
 ZMB 67953–979: Sta. Catharina, Hansa, Rio Humboldt-Gebiet.

Scinax ruber (Laurenti, 1768)

ZMB 30983: Fonteboa, Rio Solimões, Amazonas;
 ZMB 31081, 67460–471: Manacapuru, Solimões, Amazonas;
 ZMB 68337: Ayapua, Rio Purus, Solimões, Amazonas.

Trachycephalus mesophaeus (Hensel, 1867)

ZMB 32007, 64971–65073, 67446–459, 68243–244: Sta. Catharina, Hansa;
 ZMB 68228–229: Sta. Catharina, Hansa, Quellfluß des Kapuru.

Trachycephalus venulosus (Laurenti, 1768)

ZMB 31080: Manacapuru, Solimões, Amazonas;
 ZMB 30303, 30307, 68321–323: Ayapua, Rio Purus, Solimões, Amazonas.

Leptodactylidae

Adenomera nana (Müller, 1922)

ZMB 66829–844, 66950, 66976–67011, 67814: Sta. Catharina;
 ZMB 67815–816: Rio Novo-Gebiet.

Remarks: Up to date, this taxon was treated as a junior synonym of *A. marmorata* (see Frost 2006), but based on bioacoustic studies, it was recently suggested to revalidate the species status (Kwet in press).

Ceratophrys aurita (Raddi, 1823)

ZMB 61806, 67245: Sta. Catharina;
 ZMB 31997, 54316–327: Sta. Catharina, Hansa;
 ZMB 38356, 67288–289, 68216–221: Sta. Catharina, Hansa-Humboldt.

Crossodactylus dispar Lutz, 1925

ZMB 68168, 68170–176, 68276–308, 68386–393, 68446–492, 68765: Sta. Catharina;
 ZMB 32011–012, 67487–694: Sta. Catharina, Hansa;
 ZMB 68421–426: Sta. Catharina, Hansa-Humboldt;
 ZMB 68146–153: Sta. Catharina, Rio Novo;
 ZMB 68100–117: Sta. Catharina, Rio Novo-Gebiet;
 ZMB 67922–934: Sta. Catharina, Rio Novo-Gebiet, Quellfluß des Kapuru;
 ZMB 68074–077: Sta. Catharina, Rio Humboldt-Gebiet.

Remarks: The taxonomy of *Crossodactylus* is unresolved and the species groups are discussed (Bastos & Pombal 1995). However, other specimens

collected by W. Ehrhardt at the same locality were identified by Cochran (1955) as *Crossodactylus dispar*, and until a more precise review, this is the name available for this population.

***Cycloramphus cf. asper* Werner, 1899**

ZMB 67942, 68499; 68776–789: Sta. Catharina;
ZMB 32014, 68226: Sta. Catharina, Hansa.

Remarks: The taxonomy of the genus *Cycloramphus* is difficult. Eight closely related species of *Cycloramphus* are known from the State of Santa Catarina (*C. asper*, *C. bolitoglossus*, *C. catarinensis*, *C. cedrensis*, *C. diringshofeni*, *C. izecksohni*, *C. rhyakonastes*, and *C. valae*). Of these, four are with reduced to considerable webbing (see Heyer 1983a, b). The specimens here analysed display considerable webbing, and therefore are tentatively referred as *Cycloramphus cf. asper*.

***Cycloramphus bolitoglossus* (Werner, 1897)**

ZMB 29997: Rio Novo-Gebiet;
ZMB 68240: Sta. Catharina, Hansa;
ZMB 68184–186: Sta. Catharina, Rio Humboldt-Gebiet.

***Cycloramphus diringshofeni* Bokermann, 1957**

ZMB 68191: Sta. Catharina, Rio Novo-Gebiet.

***Cycloramphus izecksohni* Heyer, 1983**

ZMB 68496–498, 68771–775: Sta. Catharina;
ZMB 32019, 67225–227: Sta. Catharina, Hansa;
ZMB 67935–936: Sta. Catharina, Rio Novo-Gebiet;
ZMB 68081–087: Sta. Catharina, Rio Humboldt-Gebiet;
ZMB 68119–120: St. Catharina, Rio Novo-Gebiet, Quellfluss des Kaporu;
ZMB 68192–195: Sta. Catharina, Hansa, Rio Humboldt-Gebiet.

***Eleutherodactylus binotatus* (Spix, 1824)**

ZMB 67941, 68261: Sta. Catharina;
ZMB 67290–292: Sta. Catharina, Hansa;
ZMB 69090–091: Joinville [Santa Catarina State], Südamerika.

***Eleutherodactylus cf. guentheri* (Steindachner, 1864)**

ZMB 67793: Brasilien;
ZMB 66955–956: Rio Novo-Gebiet;
ZMB 67813, 68182–183: Sta. Catharina, Rio Humboldt-Gebiet.

Remarks: These specimens may belong to *E. guentheri*, although this species is stated to be morphologically very similar to its cryptic sibling species *E. henselii* (Peters, 1870) (Kwet & Solé 2005). Both *E. guentheri* and *E. henselii* are distributed in northeastern Santa Catarina and bioacoustic data are necessary to take a final decision about their species identity.

***Flectonotus cf. fissilis* (Miranda-Ribeiro, 1920)**

ZMB 68189: Sta. Catharina, Rio Novo-Gebiet.

Remarks: This specimen is allied to *F. fissilis*. According to Duellman and Gray (1983), *F. fissilis* inhabits the humid forests in the mountains of southeastern Brazil – Serra da Bocaina, Serra do Mar, and Serra dos Órgãos in the states of São Paulo, Rio de Janeiro, and Espírito Santo. The specimen may represent a new species rather than reflect an increasing geographic distribution range of *F. fissilis*, but more samples are necessary for a precise identification.

***Hylodes perplicatus* (Miranda-Ribeiro, 1926)**

ZMB 68164–167, 68169, 68313–317, 68366–385, 68500–505: Sta. Catharina;
ZMB 67421–433: Sta. Catharina, Hansa;
ZMB 68427–443: Sta. Catharina, Hansa-Humboldt;
ZMB 68060–073: Sta. Catharina, Rio Humboldt-Gebiet;
ZMB 67887–894: Sta. Catharina, Rio Novo-Gebiet;
ZMB 68096–098: Sta. Catharina, Rio Novo;
ZMB 68143–145: Sta. Catharina, Rio Novo-Gebiet, Quellfluß des Kaporu.

***Leptodactylus notoaktites* Heyer, 1978**

ZMB 68310, 68761–764: Sta. Catharina;
ZMB 32005, 67293–295, 67818–819, 68241–242: Sta. Catharina, Hansa;
ZMB 68099: Sta. Catharina, Rio Novo-Gebiet;
ZMB 29482: Sta. Catharina, Humboldt, Gebiet des Rio Novo.

***Leptodactylus ocellatus* (Linnaeus, 1758)**

ZMB 67012–014: Brasilien;
ZMB 66827–828: Sta. Catharina;
ZMB 31999, 67228–230: Sta. Catharina, Hansa;
ZMB 31082, 67445: Manacapuru, Solimões, Amazonas;
ZMB 68338–340: Ayapua, Rio Purus, Solimões, Amazonas;
ZMB 68341–344: Rio Purus, Solimões, Amazonas.

***Leptodactylus pentadactylus* (Laurenti, 1768)**

ZMB 30972: Rio Jutatri, Amazonas;
ZMB 68335: Lago do Jaraci, Rio Negro, Amazonas.

***Leptodactylus petersii* (Steindachner, 1864)**

ZMB 31083, 54356–378: Manacapuru, Solimões, Amazonas.

Remarks: ZMB 30121 could not be located in the collection and is presumably lost. ZMB 30973 leg. Carl Lako.

***Lithodytes lineatus* (Schneider, 1799)**

ZMB 68324: Mundurucu, Rio Manacapuru, Amazonas.

***Hydromedusa tectifera* Cope, 1869**

ZMB 31996, 36217: Sta. Catharina, Hansa.

***Physalaemus cuvieri* Fitzinger, 1826**

ZMB 67784–785, 68275: Sta. Catharina;
ZMB 68088–094, 68187: Sta. Catharina, Rio Humboldt-Gebiet.

***Phrynops nasutus* (Schweigger, 1812)**

ZMB 30936: Santa Rita, Rio Solimões, Amaz.[onas].

Remarks: The specimen could not be located in the collection and is presumably lost.

***Physalaemus nanus* (Boulenger, 1888)**

ZMB 68309: Sta. Catharina.

Podocnemididae

***Physalaemus olfersii* (Lichtenstein & Martens, 1856)**

ZMB 67789–790: Rio Novo-Gebiet.

***Podocnemis expansa* (Schweigger, 1812)**

ZMB 55159: Ayapua, Rio Purus, Solimões, Amazonas.

Remarks: The specimen is a dried skull.

***Proceratophrys boiei* (Wied-Neuwied, 1824)**

ZMB 66845–848, 67232–238, 68320, 69088: Sta. Catharina;
ZMB 32003, 32006, 32016, 32018, 48714, 67239–244: Sta. Catharina, Hansa;
ZMB 55088–090: Rio Novo-Gebiet;
ZMB 55091–137: Sta. Catharina, Hansa, Rio Humboldt-Gebiet.

Testudinidae

***Geochelone denticulata* (Linnaeus, 1766)**

ZMB 30938: Santa Rita, Rio Solimões, Amazonas.

Remarks: ZMB 30938 leg. Carl Lako.

***Proceratophrys subguttata* Izecksohn, Cruz & Peixoto, 1999 “1998”**

ZMB 67275: no locality data given;
ZMB 32015: Sta. Catharina, Hansa.

Amphisbaenia

Amphisbaenidae

***Scythrophrys sawayae* (Cochran, 1953)**

ZMB 68272: Sta. Catharina, Hansa, Rio Humboldt-Gebiet.

***Leposternon microcephalum* Wagler, 1824**

ZMB 68345: Sta. Catharina;
ZMB 31987, 69768–770, 32010, 69811: Sta. Catharina, Hansa;
ZMB 64405–420: Sta. Catharina, Hansa-Humboldt.

Remarks: The specimens ZMB 32010 and 69811 are juveniles, the specimen ZMB 68345 is a egg including an embryo.

Reptilia**Testudines**

Chelidae

***Chelus fimbriatus* (Schneider, 1783)**

ZMB 30121: Solimões;
ZMB 30973: Rio Jutatri, Amazonas.

Sauria

Gekkonidae

***Gonatodes humeralis* (Guichenot, 1855)**

ZMB 30317, 69738–750: Manacapuru, Solimões, Amazonas;
ZMB 31073, 31076, 69721–737, 69738–750: Caldeirão, Marajó, Amazonas.

***Hemidactylus mabouia* (Moreau de Jonnès, 1818)**

ZMB 69833–834: Sta. Catharina;
ZMB 69835: Rio Novo-Gebiet.

Gymnophthalmidae

***Cercosaura schreibersii schreibersii* Wiegmann, 1834**

ZMB 69886: Sta. Catharina, Hansa.

***Placosoma glabella* (Peters, 1870)**

ZMB 69888: Sta. Catharina;
ZMB 57005: Sta. Catharina, Humboldt.

Leiosauridae

***Enyalius iheringii* Boulenger, 1885**

ZMB 36942: Sta. Catharina;
ZMB 31995, 69845: Sta. Catharina, Hansa;
ZMB 36866, 37135, 37137, 38559, 56022–025, 69839–844,
69871–885: Sta. Catharina, Hansa-Humboldt.

Polychrotidae

***Anolis punctatus* Daudin, 1802**

ZMB 30962: Santa Rita, Rio Solimões, Amaz.[onas].

***Anolis transversalis* Duméril, 1851**

ZMB 30964: Santa Rita, Rio Solimões, Amaz.[onas].

***Norops fuscoauratus* (D'Orbigny in Duméril & Bibron, 1837)**

ZMB 30963, 69687–689: Santa Rita, Rio Solimões, Amaz.[onas].

***Norops nitens* (Wagler, 1830)**

ZMB 69887: Mundurucu, Rio Manacapuru, Amaz.[onas].

***Norops ortonii* (Cope, 1868)**

ZMB 30977: Rio Tonantins, Oberer Amazonas;
ZMB 31074, 69681–686: Caldeirão, Marajó, Amazonas.

***Norops trachyderma* (Cope, 1876)**

ZMB 30961: Santa Rita, Rio Solimões, Amaz.[onas].

Scincidae

***Mabuya bistrata* (Spix, 1825)**

ZMB 69837: Ayapua, Rio Purus, Solimões, Amazonas.

***Mabuya nigropunctata* (Spix, 1825)**

ZMB 29354, 29357: Caldeirão, Marajó.

Teiidae

***Ameiva ameiva* (Linnaeus, 1758)**

ZMB 29359, 31077: Manacapuru, Amazonas.

***Crocodylus amazonicus* Spix, 1825**

ZMB 29355: Manacapuru, Amazonas;
ZMB 30295: Canabonca, Paraná do Jacaré, mittlerer Amazonas;
ZMB 30300: Rio Purus;
ZMB 30978: Ayapua, Rio Purus, Amazonas.

Remarks: ZMB 30978 leg. Carl Lako.

***Kentropyx altamazonica* (Cope, 1876)**

ZMB 69836, 69838: Ayapua, Rio Purus, Solimões, Amazonas.

***Kentropyx calcarata* Spix, 1825**

ZMB 29356: Caldeirão, Marajó.

***Tupinambis merianae* (Duméril & Bibron, 1839)**

ZMB 32001, 69823–69829: Sta. Catharina, Hansa-Humboldt.
Remarks: The specimens ZMB 69823–825 are freshly hatched juveniles, the specimens ZMB 69826–828 are juveniles in the process of hatching.

Tropiduridae

***Plica plica* (Linnaeus, 1758)**

ZMB 30976: Rio Jutatri, Amazonas.

***Plica umbra ochrocollaris* (Spix, 1825)**

ZMB 30975, 52303: Rio Tonantins, Oberer Amazonas;
ZMB 36945: Canabonca, Paraná do Jacaré, Solimões, Amazonas.

***Uracentron azureum guentheri* Boulenger, 1894**

ZMB 30974: Rio Jutatri, Amazonas.

***Uracentron flaviceps* (Guichenot, 1855)**

ZMB 30973: Rio Jutatri, Amazonas.

***Uranoscodon superciliosus* (Linnaeus, 1758)**

ZMB 29358: Manacapuru, Amazonas;
ZMB 30296, 30310: Lago de Arara, Solimões, Amazonas;
ZMB 30301, 30313–314: Canabonca, Paraná do Jacaré, Solimões, Amazonas.

Serpentes

Colubridae

Colubridae

ZMB 31968: Sta. Catharina, Hansa.

Remarks: The specimen was catalogued only with the family name, however, it could not be located in the collection and is presumably lost.

***Atractus latifrons* (Günther, 1868)**

ZMB 30547: Mundurucu, Rio Manacapuru, Amazonas.

Remarks: Holotype of *Elaps herthae* Ahl, 1927, synonymized by Peters & Orejas-Miranda (1970).

***Atractus snethlageae* Cunha & Nascimento, 1983**

ZMB 47780: Lago de Arara, Solimões, Amazonas.

***Chironius exoletus* (Linnaeus, 1758)**

ZMB 30992, 66663: Canabonca, Paraná do Jacaré, Amazonas;
ZMB 47704: Sta. Catharina, Hansa;
ZMB 66587: Sta. Catharina, Hansa-Humboldt.

Remarks: ZMB 30992, 66663 leg. Carl Lako.

***Clelia plumbea* (Wied-Neuwied, 1820)**

ZMB 69272–273: Sta. Catharina, Hansa-Humboldt;
ZMB 69274: Sta. Catharina, Hansa.

***Dipsas albifrons* (Sauvage, 1884)**

ZMB 69269–270: Sta. Catharina, Hansa;
ZMB 47702, 54168: Sta. Catharina, Hansa-Humboldt.

***Dipsas alternans* (Fischer, 1885)**

ZMB 69266: Sta. Catharina, Hansa-Humboldt.

***Dipsas catesbyi* (Sentzen, 1796)**

ZMB 69271: Kastaneiro Miri, Solimões, Amazonas.

***Dipsas indica indica* Laurenti, 1768**

ZMB 47740: Ayapua, Rio Purus, Solimões, Amazonas.

***Dipsas neivai* Amaral, 1926**

ZMB 69267–268: Sta. Catharina, Hansa-Humboldt.

***Echinanthera undulata* (Wied-Neuwied, 1824)**

ZMB 47782, 49174: Sta. Catharina, Hansa;
ZMB 69258–261: Sta. Catharina, Hansa-Humboldt.

***Helicops polylepis* Günther, 1861**

ZMB 30968: Santa Rita, Rio Solimões, Amaz.[onas];
ZMB 30993: Canabonca, Paraná do Jacaré, Amazonas.

Remarks: ZMB 30968 is on loan to Rubens Nobuo Yuki (Brazil) since the 21 January 1997, therefore, species determination could not be proofed.

***Helicops hagmanni* Roux, 1910**

ZMB 30970: Rio Tonantins, Oberer Amazonas.

Remarks: The specimen is on loan to Rubens Nobuo Yuki (Brazil) since the 21 January 1997, therefore, species determination could not be proofed.

***Hydrodynastes gigas* (Duméril, Bibron & Duméril, 1854)**

ZMB 47680: Ayapua, Rio Purus, Solimões, Amazonas.

***Imantodes cenchoa cenchoa* (Linnaeus, 1758)**

ZMB 47739: Kastaneiro Miri, Solimões, Amazonas;
ZMB 64727: Caldeirão, Marajó, Amazonas-Gebiet.

***Leptodeira annulata annulata* (Linnaeus, 1758)**

ZMB 30994: Canabonca, Paraná do Jacaré, Amazonas;
ZMB 47824: Ayapua, Rio Purus, Solimões, Amazonas.

Remarks: ZMB 30994 leg. Carl Lako.

***Leptophis ahaetulla nigromarginatus* (Günther, 1866)**

ZMB 30969: Santa Rita, Rio Solimões, Amaz.[onas].

Remarks: ZMB 30969 leg. Carl Lako.

***Leptophis ahaetulla ortonii* Cope, 1876**

ZMB 47743: Lago de Arara, Solimões, Amazonas;
ZMB 47756: Ayapua, Rio Purus, Solimões, Amazonas.

***Liophis miliaris orinus* (Griffin, 1916)**

ZMB 69262: Sta. Catharina;
ZMB 31989, 32002, 32004, 47785, 47768, 69256: Sta. Catharina, Hansa;
ZMB 67072: Sta. Catharina, Hansa-Humboldt.

***Liophis reginae semilineatus* (Wagler, 1824)**

ZMB 30971: Santa Rita, Rio Solimões, Amaz.[onas].

Remarks: ZMB 30971 leg. Carl Lako.

***Oxybelis aeneus* (Wagler, 1824)**

ZMB 30311: Caldeirão, Marajó.

***Oxybelis fulgidus* (Daudin, 1803)**

ZMB 30966: Santa Rita, Rio Solimões, Amaz.[onas];
ZMB 56830: Rio Negro bei Manaus, Amazonas;
ZMB 62514: Rio Purus, Amazonas.

Remarks: The specimen ZMB 62514 is a head and neck; ZMB 30966 leg. Carl Lako.

***Oxyrhopus clathratus* Duméril, Bibron & Duméril, 1854**

ZMB 31992: Sta. Catharina, Hansa;
ZMB 65418–420, 65471–477: Sta. Catharina, Hansa-Humboldt.

***Philodryas aestiva* (Duméril, Bibron & Duméril, 1854)**

ZMB 69257: Sta. Catharina, Hansa, Brasil.

***Sibynomorphus neuwiedi* (Ihering, 1911)**

ZMB 69265: Sta. Catharina, Hansa-Humboldt.

***Spilotes pullatus* (Linnaeus, 1758)**

ZMB 47779: Sta. Catharina, Hansa.

***Thamnodynastes* sp. 1 (fide Franco & Ferreira, 2002)**

ZMB 69263: Sta. Catharina, Hansa-Humboldt.

Remarks: The Brazilian species are currently under revision, and the specimen analysed here is identical with an undescribed species, the characters of which are given in Franco & Ferreira (2002).

***Tropidodryas serra* (Schlegel, 1837)**

ZMB 47774, 47784, 65483–484: Sta. Catharina, Hansa-Humboldt.

***Tropidodryas striaticeps* (Cope, 1870 “1869”)**

ZMB 47772, 47775, 47783: Sta. Catharina, Hansa;
ZMB 65485–486: Sta. Catharina, Hansa-Humboldt.

***Xenodon neuwiedii* Günther, 1863**

ZMB 66758–760, 66805–807: Sta. Catharina;
ZMB 31994, 47713, 47766, 47773, 47832: Sta. Catharina, Hansa;
ZMB 47767, 64646–656: Sta. Catharina, Hansa-Humboldt.

***Xenoxybelis argenteus* (Daudin, 1803)**

ZMB 63774: Lago de Arara, Solimões, Amazonas.

Elapidae

***Elaps* sp.**

ZMB 31988: Sta. Catharina, Hansa.

Remarks: The South American members of the genus *Elaps* now belong to the genus *Micrurus*, however, this specimen could not be located in

the collection for determination and is presumably lost.

***Micrurus corallinus* (Merrem, 1820)**

ZMB 59093–095: Sta. Catharina;
ZMB 31918, 35743, 69246–248, 69253: Sta. Catharina, Hansa;
ZMB 47787–788, 47790, 59096–105, 69249–252, 69254: Sta. Catharina, Hansa-Humboldt.

Remarks: ZMB 69254 leg. Globig.

Typhlopidae

***Typhlops reticulatus* (Linnaeus, 1758)**

ZMB 30960: Santa Rita, Rio Solimões, Amaz.[onas].

Viperidae

***Bothrops* sp.**

ZMB 32008–009: Sta. Catharina, Hansa.

Remarks: The specimens are embryos, therefore, a more detailed species determination was not possible.

***Bothrops atrox* (Linnaeus, 1758)**

ZMB 30965: Anatyparana, Amazonas;
ZMB 30967: Rio Tonantins, Amazonas;
ZMB 48649: Rio Manacapuru, Amazonas.

***Bothrops jararaca* (Wied-Neuwied, 1824)**

ZMB 69255: Sta. Catharina;
ZMB 45807–816, 47781, 47849, 65502, 65505, 65509–522, 65497–500: Sta. Catharina, Hansa;
ZMB 45803–806, 65501, 65503–504: Sta. Catharina, Hansa-Humboldt.

Remarks: ZMB 65501, 65503 leg. Globig.

***Bothrops jararacussu* Lacerda, 1884**

ZMB 31990–991, 36261, 37227, 47769, 47776–778, 47786, 65523: Sta. Catharina, Hansa;
ZMB 63585–589, 65508: Sta. Catharina, Hansa-Humboldt.

***Crotalus durissus* (Linnaeus, 1758)**

ZMB 47796: Brasilien.

Crocodylia

Crocodylidae

***Caiman* sp.**

ZMB 30662: Rio Purus.

Remarks: The specimen could not be located in the collection and is presumably lost.

***Melanosuchus niger* (Spix, 1825)**

ZMB 36591: Rio Manacapuru, Amazonas.

Appendix

Specimens without data, but showing the typical 'Ehrhardt style' of preparation, and therefore presumably collected by W. Ehrhardt.

Colubridae

***Sibynomorphus neuwiedi* (Ihering, 1911)**

ZMB 69264: no locality data given.

Viperidae

***Bothrops jararacussu* Lacerda, 1884**

ZMB 47791, 63517–518: no locality data given.

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