

An annotated catalogue of the type specimens described by Maximilian Holly housed in the Natural History Museum of Vienna. Part. 1. Chordata: Actinopterygii and Echinodermata: Asteroidea

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Abstract

Zoological collections remain the main archive of animal biodiversity on Earth, and are of major importance especially in times of large-scale biodiversity decline. The most vital part of these collections are the type specimens, which represent the original and unique reference for respective species. A full digitisation of the entire Natural History Museum Vienna collections is currently ongoing. In the meanwhile, annotated lists of groups of types based on a thorough study of all aspects of historical museum specimens considering the Extended Specimen approach are an essential resource for researchers to perform taxonomic revisions, phylogenetic studies, barcoding, and conservation management. As the first example for the Fish Collection, we provide a catalogue of type specimens of actinopterygian species described by Maximilian Holly and deposited in the Natural History Museum of Vienna. All together, the presented catalogue includes 141 specimens in 128 lots (catalogue numbers) of 41 species-group taxa (species and subspecies). We present data on nomenclatural status of the specimens to clarify type localities and dates, review taxonomic histories for all taxa and their validity or synonymisations, a full bibliography of the original descriptions and related literature, and illustrations for especially poorly known taxa. The holotype of one invertebrate species in Asteroidea is also included as a single species described by Holly in echinoderms; Polychaeta will follow in Part 2 of the catalogue. We aim to provide a comprehensive taxonomic guide to Holly's types highlighting the importance of research on type specimens for clarifying existing taxonomic problems and importance for species conservation.

Zusammenfassung

Zoologische Sammlungen sind das wichtigste Archiv für Belege der Artenvielfalt des Tierreichs, ganz besonders angesichts des aktuellen massiven Rückgangs der Biodiversität weltweit. Der aus taxonomischer Sicht wichtigste Teil dieser Sammlungen sind Typusexemplare, die als ursprüngliche und einzigartige Referenz der jeweiligen Arten dienen.

Kommentierte Listen von Typen unter Berücksichtigung einer gründlichen Untersuchung aller Aspekte historischer Museumsexemplare gemäß des „Extended Specimen approach“, stellen eine wesentliche Ressource, um taxonomische Revisionen vorzunehmen oder weiterführende Studien (z. B. zu Phylogenie,

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Genetik, Artenschutz, etc.) zu betreiben. Im Rahmen der Erstellung des Katalogs wurden sämtliche verfügbaren Informationen zu Hollys Typen auch digitalisiert.

Hier stellen wir einen Katalog der Typusexemplare von Arten zur Verfügung, die von Maximilian Holly beschrieben und im Naturhistorischen Museum Wien hinterlegt sind. Insgesamt umfasst der Katalog 141 Exemplare in 128 Serien (Katalognummern) von 41 Taxa (Arten und Unterarten). Wir präsentieren Daten, die den nomenklatorischen Status der Exemplare bestätigen, klären Fragen zu Typuslokalitäten und Funddaten, überprüfen die taxonomische Geschichte der Taxa und die Validität ihrer Namen. Eine vollständige Bibliographie der Originalbeschreibungen und weiterer relevanter Literatur, sowie Illustrationen für einige weitgehend unbekannt Taxa, ergänzen den Katalog.

Ebenfalls enthalten ist der Holotypus von *Mithrodia fisheri* HOLLY, 1932, eines von Holly beschriebenen Seesterns, um die Anwendbarkeit des Prinzips des „Extended Specimen approach“ bei Evertebraten zu dokumentieren. Die von Holly bearbeiteten Polychaeten werden in einem gesonderten, zweiten Teil des Katalogs erscheinen.

Unser Ziel ist es, einen umfassenden taxonomischen Leitfaden für die von Holly beschriebenen Arten bereitzustellen, der die Rolle der Forschung an und mit Typusexemplaren bei der Klärung bestehender taxonomischer Probleme ebenso unterstreicht, wie ihre Bedeutung für Maßnahmen des Artenschutzes.

Key words: biodiversity, zoological collections, freshwater fishes, Natural History Museum Vienna, digitisation, Maximilian Holly.

Introduction

Founded over 270 years ago, the Natural History Museum in Vienna (NHMW) is one of the largest non-university research centers in Europe housing extensive collections, both historical and recent, of most groups of animals. In the Fish Collection of the First Zoological Department, there are over 100,000 catalogued lots (jars), including over 5,200 representing type specimens of about 2000 valid species in 248 families and 46 orders of fishes from all over the world. The collection goes back to the “Naturalien-Cabinette” of the early 18th century and includes materials collected during Johann Natterer’s Brazilian expeditions, the travels by Carl Alexander Anselm Freiherr von Hügel, as well as Joseph Russegger, Johann Jakob Heckel, Karl Georg Theodor Kotschy, Franz Steindachner, Viktor Pietschmann and other museum staff members and navy personal on special missions. Many specimens were donated or bought, or came as exchange. As a result, a great number of ichthyological publications based on the collection materials appeared, most of them by Heckel and Steindachner (e. g., HECKEL 1837, 1843, STEINDACHNER 1866, 1870a, 1895, HERZIG-STRASCHIL 1997).

The previous two decades have seen an exponential growth in the aggregation and availability of digital biodiversity data for use in research, conservation, outreach and integrated studies across all domains of the biodiversity sciences (NELSON & ELLIS 2018). As the main archive of animal biodiversity on Earth, zoological collections, and their most vital part, the type specimens, offer a basis for answering questions related to taxonomic uncertainties and the historical distribution of taxa, both relevant to ongoing conservation efforts. Thus, museum collections were at the center of digitisation processes, which became one of the main tasks to be performed in the museums around the globe. In congruence, a full digitisation of the entire NHMW collections is currently ongoing, yet in the meanwhile, fully annotated lists of type material are an essential resource for researchers to perform taxonomic revisions, phylogenetic studies, barcoding and conservation management.

Maximilian Holly (6 June 1901, Wiener Neustadt – 1969, Vienna) is the author of 46 species-group names from 10 actinopterygian fish families. In his studies, he used a wide range of comparative material of the Fish Collection (now in First Zoological Department of the NHMW) – besides the work he did on the future type specimens of the new taxa, he identified and examined over 900 non-type lots (catalogue numbers) in the NHMW fish collection. Holly is the author of four generic names (two of them are still valid):

1. *Gladostomus* (subgenus of *Acipenser*) HOLLY, 1936a: 31; synonym of *Acipenser* LINNAEUS, 1758; Acipenseridae. 2. *Hemigrammonannocharax* HOLLY, 1930b: 198, 233; synonym of *Nannocharax* GÜNTHER, 1867; Distichodontidae. 3. *Sanagia* HOLLY, 1926a: 155; valid; Cyprinidae. 4. *Sperata* HOLLY, 1939a: 143; valid, Bagridae.

In invertebrates, Holly was particularly involved in identifying materials from collecting trips of Victor Pietschmann, who was at the Bishop Museum at that time. Most of these samples were collected in the Pacific off Hawaii, but he also worked with collections originated elsewhere, e. g., the Philippines. There are records with identifications done by Holly for at least 20 specimens of Echinoidea (six species), 12 specimens of Asteroidea (four species), 7 specimens of Holothuroidea (three species). For polychaetes, there are over 70 records combining identifications and formal descriptions. Holly described 15 marine invertebrate species (HOLLY 1932, 1934, 1935, 1939b), 12 of which are still valid. They are deposited in Evertebrata Varia Collection of the Third Zoological Department of the NHMW, namely Asteroidea: *Mithrodia fisheri* HOLLY, 1932 (holotype); Polychaeta: *Nereis abbreviata* HOLLY, 1935, *Nereis mariae* HOLLY, 1935, *Nereis myersi* HOLLY, 1935, *Nereis unica* HOLLY, 1935, *Nereis (Herfriedia) waikikiensis* HOLLY, 1935, *Nereis (Neonereis) hawaiiensis* HOLLY, 1935, *Nereis (Neonereis) nigroaciculata* HOLLY, 1935, *Nereis (Ceratonereis) pietschmanni* HOLLY, 1935, *Notopygos albiseta* HOLLY, 1939, *Notopygos gregoryi* HOLLY, 1939, *Panthalis helleri* HOLLY, 1934, *Perinereis curvata* HOLLY, 1935, *Platynereis pestai* HOLLY, 1935, *Pomatoceroopsis roxasi* HOLLY, 1935. While the only species described by Holly in echinoderms is included in this catalogue, the Polychaeta will follow in Part 2.

Maximilian Holly's personal life, career, and detailed biography will be dealt with in a separate, dedicated publication.

This catalogue has two goals. The first one is to provide a comprehensive taxonomic guide to the Holly's types deposited in the NHMW Fish Collection that will help resolve taxonomic uncertainties in several groups of taxa, which is of major importance for clarifying taxonomic problems and species conservation. Considering the current trend of digitising the museum collections described above, the second goal was to present a basis for digitising types of the Fish Collection following the Extended Specimen approach (WEBSTER 2017, LENDEMER et al. 2019), in which specimens are digitised with all their additional attributes and made available online. This approach is also in line with the Open Science concept. As the first step, type specimens of species described by Holly were chosen, as a relatively small type collection with comparatively well attributed specimens, including the holotype of one invertebrate species (*Mithrodia fisheri* HOLLY, 1932, Asteroidea; a single species described by Holly in echinoderms).

Material and methods

Sources of information

The information used in this catalogue originates from all available historical records kept in the collection, which in general (theoretically) include the original description, label(s), card(s), acquisition list and inventory book, and of course the specimens themselves (e. g., TL, SL). However, in practice, some of the records are missing.

Acquisition lists – arrivals in the collection are marked with acquisition number, often combined from the year of entry and a successive Roman number (e. g., 2000.VI). All available information should be entered here, such as the number of specimens, collecting date, locality, expedition, collector, bought, in exchange, etc. Acquisition lists were not always used/filled out, or they often got lost. For type materials described by Holly, regardless of extensive search, no acquisition lists were found.

Historical labels – of two categories, internal (in the jar) and external (glued to the outside surface of the jar). Historic labels have often been taken out of the jar, dried, or peeled off the jar and stored in a plastic bag, pinned to the present-day (currently used) cards.

Historical cards – many of the curators (e. g., Heckel, Steindachner, Pietschmann) kept their cards, corresponding to the jars and carrying different types of information. Sometimes the allocated numbers on these cards do not match present day numbers. For this catalogue, “Pietschmann’s cards” were the most important source of information. They had been written by Pietschmann and/or possibly his assistants (students), as the handwriting sometimes differs.

Inventory book – a book of subsequent numbers (NMW-Numbers) including standard information: acquisition number, name (at least to generic level), locality, date, the person who identified the material, type status; however, information is usually rewritten from other sources, and parts might be missing. The Inventory Book was started by Pietschmann in 1940s, mostly (but not always) according to numbers from his earlier catalogue cards (“Pietschmann’s cards”). The Inventory Book has been continued by subsequent curators, but in many cases, they did not follow numbers from the Pietschmann’s cards; as a result, some numbers were given to different species/specimens to “fill up empty numbers”.

Present-day cards, which have been started later, possibly during the curatorship of Paul Kähnsbauer (1948–1977), the information usually repeated from the Inventory book, often with misspellings, mistakes or later corrections.

Present-day “internal” labels in the jar, repeat data from the present-day cards/inventory book often with modifications (e. g., shortening of locality data).

Present-day “external” labels glued to the jar, repeat data from the present-day cards/inventory book often with modifications (e. g., shortening of locality data).

Figure 1 provides an example of the NMW sources of data listed above (2–7, except for acquisition records which are absent for the type materials described by Holly).



Fig. 1: NMW sources of data for *Barbus versluysii* HOLLY, 1929, NMW 13954–56, syntypes: (a) old external label; (b) old internal label (c) Pietschmann's card; (d) record in Inventory book; (e) present-day internal label; (f) present-day catalogue card, both sides; (g) present-day external label.

Comments to the catalogue

Each species or subspecies is listed in the combination as it was originally proposed. If the name has been subjected to subsequent nomenclatorial change or has been given in synonymy, the name in current use is given and the taxonomic history briefly reviewed. The arrangement in the following list is alphabetical by genus and species within each family or subfamily. Localities are listed in the original spelling from the original description, label(s), card(s), and inventory books whenever necessary and in English translation and whenever possible with coordinates. Taxonomic order follows VAN DER LAAN et al. (2021).

Nomenclatural status of specimens was confirmed or identified according to the conditions of the International Code of Zoological Nomenclature (INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE 1999: Articles 72 and 73), in particular, a single type specimen is considered the holotype fixed by monotypy (Art. 73.1.2). Dates in the species accounts are given as they appear on the labels, catalogue cards and in the inventory book. In most cases, based on the existing written collection sources of information, it is not possible to distinguish between the date of collecting, the date of acquisition and the date of inventory (registration) except for those cases when there are direct or indirect indications clarifying the matter. However, we undertook special searches for historic data on routes and time of collecting trips under consideration and clarified dates of collecting as well as geographic location of type localities. Besides referenced publications, information on biographical data of collectors and persons involved in etymologies is taken from the following online sources: Österreichisches Biographisches Lexikon (1815–1950) (<https://www.biographien.ac.at/oebl/>), ZOBODAT (<https://www.zobodat.at/personen.php>), and Deutsche Biographie (<https://www.deutsche-biographie.de/>).

The current conservation condition of type specimens was evaluated by a six-point grade: very poor – poor – bad – average – good – very good. Special attention was paid to specific characteristics of the specimens (length and diagnostic features from original descriptions) to confirm their type status. Recent length measurements are commonly less than those given in original descriptions due to some shrinkage of the body that commonly occurs during ethanol preservation (SOTOLA et al. 2019).

Abbreviations: BL, body length; NHMW, Natural History Museum of Vienna (Naturhistorisches Museum Wien); NMW, a traditional abbreviation used here only for the Fish Collection of NHMW catalogue numbers; R, arm length; r, disc length; TL, total length, SL, standard length. Abbreviations for conservation status of species follow those used in the IUCN Red List of Categories and Criteria (IUCN 2012); specified criteria are given only for Critically Endangered.

Comments on date of publication

References to publications by Maximilian Holly are accompanied by comments on date of publication and, whenever relevant, on relative appearance in *Anzeiger* and/or *Sitzungsberichte*, Akademie der Wissenschaften in Wien, Mathematisch-Naturwissenschaftliche Klasse.

General guidance on dating publication of a work and of a contained name or nomenclatorial act can be found in the International Code of Zoological Nomenclature (INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE 1999: Art. 21).

Zoologischer Anzeiger: exact publication dates of the numbers are recorded in the table of contents appearing on the first page of each number. Reprints of individual articles bear the exact publication date of the corresponding number.

Journals issued by the Mathematics and Natural Sciences Class of the Imperial [Austrian] Academy of Sciences in Vienna [Mathematisch-Naturwissenschaftliche Klasse, Kaiserliche Akademie der Wissenschaften in Wien]: the data below are a summary of information from KOTTELAT (2013), consultations with Dr Stefan Sienell (Library, Archive, Austrian Academy of Sciences), and our own search.

The Academy issued three series of works. The Anzeiger [gazette], started in 1864, included minutes and summaries of lectures presented at Academy meetings. The minutes considerably varied from very short announcements on studies completed or being in progress to lengthy papers. The Sitzungsberichte [proceedings] also included texts of communications presented at each meeting of the Mathematisch-Naturwissenschaftliche Klasse [Class], in three Abteilungen [sections], corresponding to different disciplines. Section one included works on mineralogy, botany, zoology, geology and palaeontology. The Denkschriften [memoirs] included larger works and were published at irregular intervals. The Klasse had meetings every week or every second week, except between late July and early October, and the Anzeiger was published within days after each meeting (but before the following meeting). So, the publication date of a respective Anzeiger was commonly between the dates of the two subsequent meetings. The Sitzungsberichte were announced at meetings right after its printing and, starting with volume 7 (1870), this announcement was also published in the corresponding Anzeiger. The Anzeiger also mentioned that each paper of Sitzungsberichte and Denkschriften could be bought as a separate (which is an indicator that they had been published).

Some communications were only published in one of the journals (Anzeiger, Sitzungsberichte and Denkschriften) but, commonly, communications on one and the same work by the same were published, subsequently, in all three journals or, more often, in Anzeiger and Sitzungsberichte. For nomenclatural purposes, it is important that publication date of Anzeiger precedes the publication date of respective Sitzungsberichte and Denkschriften. Though paired communications (in Anzeiger and Sitzungsberichte) may duplicate each other in more or less details, they are never completely similar and it is necessary to check each of them for availability of nomenclatural acts (e. g., descriptions of new taxa) they contain. For more details see KOTTELAT (2013: 496–503).

Extended Specimen approach as applied for the NHMW Collections

Extended Specimen approach conveys the current perspective of the zoological specimen as extending beyond the singular physical object to additional physical attributes and digital resources (WEBSTER 2017, LENDEMER et al. 2019). The information gathered in this catalogue includes the following attributes linked with each respective catalogue record: 1) external morphology image files: three (lateral, dorsal and ventral aspects) to several per specimen including individual body parts and structures (e. g., close-ups of the mouth to show the shape of the lips, disc, serration of the fin-rays, barbels, etc, if they are of special importance in the taxonomy in the groups concerned); 2) x-ray images; 3) georeferencing of geographic localities, where applicable, drainage, basin, country and comments clarifying the locality; 4) accessory data on preservation condition of

a specimen; 5) essential counts and measurements; 6) scanned copies (pdfs) of labels, inventory book records, original description; 7) comments on nomenclatural status of the type specimen(s) and taxonomic history of the species. It is impossible to publish all the imagery and other files gathered, thus these data were linked to the associated physical voucher specimens through a database (the NHMW Fish Collection database is currently managed with The Artedian collection management system in MS-Access developed by Swedish Museum of Natural History; Sven O. Kullander; <https://www.gbif.org/dataset/c2e3081a-ba91-40cf-b2df-9885a24b37dc>) and are available from the authors upon request. Not included in this catalogue is genetic information on the types, however the molecular analysis has started and will be added subsequently as another dimension to the described Extended Specimen approach.

Type specimens of species-group taxa described by Maximilian Holly

Mormyridae

Mormyrops bahrachi HOLLY, 1930

HOLLY 1930b: 197, unnumbered table on page 197.

Holotype. NMW 7247. The original description is based on a single specimen with a reference to the specimen described and identified in an earlier publication (HOLLY 1927c: 117, unnumbered table on page 118) as *Mormyrops longiceps* GÜNTHER of 262 mm of TL and 242 mm of BL. The only characters provided in the original description (in the unnumbered table on page 197) are 20/16 teeth, 30 dorsal-fin rays, 94 total lateral-line scales. Recent measurements: TL 262.8 mm, SL 241.8 mm. Preservation condition average, the mid-body cut on the left side.

Remarks. The primary registration of the NMW 7247 specimen was indeed under the name *Mormyrops longiceps* (on the old external label and the Pietschmann's catalogue card). The specimen corresponds with the original description of the holotype.

Type locality, date and collector. Missing from the original description; the reference to the specimen earlier identified as *Mormyrops longiceps* (same specimen as the holotype) (HOLLY 1927c: 117) indicates its locality as "Nachtigalschnellen des Sanagaflusses" (Sanaga River, Nachtigal Falls, 4°21'N 11°38'E, Cameroon, Deutsch-Kamerun at the time) (HOLLY 1927c: 118), collector Haberer, 1907–1908 (HOLLY 1927c: 115). The old label and Pietschmann's card specify the date as the beginning of February, 1908.

Remarks. The NMW 7247 holotype is a part of the collection of fishes donated to the NHMW by Karl Albert Haberer from his expedition in 1907–1908 to Kamerun (Deutsch-Kamerun, an African colony of the German Empire from 1884 to 1916 in the region of today's Republic of Cameroon, northern parts of Gabon and Republic of the Congo, western parts of the Central African Republic, southwestern parts of Chad and far eastern parts of Nigeria).

The main part of the Haberer's fish collection had been examined and described (including new species) by Franz Steindachner, head of the NHMW Fish Collection till his

death in 1919. Holly studied the entire Cameroon collection and summarised (HOLLY 1927c, d) the Haberer's localities as representing almost the entire southwestern part of Cameroon: 1. the Dja [Ja, Jah, Dscha] River (in the region of Molundu as clarified by STEINDACHNER (1912, 1913)), a tributary of the Sangha (a tributary of the Congo); 2. the Sanaga River and its Nachtigal rapids, and the Mbam river (a right tributary of the Sanaga); 3. the Lokundje River (most samples are labelled as from Lolodorf); 4. small streams between Lokundje and Njong in the Jäunde [Yaoundé] territories; 5. "the mountain streams in the areas of the Bakoko, a tribe who have their homes in southwest Cameroon"; 6. the Maka district in the southeasternmost part of Cameroon dominated by the Bumba River and the Jah River, into which the former flows (the Jah River is a tributary of the Congo River).

Etymology. The species name is a patronym, a noun in the genitive; named for a friend of Holly, Hans Bachrach from Berlin (HOLLY 1930b: 197).

In literature. None.

Taxonomic status. *Mormyrops bachrachi* was considered valid (GOSSE 1984: 92, supposed that the holotype was lost and provided earlier references), later synonymised with *Mormyrops caballus* PELLEGRIN, 1927 (BIGORNE 1987: 156, synonymisation of *bachrachi* with *caballus* based on a wide morphological study; the holotype of *M. bachrachi* not seen), LÉVÊQUE et al. 1989: 114, BIGORNE 1990: 155).

Mormyrops caballus has a patchy distribution between Guinea and Cameroon, including the Sanaga and the Nyong rivers (HOPKINS 2007).

Conservation. IUCN: LC (OLAOSEBIKAN et al. 2020).

Cyprinidae: Labeoninae

Labeo niloticus brevicauda HOLLY, 1928

HOLLY 1928d: 184, fig. 1.

Holotype. NMW 13763. The original description is based on a single specimen 117 mm TL. Recent measurements: SL 86.7 mm, TL ca 110 mm, damaged caudal fin prevents accurate measuring. The NMW 13763 specimen corresponds in its length, general appearance, number of lateral-line scales (38) to the holotype in the original description. Preservation condition good.

Type locality, date and collector. "Schari-Fluss bei Fort Archambault" (the Chari, or Shari, River, the major inflow to the endorheic Lake Chad, at the former French colonial Fort Archambault, Sarh at present, the capital of the Moyen-Chari Region and of the Department of Barh Köh in Chad, ca. 09°09'N 18°23'E); date November 1927 to June 1928, collected during a sampling trip by A. Weidholz (HOLLY 1928d: 183), donated to the NHM in 1928 (the Pietschmann's card).

Remarks. The holotype is a part of the Weidholz collection of fishes donated by Alfred Weidholz to the NHMW that contains samples from three localities: Ansongo, Niger River, 1927; Lake Débo, Inner Niger delta, November 1927; and Chari River at Fort Archambault, 1928. All specimens examined and described by HOLLY (1928d) from the Chari River are still extant. Besides the type specimens, they include, in total, 56

catalogue numbers (58 specimens of 15 species) identified by Holly as *Petrocephalus simus*, *Marcusenius kingsleyae*, *Gnathonemus cyprinoides*, *Alestes nurse*, *Distichodus niloticus*, *Auchenoglanis biscutatus*, *Auchenoglanis occidentalis*, *Synodontis membranacea*, *Lates niloticus*, *Tilapia nilotica*, *Hemichromis fasciatus*, *Anabas petherici*, *Ophiocephalus obscurus*, *Tetrodon fahaka*, *Mastacembelus loennbergii*.

The sampling site as “at Fort Archambault” may not be precise. As Weidholz apparently travelled to various destinations collecting different animals, the given locality may only represent the main residence of him during the expedition period. The date “1928”, most likely, indicates the year the collection was received by the NHMW. Alfred Weidholz’s trip to the Chari River lasted from November 1927 to June 1928 (HOLLY 1928d: 183).

Etymology. The generic name *Labeo* is masculine, and the subspecific name *brevicauda* is a noun in apposition (indeclinable), not an adjective; it is formed from *brevis* and *cauda*, meaning “short-tail”, referring to the shortened caudal fin of the fish.

In literature. None.

Taxonomic status. HOLLY (1928d) described *L. niloticus brevicauda* without a comparison with morphologically similar *Labeo senegalensis* VALENCIENNES, 1842 known from the Lake Chad basin and the Chari River including Fort Archambault (PELLEGRIN 1904: 319, PELLEGRIN 1914: 85), and the name became a synonym with the one of the latter species (BLACHE et al. 1964: 140), the opinion widely accepted in literature (LÉVÊQUE & DAGET 1984: 320, REID 1985: 73, LÉVÊQUE 1990: 292, 2003: 340, LÉVÊQUE et al. 1991: 142).

Labeo senegalensis has a wide but patchy distribution in West Africa from Senegal to Central African Republic (REID 1985, LÉVÊQUE 1990, 2003).

Conservation. IUCN: LC (LALÈYÈ & ENTSUA-MENSAH 2020).

Cyprinidae: Torinae

Barbus mariae HOLLY, 1929

HOLLY 1929a: 34.

Lectotype and paralectotype. NMW 96552 (1) and 96553 (1), respectively. The original description is based on two syntypes 295 mm and 280 mm TL. Recent measurements: NMW 96552: TL ca 295 mm, SL 225.6 mm; 96553: TL >275, SL 208.2 mm. The NMW 96552 and 96553 specimens largely agree with the syntypes in its length, body proportions and total number of lateral-line scales (30 and 31).

The larger syntype (now NMW 96552, Fig. 2a–b) was designated as lectotype by BANISTER (1973: 84) on the assumption that both specimens were extant. At that time, Paul Kähnsbauer, the head of the NHMW Fish Collection, could not locate them. In 2013, the specimens were found by Helmut Wellendorf (the NHMW fish collection manager at the time) and Emmanuel Vreven (the Royal Museum for Central Africa, Tervuren).

Preservation condition good but the caudal fin damaged in both specimens.



Fig. 2: (a) *Barbus mariae* HOLLY, 1928, NMW 96552, lectotype, SL 225.6 mm; (b) radiograph, arrow showing ethmoid region of skull and upper jaw with a median protrusion ('rhinoceros horn'), features that confirm conspecificity with *Barbus rhinoceros* COPLEY, 1938; both left lateral view.

Type locality, date and collector. "Kituifluß in Britisch-Ostafrika" The source of the data for this lot was a label reading "Type? Kitni Tanganyka-Terr Ostafrika c. Thomas 26.I.1903".

Remarks. Kitni is apparently a misspelling of Kitui; "Kituifluß" of HOLLY (1929a: 34) might be a misunderstanding because the mentioned old label he had apparently seen, does not contain the word "river". It was written after the time of acquisition of Thomas's material and "Tanganyka-Terr" is apparently a mis-interpretation. The geographic toponym 'Tanganyka Territory' only appeared in 1916 as Mandate of the United Kingdom. It happened after German East Africa (Deutsch-Ostafrika), a Germany colony in the African Great Lakes region (established in 1885 and formally de-established in 1919; present-day Burundi, Rwanda and mainland Tanzania) was divided between Britain, Belgium and Portugal. We failed to find a toponym "Kitui" in the former Tanganyka Territory.

Following Holly, BANISTER (1973: 83) interpreted the locality as the Kitui River adding "(Athi system)", and VREVEN et al. (2016: 261) as "Kitui River". We could not locate a river with the name "Kitui"; instead, the name refers to the region of Kitui, now Kitui County of Kenya with its capital town Kitui, located 180 km east of Nairobi, ca 1°22'S, 38°1'E. The hydrographic network of the Kitui region is described in detail by KITHEKA (2016, map in fig. 2). The major rivers (Thua, Tiva, Kalundu, Nzeeu, Mikuyuni and Mwita Syano) drain into the Tana River basin to the east and are seasonal at present time. This understanding of the type locality does not contradict the accepted concept of *B. mariae* and its distribution (known from the Athi and Tana drainages) (COPLEY 1938, BANISTER 1973).

The name of the collector “Thomas” might refer to Frère Thomas at British East Africa at the time.

Etymology. The species name is a patronym, a noun in the genitive; apparently named for Holly’s wife, Maria Holly (born Sperat).

In literature. Diagnostic characters (E. Vreven pers. observ. in VREVEN et al. (2016)): 12 (9+1+2) and 13 (10+1+2) gill rakers, 4,5 scales below the lateral line, and the length of the unsegmented dorsal spine 26–29% SL.

Taxonomic status. Though BANISTER (1973: 283) indicated that the original descriptions of *Barbus mariae* HOLLY, 1929 and *Barbus matris* HOLLY, 1928 were similar, he did not proceed with the synonymisation as he could not examine the type specimens of both (they had not been found in the NHMW at that time). Some authors later suggested that *B. matris* is a possible synonym of *B. mariae*, and both are junior synonyms of *Barbus oxyrhynchus* PFEFFER, 1889 (FOWLER 1976: 341, LÉVÊQUE & DAGET 1984: 266, SEEGER et al. 2003: 32). The examination of the type specimens of *B. mariae* and *B. matris* (VREVEN et al. 2016) showed that the two species were clearly distinct species. As *Varicorhinus* was recently synonymised with *Labeobarbus* (VREVEN et al. 2016, BORKENHAGEN 2017), the name *Barbus mariae* HOLLY, 1929 became a subjective junior homonym of *Varicorhinus mariae* HOLLY, 1926. Accordingly, *B. mariae* HOLLY, 1929 was replaced by *Barbus rhinoceros* COPLEY, 1938, now in the genus *Labeobarbus*; see VREVEN et al. (2016) for a detailed discussion of the issue.

Labeobarbus rhinoceros is a poorly known species with a limited distribution in the upper reaches of the Athi and Tana rivers in Kenya (VREVEN 2018a).

Conservation. IUCN: DD (VREVEN 2018a).

Barbus matris HOLLY, 1928

HOLLY 1928a: 4, fig. 2, unnumbered table on page 5.

Holotype. NMW 8000. The original description is based on a single specimen 322 mm TL and 256 mm BL. Recent measurements: ca 300 mm TL, 251.5 mm BL, 241 mm SL. The NMW 8000 specimen (Fig. 3a, b) corresponds in its length, general appearance and total number of lateral-line scales (26) to the original description. Preservation condition good.

Type locality, date and collector. “Athi-Fluss bei Nairobi in Britisch-Ostafrika” (Athi River, British East Africa, now Kenya); “in Jahre 1904 vom F. Thomas gefangen” (received from Frère Thomas at British East Africa, collected in 1904) (HOLLY 1928a: 1).

Etymology. The species name is the Latin genitive singular of *māter* (mother).

In literature. The holotype is characterised by 19 [15+1+3] gill rakers, 3,5 scales below the lateral line, and the length of the unsegmented dorsal spine 18.8% SL (E. Vreven pers. obs. in VREVEN et al. (2016)).

Taxonomic status. *Barbus matris* had been considered a synonym of *B. mariae* until the type material was examined by VREVEN et al. (2016), the validity of both species, now in the genus “*Labeobarbus*”.



Fig. 3: (a) *Barbus matris* HOLLY, 1928, NMW 8000, holotype, SL 241 mm; (b) radiograph; both left lateral view.

Known only from the type locality (VREVEN et al. 2016), and the only known specimen is the holotype.

Conservation. IUCN: not evaluated.

Barbus nairobi HOLLY, 1928

HOLLY 1928a: 2, fig. 1, unnumbered table of measurements on page 3.

Syntypes. NMW 13330 (1) and 13331 (1) in one jar. The original description is based on two specimens, TL 364 mm (BL 313 mm) and TL 335 mm (BL 273 mm). Recent measurements (TL, mm/BL, mm/SL, mm): NMW 13330 (ca 330/300.6/270.9), NMW 13331 (n/a, caudal fin damaged/288.3/259.9).

The specimens correspond in their length, general appearance, number of lateral-line scales (26 in 13330, 27 in 13331) to the original description. The syntype NMW 13331 is the one in fig. 1 in HOLLY (1928a: 2). Preservation condition good.

Type locality, date and collector. “Athi-Fluß bei Nairobi in Britisch-Ostafrika” (Athi River, British East Africa, now Kenya); “in Jahre 1904 vom F. Thomas gefangen” (received from Frère Thomas at British East Africa, collected in 1904 (HOLLY 1928a: 1), same as for *B. matris* above, consistent with all other sources of data.

Etymology. The species name is a noun in the nominative (a noun in apposition), in reference to the type locality, Nairobi.

In literature. None.

Taxonomic status. A synonym of *Barbus oxyrhynchus* PFEFFER, 1889 by BANISTER (1973: 94) and subsequent authors (LÉVÊQUE & DAGET 1984: 176, SEEGERs et al. 2003: 32), placed in *Labeobarbus* (VREVEN et al. 2016: 95).

Many synonymous names are given under *Barbus oxyrhynchus* and the taxonomic status of various Kenyan populations is not yet fully settled (SEEGERs et al. 2003: 32).

Barbus oxyrhynchus is distributed in upper and middle reaches of the Pangani River (north-eastern Tanzania) and the Athi and Tana drainages and the Ewaso Nyiro River (the Jubba drainage) in Kenya (SEEGERs et al. 2003, VREVEN 2018b).

Conservation. IUCN: LC (VREVEN 2018b).

Barbus perplexicans mbami HOLLY, 1927

HOLLY 1927c: 143, fig. 9, unnumbered table of measurements on page 144.

Holotype. NMW 7528. The original description is based on a single specimen 196 mm TL and 151 mm BL. Recent measurements: TL 195, BL 150, SL 146 mm. The NMW 7528 specimen corresponds in its length, general appearance (Fig. 4), total number of lateral-line scales (25) to the holotype in the original description. Preservation condition average, some scales lost on both sides.

Type locality, date and collector. “Mbamfluss” (HOLLY 1927c: 145) (Mbam River in Deutsch-Kamerun at that time, the main tributary of the Sanaga River in present-day Cameroon. Its confluence with the Sanaga is at ca 4°23'N 11°16'E). (HOLLY 1927c: 145), collector Haberer, 1907–1908 (HOLLY 1927c: 115). The Pietschmann’s card and other museum records specify the date as March 1908.

Remarks. The syntypes are a part of the collection (the expedition in 1907 to 1908 to the German Colony of Kamerun) donated by Karl Albert Haberer. A review of the Cameroon localities of Haberer see *Mormyrops bahrachi*.

Etymology. The subspecies name is a noun in the genitive, in reference to the type locality, the Mbam River.

In literature. Examined but specified data not published (VREVEN et al. 2016: 304).

Taxonomic status. The subspecies was given a species rank (HOLLY 1930b: 239) soon after the original description; a valid species since then in *Barbus* (TREWAVAS 1962: 154, LÉVÊQUE & DAGET 1984: 268), later in *Labeobarbus* (DE WEIRDT & TEUGELS 2007a: 524, 525, MOELANTS 2010a, VREVEN et al. 2016: 294).

Endemic to the Sanaga River, with only very few known locations (DE WEIRDT & TEUGELS 2007a: unnumbered map on p. 525) and it is expected to be more widespread in the Sanaga system than is currently recorded (MOELANTS 2010a).

Conservation. IUCN: EN (MOELANTS 2010a).



Fig. 4: (a) *Barbus perplexicans mbami* HOLLY, 1927, NMW 7528, holotype, SL 146 mm; (b) radiograph; both left lateral view.

Barbus ruspolii brevispinis HOLLY, 1927

HOLLY 1927c: 141, fig. 8, unnumbered table of measurements on page 142.

Syntypes. NMW 7315 (1) and 7316 (1). The original description is based on two specimens, TL 184 and 174 mm (BL 150 and 141 mm, respectively). Recent measurements (TL, mm/BL, mm/SL, mm): NMW 7315 (185/149.2/143.8), NMW 7316 (175/141.7/136.9).

The NMW 7315–16 specimens correspond in their length, general appearance, number of lateral-line scales (30 in both) with the original description. The syntype NMW 7315 is the one in fig. 8 in HOLLY (1927c: 142). Preservation condition good.

Type locality, date and collector. NMW 7315: “Das größere Tier... Lokundjefluß bei Lolodorf” (Lokoundje River at Lolodorf, 3°14'03"N 10°43'38"E; between Ngoumou and Bipindi); NMW 7316: “Das kleinere ... Sanaga (Nachtigalschnellen)” (Sanaga River, Nachtigal Falls, ca 4°21'N 11°38'E), Cameroon, Deutsch-Kamerun at the time (HOLLY 1927c: 143), collector Haberer, 1907–1908 (HOLLY 1927c: 115). The Pietschmann’s cards and labels specify the dates as October 8, 1907 (NMW 7315) and the beginning of February, 1908 (NMW 7316).

Remarks. The syntypes are a part of the collection (the expedition in 1907 to 1908 to the German Colony of Kamerun) donated by Karl Albert Haberer. A review of the Cameroon localities of Haberer see *Mormyrops bachrachi*.

Etymology. The subspecies name *brevispinis* refers to a characteristic feature of the species, the short spines; a compound noun in ablative plural from the Latin *brevis*, a masculine/feminine singular adjective for short, and *spinis*, a noun in ablative plural for spines or thorns.

In literature. Examined (VREVEN et al. 2016: 302) but specified data not published.

Taxonomic status. The subspecies was given the species rank (HOLLY 1930b: 238) soon after the original description; a valid species since then in *Barbus* (PELLEGRIN 1928: 311, TREWAVAS 1962: 154, LÉVÊQUE & DAGET 1984: 232), later in *Labeobarbus* (DE WEIRDT & TEUGELS 2007a: 520, 521, MOELANTS 2010b, VREVEN et al. 2016: 286).

This species only occurs in the Lokundje and Sanaga rivers and in volcanic Lake Monoun, Cameroon.

Conservation. IUCN: LC (MOELANTS 2010b).

***Barbus versluysii* HOLLY, 1929**

HOLLY 1929a: 32.

Syntypes. NMW 13954 (1), 13955 (1) and 13956 (1) in one jar. The original description is based on three specimens, TL 111, 82 and 80 mm. Recent measurements (TL, mm/SL, mm): NMW 13954 (109/83.9), NMW 13955 (81.5/62.2), NMW 13956 (80.0/61.5).

The NMW 13954–56 specimens correspond in their length and general appearance to the original description of the syntypes. The syntype 13954 is the one in Plate 1, fig. 8, in HOLLY (1930b: 142). Preservation condition average, the NMW 13954 and 13956 missing some scales.

Type locality, date and collector. “Kamerun, Gegend der Bakoko” (German Colony of Kamerun, area of the Bakoko) (HOLLY 1929a: 33). Date 1907, collector Haberer (from the old label and the Pietschmann’s card, missing from the original description).

Remarks. Though HOLLY (1929a: 33) mentioned “Gegend der Bakoko” as the type locality, neither old label nor the Pietschmann’s card or the inventory book record (Fig. 1) indicate the Bakoko area as the locality for NMW 13954–56, reading only “Kamerun”. A review of the Cameroon localities of Haberer see *Mormyrops bachrachi*.

Etymology. The species name is a patronym, a noun in the genitive; named for Jan Versluys Janszoon (01.09.1873, Groningen – 22.01.1939, Vienna), a Dutch, German and Austrian zoologist and anatomist.

In literature. Examined (VREVEN et al. 2016: 302).

Taxonomic status. A valid species as *Labeobarbus versluysii* (HOLLY, 1929) (DE WEIRDT & TEUGELS 2007a: 528, 529, MOELANTS 2010c, VREVEN et al. 2016: 300).

Endemic to Central and Southern Cameroon occurring in the Wouri, Sanaga and Nyong drainages (DE WEIRDT & TEUGELS 2007a: 528).

Conservation. IUCN: LC (MOELANTS 2010c).

Sanagia velifera HOLLY, 1926

HOLLY 1926a: 155.

Syntypes. NMW 7261 (1) and 7262 (1) in one jar. The original description is based on two specimens, TL 190 and 149 mm (BL 158 and 112 mm, respectively). The description was repeated with illustrations and measurements (HOLLY 1927c: 139–141, fig. 7, unnumbered table on page 140). The 7261 and 7262 specimens correspond in their length, general appearance, and total number of lateral-line scales (25) to the original description. Recent measurements (TL, mm/BL, mm/SL, mm): NMW 7161 (n/a, caudal fin damaged/157.5/147.4), NMW 7262 (147/112.8/107.2).

The NMW 7261 syntype (Fig. 5a) is the one in fig. 7 in HOLLY (1927c: 139). Preservation condition good; pharyngeal bones are in separate tubes (dissected apparently by Holly as he described the teeth).

Remarks. The syntypes had not been located in the NHMW (considered lost) before at least 1973 (BANISTER & THYS VAN DEN AUDENAERDE, 1973). The main diagnostic features of the species are two rows of pharyngeal teeth, 2.4–4.2, and a mouth with a small cornified cutting edge and well-developed lower lip on the lateral sides of the lower jaw (Figs 5b, c).

Type locality, date and collector. “Nachtigalschnellen des Sanagaflusses in Kamerun” (Sanaga River, Nachtigal Falls, 4°21'N 11°38'E, Cameroon, Deutsch-Kamerun at the time) (HOLLY 1926a: 156). Date is missing from the original description; the old label and Pietschmann’s card specify the date as the beginning of February, 1908, collector Haberer.

Remarks. The syntypes are a part of the collection (the expedition in 1907 to 1908 to the German Colony of Kamerun) donated by Karl Albert Haberer. A review of the Cameroon localities of Haberer see *Mormyrops bachrachi*.

Etymology. The species name *velifera*, a Latin feminine adjective meaning carrying a sail in reference to the enlarged dorsal fin of the fish.

In literature. Examined (VREVEN et al. 2016).

Taxonomic status. A valid species (BANISTER & THYS VAN DEN AUDENAERDE 1973: 182, LÉVÊQUE & DAGET 1984: 336, DE WEIRD 2007: 537, VREVEN et al. 2016: 243–244), the type species of the monotypic *Sanagia* (HOLLY 1926a: 155, 1930b: 134, 137). *Sanagia* is commonly considered as a distinct genus (BANISTER & THYS VAN DEN AUDENAERDE 1973: 182, LÉVÊQUE & DAGET 1984: 336, DE WEIRD 2007: 537, VREVEN et al. 2016: 243–244) though its inclusion into *Labeobarbus* (synonymised with *Varicorhynchus*) is pending (POLL 1957, VREVEN et al. 2016, BORKENHAGEN 2017). Molecular data support its position among *Labeobarbus* (YANG et al. 2015). Taxonomic and phylogenetic data on *Sanagia* are summarised by VREVEN et al. (2016) and BORKENHAGEN (2017).

Sanagia velifera is endemic to the Sanaga River system, Cameroon (WEIRD 2007).

Conservation. IUCN: NT (SNOEKS et al. 2009).



Fig. 5: (a) *Sanagia velifera* HOLLY, 1926, NMW 7261, syntype, SL 147.4 mm, left lateral view; (b) NMW 7262, syntype, SL 147.4 mm, radiograph, left lateral view; (c) NMW 7261, syntype, SL 147.4 mm, head, ventral view; (d) pharyngeal bones (7261 right, 7262 left).

Varicorhinus jaegeri HOLLY, 1930

HOLLY 1930b: 198, fig. 5.

Holotype. NMW 13957. The original description is based on a single specimen 188 mm TL. Recent measurements: TL ca 183 mm, SL 143,5 mm. The NMW 13957 specimen corresponds with the holotype in its length, general appearance and the number of total lateral-line scale (30 on the left side). Preservation condition good.

Type locality, date and collector. “Sanaga, Kamerun” (Sanaga River, Cameroon, Deutsch-Kamerun at the time) (HOLLY 1930b: 199), collector Haberer, 1907–1908 (HOLLY 1930b: 195). The old label and Pietschmann’s card specify the date as May 23, 1907.

Remarks. The syntypes are a part of the collection (the expedition in 1907 to 1908 to the German Colony of Kamerun) donated by Karl Albert Haberer. A review of the Cameroon localities of Haberer see *Mormyrops bachrachi*.

Etymology. The species name is a patronym, a noun in the genitive, presumably after Gustav Jäger (23.06.1832, Bürg am Kocher – 13.05.1917 Stuttgart), a German biologist and comparative anatomist, a friend of Christian Gottlieb Ferdinand Ritter Von Hochstetter, superintendent of the NHMW, who invited G. Jäger for the reconstruction of the Moa skeletons from New Zealand which are still at the NHMW.

In literature. Examined but just mentioned, no specified morphological data given (GETAHUN et al. 2004, GETAHUN 2007, VREVEN et al. 2016).

Taxonomic status. A valid species in *Varicorhinus* (LÉVÊQUE & DAGET 1984: 338, GETAHUN et al. 2004: 159, GETAHUN 2007: 540, 541), now in *Labeobarbus* (VREVEN et al. 2016: 291).

The type locality was recently restricted, without providing any reasoning for this, by the Mekay River (a tributary of the Djérem River that is the major headstream of the Sanaga) (GETAHUN 2007: unnumbered map on page 540, MOELANTS 2010d). None of written sources of information on the holotype existing in the NHMW Fish Collection could confirm this opinion. Known only from the holotype (GETAHUN 2007: 540, 541, fig. 17.61: re-printed fig. 5 from HOLLY (1930b)).

Conservation. IUCN: DD (MOELANTS 2010d).

Varicorhinus mariae HOLLY, 1926

HOLLY 1926a: 156.

Syntypes. NMW 7221 (1); 7222 (1) and 7223 (1) in one jar. The original description is based on three specimens 138, 149, and 175 mm TL. Recent measurements (TL, mm/SL, mm): NMW 7221 (ca 166/128.8), NMW 7222 (144.5/108.1), NMW 7223 (135.5/98.9).

The NMW 7221–23 specimens largely agree with the syntypes in their length and body proportions but the number of total lateral-line scales (26, 26, 24, respectively) is somewhat different (26–28 in the original description). A widened description was repeated in HOLLY (1927c: 134–136, Fig. [5], unnumbered table of measurements on page 135) and briefly in the key (HOLLY 1930b: 236). The NMW 7221 syntype is apparently the one in fig. 5 in HOLLY (1930b) but the number of lateral-lines scales does not suit – 28 in the figure vs. 26 in the syntype. Preservation condition average, the caudal-fin lobes and the tip of the dorsal fin are variably damaged.

Type locality, date and collector. “Nachtigalschnellen des Sanaga in Kamerun” (Sanaga River, Nachtigal Falls, 4°21'N 11°38'E, Cameroon, Deutsch-Kamerun at the time) (HOLLY 1926a: 156). The date is the beginning of February, 1908, collector Haberer (data from the old label and the Pietschmann’s card, missing from the original description).

Remarks. The syntypes are a part of the collection (the expedition in 1907 to 1908 to the German Colony of Kamerun) donated by Karl Albert Haberer. A review of the Cameroon localities of Haberer see *Mormyrops bachrachi*.

Etymology. The species name is a patronym, a noun in the genitive; apparently named for Holly's wife, Maria Holly (born Sperat).

In literature. Examined (GETAHUN et al. 2004, VREVEN et al. 2016: 302).

Taxonomic status. A valid species as *Varicorhinus mariae* (PARENZAN 1936: 21, LÉVÊQUE & DAGET 1984: 339, GETAHUN et al. 2004: 159, GETAHUN 2007: 542–544, fig. 17.63, MOELANTS 2010e), now in *Labeobarbus* (BESHERA et al. 2016: 376–377, VREVEN et al. 2016: 293).

Endemic to the Sanaga and Wouri rivers, Cameroon (GETAHUN 2007).

Conservation. IUCN: LC (MOELANTS 2010e).

Varicorhinus sandersi fimbriatus HOLLY, 1926

HOLLY 1926a: 156.

Syntypes. The original description is based on ten specimens 112–213 mm TL (not specified by specimen). NMW specimens considered syntypes: 7224 (1), 7225 (1), and 7226 (1) in one jar; 7227 (1), 7228 (1), 7229 (1), 7230 (1), 7231 (1), 7232 (1), and 7233 (1) in one jar. A description also appeared in HOLLY (1927c: 136, unnumbered table of measurements on page 137 with measurements for each specimen). Measurements from HOLLY (1927c) (no catalogue numbers provided); TL, mm/BL, mm: 213/169, 186/147.5, 186/148, 173/134, 161/131, 148.8/117, 144/115.3, 130.5/111.5, 136/109.8, 112/94.5. Recent measurements (TL, mm/SL, mm): NMW 7224 (206.5/161), 7225 (182/142.8), 7226 (139/105.5), 7227 (181/140.5), 7228 (169.5/126.2), 7229 ([damaged]/123.2), 7230 (147/109.9), 7231 (142/113.2), 72232 (131/103.1), 7233 (116/91).

The NMW specimens chiefly correspond with the original description of the syntypes in their lengths and general appearances. Preservation condition good to average.

Type locality, date and collector. “Nachtigalschnellen des Sanaga in Kamerun” (Sanaga River, Nachtigal Falls, 4°21'N 11°38'E, Cameroon, Deutsch-Kamerun at the time) (HOLLY 1926a: 157). Date is missing from the original description; the old label and Piet-schmann's card specify the date as the beginning of February, 1908, collector Haberer.

Remarks. The syntypes are a part of the collection (the expedition in 1907 to 1908 to the German Colony of Kamerun) donated by Karl Albert Haberer. A review of the Cameroon localities of Haberer see *Mormyrops bachrachi*.

Etymology. The subspecific name *fimbriatus* is a Latin masculine adjective meaning fibrous, fringed.

In literature. examined but specified morphological data not presented (GETAHUN et al. 2004, VREVEN et al. 2016).

Taxonomic status. The subspecies was given a species rank (HOLLY 1930b: 236) soon after the original description and considered a valid species since then in *Varicorhinus*

(LÉVÊQUE & DAGET 1984: 337, GETAHUN et al. 2004: 159, GETAHUN 2007: 540, 541) or *Labeobarbus* (VREVEN et al. 2016: 289).

Endemic to the Sanaga River, Cameroon.

Conservation. IUCN: LC (MOELANTS 2010f).

Varicorhinus weneri HOLLY, 1929

HOLLY 1929a: 32.

Syntypes. The original description is based on two specimens with TL 79 and 76 mm. The NMW 13948 specimen (TL ca 78 mm, SL 61.5 mm, Fig. 6a) corresponds in its length and principal morphometric and meristic characters to the 79 mm-long syntype. We suppose that the syntype 13948 is the one in in HOLLY (1930b: 142, Plate 1, fig. 7). Preservation condition average, the upper caudal-fin lobe damaged and all rays fragile.

Remarks. One of two syntypes, NMW 13949, has been apparently lost as intensive searches have not recovered it. According to the old label, it was in one jar with NMW 13948.

Type locality, date and collector. “Gegend des Volks-stammes der Bakoko in Süd-kamerun” (the area of the Bakoko tribe in South Cameroon) (HOLLY 1929a: 32), other data are missing from the original description. The Pietschmann’s card specifies the date as October 8, 1907, collector Haberer.

Remarks. The syntypes are a part of the collection (the expedition in 1907 to 1908 to the German Colony of Kamerun) donated by Karl Albert Haberer. HOLLY (1927c) described the locality as “the mountain streams in the area of the Bakoko, a tribe who has its homes in southwest Cameroon”. For a further discussion on the Haberer’s locality ‘Bakoko’, see *Aucheloganis ahli*.

Etymology. The species name is a patronym, a noun in the genitive; named for Franz Josef Maria Werner (15.08.1867, Vienna – 28.02.1939, Vienna), an Austrian zoologist, chiefly herpetologist and entomologist, and explorer, professor at the Institute of Zoology of the University of Vienna. He worked close to the NHMW and donated some of his collected fish materials to the Fish Collection; some of his samples were identified and described by Holly (see *Gobius pigmaeus*); a supervisor of Holly’s dissertation.

In literature. Examined but specified data not published (GETAHUN et al. 2004, VREVEN et al. 2016: 302).

Taxonomic status. A valid species as *Varicorhinus weneri* HOLLY, 1929 (PARENZAN 1936: 21, LÉVÊQUE & DAGET 1984: 341, GETAHUN et al. 2004: 159, GETAHUN 2007: 548, 549, fig. 17.68), now in *Labeobarbus* (VREVEN et al. 2016: 301).

Known in Cameroon in the Sanaga River and scattered localities southwards (GETAHUN 2007: map on p. 549). Its distribution pattern is thought to be “strange” and to be looked at in more detail (MOELANTS 2010g).

Conservation. IUCN: LC (MOELANTS 2010g).



Fig. 6: (a) *Varicorhinus weneri* Holly, 1929, NMW 13948, syntype, SL 61.5 mm; (b) *Barbus weidholzii* HOLLY, 1929, NMW 13762, holotype, SL 38.2 mm; both left lateral view.

Cyprinidae: Smiliogastrinae

Barbus weidholzii HOLLY, 1928

HOLLY 1928d: 186, fig. 2.

Holotype. NMW 13762. The original description is based on a single specimen with TL 49 mm TL. Recent measurements: SL 38.2 mm, TL cannot be measured as the caudal fin is completely broken, otherwise preservation condition average. The NMW 13762 specimen largely corresponds with the holotype in its body length, general appearance (Fig. 6b), and the total number of lateral-line scales (24).

Type locality, date and collector. “Schari-Fluss bei Fort Archambault” (the Chari, or Shari, River, the major inflow to the endorheic Lake Chad, at the former French colonial Fort Archambault, Sarh at present, the capital of the Moyen-Chari Region and of the Department of Barh Köh in Chad, ca. 09°09'N 18°23'E); date November 1927 to June 1928, collected during a sampling trip by A. Weidholz (HOLLY 1928d: 183), donated to the NHM in 1928 (the Pietschmann’s card).

Remarks. The holotype is a part of the collection of fishes of Alfred Weidholz’s trip to the Chari River in November 1927 to June 1928 (HOLLY 1928d: 183), donated to the NHMW (see *Labeo niloticus brevicauda*).

Etymology. The species name is a patronym, a noun in the genitive; named for Alfred Heinrich Ernest Weidholz (28.04.1880–6.04.1945), an Austrian banker, animal collector and trader, traveller and naturalist.

In literature. None.

Taxonomic status. the species was treated as a synonym of *Barbus ablakes* type *deserti* non PELLEGRIN, 1909 (BLACHE et al. 1964: 123) later synonymised with *Barbus macrops* BOULENGER, 1911 (LÉVÊQUE & DAGET 1984: 123, LÉVÊQUE 1990: 344), which is now in the genus *Enteromius* (HAYES & ARMBRUSTER 2017: 353).

Enteromius macrops is considered to be a widely distributed species – from Guinea Bisau eastwards to the Nile (BOULENGER 1911, MORITZ et al. 2019). Five paralectotypes of *B. macrops* are deposited in the collection (NMW 54271) but a discussion on their conspecificity with *Barbus weidholzii* is beyond the goal of the present catalogue.

Conservation. IUCN: LC (DIOUF et al. 2020).

Cyprinidae: Cyprininae

Rohteichthys macrolepis HOLLY, 1927

HOLLY 1927b: 9.

Holotype. NMW 7246 (1). The original description is based on a single specimen of 119 mm TL. Current measurements are: TL 120 mm, SL 86.8 mm. The description was repeated with additional illustrations later that year (HOLLY 1927e: 199, fig. 1–2) in a paper devoted to a study of the collection of fishes from Sumba (Tjendana) Island. The specimen in NMW 7246 corresponds in its length, general appearance, number of lateral-line scales (34) to the original description. Preservation condition good.

Type locality, date and collector. “Insel Sumba, eine der kleinen Sundainseln” (Sumba Island, one of the Lesser Sunda Islands). Bought from Gerrard, 1897 (data from the Pietzschmann’s card, missing from the original description).

Remarks. It belongs to the collection of fishes purchased by the NHMW from “Gerrard” and the date “1897” refers to the date when the collection was received. The exact type locality is not known. It is also not clear if the collection was bought from Edward Gerrard or from the company Edward Gerrard & Sons, a taxidermy firm founded and run by the Gerrard family from 1853 in Camden, London. The founder Edward Gerrard was an employee of the British Museum’s zoological department, as an attendant. By the 1890s, Gerrard’s son, also called Edward had taken over the business, which he ran until his death in 1929 (MORRIS 2004). The Gerrards and their employees travelled and collected all over the world. The Fish collection of NHMW houses over 50 catalogue numbers of fishes purchased from this company, including materials from different islands of the Malaysian Archipelago (Celebes, Borneo, Java, Flores).

KOTTELAT (2013: 92) doubts Sumba Island to be the type locality because almost all species mentioned in HOLLY (1927e) together with *R. macrolepis* have never been reported from Sumba. We found no indications of mislabelling or misspelling in the inventory

book, old cards or labels. However, it cannot be excluded that incorrect data were originally provided by Gerrard.

Besides *Rotheichthys macrolepis*, the collection contains samples of ten species registered in the Pietschmann's catalogue under the numbers 7234–7251, all with the locality, collector and date as “Sumba, Gerrard, 1897”. They were identified by Holly as follows: *Clarias nieuhofti* (lost), *Rasbora kalochroma*, *Puntius binotatus*, *Ophiocephalus striatus*, *O. melasoma* (misprinted as *melanosoma*), *O. bankanensis*, *Anabas testudineus*, *Polyacanthus hasselti*, *Betta anabatooides*, and *Trichopodus trichopterus*. They are still deposited in the collection under the same numbers except for *Polyacanthus hasselti* (now NMW 60749).

Etymology. The species name *macrolepis* is a compound noun in apposition from the Greek *macro-* for large and *lepis* for scale, in reference to the relatively large size of the scales in this species.

In literature. None.

Taxonomic status. It was synonymised with *Cyclocheilichthys apogon* (VALENCIENNES, 1842) by HOLLY (1933: 266) soon after the original description, an opinion accepted in literature (KOTTELAT & WHITTEN 1996: 2, KOTTELAT 2013: 92).

Cyclocheilichthys apogon is widespread in both Indochinese and Sundaic basins from Myanmar, Thailand, Lao PDR, Cambodia and Vietnam to the south through Malaysia and Indonesia (Sumatra, Java, Borneo).

Conservation. IUCN: LC (LUMBANTOBING, D. & VIDTHAYANON, C. 2020).

Cyprinidae: Barbinae

Barbus baschakirdi HOLLY, 1929

HOLLY 1929b: 62.

Holotype. NMW 13798. The original description is based on a single specimen with “broken caudal fin and BL 54 mm”. Recent measurements: SL 51.3 mm, BL 52.6 mm. Redescribed and illustrated in HOLLY (1929e: fig. 1). The NMW 13798 specimen corresponds in its length, general appearance, total number of lateral-line scales (38) to the original description. Preservation condition bad (Fig. 7a), though major diagnostic characters can be examined.

Remarks. The holotype was a part of a small collection of fishes done by Alfons and Agnes Gabriel during their trip to Iran in 1928 and soon after donated to Franz Werner at the NHMW. The collection was studied by Holly who presented the results a few months later at a meeting of the Academy of Sciences in Vienna (HOLLY 1929b, f, WERNER 1929).

Type locality, date and collector. “Ein Bach bei Guadjik am Wege von Sarzeh in Biabun nach Darpahan in den Bergen von Baschakird, Südost-persien” (a brook at Guadjik on the way from Sarzeh in Biabun [Biyābān, Bīābān] to Darpahan in the

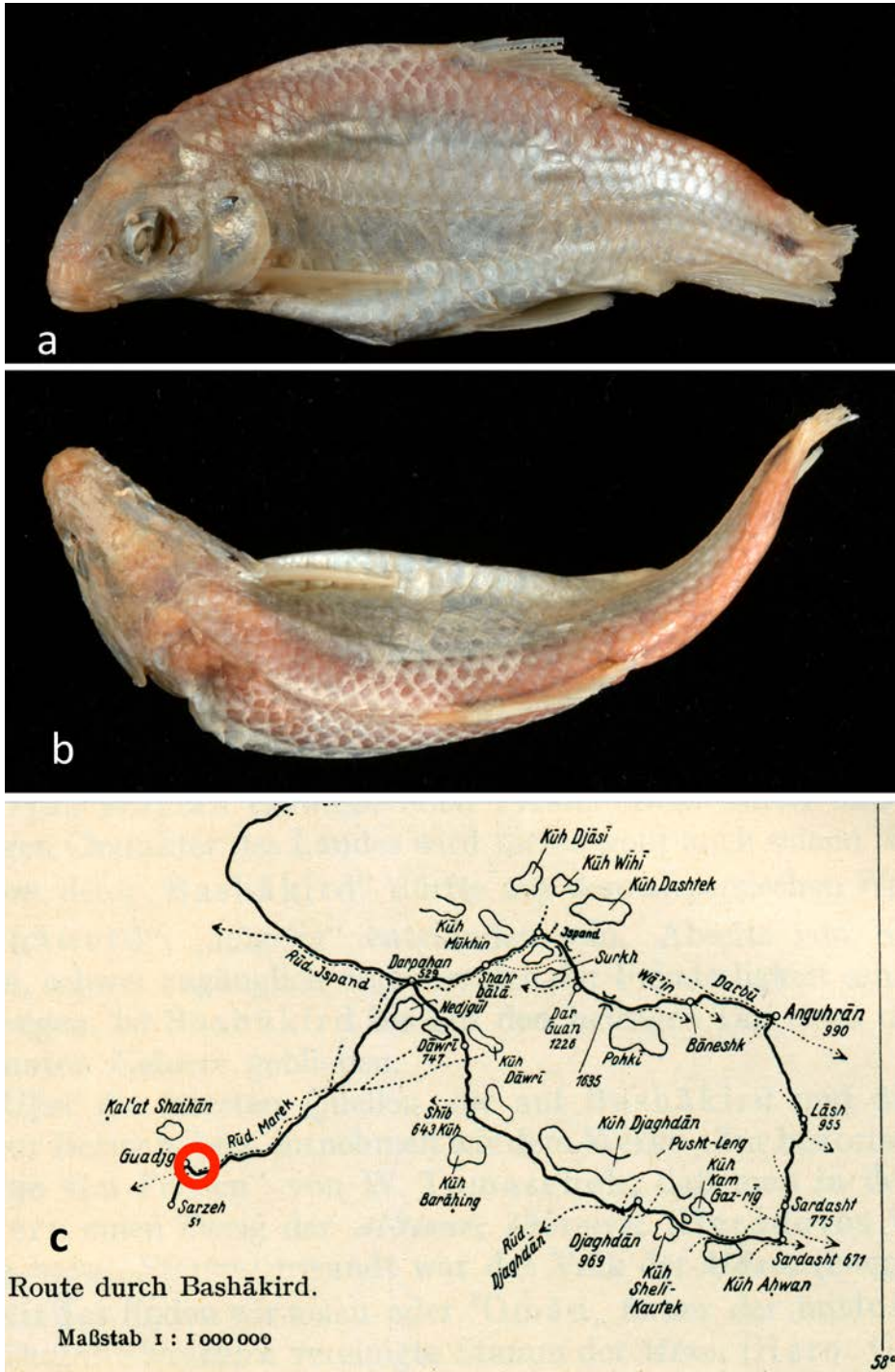


Fig. 7: (a) *Barbus baschakirdi* HOLLY, 1929, NMW 13798, holotype, SL 51.3 mm, left lateral view; (b) dorsal view; (c) type locality (red circle) from GABRIEL (1929), see text for more detail.

Baschakird Mountains, southeast Persia) (HOLLY 1929b: 63); collected by Gabriel and donated to the NHM in 1928 (data from the cards and labels, missing from the original description).

Remarks. According to the collector (GABRIEL 1929: 104, Map No. II), a small village Guadjg was located in NNO direction from Sarzeh (Fig. 7c), the stream name was Marek (Marek-Fluss, Rudkhāneh Marek). We could not locate Guadjg in present-day maps, but roughly calculated the distance, based on the map from Gabriel (Fig. 7c) between Sarzeh (26°26'N 57°15'E) and Guadjg, and it is about 5–6 km. The Rudkhāneh Marek flew in south-western direction with its sources at Dawri (Davāri) mountains and was dry near Guadjg at that time but 200 m further along the valley the river bed contained water where the Gabriels collected “*Gobio* and *Barbus* later described under the name *Barbus baschakirdi* Holly” (GABRIEL 1929: 109). “*Gobio*” identified later by HOLLY (1929e: 183) as *Periophthalmus koehltreuteri* (sic) (= *P. barbarus*) is in the collection under the number NMW 13805 (1 specimen). The locality belongs to the western part of the Makran zoogeographical province (COAD & VILENKIN 2004, JOULADEH-ROUDBAR et al. 2015, ESMAEILI et al. 2017, COAD 2021a).

The date of collecting is March 28, 1928 (GABRIEL 1929: 104–110).

Etymology. The species name is a noun in the genitive, derived from Bashakird (Bašākerd, Bašāgerd). It is a roughly rectangular mountainous district (*dehestān*) east of Mīnāb and north of Jāsk, bounded on the west by the district of Rūdān and the coastal strip known as Bīābān, by Fannūč in Baluchistan to the east, by Manūjān to the north and by the western extension of the coastal plain of Baluchistan to the south (covering some 10.4 thousand square km). Its major feature is the Kūh-e Bašākerd that stretches some 145 km east-southeast from the Mārż range in the north to the Rapč river in the east (SPOONER 1988).

In literature. KÄHSBAUER (1963: 325) repeated diagnostic characters from HOLLY (1929 b, f) and COAD (2021a: 891) provided data supporting synonymisation of *B. baschakirdi* with *C. milesi*.

Taxonomic status. It was treated as a distinct valid species in earlier publications (WERNER 1929, KÄHSBAUER 1963), later synonymised with *Cyprinion watsoni* DAY, 1872 (MIRZA 1969, KARAMAN 1971, COAD 1996) or *Cyprinion milesi* after the latter had been re-established out of the synonymy with *C. watsoni* (HOWES 1982a, COAD 1995, ESMAEILI et al. 2015, 2017, JOULADEH-ROUDBAR et al. 2015, COAD 2021a).

In contrast, the latest updated review (JOULADEH-ROUDBAR et al. 2020), though synonymising *B. baschakirdi* with *Cyprinion milesi*, highlighted that the use of the latter name in Iran is limited by a *Cyprinion* from the eastern Makran only (a single confirmed specimen of *C. milesi* in Iran is from the Sarbaz River). All other locations of *C. milesi* in Iran (western Makran, Hormuz, Mashkid, Hamun-e Yaz Murian basins) are considered to be based on misidentifications and actually referring to another species of the genus (JOULADEH-ROUDBAR et al. 2020: 65–66, map in fig. 112). Within this taxonomic concept, a synonymy of *B. baschakirdi* with *C. milesi* loses its grounds, requiring a re-evaluation of the taxonomic status of *B. baschakirdi* and a revision of the entire *C. watsoni/C. milesi* complex.

Conservation. IUCN: not evaluated. In Iran, it is locally accessed as Data Deficient because the status of its populations and distribution range are not clear (JOULADEH-ROUDBAR et al. 2020: 66).

Distichodontidae

Distichodus kollerii HOLLY, 1926

HOLLY 1926b: 158.

Syntypes. NMW 7167 (1) and 7168–72 (5), in one jar. The original description is based on six specimens (HOLLY 1926b: 159), also in HOLLY (1927c) (no catalogue numbers provided); TL, mm/BL, mm: 215/158, 175/135, 160/125, 165/125.5, 138/110, 135/107. Recent measurements (TL, mm/SL, mm): NMW 7167 (213/151), 7168 (173/133.7), 7169 (159/122.3), 7170 (168/123.7), 7171 (138/106.8), 7172 (135/102.8).

Soon after, HOLLY (1927c: 128–130, fig. 3, table of measurements on p. 129) published a wider description with an illustration and a table of measurements. We could not identify the syntype illustrated by HOLLY (1927d: fig. 5). Preservation condition very good (NMW 7167) or good, some missing scales in most syntypes.

Type locality, date and collector. Type locality is “ein Exemplar aus Sanaga” without a specified locality (NMW 7167 according to the Pitschmann’s card) and “5 aus dem Bam-Fluß, einem Nebenflusse des Sanaga in Kamerun” (NMW 7168–72 according to the Pitschmann’s card) (HOLLY 1926b: 159). The spelling “Bam”-Fluß is an obvious misprint for the Mbam River, corrected in HOLLY (1927d). Mbam is the main tributary of the Sanaga River in present-day Cameroon. Its confluence with the Sanaga is at 4°23'N 11°16'E. Date is March 1908 (for NMW 7168–72 according to the Pitschmann’s card) and no date (for NMW 7167), collector Haberer for both lots (data from the labels and cards, missing from the original description).

Remarks. The syntypes are a part of the collection (the expedition in 1907 to 1908 to the German Colony of Kamerun) donated by Karl Albert Haberer, so, a date for NMW 7167 may apparently be 1907 to 1908. A review of the Cameroon localities of Haberer see *Mormyrops bachrachi*.

Etymology. The species name is a patronym, a noun in the genitive; named for Otto Koller (12.03.1872, Nieder-Ottwang – 23.01.1950), an Austrian zoologist and ichthyologist at the NHMW, who participated in various expeditions (e.g. Austrian Costa-Rica Expedition in 1930) and donated materials to the NHMW Fish Collection (over 40 lots/catalogue numbers from 1924 to 1931).

In literature. None.

Taxonomic status. A valid species as *Distichodus kollerii* (PELEGRIN 1927: 557, HOLLY 1930b: 232, ROBERTS 1975: fig. 13F, DAGET & GOSSE 1984: 189, VARI 2007: 420, 421, MAMONEKENE & VREVEN 2008: 97, ARROYAVE et al. 2020: 24, 25, 26), SCHMIDT et al. 2021: 294, 295).

Endemic to the Sanaga River drainage in Cameroon.

Conservation. IUCN: LC (MOELANTS 2010h).

Alestidae

Alestes nurse albolineatus HOLLY, 1928

HOLLY, 1928c: 312, fig. 1.

Syntypes. The original description is based on 23 specimens with TL 112–213 mm (not specified by specimen), now NMW 13113–33 (21 specimens, in one jar) and 13334–35 (2 specimens, in one jar). Recent measurements (TL, mm/SL mm): NMW 13113–33 (57.5–72.5/45.2–56.5), NMW 13134 (70/55.5), 13135 (59/45.9).

The NMW specimens chiefly correspond with the original description of the syntypes in its length and general appearance. Preservation condition good to average.

Type locality, date and collector. “Senegal” (HOLLY, 1928c: 313), no other data. The Pietschmann’s cards and the labels specify the date and collector as 1869, F. Steindachner.

Remarks. Publications by F. Steindachner (STEINDACHNER 1870a, b) indicate that he collected in the Senegal River during his trip to Senegambia (a historical name for the geographical area in West Africa, which lies between the rivers Senegal in the north and the Gambia in the south, in the British possessions at the time of the trip) in October–December 1868. Most NMW freshwater fish lots collected by Steindachner during this trip possess specified localities on the Senegal River (upstream direction): St.-Louis; “marigot von Taou” (le marigot de la Taouey; the Taouey backwater which supplies Lake Guiers via the Senegal River); Dagana; Podor; Matam; Bakel. STEINDACHNER (1870a: 544–546; HOLLY 1928b: 11) assigned all his Senegambian *Alestes* (*Brachyalestes*) material to two species, *Alestes* (*Brachyalestes*) *nurse* and the newly described *Alestes* (*Brachyalestes*) *senegalensis*, and indicated localities as “Dagana, Podor and Bakel” for the former and “from Dagana to Bakel” for the latter, that means exactly similar ranges along the Senegal River. As Holly based his description on a part of this Steindachner’s material, the syntypes of *Alestes nurse albolineatus* of Holly should had also come from a locality or localities along the Senegal River from Dagana (16°31'N 15°30'W) upstream to Bakel (14°53'N 12°26'W).

Etymology. The subspecies epithet *albolineatus* is a compound Latin masculine adjective, meaning marked with white line(s).

In literature. In the fundamental revision of African *Alestes* and *Brycinus* (PAUGY 1986), the syntypes NMW 13113–35 were mentioned in the synonymy but not examined.

Taxonomic status. In a synonymy of *Alestes leuciscus* GÜNTHER, 1867 (MONOD 1950: 32, GÉRY 1968: 183, PAUGY 1984: 150), later in *Brycinus* (PAUGY 1986: 139).

Brycinus leuciscus is a western African species with a patchy distribution in river systems from Senegal to Nigeria (absent from the Lower Guinea ichthyological province).

Conservation. IUCN: LC (DANKWA et al. 2020).

Bryconidae: Bryconinae

Brycon pellegrini HOLLY, 1929

HOLLY 1929d: 208.

Holotype. NMW 8963. The original description is based on a single specimen 238 mm of TL. Recent measurements: TL 232 mm, SL 188.2 mm. The NMW 8963 specimen corresponds to the original description of the holotype. Preservation condition good.

Remarks. The preliminary name given to the species was *Brycon steindachneri* (NMW 8963 is under this name on the Pietschman's catalogue card and in the inventory book).

Type locality, date and collector. “Manaos” (Manaus, the lower Rio Negro in central Amazon, Brazil) (HOLLY 1929d: 209), collector “Dr. Machado” (the Pietschmann's card and labels), date is missing.

Remarks. The specimen belongs to a set of acquisitions (Pietschmann's catalogue numbers 8922 to 9000 with a few gaps) from the Museum Göldi (at present Museu Paraense *Emílio Goeldi*, Belém, Pará, Brazil; <https://www.museu-goeldi.br/>) (received by the NHMW in 1894–1901). The collector's name, “Dr. Machado”, presumably refers to Manuel Francisco Machado (<http://dividirparaprogridir2.blogspot.com/2008/08/dr-manoel-francisco-machado.html>). The primary original Museum Göldi label tied to the specimen (Fig. 8a), reads “Matrinchao H.5. Dr. Machado. Manaos”. Matrinchao (Matrinxã) is a common local name for the species in the Manaos region in Brazil (LIMA 2017). Exact date cannot be clarified but apparently before 1901.

Etymology. The species name is a patronym, a noun in the genitive; named for Jacques Pellegrin (12.VI.1873–12.08.1944), a famous French zoologist, ichthyologist and herpetologist at the Muséum national d'histoire naturelle in Paris.

In literature. LIMA (2017: 112) substantiated his opinion on synonymisation with *B. amazonicus* by data from the original description but did not examine the holotype.

Taxonomic status. A valid species (VARELLA 1994: 146) or a possible synonym of *Brycon cephalus* (GÜNTHER, 1869) (HOWES 1982b: 41, GÉRY & MAHNERT 1992: 797). After a revision by LIMA (2001), in a synonymy of *Brycon amazonicum* (AGASSIZ, 1829) (LIMA 2003: 175, 2017: 112).

Brycon amazonicum is widely spread in northern cis-andean South America, in the Amazonas and Orinoco drainages (LIMA 2017).

Conservation. IUCN: not evaluated.

Characidae: Stethaprioninae

Moenkhausia tridentata HOLLY, 1929

HOLLY 1929c: 117.

Holotype. NMW 8947. The original description is based on a single specimen 145 mm of TL. Recent measurements: TL cannot be measured (the caudal fin damaged), SL 117.6

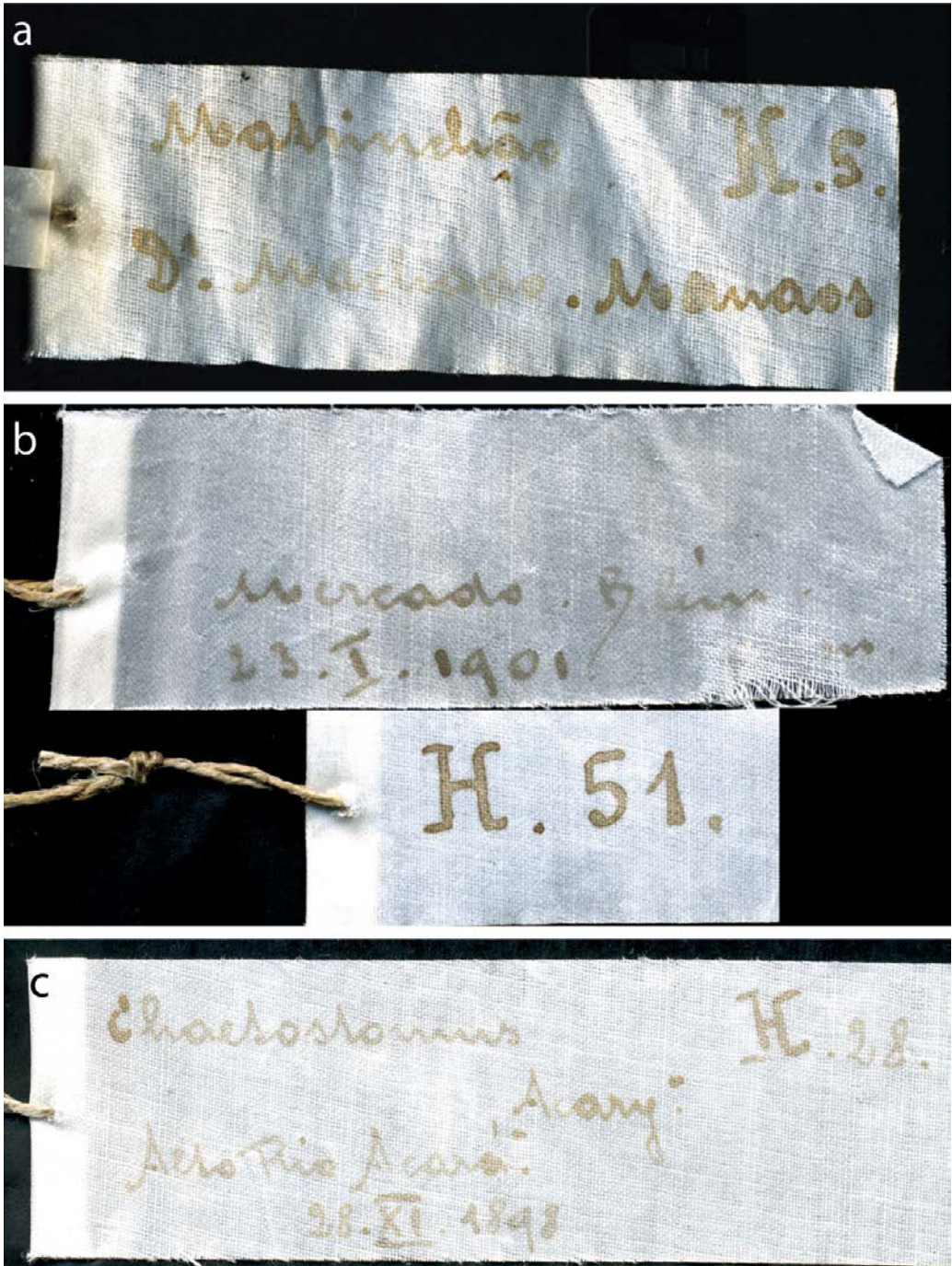


Fig. 8: (a) Original Museum Göldi labels for *Brycon pellegrini* HOLLY, 1929, NMW 8963, holotype; (b) *Ancistrus multispinis* HOLLY, 1929, NMW 8952, holotype; (c) *Xenocara fulva* HOLLY, 1929, NMW 57203, holotype.

mm. The NMW 8947 specimen corresponds to the original description of the holotype. Preservation condition average, unpaired fins damaged.

Type locality, date and collector. “Piquirão, Amazonasgebiet” (HOLLY 1929c: 117). As it was already discussed in detail by ZARSKE & GÉRY (2006: 13–14), “piquirão” is a local common name of small-size tetras rather than a geographical locality. We can only speculate that Holly could see the original label (missing at present) of the Museum Göldi as in case of the holotype of *Brycon pellegrini* (Fig. 8a) with the common name instead of a scientific identification. Neither existing labels nor the Pitschman’s catalogue card (and, respectively, the inventory book) contain any information other than “Mus. Göldi, Pará”.

Remarks. Collector unknown. The holotype belongs to a set of acquisitions from the Museum Göldi in 1894–1901 (see *Brycon pellegrini*).

Etymology. The species name *tridentata* is a compound Latin feminine adjective, meaning three-toothed.

In literature. Redescribed in detail (morphometrics, meristics, radiograph) by ZARSKE & GÉRY (2006: 11–14, figs 9, 10, Table 3).

Taxonomic status. It is commonly treated as a valid species (BENINE 2003: 150, ZARSKE & GÉRY 2006: 13, DAGOSTA & DE PINNA 2019: 87). ZARSKE & GÉRY (2006: 13) supposed that *Moenkhausia pankilopteryx* BERTACO & LUCINDA, 2006 is a junior synonym of *M. tridentata*; BERTACO & LUCINDA (2006) did not examine the holotype of *M. tridentata* for a comparison.

Known only from the holotype.

Conservation. IUCN: not evaluated.

Characidae: Stevardiinae

Knodus albolineatus HOLLY, 1929

HOLLY 1929c: 117.

Syntypes. NMW 83365:1 and 83365:2, in one jar. The original description is based on two specimens 83 mm and 87 mm TL. Recent measurements: TL >83.5 and >85 (the caudal fin damaged), SL 67.6 mm and 68.2 mm, respectively. The specimens correspond to the original description of the syntypes. Preservation condition average, unpaired fins damaged.

Remarks. The primary registration of the syntypes was under numbers 8961 and 8962 in the Pietschmann’s catalogue. However, the inclusion into the inventory book was done much later under the new number, NMW 83365. The original label of the Museum Göldi is missing; all existing labels and the Pietschmann’s catalogue cards (for numbers 8961–62) were written after the description by Holly.

Type locality, date and collector. “Piquirão, Brasilie. Mus. Göldi, Pará, Amazonasgebiet” (HOLLY 1929c: 117). As it was already discussed in detail by ZARSKE & GÉRY (2006: 13–14), “piquirão” refers to a common name for small-size characids in some regions of Brazil rather than a geographical locality.

Remarks. It belongs to a set of acquisitions (Pietschmann's catalogue numbers 8922 to 9000 with a few gaps) from the Museum Göldi (received by the NHMW in 1894–1901) (see *Brycon pelligrini*).

Etymology. The specific name *albolineatus* is a compound Latin masculine adjective from *albus* for white and *linea* for line, which refers to the white midlateral stripe, from the head to the caudal-fin base, of the species, indicated in the original description.

In literature. Redescribed in detail (morphometrics, meristics, radiograph) by ZARSKE & GÉRY (2006: 9–11, figs 6–8, 10, Table 2). NMW 83365:1 examined by FERREIRA & LIMA (2006: 637) and DEPRÁ et al. (2021: 24).

Taxonomic status. It is treated as species inquirendae (a species of doubtful identity) by BENINE (2003: 159) or in a synonymy of *Moenkhausia cotinho* EIGENMANN, 1908 (ZARSKE & GÉRY 2006: 11, MATHUBARA & TOLEDO-PIZA 2020: 3).

Moenkhausia cotinho is widely spread in rivers of the Amazon and upper Orinoco and in rivers of Guyana (MATHUBARA & TOLEDO-PIZA 2020).

Conservation. IUCN: not evaluated.

Callichthyidae: Corydoradinae

Corydoras grafi HOLLY, 1940

HOLLY 1940: 108.

Holotype. NMW 84287. The original description is based on a single specimen 63 mm of TL. Recent measurements: TL ca 62.5 mm, SL 44.2 mm. The holotype corresponds in its length and general appearance with the original description. The specimen was supposedly drawn alive and published by HOLLY (1952a: Table 862), this drawing was reproduced by NIJSSEN & ISBRÜCKER (1980: fig. 3) and GRANT (2021: fig. 2). Preservation condition good.

Remarks. An assumption on the holotype status of the NMW 84287 specimen was put forward by Han Nijssen (then at the Institute of Taxonomic Zoology, Zoölogisch Museum, University of Amsterdam) and Harald Ahnelt (at the NMW) in 1986 (a remark on the present-day card), though earlier the holotype had been considered lost (NIJSSEN & ISBRÜCKER 1980: 194).

Type locality, date and collector. The holotype is an aquarium specimen from “very small water-courses of the Amazon” received from the Munich Zoo (Münchner Tierpark A.G.), No. 92/1939.

Etymology. The species name is a patronym, a noun in the genitive; named for one of Holly's friends and colleagues, Herbert Graf (HOLLY 1940: 4) at Dritte Zoologische Abteilung des Naturhistorischen Museums in Wien (the Third Zoological Department of the NHMW).

In literature. The NMW 84287 holotype was recently redescribed from photos (lateral, ventral and dorsal views) by GRANT (2021: fig. 1, 3–4).

Taxonomic status. In a synonymy of *Corydoras ambiacus* COPE, 1872 (NIJSSEN & ISBRÜCKER 1980: 194, ISBRÜCKER 2001b: 220, REIS 2003: 294, FERRARIS 2007: 113).

Native in the upper Amazon River basin in Brazil, Colombia and Peru, as many other *Corydoras*, an object of aquarium hobby. As in many other genera of miniature corydorids, *Corydoras* contains undescribed species and forms known under so-called “C-numbers” (e. g., FULLER & EVERS 2011) pending a taxonomic revision and comparisons with existing types of available historical species names.

Conservation. IUCN: not evaluated.

Loricariidae: Hypostominae

Ancistrus multispinis HOLLY, 1929

HOLLY 1929c: 119.

Holotype. NMW 8952. The original description is based on a single specimen with TL 148 mm. Recent measurements: TL 147 mm, SL 112.9 mm. The NMW 8952 specimen corresponds to the original description of the holotype. Preservation condition very good.

Type locality, date and collector. “Mercado Belém” (in the original Museum Göldi label), misread as “Blëin” by HOLLY (1929c: 4).

Remarks. If obtained from a fish market in Belém, the locality could apparently be an area in the present-day State of Pará surrounding the town. Collector unknown, the holotype belongs to a set of acquisitions from the Museum Göldi (see *Brycon pellegrini*). Date “I.1901” (from the original Museum Göldi label, Fig. 8b).

Etymology. The specific name *multispinis* is a compound Latin masculine noun in ablative plural, from *multi-* for many and *spinis* for spines or thorns, referring to 39 spines (hypertrophied odontodes) on the interoperculum, a characteristic feature of the species.

In literature. The holotype was studied from photos by ARMBRUSTER (2008: 32–33, fig. 17: dorsal, ventral and lateral views) and ARMBRUSTER & LUJAN (2016: 115, fig. 2: mouth).

Taxonomic status. As the holotype was considered lost (not found in the NHMW) since, probably the WWII time till 2007, all publications mentioning the species were only based on the original description: as a valid species *Lasiancistrus multispinis* (ISBRÜCKER 1980: 45, 2001: 25, 29, BURGESS 1989: 434, ISBRÜCKER 2001a: 25, 29, FISCH-MULLER 2003: 388) or a synonym of *Lasiancistrus schomburgkii* (GÜNTHER, 1864) (ARMBRUSTER 2005: 561, FERRARIS 2007: 265). ARMBRUSTER (2008) redescribed the holotype from photos and concluded that the species is most certainly a species of *Peckoltia*, a valid one or a synonym of *Peckoltia vittata* (STEINDACHNER, 1881); as a valid species *Peckoltia multispinis* in later publications (ARMBRUSTER et al. 2015: 99, ARMBRUSTER & LUJAN 2016: 115).

Known only from the holotype (FERRARIS 2007: 265, ARMBRUSTER 2008: 32–33).

Conservation. IUCN: not evaluated.

Xenocara fulva HOLLY, 1929

HOLLY 1929c: 119.

Holotype. NMW 57203. The original description is based on a single specimen 115 mm of TL. Recent measurements: TL 113 mm, SL 87.6 mm. The NMW 57203 specimen (Fig. 9) corresponds to the original description of the holotype. Preservation condition good.

Type locality, date and collector. “Alto Rio Acará, Brazilien” (HOLLY 1929c: 119). The Acará River is the lowest tributary of the Guamá River with its mouth in the south of Belém, State of Pará in Brazil.

Remarks. Neither the original label nor the inventory book contain information on collector or donator. We assume that the specimen was received from the Museum Göldi (see *Brycon pellegrini*).

HOLLY (1929c) described five new species, four of which are definitely based on the Museum Göldi materials donated to the NHMW in 1894 to 1901. Samples from these acquisitions were inventoried in the Pietschman’s catalogue as a series of consecutive records, with subsequent numbers from 8922 to 9000 (with only a few gaps). Some Pietschman’s card records relevant to the issue are as follows: *Mesonauta insignis* (8925), *Moenkhausia* (8947; now holotype of *M. tridentata*), *Chalceus macrolepidotus* (8949), *Ancistrus* (8952; now holotype of *A. multispinis*), *Knodus albolineatus* HOLLY (8961–62, now syntypes NMW 83365), *Brycon steindachneri* HOLLY (8963, now holotype of *Brycon pellegrini*), and *Myloplus rhomboides* (8976). Most of the Museum Göldi samples had (and still have) early labels consistent with the Pietschmann’s catalogue, but this is not the case of the NMW 57203 holotype of *X. fulva*. However, the original Museum Göldi (fabric-made) label that was tied to the specimen is still extant (Fig. 8c), reading “Chaetostomus ‘Acary’, H.28. Alto Rio Acará. 28.XI.1898” (Fig. 8c). It is of the same material and type, and the same hand-writing, as in the original labels for the NMW 8963 *Brycon pellegrini* holotype and the NMW 8952 *Ancistrus multispinis* holotype (Fig. 7a, b). Rio Acará and 1898 are also the localities and date of the Museum Göldi’s *Mesonauta insignis* (NMW 8925), *Chalceus macrolepidotus* (NMW 8949), and *Myloplus rhomboides* (NMW 8976).

Etymology. The specific name *fulva* is a Latin feminine adjective for tawny, brownish or reddish yellow, in reference to the uniformly dark brown colouration of the holotype.

In literature. Specified data of the holotype have not been published but the specimen was examined and used in taxonomic comparisons (FISCH-MULLER 1999, 2003, DE OLIVEIRA et al. 2015, GASPARETTO BIFI & ORTEGA 2020).

Taxonomic status. A valid species, *Ancistrus fulvus* (ISBRÜCKER 1980: 69, BURGESS 1989: 437, Isbrücker 2001a: 25, 32, FISCH-MULLER 2003: 375, FERRARIS 2007: 221, DE OLIVEIRA et al. 2015: 74, GASPARETTO BIFI & ORTEGA 2020: 14).

Known only from the holotype (FISCH-MULLER 2003: 375, FERRARIS 2007: 221).

Conservation. IUCN: not evaluated.

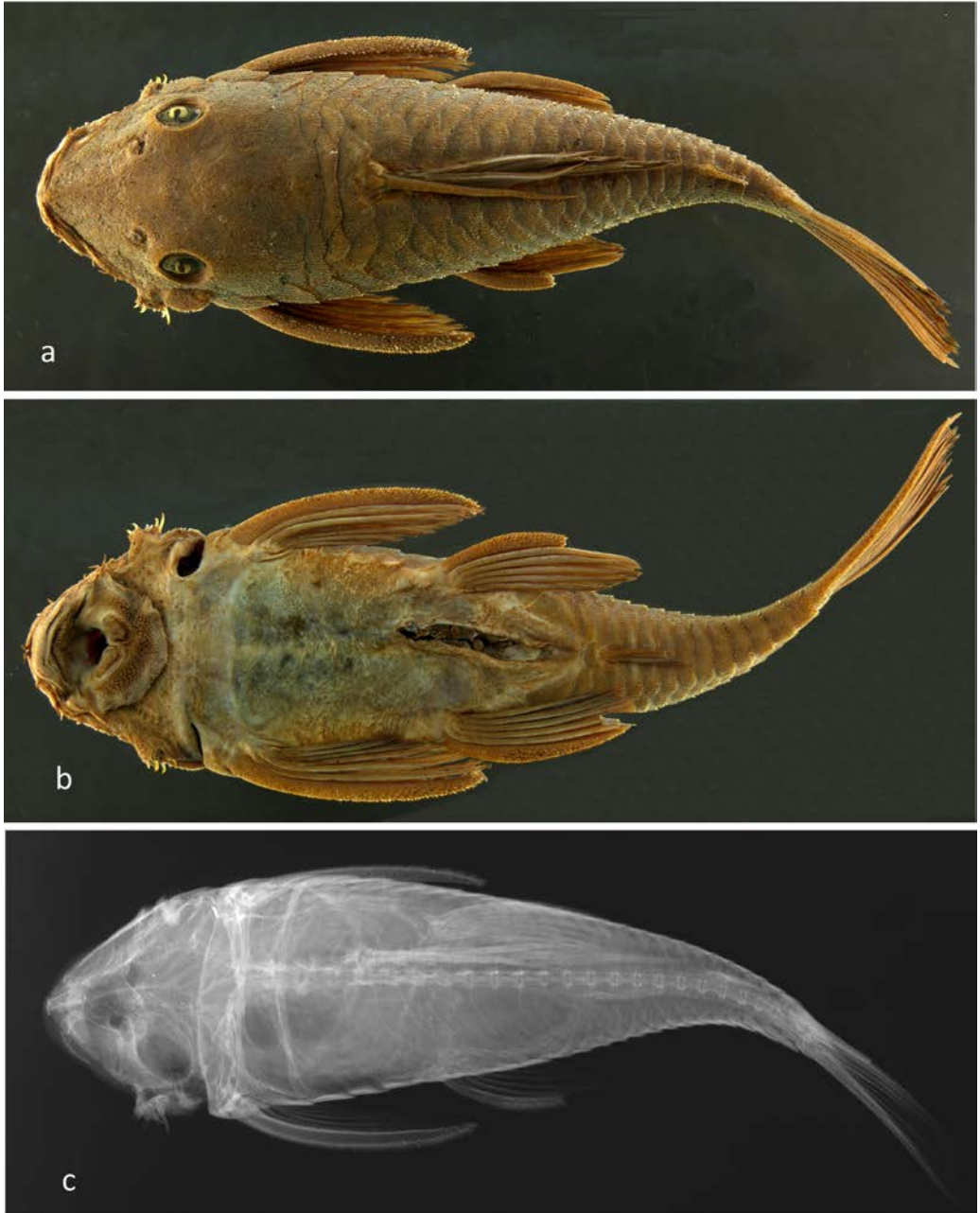


Fig. 9: (a) *Xenocara fulva* HOLLY, 1929, NMW 57203, holotype, SL 87.6 mm: (a) dorsal view, (b) ventral view; (c) radiograph, dorsal view.

Clariidae

Allabenchelys attemsi HOLLY, 1927

HOLLY 1927d: 202, fig. 2, unnumbered table of measurements on p. 203.

Holotype. NMW 7897. The original description is based on a single specimen 116 mm TL and 102 mm of BL. Recent measurements: TL 115 mm, SL 100.7 mm, BL 101.8 mm. The NMW 7897 specimen corresponds in its length and general appearance to the original description and the illustration of the holotype (HOLLY 1927d: 202–203, fig. 2). Data from the inventory book and historical labels are consistent indicating a single specimen (the holotype as such) described by Holly. Preservation condition good (Fig. 10).

Type locality, date and collector. “Kamerun, ohne nähere Fundortangabe” (Kamerun, no specified locality) (HOLLY 1927d: 203), collector Haberer, 1907–1908 (HOLLY 1927d: 195). The Pietschmann’s cards and labels specify the date as 1907.

Remarks. The syntypes are a part of the collection (the expedition in 1907 to 1908 to the German Colony of Kamerun) donated by Karl Albert Haberer. We failed to find any data indicating a more precise locality for the holotype of the species. HOLLY (1927c) highlighted that a number of samples only indicated Cameroon as the place of collecting, but the name of the collector (Haberer) and the collection years (1907 and 1908) allow the justifiable conclusion that they were also caught at one of the known Haberer’s localities. A review of the Cameroon localities of Haberer see *Mormyrops bahrachi*.

Etymology. The species name is a patronym, a noun in the genitive; named for Carl August Graf Attems-Petzenstein (13.10.1868, Leechwald at Graz – 19.04.1952, Vienna), a famous Austrian myriapodologist and invertebrate zoologist, an author of about 1800 new species and subspecies. In 1905 to 1933, he was an assistant and then the head of the Evertebrata Varia Collection of the NHMW (STROUHAL, 1961).

In literature. The holotype was described and illustrated by ADRIAENS et al. (2007: 670–673, fig. 22.15) and SEEGERs 2008 (unnumbered fig. on page 231).

Taxonomic status. A valid species *Allabenchelys attemsi* (DAVID 1935: 114), later in the genus *Clariallabes* (TEUGELS 1982a: 16, 1982b: 741, BURGESS 1989: 145, TEUGELS 1986a: 66, TEUGELS 1992: 468, TEUGELS et al. 2007: 670, FERRARIS 2007: 137, SEEGERs 2008: 231).

We failed to find any data indicating a more precise locality for the holotype, and no assumptions have been done in literature either (TEUGELS, 1986a: 66, FERRARIS 2007: 137). Known only from the holotype (TEUGELS 1986a: 66, FERRARIS 2007: 137, ADRIAENS et al. 2007: 670).

Conservation. IUCN: DD (MOELANTS 2010i).



Fig. 10: (a) *Allabenchelys attemsi* HOLLY, 1927, NMW 7897, holotype, SL 100.7 mm; (b) radiograph; both left lateral view.

Clariidae

Clarias cameronensis HOLLY, 1927

HOLLY 1927f: 422, fig. 1 (lateral aspect of the whole fish and outline of the head in dorsal view), unnumbered table of measurements on p. 423.

Holotype. NMW 13374. The original description is based on a single specimen 338 mm of TL, 302 mm of BL. Recent measurements: TL 338 mm, BL 300 mm, SL 297.3 mm. The NMW 13374 specimen corresponds with the original description of the holotype. Preservation condition very good.

Type locality, date and collector. “Nachtigalschnellen des Sanagaflusses” (Sanaga River, Nachtigal Falls, 4°21'N 11°38'E, Cameroon, Deutsch-Kamerun at the time) (HOLLY 1927f: 424), collector Haberer, 1907–1908 (HOLLY 1927f: 421). The old label and Pietschmann’s card specify the date as April 17, 1908.

Remarks. The syntypes are a part of the collection (the expedition in 1907 to 1908 to the German Colony of Kamerun) donated by Karl Albert Haberer. A review of the Cameroon localities of Haberer see *Mormyrops bachrachi*.

Etymology. The species name is a latinised adjective (third-declension) derived from Cameroon.

In literature. Examined, and the data used for supporting synonymisation with *Clarias jaensis* (TEUGELS 1982b, 1986b).

Taxonomic status. *Clarias cameronensis* HOLLY, 1927 is an available name, not a junior homonym of *Clarias camerunensis* LÖNNBERG, 1895, as it was clearly clarified by HOLLY (1930a) with references to nomenclature regulations existed at that time. According to the recent nomenclature (INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE,

1999), it is not a homonym of *Clarias camerunensis* LÖNNBERG either. As such, it should not have been replaced as was assumed by PELLEGRIN (1929a) who offered a replacement name *Clarias hollyi*.

A junior synonym of *Clarias jaensis* BOULENGER, 1909 (TEUGELS 1982a: 122, 1982b: 736, 1986a: 87, 1986b: 55, TEUGELS 1992: 482, FERRARIS 2007: 144).

Clarias jaensis is known from river drainages of the Gulf of Guinea from the Cross to the Congo (TEUGELS 2007).

Conservation. IUCN: LC (LALÈYÈ et al. 2020).

Mochokidae: Mochokinae

Synodontis marmoratus truncatus HOLLY, 1927

HOLLY 1927a: 8.

Syntypes. NMW 7794 (1) and 7795 (1) in one jar. The original description is based on two specimens 56 mm and 27 mm of TL. Recent measurements: TL ca 52 mm, SL ca 43.5 mm (NMW 7794); TL ca 24 mm, SL ca 20.5 mm (NMW 7795). Preservation condition bad, the specimens are desiccated and curved (Fig. 11a–d) but the recent measurement largely correspond with TL length given in the original description.

Remarks. The original description of *Synodontis marmoratus truncatus* (HOLLY 1927a) appeared soon after the Academy meeting on the 13th January 1927. Later that year, HOLLY (1927d: 218) published a slightly revised description of the same two specimens but re-identified as *Microsynodontis batesii* BOULENGER, 1903 with a special remark explaining reasons for the re-identification. There are no extant original labels – all existing museum records have been written after the study by Holly (under the species name *M. batesii*). Taking this into account and also because the NMW 7794–95 specimens are the only lot with a mochokid from the Jaunde locality of Haberer, we consider them as syntypes of *Synodontis marmoratus truncatus* HOLLY, 1927.

Type locality, date and collector. “Gegend der Jaunde, gegen den Njongflus zu” (=Yaoundé, Nyong River, Cameroon, German Colony of Kamerun at the time) (HOLLY 1927a: 9). The locality is “Jaunde-Staaten” (no indication to any river) in the labels, the Pietschmann’s card and the inventory book. Date October–December 1907, collector Haberer (from the label and the inventory book record, missing from the original description).

Remarks. The syntypes are a part of the collection (the expedition in 1907 to 1908 to the German Colony of Kamerun) donated by Karl Albert Haberer. A review of the Cameroon localities of Haberer see *Mormyrops bachrachi*.

Etymology. The subspecies name, *truncatus*, is a Latin masculine adjective referring to maimed (having limbs cut off) or mutilated.

In literature. None.

Taxonomic status. *Synodontis marmoratus truncatus* was treated as a synonym of *Microsynodontis batesii* by HOLLY (1927d: 218) and, later, as a possible synonym of *S. marmoratus* LÖNNBERG, 1895 by POLL (1971: 11), an opinion followed by GOSSE



Fig. 11: (a) *Synodontis marmoratus truncatus* HOLLY, 1927, NMW 7794, SL ca 43.5 mm: (a) dorsal and (b) ventral views; (c) NMW 7785, SL ca 20.5 mm, dorsal view; (d) NMW 7794 and NMW 7785, radiograph, dorsal view.

(1986: 133) and FERRARIS (2007: 317, as *marmorata*, the generic name treated as feminine). If the generic name *Synodontis* should be regarded as feminine or masculine see SCHRAML (2011) and FRICKE et al. (2021).

However, the caudal fin is clearly forked in *Synodontis* (HOLLY 1930c, FERMON et al. 2007) while in the syntypes of *S. marmoratus truncatus* it is rounded, the pectoral spine is very gently serrated along the anterior margin and distinctly serrated along the posterior edge (Fig. 11) supporting its identification as a *Microsynodontis*. As the species-group name *truncatus* has been largely forgotten and the type status of the NMW 7794–95 specimens has been just re-established, any taxonomic conclusions seem premature. The rediscovered syntypes should be re-examined to clarify their species status, which is beyond the scope of this publication.

Synodontis rebeli HOLLY, 1926

HOLLY 1926b: 157.

Lectotype & paralectotype. NMW 7796 (1) and 7797 (1) (in one jar). The original description is based on two specimens, 266 mm and 220 mm TL (198 mm and 174 mm of BL, respectively) (HOLLY 1927d)). Recent measurements: TL ca 260 mm, SL 193.5 mm (7796) and TL 217.5 mm, SL 165.2 mm (7797). These two specimens are named “Typen” (indicating that they are a male and a female) on the Pietschmann’s card for NMW

7796–97. Preservation condition good, with some dehydration and deformation of the body. Lectotype (NMW 7796) was designated by POLL (1971: 155).

Remarks. A subsequent wider description with illustrations and a table of measurements (HOLLY 1927d: 215–218, figs 5–6, table of measurements on p. 217) included two more specimens, TL 258 and 208 mm (BL 193 mm and 160 mm, respectively), which had then been considered as possible syntypes (“Cotyphen” on the Pitschmann’s card) before the study by POLL (1971) who examined the specimens in 1969: NMW 7798 (1) and 7799 (1), in one jar, Sanaga River at Nachtigal Falls, February 1908, coll. Haberer. We could not recognise which specimen of these four is illustrated by HOLLY (1927d: fig. 5). It is worth mentioning that NMW 7798 and 7799 are not syntypes, not only because they were added later as “Cotyphen” but also because they are collected from another locality (Sanaga River at Nachtigal Falls, February 1908, coll. Haberer), not mentioned in the original description.

Type locality, date and collector. “Bamfluß, Flußgebiet des Sanaga in Kamerun” (HOLLY 1926b: 158). The spelling “Bamfluß” is an obvious misprint for the Mbam River (all labels and cards read “Mbamfluß”), corrected in HOLLY (1927d). Mbam is the main tributary of the Sanaga River in present-day Cameroon. Its confluence with the Sanaga is at 4°23'N 11°16'E. Date March 1908, collector Haberer (data from the labels and cards, missing from the original description).

Remarks. The syntypes (now lectotype and paralectotype) are a part of the collection (the expedition in 1907 to 1908 to the German Colony of Kamerun) donated by Karl Albert Haberer. A review of the Cameroon localities of Haberer see *Mormyrops bachrachi*.

Etymology. The species name is a patronym, a noun in the genitive; named for Hans Rebel (2.09.1861, Hietzing–19.05.1940, Vienna), a famous Austrian zoologist and entomologist, the head of the NHMW’s lepidopteran collection, then Director of the Zoological Collection, and the First Director of the NHMW, also a consultant for the Federal Ministry for Education. Participated in (and led) a great number of collecting trips all over the world (ZERNY 1940).

In literature. Lectotypification by Max F. L. Poll was based on an examination, including measurements, of the larger syntype (NMW 7796) in 1969 (POLL 1971: 155–156, fig. 70 [lateral view, head in dorsal and ventral views]); Poll’s illustration of the lectotype was reproduced later (FERMON et al. 2007: fig. 24.36).

Taxonomic status. A valid species as *Synodontis rebeli* (HOLLY 1930b: 255, POLL 1971: 155, GOSSE 1986: 142, BURGESS 1989: 196, FERMON et al. 2007: 748, 749, FERRARIS 2007: 320, DE WEIRDt et al. 2008: 122, 127, VIGLIOTTA 2008: 127, VREVEN & MILONDO 2009: 100, VREVEN & IBALA ZAMBA 2011: 359).

DE WEIRDt et al. (2008) and VREVEN & MILONDO (2009) highlighted still unresolved taxonomy of *S. obesus/rebeli* complex. If a distinct species, then endemic to the Sanaga River drainage with the only known locality in the Mbam River in western Cameroon (GEERINCKX et al. 2004: 799, 2007: 602–603).

Conservation. IUCN: DD (MOELANTS 2010j).

Claroteidae: Auchenoglanidinae

Auchenoglanis ahli HOLLY, 1930

HOLLY 1930b: 201, Pl. I: fig. 9, unnumbered table on p. 212, in key on p. 248.

Syntypes. The original description is based on six specimens 67–105 mm TL (individual lengths not given) (HOLLY 1930b: 202). At present, five syntypes are extant: NMW 13895 (1), 13896 (1), 13897 (1), 13898 (1), and 13899 (1), all in one jar. Recent measurements (TL, mm/SL, mm): NMW 13895 (102.5/83), NMW 13896 (94.3/77.2), NMW 13897 (94.375/60.5), NMW 13898 (74.3/58.7), NMW 13899 (64.3/54.5).

The 13895 syntype (Fig. 12) is apparently the one in fig. 9 in HOLLY (1930b). Preservation condition average in the NMW 13895 and poor in the other four completely dehydrated syntypes.

Type locality, date and collector. “Gebirgsbäche von Bakoko, Kamerun” (mountain streams of [the region of] Bakoko, Cameroon) (HOLLY 1930b: 202), collector Haberer, 1907–1908 (HOLLY 1930b: 195). The Pietschmann’s card specifies the date as October 8, 1907.

Remarks. The syntypes are a part of the collection (the expedition in 1907 to 1908 to the German Colony of Kamerun) donated by Karl Albert Haberer. A review of the Cameroon localities of Haberer see *Mormyrops bachrachi*.

HOLLY (1927c) also specified the locality as “the mountain streams in the Areas of the Bakoko, a tribe who have their homes in southwest Cameroon”. Neither TREWAVAS (1962: 155, 1974: 357) nor RISCH (1986: 2) linked the “Bakoko” locality with any river drainage, only referring to the species distribution as South Cameroon. Available internet sources locate “Bakoko Homeland” into south-western and western Cameroon, in lower reaches of the Sanaga and the Nyong, mostly in the Littoral Region west of Jaunde.

In contrast, GEERINCKX et al. (2004, 2007) put the Bakoko locality in the upper reaches of the Cross River in north-western Cameroon which contradicts data on distribution of other species described by Holly from the “Bakoko”, e. g., presented in the monography on fishes of the Lower Guinea zoogeographic province (STIASSNY et al. 2007): *Labeobarbus weneri* (GETAHUN 2007: map on p. 549, Sanaga River southwards to south Cameroon) and *Parauchenoglanis balayi* (*P. pietschmanni* as its synonym) (GEERINCKX et al. 2007: map on p. 600, Sanaga River southwards to the Congo). A re-examination of NMW lots from the “Bakoko” locality could shed more light on its geographic location. Holly examined and identified the non-type Bakoko lots of the same date (October 8, 1907) as follows: *Alestes longipinnis* (NMW 7199–7217, 7279–80, 13943–45), *Alestes macrolepidotus* (NMW 13946–47), *Alestes nurse* (NMW 7282), *Amphilius longirostris* (NMW 7891–92), *Anabas nanus* (NMW 7678), *Auchenoglanis ballayi* (NMW 7914–28), *Barbus camptacanthus* (NMW 13939–41), *Barbus caudovittatus* (NMW 7321), *Barbus holotaenia* (NMW 7322–50), *Barilius ubangensis* (NMW 13942), *Chrysichthys nigrodigitatus* (NMW 7839–54), *Fundulus batesii* (NMW 13278), *Haplochilus ansorgii* (NMW 13091), *Hemichromis fasciatus* (NMW 7677, 13934–36), *Malapterurus electricus* (NMW 7834–7835, 45309, 45311), *Marcusenius batesii* (NMW 7283–84), *Neolebias unifasciatus* (NMW 7265–73), *Panchax cameronensis* (NMW 13927–29),



Fig. 12: (a) *Auchenoglanis ahli* HOLLY, 1929, NMW 13895, syntype, SL 83 mm, left lateral view; (b) NMW 13896, syntype, SL 77.2 mm, radiograph, dorsal view.

Pa. jaundensis (NMW 13930–32), *Pa. lujae* (NMW 13933), *Pa. sexfasciatus* (NMW 7746–47, 7199–217, 7280, 13918), *Pelmatochromis caudifasciatus* (NMW 13901–17), *Pe. guentheri* (NMW 7740), *Pe. nigrofasciatus* (NMW 7679, 13938), *Petersius occidentalis* (NMW 7281), *Tilapia melanopleura* (NMW 13937).

Etymology. The species name is a patronym, a noun in the genitive; named for Christoph Gustav Ernst Ahl (01.09.1898, Berlin – 14.02.1945), a German zoologist, the director of the department of ichthyology and herpetology in the Museum für Naturkunde in Berlin and the editor in chief of the journal *Das Aquarium* from 1927 to 1934 (PAEPKE 1995).

In literature. The NMW 13898 syntype was redescribed and illustrated by GEERINCKX et al. (2004: 801, fig. 8i).

Taxonomic status. A valid species *Auchenoglanis ahli* (TREWAVAS 1962: 155, 1974: 357, RISCH 1986: 2, BURGESS 1989: 71), later moved to the genus *Parauchenoglanis* (GEERINCKX et al. 2004: 801, 2007: 597, FERRARIS 2007: 162, GEERINCKX et al. 2007: 602–603).

Known only from the syntypes.

Conservation. IUCN: DD (MOELANTS 2010k).

***Auchenoglanis maculosus* HOLLY, 1927**

HOLLY 1927d: 211, fig. 4, unnumbered table on p. 212.

Syntypes. NMW 7800 (1) and 7801 (1). The original description is based on two specimens of TL 486 mm and 374 mm (BL 412 mm and 313 mm, respectively). Recent measurements: TL 481 mm, SL 412.5 mm (7800), TL 376.5 mm, SL 315 mm (7801). The NMW 7800 syntype is illustrated by HOLLY (1927d: fig. 4). Preservation condition average.

Type locality, date and collector. No locality is given in the original description; collector Haberer, 1907–1908 (HOLLY 1927d: 195). The Pietschmann's cards and labels indicate the locality as "Kamerum" (Deutsch-Kamerun at the time) without a specification of the locality and the date as September 20, 1907.

Remarks. The syntypes are a part of the collection (the expedition in 1907 to 1908 to the German Colony of Kamerun) donated by Karl Albert Haberer. We failed to find any data indicating a more precise locality for the syntypes of the species. HOLLY (1927c) highlighted that a number of samples only indicated Cameroon as the place of collecting, but the name of the collector (Haberer) and the collection years (1907 and 1908) allow the justifiable conclusion that they were also caught at one of the known Haberer's localities. A review of the Cameroon localities of Haberer see *Mormyrops bachrachi*.

Etymology. A masculine adjective *maculosus* meaning speckled, spotted; the name refers to a characteristic feature of the species.

In literature. The syntypes were described by GEERINCKX et al. (2004).

Taxonomic status. It was treated as a valid species *Auchenoglanis maculosus* (HOLLY 1930b: 203, RISCH 1986: 5, BURGESS 1989: 71) later synonymised with *Parauchenoglanis longiceps* (BOULENGER, 1913) (GEERINCKX et al. 2004: 799, FERRARIS 2007: 163).

Parauchenoglanis longiceps is endemic to the Nyong River drainage in south-western Cameroon (GEERINCKX et al. 2004: 799, 2007: 602–603), known only from the syntypes.

Conservation. IUCN: LC (MOELANTS 2010l).

***Auchenoglanis pietschmanni* HOLLY, 1926**

HOLLY 1926b: 158.

Syntypes. NMW 7802 (1); 7804 (1), 7805 (1), and 7806 (1) in one jar. The original description is based on five specimens (HOLLY 1926b: 158):

Measurements from HOLLY (1926b, 1927d) (no catalogue numbers provided); TL, mm/BL, mm: 370/317, 363/315, 346/284, 295/257, 293/249. Recent measurements (TL, mm/SL, mm): NMW 7802 (342/283), 7804 (369/308), 7805 (364/304), 7806 (285/234). A remark on the card says that NMW 7803, one specimen, was sent to L.S. Hora (Calcutta) in 1955.

A subsequent wider description with illustration and a table of measurements in a later publication (HOLLY 1927d: 208–211, fig. 3, table of measurements on p. 210). We could not identify which one of the four existing syntypes is illustrated by HOLLY (1927d: fig. 3). Preservation condition average to bad, with slight to considerable dehydration and deformation of the body.

Type locality, date and collector. “Bamfluß, Flußgebiet des Sanaga in Kamerun” (HOLLY 1926b: 158). The spelling “Bamfluß” is an obvious misprint for the Mbam River (all labels and cards read “Mbamfluß”), corrected in HOLLY (1927d). Mbam is the main tributary of the Sanaga River in present-day Cameroon. Its confluence with the Sanaga is at 4°23'N 11°16'E. Date March 1908, collector Haberer (data from the labels and cards, missing from the original description).

Remarks. The syntypes are a part of the collection (the expedition in 1907 to 1908 to the German Colony of Kamerun) donated by Karl Albert Haberer. A review of the Cameroon localities of Haberer see *Mormyrops bachrachi*.

Etymology. The species name is a patronym, a noun in the genitive; named for Viktor Pietschmann (27.10.1881, Vienna – 11.11.1956, Vienna), an Austrian ichthyologist at the NHMW, the curator of the Fish Collection from 1919 to 1946. He made numerous collecting trips all over the world, and his donations to the NHMW collections were enormous (over 1200 lots, the second large contribution after Franz Steindachner). Pietschmann described 32 new fish species, and had more than 50 publications over his career. For details of his scientific biography see, e. g., KÄHSBAUER (1957).

In literature. A description of the syntypes by GEERINCKX et al. (2004).

Taxonomic status. PELLEGRIN (1929a, 1929b) supposed that *P. pietschmanni* was a subspecies or variety of *Parauchenoglanis balayi* (SAUVAGE, 1879). As a valid species *Auchenoglanis pietschmanni* (TREWAVAS 1974: 356, 357, RISCH 1986: 8, BURGESS 1989: 71); later in a synonymy of *P. balayi* (GEERINCKX et al. 2004: 790, FERRARIS 2007: 162).

Parauchenoglanis balayi is known from throughout the Congo River drainage, with exception of the Mweru-Luapula-Bangweulu region, and in drainages from from the Sanaga to the Chiloango (GEERINCKX et al. 2007, MOELANTS 2010m).

Conservation. IUCN: LC (MOELANTS 2010m).

Gobiidae: Gobionellinae

Gobius pygmaeus HOLLY, 1929

HOLLY 1929f: 487, figs 1, 2.

Syntypes. NMW 33930 (with internal numbers 1 to 12). The original description is based on 12 specimens with TL 15.5–35 mm without precise data per specimen (HOLLY 1929f: 158). Individual length measurements are as follows (TL, mm/SL, mm): 33.9/27.8 (male, No 1), 28.9/24 (male, No 2), 31.9/25.7 (male, No 3), 299.9/24.8 (female, No 4), 30.7/25.8 (female, No 5), 29.2/24.6 (female, No 6), 29.8/24.6 (male, No 7), 27.7/25.8 (male, No 8); TL in four smallest specimens is 14.7–21.7 mm (Nos 9–10).

The largest specimen NMW 33930:1 (male) is apparently the one in fig. 1 and the 33930:4 female is in fig. 2 in HOLLY (1929f). Preservation condition average.

Remarks. The indication to the NMW 17922–33 as syntypes of the species (ECONOMOU et al. 2004: 444), with reference to the Eschmayer’s Catalog of Fishes is apparently

based on a confusion as NMW 17922–33 represent historical records for completely different species/ lots; only the number NMW 33930 was originally given to a sample first identified by Holly as *Gobius nanus* and later described as a new species *G. pygmaeus*.

Type locality, date and collector. “die Tiere wurden teils in einem Quellbach, teils in einem Teich, welcher von ersterem gespeist wird, bei Zoodochos Pigi nächst Kaligoni, einer kleinen Ortschaft auf der Insel Levkas” (a part [of the specimens] in a spring stream, and another part in a pond, which is fed by the former, at Zoodochos Pigi next to Kaligoni, a small village on the island of Lavkas [Lefkas Island, Ionian Islands, Greece]). The collector is Max Beier, who donated a small collection of fishes from his travel to Ionian Islands and the Peloponnes in 1929 (HOLLY 1929f: 487).

Etymology. In ancient Greek the word *pygm* meant “a measure of length from the elbow to the knuckles” and the word *pygmaios* was in use for “a tiny person no longer than the forearm”, later latinised as *pygmaeus*, a masculine adjective meaning dwarf. The name refers to the small size of the fish.

In literature. The syntypes examined and described by ECONOMIDIS & MILLER (1990).

Taxonomic status. Since a fundamental study on nomenclature and taxonomy of the species (ECONOMIDIS & MILLER 1990), it is widely accepted as a valid species *Economidichthys pygmaeus* including reviews and check-lists (e.g., ECONOMOU et al. 2004: 443, PARENTI 2021: 135).

The species is endemic to western Greece north of Patraikos Gulf, rather common in both coastal and fresh waters including islands and mainland lakes (BARBIERI et al. 2015).

Conservation. IUCN: LC (CRIVELLI 2006).

Gobiidae: Oxudercinae

Boleophthalmus chamiri HOLLY, 1929

HOLLY 1929b: 64.

Holotype. NMW 13804. The original description is based on a single specimen 99 mm of TL. A shortened description was repeated with an illustration of the holotype (HOLLY 1929e: 183). Recent measurements: TL 98.5 mm, SL 79 mm. The NMW 13804 specimen corresponds in its length and general appearance (HOLLY 1929e: fig. 3) with the original description. Preservation condition good.

Type locality, date and collector. “Chamir an der Straße von Clarence gegenüber der Insel Tawilah in der Meerenge von Hormus, südöstliches Persien” (Chamir on the Strait of Clarence opposite the island of Tawilah, Strait of Hormuz, southeastern Persia) (HOLLY 1929b: 64). The Clarence Strait is a narrow strait (a part of the Strait of Hormuz) separating the island of Qeshm (Jazireh-ye Qeshm, Arabic Jazirat al-Tawilah) from the Iranian mainland. Collected by Gabriel and donated to the NHM in 1928 (the Pietschmann’s card).

Remarks. The collector, GABRIEL (1929: 75) spelled the locality as Khāmīr; the present-day Bandar Khamir is at 26°56'N 55°35'E. A photo in GABRIEL (1929: fig. 24) represents a stretch of the coast with mangrove vegetation in the Strait of Clarence near

Khāmir. The probable date of collecting is between January 17, 1927 and March 3, 1928 during a two-day trip by Alfons and Agnes Gabriel west and east of Bandar Abbās (GABRIEL 1929: 65–81).

Etymology. The species name is a noun in the genitive derived from the type locality, Chamir (Khāmir).

In literature. None.

Taxonomic status. It was synonymised with *Boleophthalmus dussumieri* VALENCIENNES, 1837 by MURDY (1989: 17) based on the original description and a subsequent figure (HOLLY 1929e: fig. 3) but the holotype of *B. chamiri* was not seen. This opinion has been widely accepted. A detailed review of earlier identifications and synonymy of Iranian material is provided by EAGDERI et al. (2019: 60) and JOULADEH-ROUDBAR et al. (2020: 231).

Boleophthalmus dussumieri is a widely distributed species in the coastal waters of western Indian Ocean from the Persian Gulf and Oman to India.

Conservation. IUCN: LC (LARSON 2019).

Cichlidae: Pseudocrenilabrinae

Paratilapia mariae HOLLY, 1930

HOLLY 1930b: 206, Pl. 2 (fig. 12).

Holotype. NMW 13950. The original description is based on a single specimen 139 mm TL. Recent measurements: TL 138.5 mm, SL 109.3 mm. The NMW 13950 specimen corresponds in its length, general appearance (Fig. 13), number of lateral-line scales (19/14) with the holotype in the original description. Preservation condition good but some scales lost on both sides.

Type locality, date and collector. “Kamerun, ohne näherer Fundortangabe” (German Colony of Kamerun at the time, no specified locality) (HOLLY 1930b: 207), collector Rohde (Pietschmann’s card), date missing.

Remarks. The collector could be Richard Rohde, a German explorer, natural history collector and trader (OHL 2012), who collected in German Cameroon in about 1908 (KLAVER & BOHME 1992). Trewavas (1962) was the first to assume that the locality might be Lake Barombi-Mbo (= Barombi-ma-Mbu, Elefanten-See, ca 9°22'E 4°38'N) as the species and two other tilapias (see below) occur only in this lake. Other authors (TEUGELS 1991, STIASSNY 2007) followed this opinion and considered the three species as endemic to Lake Barombi-Mbo. We failed to find any historical direct or indirect evidence of a specified locality of the holotype.

Etymology. The species name is a patronym, a noun in the genitive; apparently named for Holly’s wife, Maria Holly (born Sperat).

In literature. The holotype was examined and the data included in the redescription of *Stomatepia mariae* by TREWAVAS (1962: 182).



Fig. 13: (a) *Paratilapia mariae* HOLLY, 1930, NMW 13950, holotype, SL 109.3 mm; (b) radiograph; both left lateral view.

Taxonomic status. A valid species in the genus *Stomatepia* (TREWAVAS 1962: 182, 1972: 68, DAGET 1984: 196, UFERMANN et al. 1987: 367, TEUGELS 1991: 465, STIASSNY 2007: 396, 397).

Endemic to Barombi-Mbo, a small volcanic lake (7 km²) in north-eastern Cameroon (TREWAVAS 1962, 1972, 1983, STIASSNY et al. 2007).

Conservation. IUCN: CR [B1ab(iii)+2ab(iii)]; major threat is from oil plantations and slash and burn agriculture leading to sedimentation and pollution in the lake (MOELANTS 2010n).

Tilapia camerounensis HOLLY, 1927

HOLLY 1927d: 222, fig. 7, unnumbered table of measurements on page 223.

Holotype. NMW 7645. The original description is based on a single specimen 314 mm TL and 252 mm BL. Recent measurements: TL 313 mm, BL 253.5 mm, SL 249.5 mm. The NMW 7645 specimen corresponds in its length, general appearance, number of lateral-line scales (16/15) with the original description. Preservation condition good.

Type locality, date and collector. “Mbamfluss” (Mbam River, the main tributary of the Sanaga River in present-day Cameroon) (HOLLY 1927d: 224), collector Haberer, 1907–1908 (HOLLY 1927d: 195). The Pietschmann’s card and other museum records specify the date as March 1908.

Remarks. The syntypes are a part of the collection (the expedition in 1907 to 1908 to the German Colony of Kamerun) donated by Karl Albert Haberer. A review of the Cameroon localities of Haberer see *Mormyrops bachrachi*.

Etymology. The species name is a latinised adjective (third-declension) derived from Cameroon.

In literature. DUNZ & SCHLIEWEN (2010) examined the holotype, the data used in the comparisons.

Taxonomic status. A valid species as *Tilapia cameronensis* (HOLLY 1930b: 267, THYS VAN DEN AUDENAERDE 1966: 48, 1969: 161, 162, TREWAVAS 1974: 403, 1983: 517 [table 115, in the subgenus *Coptodon*], TREWAVAS & TEUGELS 1991: 485, DE WEIRDT & TEUGELS 2007c: 362, DUNZ & SCHLIEWEN 2010: 275, 2012: 18), later in *Coptodon* (DUNZ & SCHLIEWEN 2013: 16).

Endemic to the Sanaga River drainage in Cameroon.

Conservation. IUCN: LC (MOELANTS 2010o).

Tilapia caroli HOLLY, 1930

HOLLY 1930b: 204, Pl. 2 (fig. 11).

Lectotype & paralectotype. NMW 13952(1) and 13953(1) in one jar. The original description is based on two specimens, TL 178 and 186 mm. Recent measurements: TL 176 mm, SL 140.7 mm (13952); TL 182 mm, SL 146.7 mm (13953). The NMW 13952–53 syntypes correspond in their length, general appearance, number of lateral-line scales (20/12 and 18/14, respectively) with the original description. Preservation condition good. Lectotype (the larger specimen = NMW 13953) designated by TREWAVAS (1983: 90, 93: 147.5+33 mm; incorrectly as “holotype” and Haberer as collector). The lectotype is the one in fig. 11 in HOLLY (1930b).

Type locality, date and collector. “Kamerun, ohne nähere Fundortangabe” (German Colony of Kamerun at the time, no specified locality) (HOLLY 1930b: 205), collector Rohde (Pietschmann’s card), date missing.

Remarks. The collector could be Richard Rohde and the type locality Lake Barombi-Mbo (= Barombi-ma-Mbu, Elefanten-See, ca 9°22'E 4°38'N) as the species is endemic to the lake. See *Paratilapia mariae*.

Etymology. The species name is a masculine (second declension) patronym in the genitive for a forename Carol – Latin for Charles or Carl (Karl).

In literature. The holotype was examined and the data included in the redescription of *Sarotherodon caroli* by TREWAVAS (1983: 90–93, Tables 19–20).

Taxonomic status. It was synonymised with *Tilapia linnellii* LÖNNBERG, 1903 (TREWAVAS 1962: 174, THYS VAN DER AUDENAERDE 1969: 162), then revalidated as *Sarotherodon caroli* (TREWAVAS 1983: 90) and is treated as a valid species since then (UFERMANN et al. 1987: 351, TREWAVAS & TEUGELS 1991: 425, DE WEIRDT & TEUGELS 2007b: 390, 391, NEUMANN et al. 2011: 19).

Endemic to Barombi-Mbo, a small volcanic lake (7 km²) in north-eastern Cameroon (TREWAVAS 1962, 1972, 1983, STIASSNY et al. 2007).

Conservation. IUCN: CR [B1ab(iii)+2ab(iii)]; major threat is from oil plantations and slash and burn agriculture leading to sedimentation and pollution in the lake (MOELANTS 2010p).

Tilapia lohbergeri HOLLY, 1930

HOLLY 1930b: 203, Pl. 2 (fig. 10).

Holotype. NMW 13951. The original description is based on a single specimen 118 mm TL. Recent measurements: TL 116 mm, SL 90.5 mm. The NMW 13951 specimen corresponds in its length, general appearance (Fig. 14a, b), number of lateral-line scales (18/13) with the holotype in the original description. Preservation condition good.

Type locality, date and collector. “Kamerun, ohne näherer Fundortangabe” (German Colony of Kamerun at the time, no specified locality) (HOLLY 1930b: 204), collector Rohde (Pietschmann’s card), date missing.

Remarks. The collector could be Richard Rohde and the type locality Lake Barombi-Mbo (= Barombi-ma-Mbu, Elefanten-See, ca 9°22'E 4°38'N) as the species is endemic to the lake (TREWAVAS 1962). See *Paratilapia mariae*.

Etymology. The species name is a patronym, a noun in the genitive; named for Karl Lohberger, an Austrian zoologist and ichthyologist who was actively working on fishes at the NHMW in 1920–30s (described 15 new species in 1928–1930, including *Barbus hollyi* LOHBERGER, 1929).

In literature. The holotype was examined and the data included in the redescription of *Tilapia lohbergeri* by TREWAVAS (1962).

Taxonomic status. A valid species in *Tilapia* (TREWAVAS 1962: 171, THYS VAN DEN AUDENAERDE 1969: 162), later as *Sarotherodon lohbergeri* (TREWAVAS et al. 1972: 48, TREWAVAS 1983: 75, UFERMANN et al. 1987: 353, TREWAVAS & TEUGELS 1991: 431, STIASSNY et al. 2007: 387, NEUMANN et al. 2011: 19).

Endemic to Barombi-Mbo, a small volcanic lake (7 km²) in north-eastern Cameroon (TREWAVAS 1962, 1972, STIASSNY et al. 2007).

Conservation. IUCN: CR [B1ab(iii)+2ab(iii)]; major threat is from oil plantations and slash and burn agriculture leading to sedimentation and pollution in the lake (MOELANTS 2010q).

Tilapia sparrmani multiradiata HOLLY, 1929

HOLLY 1928d: 188, fig. 3.

Syntypes. NMW 13736–51, 16 specimens in total, in one jar. The original description is based on 17 specimens 46–111 mm TL. Recent measurements (TL, mm/SL, mm [damaged caudal fin prevents accurate measuring of TL in some specimens]): NMW



Fig. 14: (a) *Paratilapia lohbergeri* HOLLY, 1930, NMW 13951, holotype, SL 90.5 mm; (b) radiograph; both left lateral view.

13736 (58.3/44.7), 13737 (63.2/49.3), 13738 (57.2/44.1), 13739 (ca 66/52.3), 13740 (ca 84/65.3), 13741 (97.2/74.8), 13742 (71.8/62.3), 13743 (ca 99.5/79.9), 13744 (83.5/63.8), 13745 (92.5/71.2), 13746 (73.9/56.3), 13747 (44.9/34.3), 13748 (59.4/44.8), 13749 (79.1/60.6), 13750 (ca 107/81.9), 13751 (103.7/79.7).

The NMW 13736–51 specimens correspond in the TL range (45 mm to ca 107 mm) and the general description of the syntypes. Preservation condition good.

Remarks. The syntypes were inventoried under individual numbers NMW 13735 to 13751. The NMW 13735 syntype is missing, not found by special searches undertaken in 1979 and 1987.

Type locality, date and collector. “Schari-Fluss bei Fort Archambault” (the Chari, or Shari, River, the major inflow to the endorheic Lake Chad, at the former French colonial Fort Archambault, Sarh at present, the capital of the Moyen-Chari Region and of the

Department of Barh Köh in Chad, ca 09°09'N 18°23'E); date November 1927 to June 1928, collected during a sampling trip by A. Weidholz (HOLLY 1928d: 183), donated to the NHMW in 1928 (the Pietschmann's card).

Remarks. See also *Labeo niloticus brevicauda* for more information on Weidholz's collection.

Etymology. The name of the subspecies is a compound Latin feminine adjective from *multi-* for many and the noun *radium* for ray meaning multiradiate in reference to a greater number of the dorsal-fin rays in the new subspecies in comparison with typical *T. sparrmani*.

In literature. None.

Taxonomic status. The subspecies was given a species rank (HOLLY 1930b: 206) soon after the original description; a valid species by BLACHE et al. (1964: 244, fig. 135) who distinguished sympatric *T. multiradiata* and *T. zillii* by “the very characteristic colouration of the caudal fin” in *T. multiradiata*. The illustrations of *T. multiradiata* in fig. 135 and *T. zillii* in fig. 136 in BLACHE et al. (1964) present externally different fishes (besides the caudal fin colour patten, they differ by the posterior outline of the caudal fin, the shape of the head and body, and the size of adult). The characteristic banded colour patten of the caudal fin is still seen in some of the syntypes (e. g., NMW 13749). The species was later synonymised with *T. zillii* (THYS VAN DEN AUDENAERDE 1969: 161, UFERMANN et al. 1987: 391, TEUGELS & THYS VAN DEN AUDENAERDE 1991: 507, LÉVÊQUE et al. 1991: 146), now in *Coptodon*.

Coptodon zillii is commonly considered as a species widely distributed across the northern half of Africa. However, in many areas its native historical distribution is not well documented. Since late 1940s, widely introduced, translocated and invasive elsewhere in Africa outside its native range.

Conservation. IUCN: LC (LALÈYÈ 2020).

Aplocheilidae

Panchax sakaramyi HOLLY, 1928

HOLLY 1928c: 313, fig. 2.

Syntypes. The original description is based on 20 specimens with TL 31.5–71 mm without precise data per specimen (HOLLY 1928c: 314). At present, there are 18 specimens under the numbers NMW 13469 (1) and 13470 (1) in one jar; and NMW 13473–89 (16 specimens in one jar) with the following length measurements (some specimens are dehydrated and damaged); the length of the largest specimen corresponds with the upper TL limit in the original description. Recent measurements (TL, mm/SL, mm): NMW 13469 (70.5/58.8), 13470 (66/54.7), 13473 (62.6/52.2), 13474 (54.2/44.3), 13475 (53.1/43.1), 13476 (44.4/35.2), 13477 (39/32.3), 13478 (58.5/49.5).

Preservation condition from good (NMW 13469–70) (Fig. 15) to very bad (NMW 13479–88).

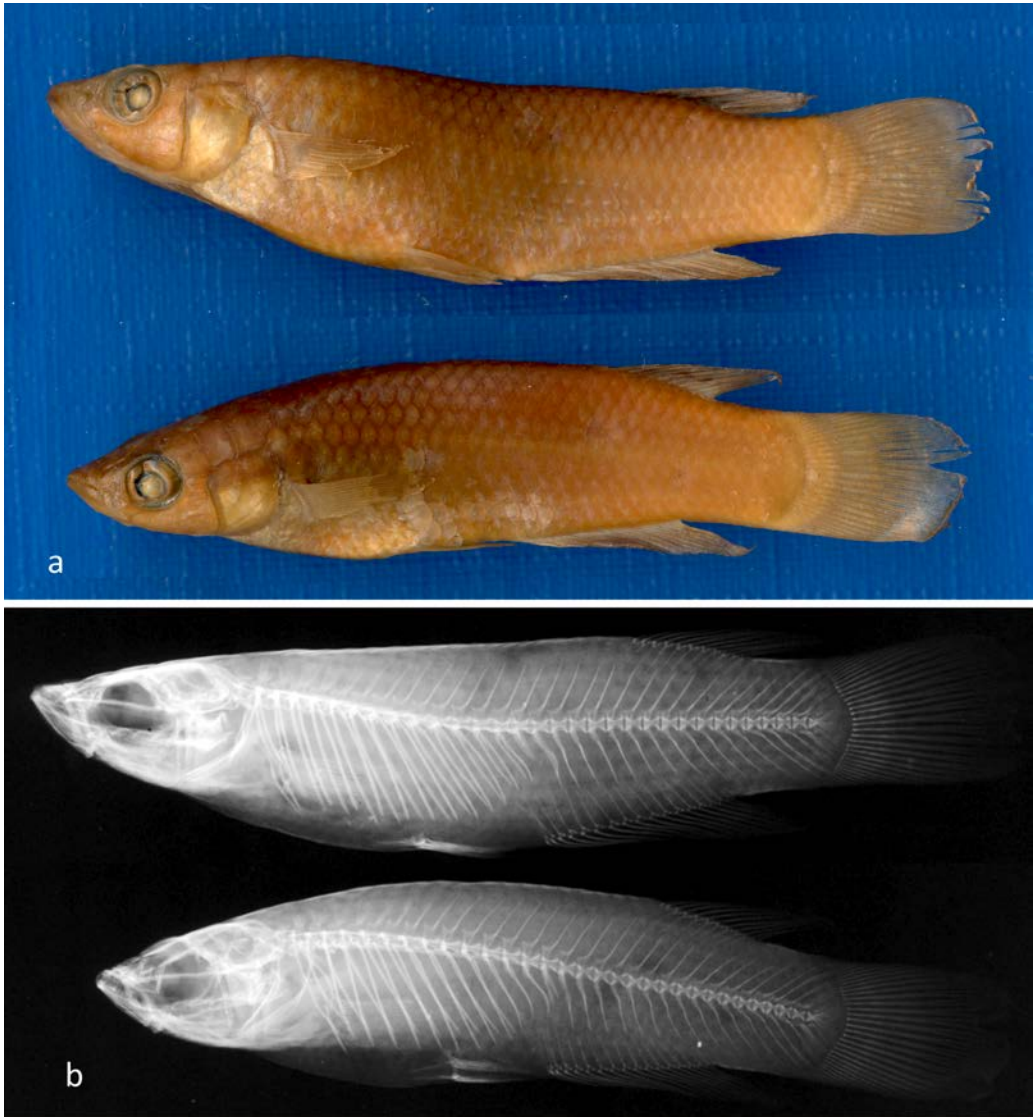


Fig. 15: (a) *Panchax sakaramyi* HOLLY, 1928, syntypes NMW 13469, SL 58.5 mm (top) and NMW 13470, SL 54.7 mm; (b) radiograph; both left lateral view.

Remarks. One syntype was sent to Museo Civico di Storia Naturale, Milano, Italy (CONCI & MICHELANGELI 1974), is still extant and in a good preservation condition, under the number MSNM Pi 56 (formerly 4426) (G. Bardelli, Museo Civico di Storia Naturale, Milano, pers. comm.). Whereabouts of one more syntype are not known (NMW 13473–89 contains 16 specimens instead of 17).

Type locality, date and collector. “Ein Bach im Gebirge ca 500 m hoch bei Sakaramy, 30 km landeinwärts von Diego Suarez auf Madagaskar” (a stream in the mountains ca

500 m above [the village of] Sakaramy, 30 km inland from Dirgo Suarez (now Antsirana) on Madagascar) (HOLLY 1928c: 314), consistent with all other museum sources. Sakaramy is also the name of the river in the Ambohitra mountains, Northern Madagascar.

Remarks. Date is missing from the original description and all museum sources, but obviously before 1928. According to LOISELLE (2006: 14), the village of Sakaramy is at 14°27'S 49°16'E, and the Sakaramy is a tributary of the Sahakazoambany River, which flows into the Bay of Ambavarano.

Etymology. The species name is a noun in the genitive derived from the type locality, Sakaramy.

Taxonomic status. A valid species as *Pachypanchax sakaramyi* (LOISELLE 2006: 14, NEUMANN 2015: 5, FRICKE et al. 2018: 108). Earlier records and the use of the name are listed by FRICKE et al. (2018: 108).

In literature. No data published on the NMW syntypes. The MSNM syntype examined by FRICKE et al. (2018).

Pachypanchax sakaramyi is endemic to northern Madagascar and is only recorded from a very few localities (SPARKS 2016).

Conservation. IUCN: EN (SPARKS 2016). However, the situation may be even worse because most biotopes have been heavily destroyed by drinking water withdrawals and introductions of guppies and *Gambusia*. The species should be considered one of the rarest fishes in the world and critically endangered (SCHÄFER 2018).

Aphaniidae

Cyprinodon ginaonis HOLLY, 1929

HOLLY 1929b: 63.

Syntypes. NMW 13800–02 (in one jar). The original description is based on three specimens 29, 27, and 26 mm TL. A shortened description was repeated with an illustration of one syntype (HOLLY 1929e: 184, fig. 2) which is now under the number NMW 13800. Recent measurements (TL, mm/SL, mm): NMW 13800 (26.2/22.2), NMW 13801 (27.7/23.6), NMW 138002 (25.6/21.3).

The NMW 13800–02 specimens (Fig. 16) correspond in their length and general appearance with the original description. The most distinguishing character of the species, a low number of the dorsal-fin rays (6–7 in the original description; Holly calculated the two last rays as two). Preservation condition average, and major diagnostic characters can be examined.

Remarks. Friedhelm Krupp, in 1984, selected the NMW 13800 syntype (female) as lectotype. He also pointed out that the NMW 13803 specimen, which had long been considered a syntype, does not belong to the type series (TL 22.3 mm, much shorter than the published total length of the syntypes), but this has never been published.

The syntypes belong to a small collection of fishes done by Alfons and Agnes Gabriel during their trip to Iran in 1927–28 (see also *Barbus baschakirdi*).

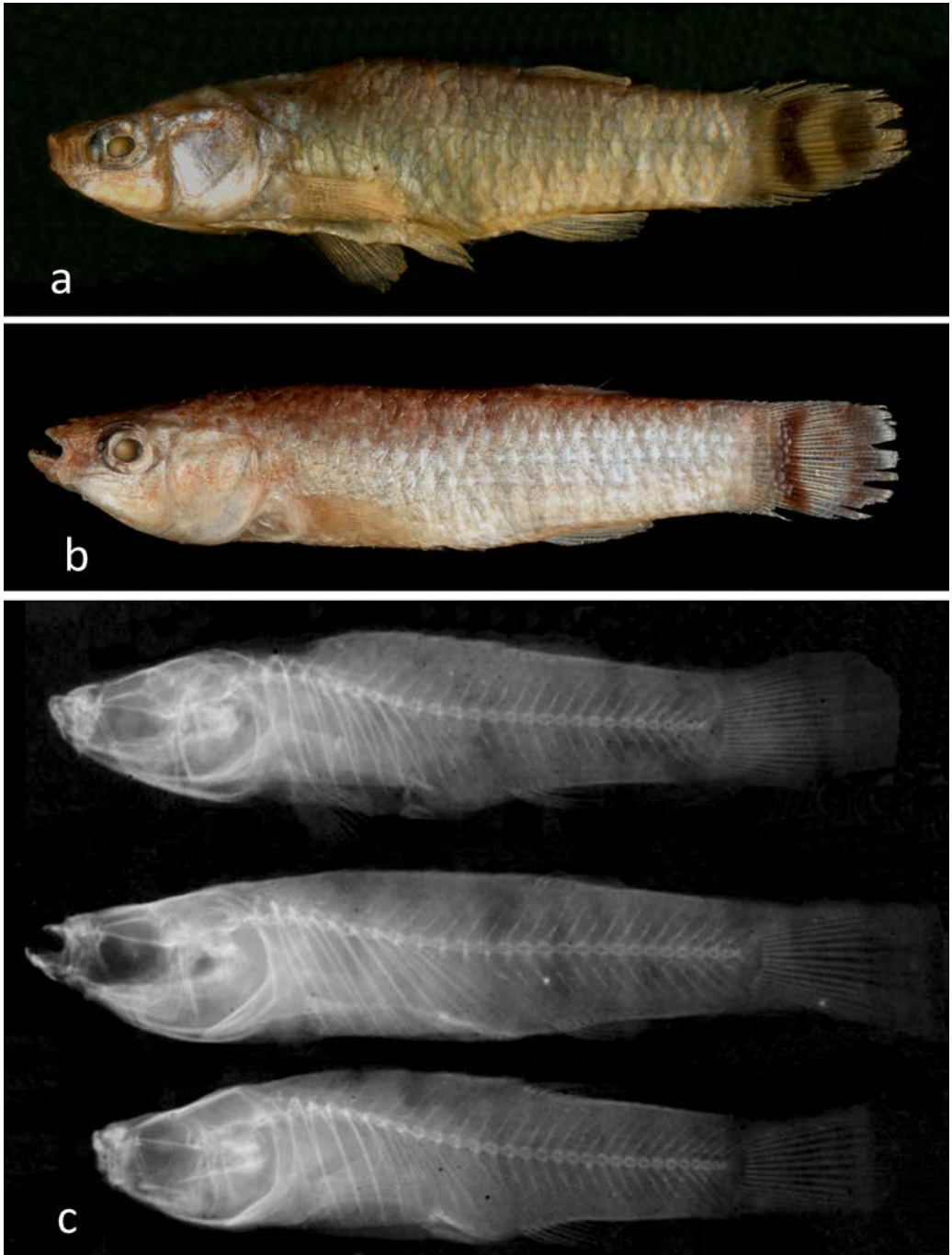


Fig. 16: *Cyprinodon ginaonis* HOLLY, 1929, NMW 13469-70, syntypes (left lateral view): (a) NMW 13800, SL 22.2 mm; (b) NMW 13801, SL 23.6 mm; (c) NMW 13800-02, SL 22.2, 23.6, and 21.3 mm, radiograph.

Type locality, date and collector. “Heiße Quellen von Djebel Ginao nördlich von Bender Abbas, südöstliches Persien” (a hot spring from the Ginao Mountain, north of Bandar Abbas, southeastern Iran) (HOLLY 1929b: 64). Collected by Gabriel and donated to the NHMW in 1928 (the Pietschmann’s card).

Remarks. GABRIEL (1929: 75, 82–83) describes the locality as “a hot spring ... near the village Ginão at the mountain Kūh-e-Ginão” at “the ruins of a caravanserai where the warm stream meanders along a group of palms”; the water was “clear and hot” with a temperature of 40 °C. The date of collecting was March 4, 1928 (GABRIEL 1929: 82–83). The hot spring Ginao (also spelled Geno, Ganow or Genow in literature) still exists and located about 38 km north of Bandar Abbas and about 2 km west from the Bandar Abbas to Sirjan road (COAD 1980) at 27°27'N 56°18'E (JOULADEH-ROUDBAR et al. 2020). A description of the present-day habitat is in REICHENBACHER et al. (2009: 510, fig. 1b).

Etymology. The species name is a latinised feminine/masculine (third-declension) adjective derived from the type locality, Ginão.

In literature. Though the species has been redescribed a number of times in literature (COAD 1980, REICHENBACHER et al. 2009, FREYHOF & YOĞURTÇUOĞLU 2020) based on recent collections from the type locality, we are not aware of any comparison with the NHMW type series.

Taxonomic status. A distinct valid species in *Aphanius* (KÄHSBAUER, 1964: 470, REICHENBACHER et al. 2009: 507 TEIMORI et al. 2018: 72, JOULADEH-ROUDBAR et al. 2020: 262) or *Aphaniops* (ESMAEILI et al. 2020: 5, FREYHOF & YOĞURTÇUOĞLU 2020: 432, CHARMPILA et al. 2020: 2). It may involve two potential species based on species delimitation methods using two molecular markers, but only 4 specimens were studied (ESMAEILI et al. 2020).

In this regard, it is worth mentioning that HOLLY (1929e: 183) described a specimen (NMW 13799) from the same locality (Ginao hot spring, same collector and the date as the syntypes of *A. ginaonis*) identified by him as *Cyprinion dispar* [= *Aphaniops hormuzensis* (TEIMORI, ESMAEILI, HAMIDAN & REICHENBACHER, 2018)] based on the main diagnostic difference: 10 dorsal-fin rays in ‘*Cyprinion dispar*’ vs. 6–7 in *A. ginaonis*. Present-day published data do not indicate a sympatry of the two species.

Aphaniops ginaonis is believed to be a very local endemic species only occurring in the Ginao spring while *Aphaniops hormuzensis* occurs in the connected stream and in some other close endorheic drainages and the Mehran River (all in the Hormuzgan Basin) being sometimes sympatric with *A. furcatus* in both exorheic drainages and hot sulphur springs (REICHENBACHER et al. 2009, TEIMORI et al. 2018).

Conservation. *Aphaniops ginaonis* has not been globally evaluated by the IUCN but within Iran it is considered as CR [B2ab(iii)] (JOULADEH-ROUDBAR et al. 2020) occurring in a single extremely restricted locality (the total area of occupancy is 7 square km) and in a highly polluted biotope.

Types of fish species described by Holly, either lost or not yet found at NHMW

Barbus donyensis HOLLY, 1929a: 33 (type [holotype] 224 mm TL from Athi River at Denye Satna, British East Africa; two specimens [paratypes] from Athi River at Nairobi). Synonym of *Labeobarbus oxyrhynchus* (PFEFFER, 1889).

Barbus iturii HOLLY, 1929a: 34 (one specimen [holotype] from Ituri River, Congo). Valid as *Labeobarbus iturii* (HOLLY, 1929).

Remarks. The specimen was apparently from the collection by Gauer, 1910–1911 in Zaire; there are 21 lots from stated localities “Iturifluss, Zaire” and “Ituri-Fluss bei Mawambi, Zaire”, including types of *Barbus hindii* var. *mawambiensis* STEINDACHNER, 1911 (NMW 54177, 54286–88), *Allabenchelys laticeps* STEINDACHNER, 1911 (NMW 7649, 47988–91), *Synodontis melanostictus* var. *iturii* STEINDACHNER, 1911 (46049), *Auchenoglanis iturii* STEINDACHNER, 1911 (NMW 47474–76), and *Mastacembelus trispinosus* STEINDACHNER, 1911 (NMW 73352) examined by Holly.

Corydoras griseus HOLLY, 1940: 110 (one specimen [holotype] 47.7 mm TL, Münchner Tierpark A.G. 72/1938, “very small water-courses of the Amazon”. A drawing of the alive specimen in HOLLY (1952b). Valid as *Corydoras griseus* HOLLY, 1940.

Remarks. The restriction of the type locality of *C. griseus* to “Essequibo, Potaro River, Guyana” based on lectotypification of *Corydoras griseus deweyeri* MEINKEN, 1957 by NIJSSEN & ISBRÜCKER (1967: 35, 1980: 210) is not available.

Corydoras pestai HOLLY, 1940: 107 (one specimen [holotype] 46.8 mm BL, Münchner Tierpark A.G. 81/1938, “very small water-courses of the Amazon”. A drawing of the alive specimen in HOLLY (1952c). Synonym of *Corydoras elegans* STEINDACHNER, 1876 (NIJSSEN & ISBRÜCKER, 1980: 213).

Corydoras schultzei HOLLY, 1940: 111 (seven specimens [syntypes] 55.5–65.3 mm TL, Münchner Tierpark A.G. 80/1938, “very small water-courses of the Amazon”. A drawing of an alive specimen in HOLLY (1952d). Synonym of *Corydoras aeneus* (GILL, 1858) (NIJSSEN & ISBRÜCKER, 1980: 207).

Plecostomus longiradiatus HOLLY, 1929c: 118 (type [holotype] 395 mm TL from “Rio Guana, probably a tributary of the Madeira, which is itself a tributary of the Amazon River”, and one specimen [paratype] 385 mm “long” [TL?] from “Illia das Onças, a river island in Madeira”, Brazil). Valid as *Hypostomus longiradiatus* HOLLY, 1929.

Echinodermata: Asterozoa: Asteroidea: Valvatacea: Mithrodiidae

Mithrodia fisheri HOLLY, 1932

HOLLY 1932: 6, fig. 2a–b.

Holotype. No 9975 (inventory No 1928/1/3). The original description is based on a single specimen (the holotype) with morphometric parameters as follow: R 37 mm to 55 mm, r 11.5 mm, width of arm at base 14 mm corresponding with that of its middle. It is a damaged, juvenile individual; one arm had been broken and slightly regenerated; the holotype (Fig. 17) is the one in HOLLY (1932: fig. 2a–b). Preservation condition good.

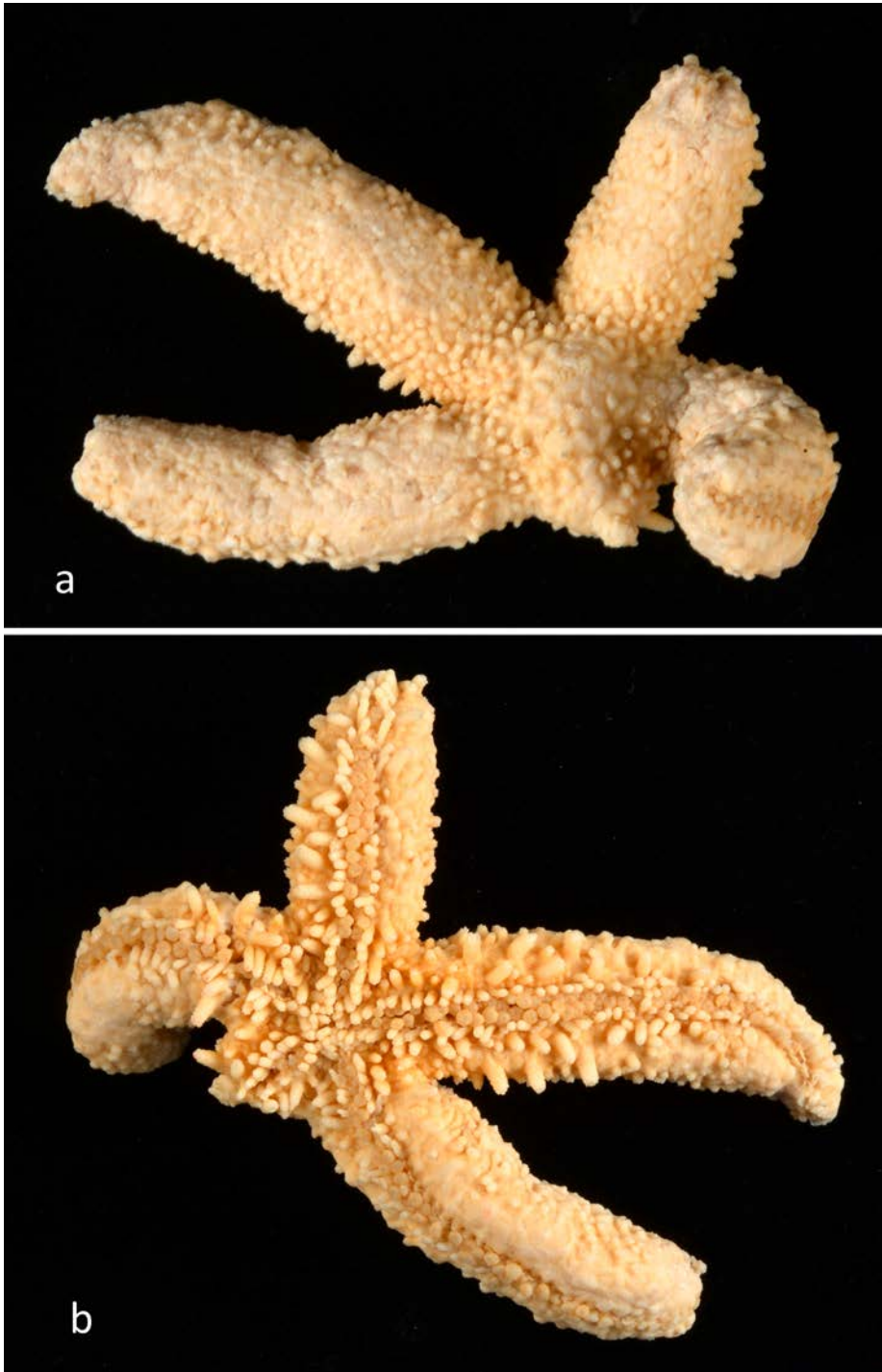


Fig. 17: *Mithrodia fisheri* HOLLY, 1932 (holotype), No 9975, holotype: (a) dorsal view and (b) ventral view.

Type locality, date and collector. Shoal water at Pearl and Hermes Atoll, the Northwestern Hawaiian Islands. Collector Viktor Pietschmann. Date is missing but see below.

Remarks. The holotype is a part of materials of fishes and invertebrates collected by Pietschmann during his trips in the Pacific Ocean in the area of Hawaiian Islands while being a Bishop Museum Fellow in 1926–1927.

Etymology. The species name is a patronym, a noun in the genitive; named for Walter Kenrick Fisher, an American zoologist and evolutionary biologist, an expert in echinoderms, who participated in two of the M.V. Albatross expeditions in 1902 and 1904.

In literature. nomenclatural and taxonomic status of the holotype discussed (but the holotype not seen) by ENGEL et al. (1948: 27–33) and POPE & ROWE (1977: 213).

Taxonomic status. A valid species (MORTENSEN 1935: 4, ELY 1942: 28, ENGEL et al. 1948: 27, CLARK 1952: 303, POPE & ROWE 1977: 213, JANGOUS & AZIZ 1984: 873, MAH 2021).

Endemic to Hawaii.

Conclusion

Consistent with the two proposed goals, the publication, first, provides a comprehensive taxonomic guide to the Holly's types deposited in the NHMW Fish Collection. The study revealed 86 specimens in 40 species and subspecies; six type series have not been found. Type status of one lot (a series of two syntypes) of *Synodontis marmoratus truncatus* HOLLY, 1927 has been clarified for the first time. We re-traced taxonomic histories of all type specimens and highlighted existing taxonomic problems that could be solved if based on a proper study of type specimens. Nine valid (possibly valid) species from 40 are known only from the type specimens and, respectively, from only their type localities. Consequently, the data on the type specimens are essential for understanding their distribution and evaluating their conservation status. The holotype of one invertebrate species, an asteroid *Mithrodia fisheri* HOLLY, 1932 is also included as a first step forward to Part 2 of the type catalogue to be devoted to other invertebrate species described by Maximilian Holly.

Second, a pilot project of Extended Specimen approach applied to the NHMW Fish Collection is presented. The data are given in a condensed way, with all available updated information on types of species and subspecies described by Maximilian Holly in the context of present-day taxonomy. In addition, all relevant attributes of each type-series (image files of specimens, radiographs, labels, written records, cards, pdfs of original publications and original description, bibliography) were digitised, linked to the Fish Collection database, and are available by request from Dr. Anja Palandačić (the NHMW Fish Collection) before the database is made available online.

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Austrian Academy of Sciences) with dating publications by Holly. We would also like to show our sincere gratitude to the current and former staff of the NHMW Fish Collection: Barbara Herzig, Helmut Wellendorf, Harald Ahnelt, Katharina Schiller, Bettina Riedl, Matthias Reithofer, and Christian Pollmann. We thank Jos Snoeks (Royal Museum for Central Africa), Albert Chakona (South African Institute for Aquatic Biodiversity), Steven Grant (the Catfish Study Group), and Giorgio Chiozzi and Giorgio Bardelli (Museo Civico di Storia Naturale, Milano) for assistance with getting copies of publications. We would like to thank the anonymous reviewer and the editors Nesrine Akkari and Peter Dworschak for enormous time invested into a thorough review of this catalogue, which considerably improved its presentation.

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