SPIXIANA	29	3	259–285	München, 01. November 2006	ISSN 0341–8391

Type Catalogue of the Ichthyological Collection of the Zoologische Staatssammlung München. Part I: Historic type material from the "Old Collection", destroyed in the night 24/25 April 1944

Dirk Neumann

Neumann; D. (2006): Type Catalogue of the Ichthyological Collection of the Zoologische Staatssammlung München. Part I: Historic type material from the "Old Collection", destroyed in the night 24/25 April 1944. – Spixiana **29/3:** 259-285

For the first time a type catalogue of the Ichthyological Collection of the Zoologische Staatssammlung München (ZSM) is published. In 2005 the Global Biodiversity Information Facility (GBIF) programme aimed to create a database of the type specimens in German research museums. In the course of this programme, the fish collection in ZSM was searched for hidden type material previously considered lost and available type material was revised. With the end of the project in 2006 and publication of the type catalogue, the reorganisation and thorough revision of the fish collection in ZSM started by F. Glaw in 1998 is completed.

Besides the data basing of available type material searched by F. Zajitschek and S. Nell already in 1998, there was a strong focus to restore information from historic publications concerning fish collections known to be housed in the "Old Collection" of ZSM in the course of the GBIF programme.

Historic ichthyological collections originally deposited and formally housed in the historic "Old Collection" of the Zoologische Staatssammlung München known so far: fishes from the Spix Collection (Brazilian Expedition of Spix and Martius, 1817-1820), the Bleeker specimens from Dutch East India, the Moritz Wagner Collection with freshwater fishes from Panama and Ecuador (1858-1859), European freshwater fishes from the Collections of Franz von Paula Schrank (1817-1835), Carl Theodor von Siebold (1854-1863) and Bruno Hofer (~ 1900), the Japanese fishes from the Collections Karl August Haberer (1898-1901) and Franz Doflein (1904), the Collection of Princess Therese von Bayern from her expeditions to Mexico (1893) and South America (1898), and the Erich Zugmayer Collection from Tibet (1906) and Pakistan (1911). Nearly all types described from these historic collections were apparently destroyed in the night 24/25 April 1944 during a bombing raid. Only few specimens were saved which were either evacuated separately from the public exhibition or already exchanged from ZSM to other museums, i.e. London (BMNH), Vienna (NMW) and Frankfurt (SMF) already before World War II.

As known from literature sources so far, the historic "Old Collection" of the ZSM ichthyological collection contained at least 10000 specimens including 541 type specimens of 88 taxa (36 holotypes and 505 syntypes) out of 51 families. None of the types from the "Old Collection" mentioned in this first part of the type catalogue were found during a type search in 2005 in the ichthyological collection of ZSM; all types mentioned here have to be considered as lost in Word War II.

During the type search in 2005, additional historic specimens including type material were re-discovered in the Zoologische Präparatesammlung der Ludwig-Maximilians-Universität München. A review of this collection is given in the second part of this type catalogue. The ichthyological section of this collection was transferred and incorporated into ZSM in 2004.

Dirk Neumann, Zoologische Staatssammlung, Münchhausenstr. 21, 81247 München, Germany; e-mail: Dirk.Neumann@zsm.mwn.de.

Introduction

The early Zoologische Staatssammlung München (ZSM) was institutionally founded as "Naturalienkabinett" [cabinet of natural curiosities] by King Maximilian I. Joseph on 1 May 1807. Besides the Spix material from Brazil the early fish collection included mainly freshwater fishes from Bavaria collected by Franz Paula von Schrank who curated the combined zoological-anthropological collections during Spix's expedition to Brazil. Both, the Spix collection and the collections of Schrank mark the beginning of the ichthyological collection in the ZSM. Under the supervision of Siebold (1853-1885) the combined zoological collections were thematically regrouped and part of the material was exhibited in a Cabinet of natural curiosities. For this purpose, public and scientific collections were separated and curated independently (Balss 1926). During this time ZSM received specimens from the Bleeker Collection from Dutch East India (Fricke 1991) when Bleeker in the late 1860ies or 1870ies donated duplicates from his collection to various reputated collections to promote his attempts to find an employment at a prestigious University. Except one lot with two specimens of *Drepane punctata* (ZSM 310-311), the complete Bleeker Collection in ZSM was destroyed. While the early fish collection focused mainly on the South American and European ichthyofauna this focus was shifted toward South East Asia when the collection was surely doubled with the deposition of approximately 6000 marine fishes from the Haberer & Doflein collections from Japan, mainly deep sea fishes. ZSM received additional deep sea specimens from the Valdivia Expedition (1898-1899); the material (including type material) was spread among University and Natural History collections in Germany. Specimens from this collection were re-discovered from the Zoological Collection of Ludwig-Maximilians University, and there is a high probability that material was deposited in ZSM, too.

Only 300 lots of the historic collection survived the war. This material was probably saved because it was part of the public exhibition in the cabinet of the Wilhelminum that was evacuated earlier than the scientific collection.

Part I of the type catalogue gives a historical review of the Ichthyological Collection in ZSM and reviews single historic collections.

Part II of the type catalogue includes type material either deposited after the Second World War or re-inventoried form the "Old Collection" by Schindler in the re-built Ichthyological Collection in ZSM. Historic types rediscovered from the "Old Collection" and the Zoological Collection of Ludwig-Maximilians University in the type search in 2005 are included in part II since they were subsequently registered in Schindler's new inventory.

Part III of the type catalogue includes the Spix material collected during the Brazil Expedition (1817-1820) and described in Selecta genera et species piscium Brasiliensium that was destroyed in the Second World War.

Historical review of the ichthyological collection in ZSM

In the course of the secularization of the Bavarian monasteries in 1803 their rich collections and libraries were centralised and rationalised under Graf von Montgelas and fused with the newly founded collection of the "Bayerische Akademie der Wissenschaften" [Bavarian Academy of Sciences] (Mauermayer 1986). This early collection included zoological, botanical, mineralogical and physical objects from the private collection of King Maximilian, then stored in the Residenz in Munich, the geological Collection of the "Riedlsche Kabinett", which was previously stored in the "Akademie der Wissenschaften" [Academy of Sciences] and the "Herzoglich Zweibrücken'sche Kabinett". After the death of Maximilian I., King Ludwig I. translocated the University from Landshut to the Wilhelminum in Munich in 1827. With this step the collection of the Academy of Sciences gained more independence. However, the academy collections were partly incorporated in the former university collections and vice versa, aimed to mainly serve university interests and demands (Balss 1926). Consequently, different university professors were in charge for the curation of the combined collections. Montgelas thematically reorganised this mixed collections of natural and physical curiosities in 1811 as Zoologisch-Zootomische Sammlung and Johann Baptist Spix was appointed first curator of this museum (Balss 1926).

The historic ichthyological collection of ZSM dates back to specimens collected by Spix together with Carl Friedrich Philipp von Martius during their famous Brazil Expedition (1817-1820). Early ZSM collections received additional material under Spix's curatorship in 1825 just before he died, when he travelled to The Netherlands to buy "zoological objects" (Balss 1926), which likely included fish specimens, too.

During Spix's Brazil Expedition the zoological collections were provisionally curated by Franz von Paula Schrank (1747-1835), founder of the Botanical Gardens Munich. Besides his botanical interests, Schrank contributed much to the knowledge of the Bavarian fauna, mainly on insects and fishes (Balss 1926). Together with the Spix specimens from Brazil,

the fishes collected by Schrank in Bavarian rivers marked the origin of the ZSM ichthyological collection.

During the time of Carl Theodor von Siebold's curatorship (1853-1885) the zoological collection and especially the fish collection was substantially enlarged. Balss (1926) separately mentions the large collection of fish skeletons that was built up under Siebold's supervision. Besides this dry material it is not unlikely that the separately preparated anatomical objects of the collection are dating back to Siebold, too, including formalin preserved specimens, which were used for university lectures.

The comparative-anatomical collections, then housed in the Institute of Physiology, was incorporated into the zoological collections and moved to the Wilhelminum under Siebold. A part of the combined collections was then already accessible to the public in a Cabinet of natural curiosities (Balss 1926), which was also under Siebold's supervision. The historic zoological collections grew steadily: already comprising single halls scattered over three floors in the Wilheminum under Siebold in 1872, the collections comprised parts of the 2nd, and the complete 3rd and 4th floor in the northern tract of the Wilhelminum in 1908 (Balss 1926).

Richard von Hertwig (1850-1937) followed Siebold as curator of the zoological collection. During his time Franz Doflein started to work as assistant in the collection and was appointed vice director in 1909. The fish collection gained largely from the work of Karl August Haberer and especially of Franz Doflein and their large collections of deep sea fishes from Japan. Many of the preparated hagfishes in the university collection originate from Dofleins expedition to California (USA) in 1904. Besides these two comprising collections, the ichthyology section received additional material from Expeditions of G. Merzbacher (Tian-Shan range 1904-1910), Lorenz Müller (Amazon, 1910), E. Zugmayer (Tibet, 1906-1917) and Kapitän Michell (Congo and Orinoco, 1909-1913). Additional material of Bavarian freshwater fishes was deposited by Bruno Hofer. In the early 20th century the ichthyological collection grew steadily and demanded a separate curation within the zoological collections of ZSM. With Erich Zugmayer for the first time one scientific volunteer was in charge for the curation of the ichthyological section of the zoological collections. In 1926 ZSM received the substantial zoological bequests of Princess Therese von Bayern, including her considerable fish collection (Balss 1926).

Karl von Frisch succeeded Hertwig in 1925, both as director of the Zoological Institute as well as director of the ZSM. To this time, 10 different collections were housed in the Wilhelminum in Neuhauser Str. 10 (Mauermayer 1986). Frisch strongly demanded a separation at least of the institute and the collection; in 1932 the Zoological Institute moved to a new building at Luisenstraße 14, where it was situated until the building was demolished early 2005. With this partition, the zoological collections of the University and ZSM were separated institutionally after 122 years. The university collection included – with few exceptions collected in the 1970ies – mainly historic specimens. Specimens originating from Siebold, Hofer, Zugmayer, Müller; moreover single types from the Collections of Spix and Doflein were recently rediscovered in the Zoological Collection of the Ludwig-Maximilians University Munich (LMU). To preserve the history of the specimens that were formerly housed in this second historic fish collection in Munich, the acronym ZPLMU is here introduced; it is the abbreviation for "Zoologische Präparatesammlung der Ludwig-Maximilians-Universität München" [Zoological objects collection of the Ludwig-Maximilians University Munich].

While Frisch stayed as head at the Zoological Institute, Hans Krieg became director of the now independent Zoologische Staatssammlung, which was still housed in the Wilhelminum at Neuhauser Straße.

Krieg earned reputation after his Gran Chaco transition (II. Deutsche Gran-Chaco-Expedition 1925-1927) from Asuncion (Paraguay) to Santa Cruz de la Sierra (Bolivia). A third expedition to northern Paraguay followed from 1931-1932. On his IV Expedition to Patagonia, Alto Paraná, Mato Grosso and Sao Paulo Krieg was assisted by his student Otto Schindler (1906-1959). Inspired from his scientific work, Krieg thematically reorganised the public exhibition from systematically grouped natural curiosities towards a more modern biogeographical conception and separated the public exhibition from the scientific collection in 1928 (Kraft & Huber 1992). Schindler, who volunteered in the ichthyology already under Hertwig, became the first curator of the ichthyological collection in 1939 (Mauermayer 1986).

In 1943 the ZSM staff managed to evacuate large parts of the collection. The fish collection had been packed and was stored in the entrance of the Wilhelminum. Before the planned evacuation in the forthcoming days, fire and demolition bombs destroyed the entire building during a British bombing raid on the night of 24/25 April 1944, including the complete historic ichthyological collection, the old inventories and all further data concerning this collection (Terofal 1983, Gruber 1992). As known so far from historic literature sources, the historic ichthyological collection in ZSM contained at least 10000

specimens. However, this may be only a rough estimate that is available from various historic publications referring to single specimens known to be housed in the ichthyological collection in ZSM; e.g. the Haberer & Doflein Collections contained about 6000 specimens (Balss 1926).

The ichthyological section in ZSM was re-opened under Otto Schindler in 1949. He revised the remains of the historic "Alte Sammlung" [Old Collection] and re-inventoried remaining specimens from the "Old Collection" with a new numbering system and in a new inventory. The Schindler inventory is the only available inventory of the fish collection of ZSM known today. Therefore, Schindler's work after World War II marks the transition from the historic "Old Collection" towards a modern ichthyological collection. As a consequence, the present fish collection in ZSM is a complete post-war collection in which only single historic specimens are left.

The Moritz Wagner Collection (1813-1887)

Moritz Wagner (1813-1887), professor at the Ludwig-Maximilians University Munich, explored Central-South America from 1853-1854 (Honduras, San Salvador, Nicaragua and Costa Rica) and 1858-1859 (Panama). Wagner deposited his comprising fish collections in the Zoologische-zootomische Staatssammlung, the early ZSM under Siebold (Wagner 1864: 66 [2 as separate]). While he shipped part of his material already during his first expedition, major parts of the 1853-1854 collection were lost because inadequate preservation at the end of his journey. The remaining material that should be shipped later on was destroyed during an earthquake on 16 April 1854 in San Salvador (Wagner, 1870). Most of the material stored in the Old Collection probably dates from his second expedition. The location "Neu-Granada" in some specimens was later corrected by Wagner (1864) into "Panama" to indicate that he exclusively collected in this former province of New-Granada; the former Viceroyalty of New Granda, included the today's countries Colombia, Panama, Venezuela and Ecuador, but changed its name in 1863 into United States of Colombia. Venezuela and Ecuador became independent already in 1830, while Panama remained part of New-Granada as province until 1903.

Siebold asked Rudolf Kner to work on the fishes of the Wagner Collection (Kner 1863: 221; Wagner 1864: 66 [2 as separate]). Kner accepted, and worked together with his "jungen Freund" [young friend] Franz Steindachner on the Wagner material. The Wagner Collection comprised at least 72 specimens (22 genera, 32 species); this number is available from the second part of Kner's work (1863), where he gives a complete list of all specimens he received from Siebold. It remains unclear, whether Siebold sent the complete Wagner material to Vienna, or if the Collection included even more specimens, which were not exchanged. The discordant counts of specimens in the publications from 1863 and 1864 suggest that more material was available. Kner (1863) described 16 new species and 2 new genera from this material. Kner mentions that both, he and Steindachner did work on the material, but Kner (1863) is the sole author of the "provisional" descriptions published 1863 in "Sitzungsberichten" and thus must be considered as sole author of these species. All new species are indicated by the abbreviation "n." (nova), the two new genera with "nov. gen." (novus genus) and formally described with a short Latin diagnosis, accompanied with remarks in German on closely related species. He already indicated that the same species will be published later on in the "Abhandlungen" in more detail. The figure captions in the original description refer to unpublished plates, which were delayed (Kner 1863:221) and therefore not included in the 1863 work. The same species were described a second time one year later together with the now finished but renumbered plates (Kner & Steindachner 1864).

Unlike many descriptions of this time Kner did not only explicitly indicate the number of specimens he had for his descriptions, but refers also to a "Verz. No." (Verzeichnis-Nummer [registry number]) of each single specimen of his new species. These numbers are obviously corresponding with a list of specimens Siebold sent together with the material, probably to identify the single specimens included in the shipment: "Die jeder Species beigefügten Nummern stimmen mit jenen überein, welche den Fischen selbst angehängt und in dem von … Professor Siebold mir eingesandten Verzeichnisse angegeben sind [The given numbers of every species correspond to those which are attached to the fishes themselves and are given in the inventory … Professor Siebold sent to me]". These numbers were directly attached to single fishes identifying individuals. Siebold started as curator of the combined zoological collections in 1853, and received the material from Wagner shortly afterwards in 1854, while Wagner was still in Panama (Wagner 1864: 66 (2 as separate]). However, the bulk of Wagner's material arrived later and originates from his second expedition (1858-1859). Kner published discontinuous registry numbers ranging from 3 up to 298, so that it seems unlikely that they were used e.g. for

plain numbering of lots on a packing list or loan agreement; would this have been the case, the numbers surely would be continuously and perhaps sorted by species. The Wagner Collection Siebold sent to Kner included 72 specimens, which exactly agrees with the count of all "Verz. No." mentioned by Kner in his work. Assuming that the published numbers for the Wagner material are indeed inventory numbers and that Siebold registered incoming material in an inventory file according to the actual arrival of specimens in his collection, then the old ZSM inventory would date back to Siebold and the Wagner collection would be the earliest record of ZSM inventory numbers. The Wagner material arrived in 1854 and was one of the earliest acquisitions after Siebold started to work as curator in 1853. Siebold specimens from the historic ZPLMU Collection (as early as May 1854, details see below) have already high numbers like ZPLMU 1768, *Spinachia spinachia*, or ZPLMU 1662, *Blicca bjoerkna*, because of the independent curation of the University Collection. Therefore, the "Verz. No." published by Kner in 1863 are assumed as early ZSM inventory numbers. To be not confused with today's records, the suffix "[Old Collection]" is added, according to Schindler's treatment and identification of historic (pre-war) material.

It is not unlikely that additional fish material Wagner collected during his "Transkaukasien Expedition" (Wagner 1864: 75 [11 as separate]) was deposited in ZSM, too.

The Collection of Carl Theodor von Siebold (1804-1885)

Siebold's material originates mainly from Germany, with a special focus on Bavarian freshwater fishes and the fishes from the pre-alpine lakes in Bavaria. Starting on 3 May 1854 he built up a comprising collection of European freshwater fishes for the planned publication of the "Süßwasserfische Mitteleuropas". In the preface of his book he gives a brief report where he collected or purchased the specimens he used in his work (Siebold 1863). He obtained specimens from the Danube drainage from the following fish markets: "Ulm, Regensburg, Passau, Linz und Wien". But his main source was the fish market in Munich, where he also purchased "Bodensee-Fische, Teichfische aus Mittelfranken, Schwaben, von der Oberpfalz und von Böhmen, Lachsarten vom Niederrhein und der Elbe … [fishes from Lake Konstanz, pond fishes from Middle Franconia, Swabia, Upper Palatinate and Bohemia, salmon-species from the Lower Rhine and Elbe]".

Additional material was purchased at (quoted from Siebold, 1863: 5):

Rhine drainage: Basel, Freiburg, Straßburg, Speyer, Mainz, Heidelberg, Mannheim, Nürnberg, Bamberg, Würzburg and Frankfurt (Main).

Weser drainage: Meinigen, Eisenach, Kassel, Münden and Göttingen.

Elbe drainage: Prag, Dresden, Magdeburg, Hamburg, Wunsiedel, Leipzig, Hof, Naumburg, Halle and Berlin.

Oder drainage: Breslau, Stettin and Swinemünde.

Weichsel drainage: Danzig [Gdansk], Elbing [Elblag] and Thorn [Toruń].

Pregel drainage: Königsberg [Kaliningrad] and Heilsberg [Lidzbark Warminski].

Lake Konstanz: Lindau, Bregenz, Konstanz, Überlingen and Langenargen.

Further material from the former East Prussia: Rivers Memel, Russ and Tilsit [Sowetsk], Kurisches Haff, Frisches Haff at Braunsberg [Braniewo], Frauenberg [Frombork] and Tolkemit [Tolkmicko].

Switzerland: Genfer See [Lake Geneva].

Etsch drainage (Italy): Brixen, Bozen, Meran and Mals.

Siebold received further material from Italy from the following persons: Pirona, Udine; Jan, Milano; De Filippi, Turin (all Italy); Coinde, Lyon; Gervais, Montpellier (both France).

In an annotation (page IV) in the preface of his "Süsswasserfische Mitteleuropas", Siebold (1863) clearly states that he deposited his complete material of freshwater fishes which he obtained from 1854 onwards in the zoological cabinet of the Bavarian State: "Sämtliche von mir gesammelten oder durch Schenkung an mich gelangten Süsswasserfische werden in dem hiesigen zoologischen Cabinete des Staates aufbewahrt. … München, den 20ten Juni 1863 [All freshwater fishes collected by myself or received by me as donation are stored in the local zoological cabinet of the State … Munich, 20th June 1863]". Balss (1926) confirms that the Siebold Collection of Bavarian and European freshwater fishes was housed in the early ZSM collection. Even if nearly the complete collection was lost in World War II, single specimens are still traceable in ZSM. Only two of them can be unambiguously identified as Siebold specimens: ZSM 2 (1), *Abramidopsis leukartii*, Danube at Regensburg; v. Siebold; ZSM 302 (1), *Platessa flesus*, Helgoland; v. Siebold. Two more lots have been re-discovered in the ZPLMU collection: ZSM 30549 (1) ex ZPLMU 1768, *Spinachia spinachia*, Kieler Bucht, Ostsee [Kiel Bay, Baltic Sea], v. Siebold; ZSM 30610 (1) ex ZPLMU 1662, *Blicca bjoerkna*, Chiemsee [Lake Chiemsee].

The Japanese Collections of August Haberer (1864-1941) and Franz Doflein (1873-1924)

The Haberer and Doflein Collection contained more than 6500 marine fishes (481 species out of 319 genera in 130 families) (Anonymous, no date). Both collections originate from the Sagami Bay off Yokohama and Aburatsubo, including many deep sea fishes but also large specimens like an Ocean Sunfish *(Mola mola)* and a Goblin Shark that was described by Engelhardt as *Scapanorhynchus dofleini*. Later specimens were purchased by Doflein from the natural history dealer Alan Owston in Yokohama.

The collection of A. Haberer

The Haberer Collection was mainly based on material from his second journey to China and Japan from 1898-1901. Due to the Boxer Rebellion Haberer was forced to leave China immediately; however he managed to save his vertebrate fossils from the Yangtze-Kiang River. Before he left for Japan, he assembled a comprehensive marine collection from the Chinese Sea off Shanghai. However, major parts of his collection, more than 5000 specimens, originate from the Sagami Bay off Yokohama, among them 3000 fishes. Haberer donated his large collection of zoological objects to ZSM (Doflein 1905). Doflein revised parts of the Haberer Collection, and worked scientifically on the crustaceans.

The collection of F. Doflein

In 1904 Doflein received a grant from King Luitpold von Bayern which allowed him to explore the deep sea fauna in the Sagami Bay. The Doflein Collection included also more than 3000 fishes, nearly exclusively marine material and only few specimens from brackish or freshwater habitats. A station list with detailed information on coordinates, depths and duration of single trawls was published by Doflein in 1910. Additional material originates from local fishermen, which used hooked diabolo lines for long-line fishing in greater depths in the Aburatsubo Bay. Two of them, Kuma and Tsuschida, assisted Doflein also onboard of the steam vessel "Zuso Maru", which Doflein hired for 18 days for his surveys in the Sagami Bay. Due to bad weather it was actually possible to trawl only on 8 days from 8-15. XI.1904.

The fishes from both collections were revised by Victor Franz, who described 22 new species from the available material. Few specimens from the Haberer & Doflein Collections survived World War II because they were part of the public exhibition in the Cabinet of natural curiosities, or stored in the ZPLMU collection. Two of the originally 19 syntypes of *Ditrema temmincki* var. *jordani* Franz, 1910 were rediscovered in a type search in 2005 (D. Neumann): ZSM 257 und ZSM 30574 (ex ZPLMU 1757).

The Collection of Princess Therese von Bayern (1850-1925)

Princess Therese von Bayern showed an early interest in natural science; however women were not admitted at universities in Bavaria until 1903. She owes her extensive knowledge to her private studies in geology, ethnology botany and zoology. At the age of 21 she started to travel European countries and soon was capable to speak and write 12 languages. During her expedition-like journeys she travelled incognito, preferred a spartanic life-style and allowed not more than three personnel attendants. In 1892 Therese von Bayern was appointed an honorary member of the Geographical Society and of the Academy of Sciences, five years later she was awarded with an honorary doctorate at the Philosophical Faculty of the University of Munich – an exception for a female autodidact at this time.

During her six month lasting expedition to South America in 1898, Therese von Bayern compiled a comprising zoological, botanical and ethnological collection she brought back to Munich. The fish collection included 228 specimens from 91 fish species, from which Steindachner (1900 & 1902) described eight new species. The zoological bequests of Therese von Bayern were disposed by her will to the Zoologische Staatssammlung München (Balss 1926), including also the fishes from her earlier Mexico Expedition in 1893. Steindachner received few duplicates from the Collection Therese von Bayern, which were exchanged, as far as traceable in NMW files, from Therese von Bayern herself after Steindachner finished his work on her fish collection. As far as available from Steindachner (1900 & 1902) the Collection Therese von Bayern from Mexico and South America included 139 species. However, the actual number of specimens and actual size of the complete Collection Therese von Bayern at the time of deposition in ZSM is unknown. For detailed information on locations and dates of the three South-America Expeditions of Princess Therese von Bayern the reader is referred to Huber (1998).

The Collection of Erich Zugmayer (1879-1939)

Zugmayer explored the fish fauna of East and Central Asia in two expeditions. The first led him in 1906

to West and Central Tibet, to Ladakh (East Kashmir) and to the Panggong Lake. During this expedition Zugmayer collected 23 species with more than 400 specimens; Zugmayer (1909a) described four of them as new, *Schizothorax montanus*, *Schizothorax ladacensis*, *Schizothorax tibetanus* and *Aspiorhynchus sartus*. The complete collection and all syntypes were originally deposited in ZSM (Zugmayer 1910: 5). Supplemental information on field camps, dates etc. is detailed in Zugmayer (1909b).

In his second expedition in 1911 he explored Balutschistan, today a province of the Islamic Republic of Pakistan. He followed an invitation to build up a representative collection of marine fishes for the National Museum of Sir Henry McMahon in Quetta. From February to May 1911 he travelled the costal area near today's Iranian border while from June to mid September he explored central Balutschistan. In October, the last part of his journey, he worked in the north-eastern part of the country, the (east) Kashmir region.

At the beginning of his journey he mainly stayed in the harbours of Pasni, Gwadar, Sonmiani and Ormara, where he purchased numerous specimens from local fishermen for his collection. However, since he was more interested in freshwater fishes, he collected additional material from the rivers Purali [Porali] at Las Bela, the Dasht at Suntsar and Turbat, the Vidar at Sonmiani, and in the surroundings of the regional capital of Quetta, in Pishin, in Mastung and Nushki southeast of Quetta [Pishin Lora basin], and in the vicinity of Panjgur in the Rakhshan-Valley (Central Makran Range).

The collection comprised more than 300 specimens out of 40 species and 18 families. From this collection *Torpedo zugmayeri*, *Platycephalus platysoma*, *Petroscirtes cristatus*, *Labeo gedrosicus*, *Labeo macmahoni*, *Scaphiodon watsoni* var. *belense*, *Scaphiodon daukesi*, *Nemacheilus baluchiorum* and *Nemacheilus brahui* were described as new species or varieties. Zugmayer deposited this material in ZSM (Zugmayer 1913: 5); all species described from this expedition are solely based on the Zugmayer material deposited in Munich. The complete Zugmayer collection from the Balutschistan Expedition in Munich was apparently destroyed during the second World War, except single syntypes that have been exchanged already before World War II: *Labeo macmahoni*, NMW 81256 (1); *Scaphiodon daukesi*, NMW 19784 (1), ZSI F8028/1 (1), ZSI F 8032/1 (1); *Nemacheilus baluchiorum*, NMW 19851 (1).

Type Catalogue (part I)

The families appear in alphabetical order; species are listed respectively in their according genera. If not stated elsewise, the taxon name is valid as originally published; if single species have been synonymised or placed in different genera, the valid name and a detailed reference is given under "Remarks". Citations from the original description appear in "quotation marks", additional information from different sources or translations in [brackets].

Abbreviations

coll: Collection
don: donatus (lat.), donated
leg: leget (lat.), collected by
NMW: Naturhistorisches Museum Wien, Vienna
TL: total length
Verz. Nr.: Verzeichnis Nummer, early ZSM inventory numbers of the Old Collection
ZPLMU: Zoologische Präparatesammlung der Ludwig-Maximilians-Universität München
ZSI: Zoological Survey of India, Calcutta
ZSM: Zoologische Staatssammlung München, Munich
ZSM [Old Collection]: historic pre-war ichthyological collection of Zoologische Staatssammlung München, Munich

Anguillidae

Anguilla capensis Kaup, 1860

Abh. Naturwiss. Ver. Hamburg, (2): 18, Pl. 2 (fig. 3).

Holotype (?): ZSM [Old Collection], 660 mm SL, "vom Cap".

Remarks. Original description in the singular; apparently based on one specimen. No further collecting data available in ZSM. According to the Eschmeyer Catalogue (updated online version 17 April 2006) the synonymy with *Anguilla mossambica* (Peters, 1852) as proposed by Ege (1939) is questionable.

Anostomidae

Leporinus muyscorum Steindachner, 1900

Anz. Akad. Wiss. Wien 37 (18): 206.

Holotype (unique): ZSM [Old Collection], "18.8 cm lang", Rio Lebrija, eastern tributary of the middle Rio Magdalena at Santander (Colombia); leg: purchased out of canoas of local fishermen, Coll. Th. v. Bayern, VII. 1898.

Remarks. Apparently based on a single specimen, but not stated explicitly in the original description. The species was illustrated and described in more detail, based on a single specimen, in Steindachner (1902: 142-143 [54-55 as separate] Pl. 2, Fig. 2); holotype fixed by monotypy (ICZN Art. 73.1.2). Additional information on the length taken from Steindachner (1902), information on the collection date retrieved from preface of Therese v. Bayern (1902). Holotype of *Leporinus muyscorum* ex private Collection Therese v. Bayern.

Ariidae

Bagrus arioides Kner, 1863

Sitzungsber. Königl. Bayer. Akad. Wiss. München 2: 227, Fig. 15.

Holotype (unique): ZSM Verz. No. 273 [Old Collection], "Rio Bayano" (Panama); leg: M. Wagner, 1858-1859.

Remarks. Original description based explicitly on a single specimen, holotype fixed by monotypy (ICZN Art. 73.1.2), which was originally deposited in ZSM (Wagner 1864; see historical review for details). Figure caption "15" in original description refers to unfinished (and unpublished) plates. The species was described in more detail by Kner & Steindachner later on (1864: 47-49) but not illustrated. It is unlikely that Siebold exchanged the holotype to NMW; there is no evidence in the NMW acquisition files that type material of *Bagrus arioides* was deposited in NMW (Wellendorf, pers. comm. Oct. 2005). According to Kailola (2004) a synonym of *Cathorops multiradiatus* (Günther, 1864).

Atherinopsidae

Atherinichthys albus Steindachner, 1894

Anz. Akad. Wiss. Wien 31 (15): 149.

Syntypes: ZSM [Old Collection] (5), 13.3-25.4 mm TL (?), Lake Cuitzeo near Morelia (Mexico); leg: local fishermen; purchased at local fish market, coll. Th. v. Bayern, 4.X.1893.

Remarks. Additional information on the collection date from the preface of Bayern (1895). ZSM received the syntypes from the private Collection Therese v. Bayern (see historical review for details); no type material of this species is available in NMW (Wellendorf, pers. comm. 22.VI.2006). Placed for doubtful reasons by Dyer (in: Reis et al. 2003) into synonymy of *Chirostoma estor* Jordan, 1880 without comparing the type of *Ch. estor* with comparative material from Lake Cuitzeo. Needs further research and is tentatively treated as valid until a thorough revision of the group is published.

Atherinichthys brevis Steindachner, 1894

Anz. Akad. Wiss. Wien 31 (15): 149.

Syntypes: ZSM [Old Collection] (2), 51 & 53 mm TL (?), Lake Cuitzeo near Morelia (Mexico); leg: local fishermen; purchased at local fish market, coll. Th. v. Bayern, 4.X.1893.

Remarks. Additional information on the collection date from the preface of Bayern (1895). ZSM received the syntypes from the private collection Therese v. Bayern (see historical review for details); no type material of this species is available in NMW (Wellendorf, pers. comm. 17.X.2005). Steindachner (1895) described and illustrated the species again in a new combination as *Chirostoma breve*. Placed for doubtful reasons by Dyer (in: Reis et al. 2003) into synonymy of *Chirostoma jordani* Woolmann, 1895 without comparing type material of *Ch. jordani* with comparative material from Lake Cuitzeo. The hydrologically closed Lake Cuitzeo basin is not connected to neighbouring Rio Lerma system, the terra typica of *Ch. jordani*. Needs further research and is tentatively treated as valid until a thorough revision of the group is published. Valid as **Chirostoma breve** (Steindachner, 1894).

Atherinichthys grandoculis Steindachner, 1894

Anz. Akad. Wiss. Wien 31 (15): 149.

Holotype (unique): ZSM [Old Collection] (1), 122 mm TL (?), "aus dem Pátzcuaro-See [from Lake Pátzcuaro]" (Mexico); leg: local fishermen; purchased at local fish market, coll. Th. v. Bayern, 6.X.1893.

Remarks. Described from a single specimen; holotype fixed by monotypy (ICZN Art. 73.1.2). Additional information on the collection date from the preface of Bayern (1895). ZSM received the syntypes from the private collection Therese v. Bayern (see historical review for details); no type material of this species is available in NMW (Wellendorf, pers. comm. 17.X.2005). Steindachner (1895) described and illustrated the species again in a new combination as *Chirostoma grandocule*.

Balitoridae

Nemachilus baluchiorum Zugmayer, 1912 (b)

Ann. Mag. Nat. Hist. (Ser. 8) 10 (60): 599.

Syntypes: ZSM [Old Collection] (13), "Panjgur" [Rakhshan-Valley (Central Makran Range), Prov. of Baluchistan] (Islamic Republic of Pakistan); leg: E. Zugmayer, VII-IX.1911.

Remarks. All syntypes of *Nemachilus baluchiorum* were originally housed in ZSM (see historical review for details); one syntype was obviously exchanged to NMW already before World War II; NMW 19851 (1) ex ZSM [Old Collection]. The remaining 12 syntypes were apparently lost in WW II; not found during a type search in July 2005 (D. Neumann). Data restored from original description and Zugmayer (1913b). According to Mirza (2003) valid as **Schistura baluchiorum** (Zugmayer, 1912).

Nemachilus brahui Zugmayer, 1912 (b)

Ann. Mag. Nat. Hist. (Ser. 8) 10 (60): 598-599.

Syntypes: ZSM [Old Collection] (24), 100-130 mm TL (?), "Kelat", Prov. of Baluchistan (Islamic Republic of Pakistan); leg: E. Zugmayer, X.1911.

Remarks. All syntypes of *Nemachilus brahui* were originally housed in ZSM (see introduction for details). Data restored from original description and Zugmayer (1913b). According to Mirza (2003) valid as **Triplophysa brahui** (Zugmayer, 1912).

Blenniidae

Petroscirtes cristatus Zugmayer, 1913 (b)

Abh. Akad. Wiss. München 26 (6): 20-21.

Syntypes: ZSM [Old Collection] (4), 60-84 mm TL (?), "Omara", Prov. of Balutschistan (Islamic Republic of Pakistan); leg: E. Zugmayer, V.1911.

Remarks. The syntypes of *Petroscirtes cristatus* were originally housed in ZSM (see introduction for details). According to Springer & Gomon (1975) a synonym of *Omobranchus mekranensis* (Regan, 1905).

Bothidae

Arnoglossus violaceus Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 61, Pl. VII, Fig. 56.

Holotype (unique): ZSM [Old Collection], 23.5 cm TL, "Aburatsubo" (Japan); coll. Doflein, no date.

Remarks. Described from a single specimen; holotype fixed by monotypy (ICZN Art. 73.1.2). According to Amaoka 1969: 122 a synonym of *Parabothus coarctatus* (Gilbert, 1905).

Laeops lanceolata Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 62, Pl. VIII, Fig. 60.

Syntypes (9): ZSM [Old Collection], 8-9 cm TL, "Fukuura" (Japan); coll. Haberer, no date. ZSM [Old Collection], Dzushi, 50-100 m (Japan); coll. Doflein, no date.

Remarks. One syntype was apparently exchanged to BMNH before World War II: BMNH 1931.11.16.2 ex ZSM [Old Collection]. The metres in the Dzushi specimens probably refer to the depths at which the fishes were caught.

Laeops variegata Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 63, Pl. VIII, Fig. 59.

Syntypes (4): ZSM [Old Collection], "Fukuura" (Japan); coll. Haberer, no date. ZSM [Old Collection], "Dzushi" (Japan), 50-100 m; coll. Doflein, no date.

Remarks. The metre values for the Dzushi specimens probably refer to the depths at which they were caught. According to Li & Wang (1995) a synonym of *Laeops lanceolata* Franz, 1910.

Trachypterophrys raptator Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 60-61, Pl. VII, Fig. 54.

Syntypes (6): ZSM [Old Collection] (4 ?), 14.5-16.5 cm TL, "Fukuura" (Japan); coll. Haberer, no date.

Remarks. Two of the syntypes were apparently exchanged before World War II from ZSM [Old Collection]: BMNH 1931.11.16.1 (1) and SMF 7433 (1). The remaining four syntypes of *Trachypterophrys raptator* housed in ZSM were apparently destroyed in WW II. According to Amaoka (1969) a synonym of *Chascanopsetta lugubris* Alcock, 1894.

Callanthiidae

Callanthias japonicus Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 40, Pl. VI, Fig. 49.

Holotype (unique): ZSM [Old Collection], "Aburatsubo" (Japan); coll. Doflein; no date.

Remarks. Described from a single specimen; holotype fixed by monotypy (ICZN Art. 73.1.2).

Carcharhinidae

Carcharias sanctithomae Engelhardt, 1912

Zool. Anz. 39 (21/22): 646.

Syntypes: ZSM [old Collection] (1), female, 1.0 m, [Island of] "St. Thomas", Virgin Islands (United States of America); leg: Dr. Jäger, 1908. ZSM [Old Collection] (4), heads, 16-18 cm, same data.

Remarks. Originally published as "*sancti-thomae*"; correction of spelling mandatory (ICZN Art. 32.5.2.3). Collection data supplemented from original description.

Carcharias marianensis Engelhardt, 1912

Zool. Anz. 39 (21/22): 647.

Holotype (unique): ZSM [Old Collection], female, 40 cm, [off Island of] "Guam-Insel", Marianas Islands (United States of America); coll. Doflein, purchased from Owston, 1904.

Remarks. Holotype fixed by monotypy (ICZN Art. 73.1.2); collection data supplemented from original description. According to Compagno (1984) a synonym of *Carcharhinus melanopterus* (Quoy & Gaimard, 1824).

Centrophoridae

Centrophorus drygalskii Engelhardt, 1912

Zool. Anz. 39 (21/22): 645-646.

Syntypes: ZSM [Old Collection] (1), female, 41 cm, [off] "Enoura: Sagamibai [Sagami Bay]" (Japan); coll. Doflein, purchased from Owston, 1904. ZSM [Old Collection] (1), male, 39 cm, Sagami Bay off "Yokohama" (Japan); coll. Haberer, 1901.

Remarks. Collection data from original description, additional information from Doflein (1904). According to Compagno (1984) questionably a synonym of *Centrophorus acus* Garman, 1906.

Chaetodontidae

Chaetodon ocellifer Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 49-50, Pl. V, Fig. 35.

Syntypes: ZSM [Old Collection] (3), 1.85-3.3 cm TL, "Nagasaki, durch Consul Müller-Beek, coll. Doflein" [Nagasaki (Japan); leg (?): Consul Müller-Beek, coll. Doflein]; no date.

Remarks. According to Burgess (1978) a synonym of *Chaetodon speculum* Cuvier; 1831, which is questionable (no comparative material was compared).

Osteochromis larvatus Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 52, Pl. V, Fig. 43.

Holotype (unique): ZSM [Old Collection], 2.15 cm TL, "Aburatsubo" (Japan); coll. Doflein"; no date.

Remarks. Based on a single specimen; holotype fixed by monotypy (ICZN Art. 73.1.2).

Champsodontidae

Champsodon snyderi Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 82, Pl. IX, Fig. 74.

Syntypes (approx. 40): ZSM [Old Collection], "Fukuura" (Japan); coll. Haberer, no date. ZSM [Old Collection], "Misaki" (Japan); coll. Doflein, no date. ZSM [Old Collection], "Yagoshima" (Japan); coll. Doflein, no date.

Remarks. The exact number of syntypes remains unclear; Franz (1910) mentions that the material comprised approx. 40 specimens ("Ca. 40 Exemplare") but gives neither total number of specimens nor an exact specimen count from the different locations. A neotype (MCZ 100468) was designated by Nemeth (1994).

Characidae

Chalceus atrocaudatus Kner, 1863

Sitzungsber. Königl. Bayer. Akad. Wiss. München 2: 227, Fig. 14.

Holotype (unique): ZSM Verz. No. 143 [Old Collection], "Vom Westabhange der Anden im Staate Ecuador [western slopes of the Andes in the State of Ecuador]"; leg: M. Wagner, 1858-1859.

Remarks. Holotype fixed by monotypy (ICZN Art. 73.1.2). Originally deposited in ZSM (Wagner 1864; see historical review for details). Figure caption "14" in original description refers to unfinished (and unpublished) plates. The species was described and illustrated in more detail by Kner & Steindachner later on (1864: XX [44-46 in separate], Pl. 4, Fig. 2 & 2a). According to Lima (in Reis et al. 2003) valid as **Brycon atrocaudatus** (Kner, 1863).

Chalcinopsis chagrensis Kner, 1863

Sitzungsber. Königl. Bayer. Akad. Wiss. München 2: 226, Fig. 13.

Syntypes (5): ZSM Verz. No. 3, 16, 47, 129, 234 [Old Collection], "Rio Chagres" (Panama); leg: M. Wagner, 1858-1859.

Remarks. All syntypes were originally deposited in ZSM (Wagner 1864; see historical review for details). Figure caption "12" in original description refers to unfinished (and unpublished) plates. Duplicates have been exchanged to / were retained in NMW probably on behalf of Siebold; NMW 62661 (2), 22106 (1) ex ZSM [Old Collection]. The species was described and illustrated in more detail by Kner & Steindachner later on (1864: 42-43, Pl. 5, Fig. 3). According to Lima (in Reis et al. 2003) valid as **Brycon chagrensis** (Kner, 1863).

Chalcinopsis striatulus Kner, 1863

Sitzungsber. Königl. Bayer. Akad. Wiss. München 2: 226, Fig. 12.

Syntypes (5): ZSM Verz. No. 15, 117, 200, 204, 206 [Old Collection], "Panama"; leg: M. Wagner, 1858-1859.

Remarks. All syntypes were originally deposited in ZSM (Wagner 1864; see historical review for details). Figure caption "12" in original description refers to unfinished (and unpublished) plates. Duplicates have been exchanged to / were retained in NMW probably on behalf of Siebold; NMW 62662 (2) ex ZSM [Old Collection]. It is doubtful if the NMW specimens were included in the original syntype series; according to NMW acquisition files the duplicates were received in 1864 (Wellendorf, pers. comm. X.2005). The species was described and illustrated in more detail by Kner & Steindachner later on (1864: 38-41, Pl. 5, Figs. 2 & 2a) but based on nine instead of five syntypes; needs further investigation in NMW acquisition and inventory files. The Munich specimens were apparently destroyed in World War II. According to Lima (in Reis et al. 2003) valid as **Brycon striatulus** (Kner, 1863).

Pseudochalceus lineatus Kner, 1863

Sitzungsber. Königl. Bayer. Akad. Wiss. München 2: 225-226, Fig. 11.

Syntypes (2): ZSM Verz. No. 146, 292 [Old Collection], "Vom Westabhange der Anden im Staate Ecuador [western slopes of the Andes in the State of Ecuador]"; leg: M. Wagner, 1858-1859.

Remarks. Both syntypes were originally deposited in ZSM (Wagner, 1864; see historical review for details). Figure caption "11" in original description refers to unfinished (and unpublished) plates. Two specimens were retained in NMW or exchanged by Siebold; NMW 56739 ex ZSM [Old Collection]. NMW 56738 (1) includes a in situ preparation of the intestines of one of the two specimens retained in MW 56739 (Wellendorf, pers. comm. 17.Oct.2005). It remains unclear if the specimens stored in NMW 56739 were included in the original syntype series. The species was described and illustrated in more detail by Kner & Steindachner later on (1864: 35-38, Pl. 5, Fig. 1 & 1a) but based on three instead of two syntypes; needs further investigation in NMW acquisition and inventory files. Munich specimen(s) apparently destroyed in World War II.

Cichlidae

Acara coeruleopunctata Kner, 1863

Sitzungsber. Königl. Bayer. Akad. Wiss. München 2: 222, Fig. 3.

Syntypes (5): ZSM Verz. Nr. 5, 30, 116, 219, 239 [Old Collection], Rio Chagres (Panama); leg: M. Wagner, 1858-1859.

Remarks. All syntypes were originally deposited in ZSM (Wagner 1864; see historical review for details). Figure caption "3" in original description refers to unfinished (and unpublished) plates. Duplicates were retained in NMW or exchanged by Siebold; NMW 33635-36 (1, 1), 22168 (1) ex ZSM [Old Collection]. It remains unclear if these specimens were included in the original syntype series. The species was described and illustrated in more detail by Kner & Steindachner later on (1864: 16-18, Pl. 1, Fig. 2) but based on 9 instead of 5 syntypes; needs further investigation in NMW acquisition and inventory files.

The Munich specimens were apparently destroyed in World War II. According to Kullander (in Reis et al. 2003) valid as **Aequidens coeruleopunctatus** (Kner, 1863).

Heros altifrons Kner, 1863

Sitzungsber. Königl. Bayer. Akad. Wiss. München 2: 223, Fig. 4.

Syntypes (3): ZSM Verz. Nr. 19, 103, 195 [Old Collection], "Von Panama" (Panama); leg: M. Wagner, 1858-1859.

Remarks. All syntypes were originally deposited in ZSM (Wagner 1864; see historical review for details). Figure caption "4" in original description refers to unfinished (and unpublished) plates. One syntype was retained in NMW or exchanged by Siebold; NMW 21204 (1) ex ZSM [Old Collection]. However, it remains unclear if this specimen was included in the original syntype series. The species was described and illustrated in more detail by Kner & Steindachner later on (1864: 11-13, Pl. 2, Fig. 1) but based on eight instead of three syntypes with a new type location "Neu-Granada"; needs further investigation in NMW acquisition and inventory files. The Munich specimens were apparently destroyed in World War II. According to Kullander (in Reis et al. 2003) valid as **Amphilophus altifrons** (Kner, 1863).

Heros sieboldii Kner, 1863

Sitzungsber. Königl. Bayer. Akad. Wiss. München 2: 223, Fig. 5.

Syntypes (5): ZSM Verz. Nr. 6, 24, 27, 179, 287 [Old Collection], "Von Panama an der Südseite" [from Panama at the southern side); leg: M. Wagner, 1858-1859.

Remarks. All syntypes were originally deposited in ZSM (Wagner 1864; see historical review for details). Figure caption "5" in original description refers to unfinished (and unpublished) plates. One syntype was retained in NMW or exchanged by Siebold; NMW 22012 (1) ex ZSM [Old Collection]. It remains unclear if this specimen was included in the original syntype series. The species was described and illustrated in more detail by Kner & Steindachner later on (1864: 13-15, Pl. 2, Fig. 2) but based on 11 instead of 5 syntypes with a new type location ("Neu-Granada und vom westlichen Abhange der Panama Landenge" [New-Granada and western slopes of the Panama Isthmus]); needs further investigation in NMW acquisition and inventory files. The Munich specimens were apparently destroyed in World War II. According to Kullander (in Reis et al. 2003) valid as **Tomocichla sieboldii** (Kner, 1863).

Hoplarchus pentacanthus Kaup, 1860

Arch. Naturgesch. 26 (1): 129-131, Pl. 6 (Fig. 1).

Holotype (unique?): ZSM [Old Collection], no data available.

Remarks. No detailed information on number of specimens, type location or date is available from the original description. The material Kaup used for his description likely originated from the Spix Collection from Brazil (for details see Kottelat 1988: 87). The original description is in the singular; thus it may be assumed that it was based on a single specimen, which would then be the holotype by monotypy (ICZN Art. 73.1.2). No *Hoplarchus* specimen from the Old Collection or historic Kaup material is available in ZSM. Only one South American cichlid from the historic collection is available in ZSM. However, this specimen is a *Hypselecara*; the anal spine counts of this specimen disagree with Kaup's description. Originally described as marine species, placed in Labridae. According to Kullander (in Reis et al. 2003) a synonym of *Hoplarchus psittacus* (Heckel, 1840).

Hoplarchus planifrons Kaup, 1860

Arch. Naturgesch. 26 (1): 131-132.

Holotype (unique ?): ZSM [Old Collection], no data available.

Remarks. No detailed information on number of specimens, type location or date is available from the original description. The material Kaup used for his description likely originated from the Spix Collection from Brazil (for details see Kottelat 1988: 87). The original description is in the singular; thus it may be assumed that it was based on a single specimen, which would then be the holotype by monotypy (ICZN Art. 73.1.2). No *Hoplarchus* specimen from the Old Collection or historic Kaup material is available in ZSM (see above). Originally described as marine species, placed in Labridae; species inquirenda in Cichlidae (Kullander in Reis et al. 2003).

Clupeidae

Platycephalus platysoma Zugmayer, 1912 (b)

Ann. Mag. Nat. Hist. (Ser. 8) 10 (60): 595-596.

Holotype (unique): ZSM [Old Collection], 570 mm TL (?), "Gwadar", Prov. of Baluchistan (Islamic Republic of Pakistan); leg: local fishermen, purchased from local fish market by E. Zugmayer, II-V.1911.

Remarks. Based on a single specimen; holotype fixed by monotypy (ICZN Art. 73.1.2). Originally deposited in ZSM (see historical review for details). Collection data restored from original description, additional information from Zugmayer (1913b).

Coregonidae

Coregonus acronius var. *bavarica* Hofer (in Vogt & Hofer, 1909)

Süsswasserfische Mitteleuropas: 341, Fig. 194.

Syntypes (?): (20), Lake Ammersee, within Danube catchment, Upper Bavaria (Germany); leg: local fishermen, coll. B. Hofer, VI.1908. (20), same location; local fishermen, coll. B. Hofer, VII.1908.

Remarks. The description is based on 40 specimens. Hofer examined 2 lots with 20 specimens each, one on 19 June and the other on 10 July. While the first lot only included ripe specimens, 18 fishes from the second lot had already spawned. Specimens were dissected and ripe ovaries were weighed. It remains unclear whether or not Hofer preserved the dissected specimens. Hofer material is available in different Collections in Munich, i.e. at ZPLMU, ZSM, and at the Institute for Zoology, Fish Biology & Fish diseases, Faculty of Veterinary Medicine of LMU, the former Hofer Institute. Hofer became Curator at the Anatomical Collection of LMU in 1894 and professor of fish biology at the Faculty of Veterinary Medicine at the LMU two years later. It is therefore not unlikely that Hofer preserved and deposited specimens from this series in one of these collections. In addition, the fish hatchery of the Hofer Institute in Wielenbach also kept a larger anatomical collection, but the majority of this collection was discarded between 1950 and 1980. In this collection there is obviously no coregonid material left today (E. Bohl, pers. comm. Apr. 2006); it was either destroyed in the Second World War, or discarded later on in the 1950s. The same apparently applies to material in various University Collections in Munich. The remaining fish lots from the former Hofer Institute were transferred to ZSM in 2000. In this collection one small undissected *Coregonus* is available, but this specimen has no data and is unlikely a syntype of this species. No *Coregonus* material was discovered among Hofer specimens in the ZPLMU or ZSM Collections during type searches in 2005 (D. Neumann). The Anatomical Collection was not searched. If material was preserved at all, it was likely lost in World War II. The species was revalidated as **Coregonus bavaricus** Hofer, 1910 by Kottelat (1997) and redescribed by Freyhof (2005).

Coregonus exiguus danneri Vogt (in Vogt & Hofer, 1909)

Süsswasserfische Mitteleuropas: 332, Pl. 14 (Fig. 4).

Syntypes: Lake Traunsee (Austria); leg (?): H. Danner, no date.

Remarks. Vogt received several specimens from Lake Traunsee from Danner (Vogt, in original description). Evidently, the species is based not on a single holotype (Kottelat 1997) but on a syntype series, as Vogt refers to "Exemplare" [specimens] he received from Danner. At least one specimen must have been available to prepare the illustration on plate XIV. Kottelat (1997) indicates that the illustration on the plate dates from 1908, the text from 1909 without giving evidence for his assumptions. Vogt died already in 1895 in Geneva, where he was professor of zoology and geology, 13 years prior to the publication of *C. exiguus danneri*. It remains unclear, whether Vogt preserved Danner material (that was likely housed originally in Geneva and subsequently transferred later on by Hofer from Geneva to Munich), or if Hofer received fresh material from lake Traunsee to finish the plates, which would than have syntype status. It has not been possible to trace information that Hofer transferred Vogt specimens to Munich; needs further research. If syntypes were preserved and transferred to Munich they were likely destroyed in Word War II or discarded later on in the 1960ies in the Hofer Institute. Valid as **Coregonus danneri** (Freyhof, 2005).

Salmo renke Schrank, 1783

Schrift. Berlin. Gesells. Naturf. Fr. v. 4: 427-429.

Syntypes (?): ZSM [Old Collection], Lake Starnberger See, Upper Bavaria (Germany); Coll. Schrank (?), autum 1782.

Remarks. Original description in the singular; even if Schrank writes that he examined "diesen Fisch" [this fish], he mentiones that this species barely

reaches one foot ("erreicht fast niemals einen Fuß"), which implicates that Schrank compared at least two specimens; a mean length is given with "9 Zoll" [9 Bavarian (?) inch]. The existence of syntypes is assumed in accordance with Recommendation 73F (ICZN; "Avoidance of assumption of holotype"). Syntypes were likely part of the Collection Schrank and housed in the early ZSM fish collection (see historical review and *Salmo saxatilis* for details). No further collecting data is available in ZSM. According to Freyhof (2005) valid as **Coregonus renke** (Schrank, 1783).

Cyprinidae

Algansea lacustris Steindachner, 1894

Anz. Akad. Wiss. Wien 32 (17): 166.

Holotype (unique): ZSM [Old Collection], 20 cm TL (?), "aus dem Pátzcuaro-See [from Lake Pátzcuaro]" (Mexico); leg: purchased from local fishermen at local fish market, Th. v. Bayern, 6.X.1893.

Remarks. Holotype fixed by monotypy (ICZN Art. 73.1.2). Additional information on the collection date from the preface of Bayern (1895). ZSM received the Holotype from private Collection Therese v. Bayern (see historical review for details); no type material of this species is available in NMW (Wellendorf, pers. comm. 17X.2005). Species later described in more detail again by Steindachner (1895).

Algansea tarascorum Steindachner, 1894

Anz. Akad. Wiss. Wien 32 (17): 166.

Holotype (unique): ZSM [Old Collection], 135 mm TL (?),"Fundort: Pátzcuaro-See [Location: Lake Pátzcuaro]" (Mexico); leg: purchased from fishermen at local fish market, Th. v. Bayern, 6.X.1893.

Remarks. Based on a single specimen, not on a syntype series as stated in the Eschmeyer Catalog (updated On-Line version, 17 April 2006); holotype fixed by monotypy (ICZN Art. 73.1.2). Additional information on the collection date from the preface of Bayern (1895). ZSM received the holotype from the private Collection Th. v. Bayern (see introduction for details); no type material of this species is available in NMW (Wellendorf, pers. comm. 17X.2005). Species later described in more detail by Steindachner (1895). According to Gilbert (1998) in synonymy with *Algansea lacustris* Steindachner, 1894.

Aspiopsis merzbacheri Zugmayer, 1912 (a)

Ann. Mag. Nat. Hist. (Ser. 8) 9 (54): 682.

Syntypes: ZSM [Old Collection] (16), River Manas [River Manas He] at Manas, west of Urumtchi on northern slopes of the Tian-Shan range (People's Republic of China); leg: G. Merzbacher, 1906-1907.

Remarks. All syntypes were originally housed in ZSM (see historical review for details); one syntype was obviously exchanged to BMNH already before World War II; BMNH 1914.3.2.1 (1) ex ZSM [Old Collection]. The species was described in more detail and illustrated in Zugmayer (1913a). The Munich specimens were apparently lost in WW II. Collection data restored from original description and Zugmayer (1913a). According to Yang & Hwang (in: Wu, 1964) valid as **Leuciscus merzbacheri** (Zugmayer, 1912).

Aspiorhynchus sartus Zugmayer, 1909 (a)

Ann. Mag. Nat. Hist. (Ser. 8) 4 (23): 432.

Holotype (unique): ZSM [Old Collection], male, 530 mm TL (?),"Kisil Su near Kashgar", Tarim River basin (People's Republic of China); leg: E. Zugmayer, V-VI.1906.

Remarks. Described from a single specimen; holotype fixed by monotypy (ICZN Art. 73.1.2). The holotype was originally deposited in ZSM (see historical review for details). Collection data restored from original description, additional information from Zugmayer (1909b). Species illustrated and described in more detail by Zugmayer (1910: 288-291, Pl. 12 (Fig. 4). Original country given mistakenly as "Turkey" in the Eschmeyer Catalog (On-line version, updated 17. April 2006). According to Tsao (in: Wu, 1964) a synonym of *Aspiorhynchus laticeps* (Day, 1877).

Labeo gedrosicus Zugmayer 1912 (b)

Ann. Mag. Nat. Hist. (Ser. 8) 10 (60): 598.

Syntypes: ZSM [Old Collection] (5), "Panjur" [Rakhshan-Valley (Central Makran Range), Prov. of Baluchistan] (Islamic Republic of Pakistan); leg: E. Zugmayer, VII-IX.1911.

Remarks. All syntypes were originally housed in ZSM (see historical review for details). Collection data restored from original description, additional information from Zugmayer (1913b).

Labeo macmahoni Zugmayer, 1912 (b)

Ann. Mag. Nat. Hist. (Ser. 8) 10 (60): 597.

Syntypes: ZSM [Old Collection] (13), "Dasht River, near Suntsar and Turbat", Prov. of Baluchistan (Islamic Republic of Pakistan); leg: E. Zugmayer, II-V.1911.

Remarks. All syntypes of *Labeo macmahoni* were originally housed in ZSM (see historical review for details); one syntype was obviously exchanged to NMW already before World War II; NMW 81256 (1) ex ZSM [Old Collection] (see *Tetragonopterus ocellifer* for details). However, this specimen has not been found in NMW (Wellendorf, pers. communication 17.Oct.2005). The remaining 12 syntypes deposited in Munich were apparently lost in World War II. Collection data restored from original description, additional information from Zugmayer (1913b). According to Mirza (2003) valid as **Tariqilabeo macmahoni** (Zugmayer, 1912).

Parabarbus habilis Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 8-9, Pl. III, Fig. 3.

Holotype (unique): ZSM [Old Collection], "Sagamibucht bei Aburatsubo; coll. Doflein." [Sagami Bay at Aburatsubo (Japan); coll. Doflein]; no date.

Remarks. Described from a single specimen; holotype fixed by monotypy (ICZN Art. 73.1.2).

Scaphiodon daukesi Zugmayer, 1912 (b)

Ann. Mag. Nat. Hist. (Ser. 8) 10 (60): 596-597.

Syntypes: ZSM [Old Collection] (10), 110-190 mm TL (?), "irrigation channels and pools near Panjgur" [Rakhshan-Valley (Central Makran Range), Prov. of Baluchistan] (Islamic Republic of Pakistan); leg: E. Zugmayer, VII-IX.1911.

Remarks. All syntypes were originally housed in ZSM (see historical review for details); one syntype was obviously exchanged with NMW already before World War II; NMW 19784 (1) ex ZSM [Old Collection]. Two additional syntypes were obviously exchanged to ZSI; ZSI F8028/1 (1), F8032/1 (1) ex ZSM [Old Collection]. However, an exchange of syntypes with ZSI is not recorded in ZSM files; if the ZSI specimens are types, they must have been exchanged before 1945. The remaining 7 (?) syntypes in ZSM were apparently lost in WW II. Collection data restored from original description, additional information from Zugmayer (1913b). According to Coad (1996) in synonymy of *Cyprinion milesi* (Day, 1880).

Scaphiodon watsoni var. *belense* Zugmayer, 1912 (b)

Ann. Mag. Nat. Hist. (Ser. 8) 10 (60): 596.

Syntypes: ZSM [Old Collection] (42), "River Purali [Porali], near Las Bela [Bela]", Prov. of Baluchistan (Islamic Republic of Pakistan); leg: E. Zugmayer, II-V. 1911.

Remarks. All syntypes were originally housed in ZSM (see historical review for details); two syntypes were obviously exchanged with NMW already before World War II; NMW 19833 (2) ex ZSM [Old Collection]. An exchange of syntypes with ZSI is not recorded in ZSM files and would have to date from before 1945. The remaining syntypes in ZSM were apparently lost in World War II. Collection data restored from original description, additional information from Zugmayer (1913b). According to Coad (1996) in synonymy with *Cyprinion watsoni* (Day, 1872).

Schizothorax ladacensis Zugmayer, 1909 (a)

Ann. Mag. Nat. Hist. (Ser. 8) 4 (23): 433-434.

Syntypes: ZSM [Old Collection] (2), River "Indus near Leh" (India); leg: E. Zugmayer, X-XI.1906.

Remarks. Both syntypes were originally deposited in ZSM (see historical review for details). Collection data restored from original description, additional information from Zugmayer (1909b). Species illustrated and described in more detail by Zugmayer (1910: 280-281, Pl. 12, Fig. 2). According to Kullander et al. (1999) a synonym of *Schizothorax labiatus* (McClelland, 1842).

Schizothorax montanus Zugmayer, 1909 (a)

Ann. Mag. Nat. Hist. (Ser. 8) 4 (23): 434-435.

Holotype (unique): ZSM [Old Collection] "Indus near Leh" (India); leg: E. Zugmayer, X-XI.1906.

Remarks. Described from a single specimen; holotype fixed by monotypy (ICZN Art. 73.1.2). Originally deposited in ZSM (see historical review for details). Collection data restored from original description, additional information from Zugmayer (1909b). Species illustrated and described in more detail by Zugmayer (1910: 279-280, Pl. 12 (Fig. 1). According to Kullander et al. (1999) in synonymy with *Schizothorax esocinus* Heckel, 1838.

Schizothorax tibetanus Zugmayer, 1909 (a)

Ann. Mag. Nat. Hist. (Ser. 8) 4 (23): 433.

Syntypes: ZSM [Old Collection] (4), 1 ex. 350 mm TL (?) & 3 ex. smaller, "little river running into the Tso Rum, Panggong Lakes (Tibet); leg: E. Zugmayer, VI-IX. 1906.

Remarks. All syntypes were originally deposited in ZSM (see historical review for details). Collection data restored from original description, additional information from Zugmayer (1909b). Species illustrated and described in more detail by Zugmayer (1910: 281-283, Pl. 12 (Fig. 3). According to Chen & Cao et al. (in Yue 2000) a synonym of *Schizothorax labiatus* (McClelland, 1842).

Dactylopteridae

Dactyloptena jordani Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 80-81, Pl. IX, Fig. 72 & 72a.

Holotype (unique): ZSM [Old Collection], 8.5 cm TL, "Japan" no type locality and date available from original description.

Remarks. Described from a single specimen; holotype fixed by monotypy (ICZN Art. 73.1.2). Franz does not give a type locality nor any other information concerning collector/collection, so it remains unclear, if the specimen originally belonged to either the Haberer or the Doflein collection, which would have allowed to at least to restrict the type locality to a more confined area in Japan. In a table Franz (1910: 100) is listing this species as new for "Japan", so "Japan" is the only available geographical information from the original description. According to Eschmeyer (1997) a synonym of *Dactyloptena gilberti* Snyder, 1909.

Echeneidae

Echeneis megalodiscus Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 69, Pl. VIII, Fig. 57.

Syntypes: ZSM [Old Collection] (1), "Yokohama" (Japan); coll. Haberer, no date. ZSM [Old Collection] (6), "Aburatsubo" (Japan); coll. Doflein, no date.

Remarks. According to Lachner (1973:640) a synonym of *Remora osteochir* (Cuvier, 1829).

Eleotridae

Eleotris picta Kner, 1863

Sitzungsber. Königl. Bayer. Akad. Wiss. München 2: 223, Fig. 6.

Syntypes (3): ZSM Verz. Nr. 245, 263, 267, Rio Bayano (Panama); leg: M. Wagner, 1858-1859.

Remarks. All syntypes were originally housed in ZSM (Wagner 1864; see historical review for details). Figure caption "6" in original description refers to unfinished (and unpublished) plates. One doublet was exchanged to or retained in NMW probably on behalf of Siebold; NMW 76866 (1) ex ZSM [Old Collection]. The Munich syntypes were apparently destroyed in World War II. The species was described and illustrated more detailed as *Eleotris pictus* by Kner & Steindachner later on (1864: 18-21, Pl. 3, Fig. 1).

Engraulidae

Engraulis macrolepidota Kner, 1863

Sitzungsber. Königl. Bayer. Akad. Wiss. München 2: 224, Fig. 7.

Holotype (unique): ZSM Verz. Nr. 280 [Old Collection], Rio Bayano, (Panama); leg: M. Wagner, 1858-1859.

Remarks. Based on a single specimen; holotype fixed by monotypy (ICZN Art. 73.1.2). The holotype was originally deposited in ZSM (Wagner 1864; see historical review for details). Figure caption "7" in original description refers to unfinished (and unpublished) plates. It is unlikely that Siebold exchanged the holotype to NMW; no such specimen is known to be housed in the NMW collection (Wellendorf, pers. comm. Oct. 2005). The species was described and illustrated in more detail as *Engraulis macrolepidotus* by Kner & Steindachner (1864: 21-23, Pl. 3, Fig. 2) later on, again based on a single specimen. Whitehead (1970) erroneously selected a lectotype assuming that NMW 2808 (Lectotype, 104.7 mm SL) and NMW 2807 (1, Paralectotype) were part of a syntype series. However, these specimens did not originate from a syntype series; according to NMW files they were acquired in 1874 and 1876, respectively (Wellendorf, pers. comm. Oct. 2005). Neither of the lots is marked or treated as containing type material in NMW. The lectotype designation is invalid (ICZN Art. 74.2), as the specimen selected was not a syntype. According to Nelson (2004) valid as **Anchovia macrolepidota** (Kner, 1863).

Engraulis poeyi Kner, 1863

Sitzungsber. Königl. Bayer. Akad. Wiss. München 2: 224, Fig. 8.

Holotype (unique): ZSM Verz. Nr. 7 [Old Collection], Rio Bayano (Panama); leg: M. Wagner, 1858-1859.

Remarks. Holotype fixed by monotypy (ICZN Art. 73.1.2), originally deposited in ZSM (Wagner 1864; see historical review for details). Figure caption "8" in original description refers to unfinished (and unpublished) plates. It is unlikely that Siebold exchanged the holotype to NMW; not found in NMW (Wellendorf, pers. comm. Oct. 2005). The species was described and illustrated in more detail by Kner & Steindachner later on (1864: 23-24, Pl. 3, Fig. 3). According to Whitehead et al. (1988) valid as **Lycengraulis poeyi** (Kner, 1863).

Etmopteridae

Spinax unicolor Engelhardt, 1912

Zool. Anz. 39 (21/22): 645.

Holotype (unique): ZSM [Old Collection], female, 55 cm, "Sagamibai [Sagami Bay]" (no exact location available; probably off Yokohama) (Japan); coll. Haberer, 1901.

Remarks. Holotype fixed by monotypy (ICZN Art. 73.1.2); collection data restored from original description. According to Compagno (2001) valid as **Etmopterus unicolor** (Engelhardt, 1912).

Exocoetidae

Exocoetus lineatus japonicus Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 24-25.

Syntypes: ZSM [Old Collection] (3), "Oyama, Sagamibai, coll. Haberer" [Oyama, Sagami Bay (Japan); coll. Haberer]; no date.

Remarks. According to Nakabo (2002) a synonym of *Cheilopogon pinnatibarbatus* (Bennett, 1831), but a valid subspecies as described.

Gasterosteidae

Gasterosteus williamsoni japonicus Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 19, Pl. III, Fig. 10.

Material: ZSM [Old Collection] (2), "von Misaki, coll. Doflein" [from Misaki (Japan); coll. Doflein]; no date.

Remarks. Published in the original description as *Gasterosteus* not as "*Gastrosteus*" as given in the Eschmeyer Catalog (update Online version 17. April 2006). Permanently invalid, preoccupied by *Gasterosteus japonicus* Houttuyn, 1782. No material exists for the name proposed by Franz, as there never is type material for unavailable names. According to Okada (1961) the junior homonym is a synonym of *Gasterosteus aculeatus* Linnaeus, 1758, subspecies *microcephalus* Girard, 1854.

Gobiidae

Ctenogobius macropteryx Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 67, Pl. VI, Fig. 45.

Syntypes: ZSM [Old Collection] (2), "Dzushi, 80 m" (Japan); coll. Doflein, no date.

Remarks. The metre values for the Dzushi specimens refer probably to the depth in which the specimens were caught. A neotype (NSMT-P 46608) was selected by Ikeda et al. (1995: 304). According to Shibukawa & Suzuki (2004: 116) valid as **Vanderhorstia macropteryx** (Franz, 1910).

Glossogobius intermedius Aurich, 1938

Int. Rev. Hydrobiol. Leipzig, 38 (1/2): 147-XX, Fig. 14.

Syntypes: ZSM [Old Collection], 62-100 mm TL, "Mahalona-See" [Lake Mahalona], cent. Sulawesi [Celebes] (Indonesia); leg: R. Woltereck, X.1932. ZSM [Old Collection], 62-100 mm TL, "Towoeti-See" [Lake Towuti], cent. Sulawesi [Celebes] (Indonesia); leg: R. Woltereck, X.1932.

Remarks. Collection data restored from Woltereck (1933).

Trypauchenophrys anotus Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 68, Pl. IX, Fig. 77.

Syntypes: ZSM [Old Collection] (2), each 5.2 cm SL, "Fukuura" (Japan); coll. Haberer, no date.

Remarks. Murdy & Shibukawa erroneously refer to a holotype (SMF 7432) but according to the original description the species is based on two syntypes. The type status of SMF 7432 is unclear; the current synonymy is based on a comparison of

SMF 7432. According to Murdy & Shibukawa (2003) a synonym of *Caragobius urolepis* (Bleeker, 1852).

Goodeidae

Characodon luitpoldii Steindachner, 1894

Anz. Akad. Wiss. Wien 31 (15): 147-148.

Syntype: ZSM [Old Collection] (2), females "13 und 14.6 cm lang", Lake Pátzcuaro, Michoacan, (Mexico); leg: local fishermen, purchased from Canoas at local fish market, coll. Th. v. Bayern, 6.X.1893.

Remarks. Syntypes ex private Collection Therese v. Bayern; additional information on the collecting date restored from preface of Th. v. Bayern (1894: 519 [3 as separate]). The same species was described and illustrated again by Steindachner (1895: 528-529 [12-13 in separate], Pl. 2, 3-3b), presumably based on the same specimens; however, the length of the specimens is given with 135 mm and 140 mm, respectively. Th. v. Bayern donated one of the syntypes to Steindachner, this specimen is available in NMW 12996 (pers. comm. Wellendorf, X.2005); the Munich syntype is apparently lost. According to Nelson (2004) valid as **Goodea luitpoldii** (Steindachner, 1894).

Haemulidae

Pomadasys schyrii Steindachner, 1900

Anz. Akad. Wiss. Wien 37 (18): 207-208.

Holotype (unique): ZSM [Old Collection], 17.3 cm, purchased from local fishermen on fish market in Guayaquil (Ecuador); coll. Th. v. Bayern, 17.VIII.1898.

Remarks. Holotype fixed by monotypy (ICZN Art. 73.1.2); additional information on the location and collection date restored from preface of Th. v. Bayern (1902). Holotype of *Pomadasys schyrii* ex private Collection Therese v. Bayern. Species later changed in *schryi* when species was illustrated and described in more detail in Steindachner (1902).

Pristipoma humile Kner, 1863

Sitzungsber. Königl. Bayer. Akad. Wiss. München 2: 221, Fig. 1.

Holotype (unique): ZSM Verz. Nr. 133 [Old Collection], Rio Bayano (Panama); leg: Moritz Wagner, 1858-1859.

Remarks. *Pristipoma humile* Kner, 1863 (Non Bowdich, 1825). Holotype fixed by monotypy (ICZN Art. 73.1.2) and originally deposited in ZSM (Wagner 1864; see historical review for details). Holotype (USNM 30957) and paratypes (USNM 30957) in USNM doubtfully referred to Kner (Eschmeyer Catalog, On-line version, updated 27. Apr. 2006). Data restored from original description and Wagner (1864). The figure caption "1" in the original description refers to unfinished (and unpublished) plates; species illustrated and described in more detail by Kner & Steindachner later on (1864: 3-5, Pl. 1, Fig. 1). Objectively invalid; preoccupied by *Pristipoma humilis* [*humile*] Bowdich, 1825, replaced by *Pomadasys bayanus* Jordan & Evermann, 1898.

Hypoptychidae

Hypoptychus steindachneri Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 8, Pl. V, Fig. 28.

Holotype (unique): ZSM [Old Collection], 7.7 cm TL, "von Fukuura, coll. Haberer" [from Fukuura (Japan); coll. Haberer]; no date.

Remarks. Described from a single specimen; holotype fixed by monotypy (ICZN Art. 73.1.2). According to Lindberg & Krasyukova (1975: 201) a synonym of *Hypoptychus dybowskii* Steindachner, 1880.

Loricariidae

Loricaria aurea Steindachner, 1900

Anz. Akad. Wiss. Wien 37 (18): 206-207.

Holotype (unique): ZSM [Old Collection], 16.9 cm SL, Rio Magdalena at Bodega Central (Colombia); leg: local fishermen; coll. Th. v. Bayern, 18.VI.1898.

Remarks. Holotype fixed by monotypy (ICZN Art. 73.1.2); supplemental collecting data taken from preface of Th. v. Bayern (1902: 90 [2 as separate]). ZSM [Old Collection] (1) ex private Collection Therese v. Bayern. The species was depicted and described more detailed in Steindachner (1902: 138-139 [50-51 as separate], Taf. V, Fig. 1, 1a). According to Ferraris (in Reis et al. 2003) valid as **Sturisoma aureum** (Steindachner, 1900).

Loricaria uracantha Kner, 1863

Sitzungsber. Königl. Bayer. Akad. Wiss. München 2: 228, Fig. 18.

Syntypes (2): ZSM Verz. No. 130, 135 [Old Collection], "Rio Chagres" (Panama); leg: M. Wagner, 1858-1859.

Remarks. Syntypes were originally deposited in ZSM (Wagner 1864; see historical review for details). Obviously none of the syntypes is available in NMW (Wellendorf, pers. com. Oct.2005). The species was described and illustrated in more detail by Kner & Steindachner later on (1864: 56-58, Pl. 6, Fig. 3), the figure caption "18" in the original description refers to unfinished (and unpublished) plates.

Mitsukurinidae

Scapanorhynchus dofleini Engelhardt, 1912

Zool. Anz. 39 (21/22): 644.

Holotype (unique): ZSM [Old Collection], female, 2.10 m, [off] Mayegawa, Sagami Bay (Japan); coll. Doflein, purchased from Owston, 18.III.1903.

Remarks. Described from a single specimen; holotype fixed by monotypy (ICZN Art. 73.1.2); collection data restored from original description. Eschmeyer (On-Line Catalog, updated version 17. April 2006) gives 4 jaws as additional paratypes; however, these jaws are not mentioned by Engelhardt. According to Compagno (2001) a synonym of *Mitsukurina owstoni* Jordan, 1898.

Moridae

Haloporphyrus modestus Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 28-29, Pl. IV, Fig. 13.

Holotype (unique): ZSM [Old Collection], 34 cm TL, "von Yokohama, coll. Haberer" [from Yokohama (Japan); coll. Haberer]; no date.

Remarks. Described from a single specimen; holotype fixed by monotypy (ICZN Art. 73.1.2). According to Nakabo (2002) valid as **Laemonema modestum** (Franz, 1910).

Mugilidae

Dajaus elongatus Kner, 1863

Sitzungsber. Königl. Bayer. Akad. Wiss. München 2: 222, Fig. 2.

Syntypes (2): ZSM Verz. Nr. 151 [old Collection], "Neu-Granada"; leg: M. Wagner, 1858-1859. ZSM Verz. Nr. 286 [Old Collection], same data.

Remarks. Both syntypes were originally deposited in ZSM (Wagner 1864; see historical review for details). Location later corrected by Wagner (1864) to "Panama". Figure caption "2" in the original description refers to unfinished (and unpublished) plates; the species was illustrated by Kner & Steindachner later on (1864) with a new numbering on Pl. 1, Fig. 2 in a more detailed description. According to Ferraris in synonymy of *Agonostomus monticola* (Bancroft, 1834).

Mugil charlottae Steindachner, 1902

Denkschr. Akad. Wiss. Wien 72: 129-130 [41-42 as separate], Pl. IV, Figs. 2 & 2a.

Holotype (unique): ZSM [Old Collection], "20.5 cm lang", purchased from fishmarket near Guayaquil (Ecuador); leg: local fishermen, coll. Th. v. Bayern, 11.VIII. 1898.

Remarks. Holotype fixed by monotypy (ICZN Art. 73.1.2); supplemental information on the location and collection date restored from preface of Th. v. Bayern (1902). Holotype of *Mugil charlottae* ex private Collection Therese v. Bayern. According to Thomson a synonym of *Mugil curema* Valenciennes, 1836.

Ophichthidae

Ophichthus habereri Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 13-14, Pl. III, Fig. 12.

Holotype (unique): ZSM [Old Collection], 90 cm TL, "von Yokohama, coll. Haberer" [from Yokohama (Japan), coll. Haberer]; no date.

Remarks. Described from a single specimen; holotype fixed by monotypy (ICZN Art. 73.1.2).

Parodontidae

Saccodon wagneri Kner, 1863

Sitzungsber. Königl. Bayer. Akad. Wiss. München 2: 225, Fig. 10.

Holotype (unique): ZSM Verz. No. 210, "Ecuador" [no exact location or drainage available from original description] (Ecuador); leg: M. Wagner, 1858-1859.

Remarks. Holotype fixed by monotypy (ICZN Art. 73.1.2), originally deposited in ZSM (Wagner 1864; see historical review for details). Figure caption "10" in original description refers to unfinished (and unpublished) plates. The species was described and illustrated in more detail as *Saccodon wagneri* by Kner & Steindachner later on (1864: 31-35, Pl. 4, Fig. 2). It

was hypothesised that the holotype may be available in NMW (e.g. Eschmeyer Catalog, updated On-Line version, 17. Apr. 2006); however, it is unlikely that Siebold exchanged this unique specimen to NMW. No type material of *Saccodon wagneri* is available in NMW (Wellendorf, pers. comm. Oct. 2005). The holotype was apparently destroyed in Munich in World War II.

Pempheridae

Parapriacanthus beryciformis Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 33, Pl. VI, Fig. 46.

Syntype(s ?): ZSM [Old Collection], "Japan".

Remarks. Franz (1910) did not report the number of specimens. The description, which is in the singular, contains no evidence of more than a single specimen. The existence of syntypes is assumed in accordance with Recommendation 73F (ICZN; "Avoidance of assumption of holotype"), since the number of original type specimens cannot be restored from the old ZSM inventory files (see historical review). The material of *Parapriacanthus beryciformis* was originally deposited in ZSM. Franz (1910) offers neither an exact type locality, nor any other information concerning collector/collection. Therefore, it remains unclear if the specimen(s) originally belonged to the Haberer or Doflein collection. This would at least have allowed to restrict the type locality to a more confined area in Japan. Franz (1910) gives this species as new for "Japan" in a table on page 98, so "Japan" is the only available geographical information from the original work. The location "Yokohama" available in Eschmeyer online (Updated April 5, 2005) is erroneous. Doubtfully treated as synonym *Parapriacanthus ransonneti* by Randall (1995: 244).

Percidae

Aspro apron Siebold, 1863

Die Süsswasserfische von Mitteleuropa: 55.

Holotype (unique): ZSM [Old Collection] (1), no location available; Coll. Siebold, 1854-1862.

Remarks. Siebold based his description on only one specimen: "Ich habe ein Exemplar des *Aspro vulgaris* aus der Rhone, welches ich durch den Naturalienhändler Coinde von Lyon erhalten habe" [I have one specimen of *Aspro vulgaris* from the Rhône, which I received from the natural history dealer Coinde from Lyon] (Siebold 1863: 55). This single specimen is the holotype fixed by monotypy (ICZN Art. 73.1.2). According to Kottelat (1997) a synonym of *Zingel asper* (Linnaeus, 1758).

Perca americana Schrank, 1792

Nähere Bestimmung dreier Barsch-Arten. III: 100.

Syntypes: (20) "Neuyork" "in aquis subsalinis …; da wo frische Wasser sich in Bays oder See ergießen." [New York, in brackish water, where freshwater flows into bays or the sea]; probably collected around 20.III.1783.

Remarks. Schrank apparently based his description on a literature source ("Der nordamerikanische Bersch. Schoepf. Naturf." [The northamerican Perch]; Schoepf 1784a), which was published by Johann David Schoepf (1752-1800), a German physician who worked as a botanist and zoologist in North America. Schoepf described the species very detailed based on at least 20 specimens ("Bey wenigstens 20, die ich binnen drey Tagen vor mir hatte, …" [From at least 20, which I have seen within three days, …]), but did not propose a binominal name for it. From Schoepf (1784b) it can be assumed that the specimens originate "in der Gegend um Neuyork" [from the New York area], which were purchased at a local fish market in New York. There is no evidence in the original description that Schrank has seen Schoepf specimens, Schoepf material is not reported from the ZSM collection (Blass 1926).

Perca vulgaris Schrank, 1792

Nähere Bestimmung dreier Barsch-Arten. I: 99.

Syntypes (?): ZSM [Old Collection], exact location unknown; Coll. Schrank (?), no date.

Remarks. Apparently based on Schäffer (1761); if Schäffer specimens were preserved, they could be syntypes (at least the illustrated specimen, to which Schrank namely refers). Additional specimens were likely seen by Schrank; he states that "die baierischen Bürstlinge … die Schäffers Abbildung sehr wenig an Größe übertreffen" [the Bavarian Perches barely exceed Schäffers illustrations in length], which indicates that Schrank had comparative material for his assumptions; the existence of syntypes is assumed in accordance with Recommendation 73F (ICZN; "Avoidance of assumption of holotype"). Syntypes were likely part of the Collection Schrank and housed in the early ZSM fish collection (see historical review and *Salmo saxatilis* for details). No further collecting data available in ZSM. Synonym of *Perca fluviatilis* Linnaeus 1758 (Kottelat 1997).

Pingupedidae

Neopercis decemfasciata Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 81-82, Pl. IX, Fig. 78.

Syntypes: ZSM [Old Collection] (3), "Misaki und Aburatsubo, coll. Doflein (nachts)" [Misaki and Aburatsubo (Japan), night catch; coll. Doflein, no date. ZSM [Old Collection] (6), 9-13 cm "Yokohama" (Japan); coll. Haberer, no date.

Remarks. According to Nakabo (2002) valid as **Parapercis decemfasciata** (Franz, 1910).

Poeciliidae

Xiphophorus gillii Kner, 1863

Sitzungsber. Königl. Bayer. Akad. Wiss. München 2: 224, Fig. 9.

Holotype (unique): ZSM Verz. Nr. 176, Rio Charges (Panama); leg: M. Wagner, 1858-1859.

Remarks. Explicitly based on a single specimen in the original description; holotype fixed by monotypy (ICZN Art. 73.1.2). The type of *Xiphophorus gillii* was originally deposited in ZSM (Wagner 1864; see historical review for details). Figure caption "9" in original description refers to unfinished (and unpublished) plates. The species was described and illustrated in more detail by Kner & Steindachner later on (1864: 25-28, Pl. 4, Fig. 1) based on more material. However, these specimens do not have type status, thus NMW21608-21609 are not syntypes of this species. It is unlikely that Siebold exchanged the unique holotype to NMW; type status of NMW syntypes is doubtful, needs further investigation in NMW acquisition and inventory files. The holotype was apparently destroyed in World War II in Munich. According to Lucinda (in Reis et al. 2003) valid as **Poecilia gillii** (Kner, 1863).

Potamotrygonidae

Trygon hystrix var. *ocellata* Engelhardt, 1912

Zool. Anz. v. 39 (nos. 21/22): 647-648.

Holotype (unique): ZSM [Old Collection], female, 25 cm, "Südküste von Mexiana (Süßwasser!): Brasilien [southern shores of Mexiana (Freshwater!): Brazil]"; leg (?): Lorenz Müller-Mainz, 1910.

Remarks. Holotype fixed by monotypy (ICZN Art. 73.1.2); collection data restored from original description. According to Carvalho et al. (in Reis et al. 2003) valid as **Potamotrygon ocellata** (Engelhardt, 1912).

Rajidae

Raja brasiliensis Müller & Henle, 1841

Systematische Beschreibung der Plagiostomen: 195.

Holotype (unique): ZSM [Old Collection], length approx. 40", width 16" 6", "Brasilien".

Remarks. No additional collecting data or date available from original description. Originates probably from the Spix Collection. According to Castro-Aguirre & Pérez (1996) valid as **Rhinoptera brasiliensis** (Müller & Henle, 1841).

Salmonidae

Salmo saxatilis Schrank, 1798

Fauna Boica, Vol. 1: 320.

Syntypes (?): ZSM [Old Collection], "in kalten Waldbächen [in Baiern]" (in cool forest streams [in Bavaria]) (Germany); Coll. Schrank (?), no date.

Remarks. Schrank referred to an earlier description by Bloch (1782), but the latter did not propose a scientific name. Schrank knew this species from living or preserved specimens since in the preface he explicitly mentions that he only included species in his Fauna Boica if he either was assured of their occurrence in Bavaria from reliable sources or knew them from voucher specimens (Schrank, 1798: VII-VIII). Schrank built up his private collection for more than 20 years; Balss (1926) confirms that the Schrank collection was available in the Old Collection in ZSM and included mainly Bavarian insects and fishes. No syntypes have been found in the ZSM Collection during a type search in 2005 (D. Neumann). For the nomenclatorial and taxonomical problems see Kottelat (1997; except for incorrect restriction of type locality which is not provided by the Code in that manner).

Samaridae

Plagiopsetta glossa Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 64, Pl. VIII, Fig 58.

Holotype (unique): ZSM [Old Collection], 11 cm TL, "vor Yagoshima, 150 m Tiefe, coll. Doflein" [off Yagoshima (Japan), 150 m depth; coll. Doflein]; no date.

Remarks. Described from a single specimen, holotype fixed by monotypy (ICZN Art. 73.1.2).

Scorpaenidae

Ebosia starksi Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 72-73, Pl. IX, Fig. 69.

Syntypes: ZSM [Old Collection] (4), "von Yokohama, coll. Haberer" [from Yokohama (Japan); coll. Haberer]; no date. ZSM [Old Collection] (2), "von Misaki" [from Misaki (Japan)]; coll. Doflein, no date. ZSM [Old Collection] (1), "von Dzushi, 80 m, coll. Doflein" [from Dzushi (Japan), 80 m; coll. Doflein]; no date.

Remarks. The metre values for the Dzushi specimens refer probably to the depth in which they have been caught. According to Motomura (2004) a synonym of *Parapterois heterura* (Bleeker, 1856).

Pontinus dubius Steindachner, 1902

Denkschr. Akad. Wiss. Wien 72: 124 [as separate 36], Pl. 3, Fig. 1.

Holotype (unique): ZSM [Old Collection], "24.5 cm lang", Fishmarket in dry riverbed at Payta (Peru); local fishermen, coll. Th. v. Bayern, 23-26.IX.1898.

Remarks. Holotype fixed by monotypy (ICZN Art. 73.1.2); supplemental information on the location and collection date taken from preface of Th. v. Bayern (1902). Holotype of *Pontinus dubius* ex private Collection Therese v. Bayern. No type of this species is known in the NMW Collection (Wellendorf, pers. comm. X.2005). Not included in earlier abstract (Steindachner 1900).

Scyliorhinidae

Pristiurus hertwigi Engelhardt, 1912

Zool. Anz. 39 (21/22): 644-645.

Syntypes: ZSM [Old Collection] (4), males, 46-50 cm, [Sagami Bay off] "Yokohama" (Japan); coll. Haberer, no date. ZSM [Old Collection] (1), female, 66 cm, [Sagami bay off] Aburatsubo (Japan); leg: "SS Zuso Maru", coll. Doflein, XI.1904.

Remarks. Collection data restored from original description, date from Doflein (1904). According to Compagno (1984) a synonym of **Parmaturus pilosus** Garman, 1906.

Serranidae

"Anthias" dofleini Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 42-43, Pl. 1.

Material: ZSM [Old Collection] (2), "Aburatsubo, Sagamibucht, ca. 15 m Tiefe" [Aburatsubo, Sagami Bay (Japan), approx. 15 m depth); coll Doflein, no date.

Remarks. Franz introduced this species as "*Serranidae* nov. spec." based on an illustration of two specimens on Pl. 1 (Franz 1910: 43) and placed this species doubtfully either in the genus *Anthias* or *Epinephelus* ("Augenscheinlich gehören sie zu den Serranidae, vielleicht Gattung *Anthias* oder *Epinephelus*, doch das ist zweifelhaft" [Apparently they belong to the Serranidae, maybe genus *Anthias* or *Epinephelus*, but this is doubtful]). Consequently, the species name *dofleini* is unavailable from Franz (1910), because it was not published in unambiguous combination with a generic name (Art. 11.9.3 ICZN). Furthermore, Franz proposed the new species name for future use only ("Wir wollen für später den Speziesnamen dofleini vorschlagen." [For later, we wish to propose the species name dofleini]). Thus the name is unavailable from Franz (1910) due to Art 11.5 (ICZN) as well. No subsequent work is known to have made the name dofleini available.

Anthias elongatus Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 39, Pl. VI, Fig 51.

Syntypes: ZSM [Old Collection] (31), 6.5-13 cm TL, "Yokohama; coll. Haberer"; no date.

Remarks. According to Nakabo valid as **Pseudanthias elongatus** (Franz, 1910).

Anthias gracilis Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 38-39, Pl. VI, Fig 47.

Syntypes: ZSM [Old Collection] (3), "ca. 8 cm Länge" [approx. 8 cm TL], "Dzushi, 80 m Tiefe, coll. Doflein" [Dzushi (Japan), caught from 80 m depth; coll. Doflein]; no date.

Anthias nobilis Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 38, Pl. VI, Fig. 44.

Syntypes: ZSM [Old Collection] (3), "Misaki" (Japan); "coll. Doflein"; no date.

Remarks. According to Randall & Pyle (2001) valid as **Pseudanthias nobilis** (Franz, 1910).

Epinephelus doederleinii Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 35-36.

Syntypes (8): ZSM [Old Collection] "Yokohama, coll. Haberer" [Yokohama (Japan); coll. Haberer]; no date. ZSM [Old Collection], "Dzushi, coll. Doflein" [Dzushi (Japan); coll. Doflein]; no date.

Remarks. Originally as *Epinephelus döderleinii*; change of spelling mandatory (Art 32.5.2.1 ICZN). Franz gives a total number of 8 specimens ranging from 2.6-20 cm TL, which were probably stored in two different lots. According to Randall & Heemstra (1991) a synonym of *Epinephelus radiatus* (Day, 1868).

Serranus huascarii Steindachner, 1900

Anz. Akad. Wiss. Wien 37 (18): 208.

Holotype (unique): ZSM [Old Collection], "19.5 cm lang", Fishmarket in dry riverbed in Payta (Peru); local fishermen; coll. Th. v. Bayern, 23-26.IX.1898.

Remarks. Holotype fixed by monotypy (ICZN Art. 73.1.2); additional information on the location and collection date restored from preface of Th. v. Bayern (1902). Holotype of *Serranus huascarii* ex private Collection Therese v. Bayern. No type of this species is known in the NMW Collection (Wellendorf, pers. comm. X.2205). Species illustrated and described in more detail in Steindachner 1902:112, Pl. 1 (fig. 1).

Synaphobranchidae

Simenchelys dofleini Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 10, Pl. 3 Figs. 1-2.

Syntypes: ZSM [Old Collection] (1), 46.0 cm TL, "Sagamibucht, coll. Doflein." [Sagami Bay, coll. Doflein]. ZSM [Old Collection] (3), 9.5, 11.0 and 18.0 cm TL, "Misaki, durch Fischer Kuma (coll. Doflein)" [Misaki (Japan), leg: fisherman Kuma, coll. Doflein].

Remarks. No collection date given in original description. According to Castle (in Quero et al. 1990) a synonym of *Simenchelys parasitica* Gill, 1879.

Synbranchidae

Cryptophthalmus robustus Franz, 1910

Abh. Akad. Wiss. München Math.-Phys. Kl. 4 (Suppl. 1): 15, Pl. III, Fig. 11.

Syntypes: ZSM [Old Collection] (8), 21-53 cm TL, "von Yokohama, coll. Haberer" [from Yokohama (Japan), coll. Haberer]; no date.

Remarks. According to Okada (1961: 718) a synonym of *Fluta alba* (Zuiew, 1793); valid as *Monopterus albus* (Zuiew, 1793).

Telmatherinidae

Paratherina cyanea Aurich, 1935

Zool. Anz., 112 (7/8): 175-177, Figs. 7C, 9.

Syntypes: ZSM [Old Collection] (5), 124-155 mm TL, "Towoeti-See" [Lake Towuti], Sulawesi (Indonesia); leg: R. Woltereck, X.1932.

Remarks. Collection data restored from Woltereck (1933).

Paratherina labiosa Aurich, 1935

Zool. Anz., 112 (7/8): 172-173, Figs. 6A, 7A.

Holotype (unique): ZSM [Old Collection], 103 mm TL, "Wawontoa-See" [Lake Wawontoa], Sulawesi (Indonesia); leg: R. Woltereck, X.1932.

Remarks. Holotype fixed by monotypy (ICZN Art. 73.1.2); collection data restored from Woltereck (1933).

Paratherina striata Aurich, 1935

Zool. Anz., 112 (7/8): 173-175, Figs. 7C, 8.

Syntypes: ZSM [Old Collection] (2), "Towoeti-See" [Lake Towuti], 122 mm TL and "Wawontoa-See" [Lake Wawontoa], 142 mm TL, Sulawesi (Indonesia); leg: R. Woltereck, X.1932.

Remarks. Collection data restored from Woltereck (1933).

Torpedinidae

Torpedo zugmayeri Engelhardt, 1912

Zool. Anz. 39 (21/22): 647.

Holotype (unique): ZSM [Old Collection], female, 33 cm, "Gwadar" Prov. of Baluchistan] (Islamic Republic of Pakistan); leg: local fishermen, purchased from local fishmarket by E. Zugmayer, II-V.1911.

Remarks. Holotype fixed by monotypy (ICZN Art. 73.1.2); collection data restored from original description.

Trichomycteridae

Pygidium quechuorum Steindachner, 1900

Anz. Akad. Wiss. Wien 37 (18): 207.

Syntypes: ZSM [Old Collection] (5), "5.1-6.4 cm lang", Rio Chili near Arequipa (Peru); leg: local Cholo-boy, coll. Th. v. Bayern, 28.XI.1898.

Remarks. Originally published as above, but changed to "*Pygidium* (*Trychomycterus* Val.) *quechuorum* nob." when illustrated and described in more detail in Steindachner (1902: Pl. IV, Figs. 3 & 3a). Additional information on the type locality and the curious circumstances of the collecting of the syntypes are available from the preface of Th. v. Bayern (1902): "So richtete ich einem Choloknaben mittels einer leeren Weißweinflasche eine Art primitiver Fischreuse zurecht und schickte ihn im Rio Chili sein Glück zu versuchen. Mit einer neuen Welsart ... kehrte er von seiner Sendung zurück." [Using an empty white wine bottle I prepared a simple kind of fish trap for a Cholo boy and sent him to the Rio Chili to try his luck. With a new silurid species ... he returned from his mission]. Holotype of *Pygidium quechuorum* ex private Collection Therese v. Bayern. No duplicates of the original syntype series are known in NMW (Wellendorf, pers. comm. X. 2005). According to de Pinna & Wosiacki (in Reis et al. 2003) a synonym of *Trichomycterus rivulatus* Valenciennes, 1846.

Trichomycterus laticeps Kner, 1863

Sitzungsber. Königl. Bayer. Akad. Wiss. München 2: 228, Fig. 17.

Syntypes (2): ZSM Verz. No. 181, 289 [Old Collection], "Westabhange der Andes" [western slopes of the Andes] (Ecuador]; leg: M. Wagner, 1858-1859.

Remarks. Both syntypes were originally deposited in ZSM (Wagner 1864; see historical review for details); none of them is available in NMW (Wellendorf, pers. com. Oct. 2005). The figure caption "17" in the original description refers to unfinished (and unpublished) plates; the species was described in more detail by Kner & Steindachner later on (1864) and illustrated with a new numbering on Pl. 6, Figs. 1a & 2. According to the annotation by Kner & Steindachner later on (1864: 54) Fig. 1a shows the ventral view of *T. laticeps*; the inscription on Pl. 6 is obviously wrong. According to de Pinna & Wosiacki (in Reis et al. 2003) valid as **Ituglanis laticeps** (Kner, 1863).

Trichomycterus taenia Kner, 1863

Sitzungsber. Königl. Bayer. Akad. Wiss. München 2: 228, Fig. 16.

Holotype (unique): ZSM Verz. No. 237 [Old Collection], "Westabhange der Andes" [western slopes of the Andes] (Ecuador]; leg: M. Wagner, 1858-1859.

Remarks. Holotype fixed by monotypy (ICZN Art. 73.1.2); originally deposited in ZSM (Wagner 1864; see historical review for details). Figure caption "16" in original description refers to unfinished (and unpublished) plates. It is unlikely that Siebold exchanged this specimen to NMW; it is not listed in the acquisition files of NMW (Akquisitionsbogen 1864.VII.11), no type material of *Trichomycterus taenia* is available in NMW (Wellendorf, pers. comm. Oct. 2005). The species was described and illustrated in more detail by Kner & Steindachner later on (1864: 52-54, Pl. 4, Fig. 1; the inscription "*T. taenia*" for figure 1a on plate 6 is erroneous – see *T. laticeps* for details).

Acknowledgements

Peter Bartsch (ZMB) for his help concerning the GBIF programme; Juliana Diller & Eva Karl (both ZSM) for their patience and for providing rare literature; Friedhelm Krupp & Horst Zetzsche (both SMF) for identification and additional information of types from the Collection F. Doflein; Jörg Freyhof (IGB Berlin), Nadja Pöllath (Inst. Paläoanatomie, München), Martin Spiess (ZSM) and Ulrich Schliewen for critical comments on the text; Bernhard Ruthensteiner (ZSM) for additional information on the Haberer Collection; Helmut Wellendorf (NMW) for valuable information that helped to identify and to clarify the whereabouts concerning the type material from the Collections M. Wagner & Th. v. Bayern.

This type catalogue largely benefitted from the GBIF programme of the German Federal Ministry of Education and Research.

References

Anonymous. No year. Dr. Haberers ostasiatische Sammlungen

Amaoka, K., E. Mihara & J. Rivaton 1997. Pisces, Pleuronectiformes: flatfishes from the waters around New Caledonia. Six species of the bothid genera *Tosarhombus* and *Parabothus*. – Mem. Mus. Nat. hist. Nat. NS A) **174**: 143-171

Aurich, H. J. 1938. Mitteilung XXVIII der Wallacea-Expedition Woltereck: Die Gobiiden (Ordnung: Gobioidea). – Intern. Rev. ges. Hydrobiol. Hydrograph. **38** (1/2): 125-183

Balss, H. 1926. Die Zoologische Staatssammlung und das Zoologische Institut. In: Müller, K. A. von: Die wissenschaftlichen Anstalten der Ludwigs-Maximilians University zu München. – Chronik zur Jahrhundertfeier, im Auftrag des Akademischen Senats herausgegeben: 300-315

Bayern, Prinzessin Therese von. 1895. In: Steindachner, F. Über einige Fischarten Mexiko's und die Seen, in welche sie vorkommen, – Anz. Akad. Wiss. Wien **32** (17): 516-530 [1-14 as separate], Plts 1-3

– – 1902. In: Steindachner, F. Herpetologische und ichtyologische Ergebnisse einer Reise nach Südamerika. – Denkschrift. Math.-Naturwiss. Cl. kaiserl. Akad. Wiss. Wien **72**: 89-95 [1-7 as separate]

Bloch, M. E. 1782. Oeconomische Naturgeschichte der Fische Deutschlands. – Berlin. Vol. **1**.

Burgess, W. E. 1978. Butterflyfishes of the world. A monograph of the family Chaetodontidae. – T. F. H. Publ., Neptune City, New Jersey: 1-832

Castro-Aguirre, J. L. & H. Espinosa Pérez 1996. Listados faunísticos de México. VII. Catálogo sistemático de las rayas y especies afines de México. (Chondrichthyes: Elasmobranchii: Rajiformes: Batoideiomorpha). – List Fauna Mexico **VII**: 7-75

Coad, B. W. 1996. Freshwater fishes of Iranian and Pakistani Baluchistan. – Biologia (Lahore) **42** (1-2): 1-18

Cohen, D. M., T. Inada, T. Iwamoto & N. Scialabba 1990. FAO species catalogue, Vol. 10. Gadiform fishes of the world (order Gadiformes). An annotated and illustrated catalogue of cods, hakes, grenadiers and other gadiform fishes known to date. – FAO Fisheries Synopsis **125** (10): 1-442

Compagno, L. 1984. FAO species catalogue, Vol 4. Sharks of the world. An annotated and illustrated catalogue of shark species known to date. Hexanchiformes to Lamniformes (Part 1). – FAO Fisheries Synopsis **125** (4): 1-249

– – 2001. Sharks of the world. An annotated and illustrated catalogue of shark species known to date. Volume 2. Bullhead, mackerel and carpet sharks (Heterodontiformes, Lamniformes and Orectolobiformes). – FAO Species Catalogue for Fishery Purposes: 1-269

Doflein, F. 1904. Beiträge zur Naturgeschichte Ostasiens. – Abh. II. Kl. Königl. Akad. Wiss., Suppl. Bd. **I**: 1-7, 2 maps

– – 1905. Die Tiefseefauna der Sagamibucht. – Mitt. Dt. Ges. Natur- Völkerkunde Ostasiens **X** (part 2). Hobunsha, Tokyo

Engelhardt, R. 1912. Über einige neue Selachier-Formen. – Zool. Anz. **39** (21/22): 643-648

Ege, V. 1939. A revision of the genus *Anguilla* Shaw; A systematic, phylogenetic and geographical study. – Dana Report No. **16**: 1-256

Eschmeyer, W. N. 1997. A new species of Dactylopteridae (Pisces) from the Philippines and Australia, with a brief synopsis of the family. – Bull. Marine Sci. **60** (3): 727-738

Franz, V. 1910. Die Japanischen Knochenfische der Sammlungen Haberer und Doflein. (Beiträge zur Naturgeschichte Ostasiens.). – Abh. Akad. Wiss. München, Math.-Physikal. Kl. **4** (Suppl. 1): 1-135, Pls. 1-11

Freyhof, J. 2005 Redescription of *Coregonus bavaricus* Hofer, 1909 from Lake Ammersee, Bavaria (Salmoniformes: Coregonidae). – Cybium **29** (2): 179-183

Fricke, R. 1991. Types and Historical Materials in the Fish Collection of the Staatliches Museum für Naturkunde in Stuttgart. Part 1. The Bleeker Collection. – Stuttgarter Beitr. Naturkde. (Ser. A) **471**: 1-85

Gilbert, C. R. 1998. Type catalog of Recent and fossil North American Freshwater fishes: families Cyprinidae, Catostomidae, Ictaluridae, Centrarchidae and Elassomatidae. – Florida Mus. Nat. Hist., Spec. Publ. No. **1**: 1-284

Gruber, U. 1992. Die Sektion Fische der Zoologischen Staatsammlung München. In: Diller, E. & A. Hausmann (eds.). Chronik der Zoologischen Staatssammlung. Festschrift zur Verabschiedung des Direktors der Zoologischen Staatsammlung München, Prof. Dr. Ernst Fittkau. – Spixiana Suppl. **17**: 124

Huber, W. 1998. Münchener Naturforscher in Südamerika. – Ber. Freunde ZSM **1**. Verlag F. Pfeil, München: 1-168

Ikeda, Y., T. Nakabo & W. Hiramatsu 1995. Redescription of *Vanderhorstia macropteryx* (Perciformes: Gobiidae) with designation of a neotype. – Japan. Journ. Ichthyol. **42** (3/4): 303-310

Kailola, P. J. 2004. A phylogenetic exploration of the catfish family Ariidae (Otophysi: Siluriformes). – The Beagle, Rec. Mus. Art Gall. Northern Territory, Darwin **20**: 87-166

Kner, R. 1863. Eine Übersicht der ichthyologischen Ausbeute des Herrn Professors Dr. Mor. Wagner in Central-Amerika. – Sitz.ber. königl. bayer. Akad. Wiss. München **2** (2): 220-230

– – & F. Steindachner 1864. Neue Gattungen und Arten von Fischen aus Central-Amerika; gesammelt von Prof. Moritz Wagner, beschrieben von Prof. Rudolf Kner und Dr. Franz Steindachner, Assitenten am kaiserl. Hof-Naturalienkabinete in Wien. – Abh. königl. bayer. Akad. Wiss., II. Cl., **10** (I. Abtheilung): 1-61, Tabs. I-VI

Kottelat, M. 1988. Authorship, dates of publication, status and types of Spix and Agassiz's Brasilian fishes. – Spixiana **11** (1): 69-93

– – 1997. European freshwater fishes. – Biologia Bratislava **52** (suppl. 5): 1-271
Kraft, R. & W. Huber 1992. Die Zoologische Schausammlung in der Alten Akademie in München 1809-1944. – In: Diller, E. & A. Hausmann (eds.). Chronik der Zoologischen Staatssammlung. Festschrift zur Verabschiedung des Direktors der Zoologischen Staatsammlung München, Prof. Dr. Ernst Fittkau. – Spixiana Suppl. **17**: 1-248
Kullander, S. O., F. Fang, B. Delling & E. Åhlander 1999. The fishes of the Kashmir Valley. In: Nyman, L. (ed). River Jhelum, Kashmir Valley. Impacts on the aquatic environment. – Swedmar, Göteborg: 99-167
Lachner, E. A. 1973 Echeneididae. – In: Hureau & Monod 1973: Check-list of the fishes of the north-eastern Atlantic and of the Mediterranean (CLOFNAM) Vol. **1**: 637-640
Li, S.-Z. & H.-M. Wang 2000 Fauna Sinica. Osteichthyes. Pleuronectiformes. – Science Press, Beijing. 1-433
Lindberg, G. U. & Z. J. Krasyukova 1975. Fishes of the Sea of Japan and adjacent territories of the Okhotsk and Yellow Sea. – Fish Sea Japan **4**: 1-463
Mauermayer, G. 1986 (?). Chronik der Zoologischen Staatssammlung München. – Unpublished manuscript, 16 p.
Miller, R. R. 2005. Freshwater Fishes of México. – Univ. Chicago Press, Chicago: 1-490
Mirza, M. R. 2003. Checklist of freshwater fishes of Pakistan. – Pakistan J. Zool. **3**: 1-30
Motomura, H. 2004. Morphological comparison of a poorly known scorpionfish, *Parapterois macrura*, with a related species, *P. heterura* (Scorpaenidae: Pteroinae). – Zool. Stud. **43** (1): 1-7
Murdy, E. O. & K. Shibukawa A revision of the Indo-Pacific fish genus *Caragobius* (Gobiidae: Amblyopinae). – Zootaxa **301**: 1-12
Nakabo, T. 2002 (Ed.). Fishes of Japan with pictorial keys to the species, English edition. – Tokai University Press: 1-866
Nemeth, D. 1994. Systematics and distribution of fishes of the family Champsodontidae (Teleostei: Perciformes), with descriptions of three new species. – Copeia 1994 (2): 347-371
Okada, Y. 1961. Studies on the freshwater fishes of Japan. – Prefectural University of Mei, Tsu, Mie Prefecture, Japan. Freshwater Fish. Japan: 1-860
Quéro, J.-C., J.-C. Hureau, C. Karrer, A. Post & L. Saldanha 1990. Check-list of the fishes of the eastern tropical Atlantic (CLOFETA). – Paris, Unesco: 1-1492
Randall, J. E. 1995. Coastal fishes of Oman. – Crowford House Publ. Pty Ltd, Bathurst, Australia: 1-439
– – & P. C. Heemstra 1991. Revision of Indo-Pacific groupers (Perciformes: Serranidae: Epinephelinae), with descriptions of five new species. – Indo-Pacific Fishes **20**: 1-332
– – and R. L. Pyle 2001. Four new serranid fishes of the anthiine genus *Pseudanthias* from the South Pacific. – Raffles Bull. Zool. **49** (1): 19-34
Reis, R. E., S. O. Kullander & C. J. Ferraris, Jr. 2003. Check list of the freshwater fishes of South and Central America (CLOFFSCA). – EDIPUCRS, Porto Alegre (Brazil): 1-729
– – & E. H. L. Pereira 2000. Three new species of the loricariid catfish genus *Loricariichthys* (Teleostei: Siluriformes) from southern South America. – Copeia 2000 (4): 1029-1047
Schäffer, J. C. 1761. Piscium Bavarico-Ratisbonensium pentas. 1-82.
Schrank, F. von Paula 1783. XXVII. Kurze Nachrichten und Auszüge aus Briefen unserer auswärtigen gelehrten Freunde; 9. Auszüge aus den Briefen an den Herrn Bloch von Herrn von Paula Schrank und Herrn D. Wartmann. – Schr. Berlin. Ges. Naturforsch. Freunde. Fr. (4): 427-429
– – 1792. Nähere Bestimmung dreier Barscharten. – Abh. Privatges. Naturforsch. Oekonom. Oberdeutschland **1**: 98-103
Schoepf, J. D. 1784a. Der nord-amerikanische Pertsch. – Der Naturforscher **20**: 17-25. Halle
– – 1784b. Der gemeine Hecht in Amerika. – Der Naturforscher **20**: 26-31. Halle
Shibukawa, K. & T. Suzuki 2004. *Vanderhorstia papilio*, a new shrimp-associated goby from the Ryukyu Islands, Japan (Perciformes: Gobiidae: Gobiinae), with comments on the limits of the genus. – Ichthyolog. Res. **51** (2): 113-119
Siebold, C. Th. E. von. 1863. Die Süsswasserfische von Mitteleuropa. – Wilhelm Engelmann, Leipzig; 1-430
Steindachner, F. 1894. Vorläufige Mittheilung über einige neue Fischarten aus den Seen von Mexico. – Anz. Akad. Wiss. Wien **31** (15): 147-149
– – 1895. Über einige Fischarten Mexiko's und die Seen, in welche sie vorkommen. – Anz. Akad. Wiss. Wien **32** (17): 516-530 [1-14 as separate], Plts 1-3
– – 1900. Erstattungen eines vorläufigen Berichtes über einige von Ihrer königlichen Hoheit Frau Prinzessin Therese von Bayeren während einer Reise nach Südamerika 1898 gesammelte neue Fischarten. – Anz. Akad. Wiss. Wien **37** (18): 206-208
– – 1902. Herpetologische und ichtyologische Ergebnisse einer Reise nach Südamerika, mit einer Einleitung von Therese Prinzessin von Bayern. – Denkschr. Math.-Naturwiss. Cl. kaiserl. Akad. Wiss. Wien **72**: 95-148 [7-60 as separate], Tabs. 1-5
Springer, V. G. & M. F. Gomon 1975. Revision of the blenniid fish genus *Omobranchus* with descriptions of three new species and notes on other species of the tribe Omobranchini. – Smithson. Contr. Zool. **177**: 1-135
Terofal, F. 1983. Die Fischausbeute der Brasilien-Expedition 1817-1820 von J. B. v. Spix und C. F. V. Martius. – Spixiana Suppl. **9**: 35-42
Thomson, J. M. 1997. The Mugilidae of the World. – Mem. Queensland Mus **41** (3): 457-562
Vogt, C. & B. Hofer 1909. Die Süsswasserfische von Mittel-Europa. – Engelmann, Leipzig: 1-558
Wagner, M. 1864. Ueber die hydrographischen Verhältnisse und das Vorkommen der Süsswasserfische in

den Staaten Panama und Ecuador. – Abh. königl. bayer. Akad. Wiss., II. Cl. **10** (I. Abtheilung): 67-113 [1-49 as separate]
– – 1870. Naturwissenschaftliche Reisen im tropischen Amerika. – Cotta, Stuttgart
Whitehead, P. J. P. 1970. The clupeoid fishes described by Steindachner. – Bull. British Mus. (Nat. Hist.) Zool. **20** (1): 1-46
– – , G. J. Nelson & T. Wongratana 1988. FAO species catalogue, Vol. 7. Clupeoid fishes of the world (Suborder Clupeoidei). An annotated and illustrated catalogue of the herrings, sardines, pilchards, sprats, anchovies and wolf-herrings. Part 2. Engraulididae. – FAO Fisheries Synopsis No. **125** (7): 305-579
Woltereck, R. 1933. Meine Forschungsreise nach Amerika und Ostasien zum Studium insulärer und lakustriner Endemismen. – Intern. Rev. Ges. Hydrobiol. **28**: 338-349
Wu, W. (ed.) The cyprinid fishes of China (Vol. 1) [In Chinese]. – Science Press, Shanghai: 137-197
Yue, P.-Q. 2000 (Chief Editor). Fauna Sinica. Osteichthyes. Cypriniformes III. – Science Press, Beijing: 1-661
Zugmayer, E. 1909a. Desription of Four new Cyprinoid Fishes from High Asia. – Ann. Mag. Nat. Hist. (London) (Ser. 8) **4** (23): 432-435
– – 1909b. Bericht über eine Reise in Westtibet. – Geogr. Mitt. **7**: 145-151, 2 maps
– – 1910. Beiträge zur Ichthyologie von Zentral-Asien. – Zool. Jb. **29** (3/4): 275-298, Tab. 12, Figs. 1-4
– – 1912a. On a new genus of cyprinoid fishes from high Asia. – Ann. Mag. Nat. Hist. (London) (Ser. 8) **9** (54): 682
– – 1912b. Eight new fishes from Baluchistan. – Ann. Mag. Nat. Hist. (London) (Ser. 8) **10** (60): 595-599
– – 1913a. Wissenschaftliche Ergebnisse der Reise von Prof. Dr. G. Merzbacher im zentralen und östlichen Thian-Schan 1907/8. II. Fische. – Abh. königl. bayer. Akad. Wiss. (math-physikal. Kl.): **26** (4): 1-18
– – 1913b. Die Fische von Balutschistan. – Abh. königl. bayer. Akad. Wiss. (math-physikal. Kl.) **26** (6): 1-35

Internet base information

Eschmeyer, W. 2005. Catalog of Fishes. – On-Line Version (updated 17 April 2006): http://www.calacademy.org/research/ichthyology/catalog/fishcatsearch.html
Higuchi, H. 1992. An updated list of ichthyological collecting stations of the Thayer Expedition to Brazil. – On-Line Version (1996): http://www.mcz.harvard.edu/Departments/Fish/thay_sta.htm
International Commission on Zoological Nomenclature online: http://www.iczn.org/iczn/index.jsp