
N. Cumberlidge*

Abstract

The entire collection of African and Madagascan freshwater crabs in the Museum of Natural History, Vienna has been re-evaluated. A great deal of incorrectly determined and unidentified material has now been identified, and the nomenclature of correctly identified specimens has been updated to conform to modern usage. The collection has been shown to include 16 species of Potamonautes, 6 species of Sudanonautes, 2 species each of Platythelphusa, Hydrothelphusa, and Deckenia, and 1 species each of Potamonemus, Louisea, Liberonautes, Gecarcinautes and Potamon. Notable additions brought to light include the little known species Louisea edeaensis, Potamonemus sachsi, Platythelphusa concluata, Potamonautes pilosus, P. neumanni, P. triangularis and P. walderi.

Key words: Crustacea, Brachyura, Potamonautidae, taxonomy, freshwater crab, Africa, Madagascar, Vienna.

Zusammenfassung


Introduction

The Naturhistorisches Museum, Wien (NHMW) holds important collections of freshwater crabs from Europe, Asia, Central and South America, Africa and Madagascar. The Potamidae in the NHMW from Europe and Asia have been described in a number of publications by Gerhard Pretzmann spanning more than two decades beginning in the 1960s, as have the Pseudothelphusidae and Trichodactylidae from Central and South America (Pretzmann 1972, 1983a, b, c). However, the freshwater crabs from Africa and Madagascar in the collection of the NHMW are not well documented, and only a few species have been the subject of studies (Pretzmann 1961, 1962, 1977; Ng & al. 1995). The present work represents an attempt to identify and catalogue all of the African and Madagascan freshwater crab material in the NHMW according to the most recent taxo-

* Dr. Neil Cumberlidge, Department of Biology, Northern Michigan University, 1401 Presque Isle Avenue, Marquette, MI 49855-5341, USA.
onomic conventions for the group. The nomenclature of specimens found to have been identified correctly to species has been updated to conform to modern usage. Other material in the collection which had formerly been incorrectly determined, or which had never been identified, has now been identified to species. Much of the material dealt with here was either completely uncatalogued, or had only the museum's acquisition number. All of the specimens included in this work have now been assigned an inventory number, so that this resource will be readily available to future workers.

The collection in the NHMW includes freshwater crabs from West and Central Africa collected by Haberer in the early 1900s, and several lots from the Republic of the Congo (Brazzaville and the surrounding region), collected by Dr. Alain Crosnier of ORSTOM in the early 1960s. The NHMW also houses material from East Africa collected by Rudolf Grauer in the early 1900s, and material from Somalia donated by Dr. Marco Vannini, of the Università di Firenze, who carried out research in Africa in the early 1970s. There are also a few freshwater crabs from Madagascar collected by the Österreichische Madagaskar Expedition of 1958 led by Dr. Ferdinand Starmühlner of the Institut für Zoologie der Universität Wien.

Data on the material examined are listed in the following order: region of Africa - country, exact location (if available), number of males, number of females, state of maturity, name of collector/and or donator, date immediately followed by the acquisition number (in square parentheses) when available, and NHMW inventory number. Wherever possible, collection localities have been confirmed by reference to "Stielers Hand Atlas" (Justus Perthes' Geographischer Anstalt in Gotha, 1906).

Abbreviations

NHM Natural History Museum, London
ZMB Museum für Naturkunde der Humboldt-Universität, Berlin, Germany
CW carapace width at widest point
CL carapace length measured along median line, the distance from the midpoint of the frontal margin to the midpoint of the posterior margin
CH carapace height, maximum height of cephalothorax
FW front width, width of front measured along it’s anterior margin
coll. collected by
don. donated by
juv. juvenile.

All measurements are given in mm.

Taxonomy

All freshwater crabs from Africa were initially referred to a single family, the "Potamonidae". Over the years, the view of the group has changed, and today African freshwater crabs are assigned to 4 families - the Potamidae ORTMANN, 1896, the Deckeniidae ORTMANN, 1897, the Gecarcinucidae RATHBUN, 1904, and the Potamonautidae BOTT, 1970a. Three of these families, the Potamidae, the Deckeniidae, and the Potamonautidae, are represented in the collection of the NHMW.

The taxonomy followed in the present work for the freshwater crabs from continental Africa is that of CUMBERLIDGE (1991, 1993a,b,c, 1994a,b, 1995a,b,c,d), CUMBERLIDGE & SACHS (1989a,b), and CUMBERLIDGE & CLARK (1992). These works include a sub-
CUMBERLIDGE: The African and Madagascan freshwater crabs in the NHMW 573

substantial number of changes to the taxonomy suggested by BOTT (1955, 1959, 1964, 1970b). Notably, all of Bott’s subgeneric and most of his subspecific categories are not used, and many of his synonymies are not accepted.

The collection of the NHMW includes one species of Potamon SAVIGNY, 1816 (Potamidae) from Africa and two species of Deckenia HILGENDORF, 1869 (Deckeniidae). The majority of specimens in the collection of the NHMW come from continental Africa and belong to the Potamonautidae. They are referred here to 6 genera: Potamonautes MACLEAY, 1838, Platyhelphusa A. MILNE-EDWARDS, 1887, Sudanonautes BOTT, 1955, Liberonautes BOTT, 1955, Potamonemus CUMBERLIDGE & CLARK, 1992 and Louisea CUMBERLIDGE, 1994. In addition, the collection of the NHMW includes three species of freshwater crabs from Madagascar which are included here in two genera, Hydrothelphusa A. MILNE-EDWARDS, 1872 and Gecarcinautes BOTT, 1960. However, the taxonomy of the freshwater crabs from Madagascar is not stable, and was last reviewed by BOTT (1965). To avoid confusion, Bott’s (1965) genera have been used here, despite doubts as to their validity, but Bott’s (1965) assignments of taxa to families and subfamilies have been omitted.

Family Potamidae ORTMANN, 1896

This family is represented in continental Africa by a single species, Potamon fluvianalis algeriensis (BOTT, 1967). This taxon occurs only in the northwest region of Africa in the Mediterranean countries of Algeria, Tunisia, and Morocco. The NHMW collection includes specimens from the first two of these countries.

Genus Potamon SAVIGNY, 1816

This genus was most recently reviewed by BOTT (1970b), whose taxonomy is followed here.

Potamon fluvianalis algeriensis (BOTT, 1967)


Remarks: The synonymy is provided by BOTT (1970b). The mandibular palp of these specimens consists of three distinct segments, which warrants their inclusion in the Potamidae, rather than in the Potamonautidae. With the exception of Platyhelphusa from Lake Tanganyika, all other freshwater crabs from continental Africa and from Madagascar have a mandibular palp with only two distinct segments.
Family Deckeniidae ORTMANN, 1897

This East African family comprises 1 genus with 2 species. Both species are represented in the collection of the NHMW.

Genus Deckenia HILGENDORF, 1869

This genus was recently reviewed by Ng & al. (1995) who provided detailed comparisons between the two species.

Deckenia imitatrix HILGENDORF, 1869

Deckenia imitatrix HILGENDORF 1869: 24, fig. 8; ORTMANN 1902: 306; BOTT 1955: 219, fig. 6, pl. 1 fig. 1a-d; PRETZMANN 1977: figs 17-20; NG & al., 1995: 583, tables 1.2.


Remarks: PRETZMANN (1977) provided photographs of the carapace and gonopod 1 of NHMW No. 4369 from Somalia, and supplied the exact geographical coordinates for the locality.

Deckenia mitis HILGENDORF, 1869

Deckenia mitis HILGENDORF 1898: 24, fig. 8; ORTMANN 1902: 306; BOTT 1955: 221, fig. 5, pl. 1 fig. 2a-d; NG & al. 1995: 583-585, figs 1B.2,3, tables 1.2.

Material: East Africa: Ukambasin, Sumpf, 4000m über dem Meer, 3 adult ♀♂, 6 ♀♀ (2 adults), F. Thomas coll. 17.V.1903, NHMW No. 2866 (these specimens are listed by Ng & al. (1995) as NHMW No. 2886). - Tanzania: between Muhalala and Tabora, 1 adult ♀, L. Fischer coll. [1892.I.83], NHMW No. 2865.

Remarks: Ng & al. (1995) provided illustrations of the gonopods, the mandibles and the unusual mouthparts of this East African species.

Family Potamonautidae BOTT, 1970

Genus Sudanonautes BOTT, 1955

The genus Sudanonautes occurs in West and Central Africa and includes 9 species (CUMBERLIDGE 1991, 1993a,b, 1994b, 1995a,b,c,d). Six species of this genus are represented in the collection, 4 from Cameroon, 1 from Nigeria, and 1 from the Republic of the Congo.

Sudanonautes aubryi (H. MILNE EDWARDS, 1853)

Remarks: This large species is widespread and common in West and Central Africa, but for a long time had been confused with other superficially similar species found in the region. Details of the complete synonymy, identification, distribution and ecology of this species are provided in the redescription by Cumberlidge (1994b). Haberer provided very little information on his specimens, other than the country and year of collection. This means that most of this material does not contribute much to knowledge of the distribution and ecology of this species.

*Sudanonautes africanus* (A. Milne-Edwards, 1869)

**Material:** Central Africa - Cameroon: 4 large specimens, Haberer coll., NHMW No. 1881; Nyong, 4 large specimens, Haberer coll., NHMW No. 1882; 5 large specimens, Haberer coll., NHMW No. 1883; Nyong, 2 large specimens, Haberer coll. [1907.XIV], NHMW No. 1884; 2 juv., Zwilling coll. 1952, NHMW No. 1886; 1 juv., Haberer coll. 20.IX.1901, NHMW No. 13269; Gebirgsbach von Bakokoje: 15 specimens, Haberer coll. [1907.XIV], NHMW No. 13270; aus dem Nyong, 8 juv., Haberer coll. [1907.XII], NHMW No. 13272; Nyong, 8 juv. CWs 13.4 - 22.5, Haberer coll. [1907.XIV], NHMW 13273; Mambanda bei Kumba, 2 juv. (CWs 12, 13), A. Radda coll. 22.1.1970, NHMW No. 13274; Kake river, Kumba: 2 juv. CWs 22, 12, A. Radda coll. 22.1.1971, NHMW No. 13275; Ekombe Bouji, 3 juv., 1 large subadult $\delta$ CW 58, A. Radda coll. 25.I.1971, NHMW No. 13276; Maka district, 3 specimens, all dried, Haberer coll. (with *Potamonemus sachsi*) [1907.X], NHMW No. 13417.- Republic of the Congo. (Brazzaville), NE de Pointe Noire (les Saras km 102), 3 juv. CWs 25 - 35, A. Crosnier coll. June 1963, NHMW No. 13277; route de Sounda, village de Tombo, 1 juv. $\varphi$ CW 65, A. Crosnier coll. 28.VII.1963, NHMW No. 13278; (Brazzaville), NE de Pointe Noire, (les Saras km 102), 1 juv. $\varphi$ CW 40, soft-shelled, A. Crosnier coll. 18.XI.1962, NHMW No. 13279; (Brazzaville), NE de Pointe Noire, Region de Sounda, 1 juv. CW 25, A. Crosnier coll. 28.VII.1962, NHMW No. 13280; (Brazzaville), NE de Pointe Noire (les Saras km 102), 5 juv. CWs 10 - 30, A. Crosnier coll. 14.VII.1963, NHMW No. 13281; chutes de la Bouenza, 1 large adult $\varphi$ (CW 100) with eggs, A. Crosnier coll. December 1963, NHMW No. 13282; (Brazzaville) Meya (Kindamba), Riviere souterraine, 2 juv. $\varphi$ CWs 50, 60, 1 juv. $\varphi$, CW 45, A. Crosnier coll. 21.IV.1961, NHMW No. 13283.

West Africa - Nigeria: Cross River State, Yakurr local government area, 1 subadult $\delta$ CW 44, Idem S. Ibanga don. [1996.IX.1], NHMW No. 13411.

Remarks: This large species is abundant in Central Africa and in the rain forest regions of southeast Nigeria. Like *S. aubryi*, the identification of *S. africanus* has often proved difficult due to its confusion in the literature with other similar-looking species found in the same region. Details of the complete synonymy, identification, distribution and ecology of this species are provided in the redescription by Cumberlidge (1995a). The material from the Republic of the Congo collected by A. Crosnier is clearly documented, and adds a few new localities to the known distribution of this species.

*Sudanonautes chavanesii* (A. Milne-Edwards, 1886)

**Material:** Central Africa - Cameroon: 1 adult $\varphi$ CW 66.7, 1 juv. $\delta$ CW 30.6, Haberer coll., NHMW No. 1887; Nyong, 1 adult $\delta$ CW 56, Haberer coll. 6.XI.1907, NHMW No. 1888.

Remarks: *Sudanonautes chavanesii* was recently redescribed by Cumberlidge (1995b), who provided details of the complete synonymy, identification, distribution and ecology of this species. Only 14 specimens of this large Central African species were previously known, so these 3 specimens from Cameroon raise the number in museum collections to 17.
**Sudanonautes floweri (DE MAN, 1901)**

Synonymy provided by Cumberlidge (1995d).

Material: Central Africa - Republic of the Congo: (Brazzaville) NE de Pointe Noire (les Saras km 102), 1 juv. ♀, A. Crosnier coll. June 1963, NHMW No. 13284; (Brazzaville) NE de Pointe Noire, Route Sounda, 1 juv. CW 25, A. Crosnier coll. 18.VI.1964, NHMW No. 13285; (Brazzaville) region de Pointe Noire, 1 adult ♀, NHMW No. 13286.


Remarks: *Sudanonautes floweri* is a widespread species found in savanna regions from Nigeria to Sudan, and in rain forest regions from Nigeria to Zaire. This species was recently redescribed by CUMBERLIDGE (1995d), who provided details of the complete synonymy, identification, distribution and ecology of this species. The material in the NHMW from the republic of the Congo and from Cabinda is from the southern part of the range of this species.

**Sudanonautes monodi (BALSS, 1929)**

*Potamonastes aubryi monodi* BALSS 1929: 123, fig. 4 (Laro).

*Potamon monodi* CHACE, 1942: 217; CAPART 1954, 823, figs 9, 29.


Material: Central Africa - Cameroon: Poli bei Garoua, 2 adult ♂ CWs 46.6, 42.4, 2 adult ♀ ♀ CWs 44.2, 43.9, A. Weidholz coll. 1936 [1937.IV.1], NHMW No. 1429; Poli bei Garoua, 1 adult ♀, A. Weidholz coll. 1936, [1937.IV.1], NHMW No. 13288.

Remarks: *Sudanonautes monodi* is restricted to the drier parts of the savanna from Togo to Chad. These specimens from Garoua in northern Cameroon are close to the type locality (Maroua near Garoua). This species was considered by BOTT (1955) and MONOD (1977, 1980) to be a subspecies of *S. aubryi*. CUMBERLIDGE (1994b, 1995d) recently redescribed *S. aubryi* and recognised *S. monodi* as a valid species.

**Sudanonautes granulatus (BALSS, 1929)**


Remarks: *Sudanonautes granulatus* has a disjunct distribution in West Africa, and is found in the rain forest zones of Cameroon, Nigeria and Côte d'Ivoire. This species was recently redescribed by CUMBERLIDGE (1993c).

**Genus Louisea CUMBERLIDGE, 1994**


This is a monotypic genus.
**Louisea edeaensis (BOTT, 1969)**

*Globonautes macropus edeaensis* BOTT 1969: 360; BOTT 1970b: 24, pl. 1, figs 3-5, pl. 26, fig. 8; CUMBERLIDGE 1987: table 1.

**Material:** Central Africa - Cameroon: Yaounde. 1 adult d CW 19.3, 2 adult q q CWs 19.4, 17.5, Haberer coll. 1907, NHMW No. 1877.

**Remarks:** This species was described by BOTT (1969, 1970b) as *Globonautes macropus edeaensis* and was assigned to the Gecarcinucidae. CUMBERLIDGE (1994a) redescribed this taxon as *Louisea edeaensis*, and reassigned it to the Potamonautidae. Until the present study, only 3 specimens of *L. edeaensis* were known. The three specimens discovered in the NHMW double the known material for this monotypic genus. All 6 specimens of *L. edeaensis* were collected before 1910, and it is of some concern that this unusual species has not been seen for over 90 years.

**Genus Potamonemus CUMBERLIDGE & CLARK, 1992**

There are 3 species in this genus (CUMBERLIDGE & CLARK 1992; CUMBERLIDGE 1993b) one of which is represented in the collection of the NHMW.

**Potamonemus sachsi CUMBERLIDGE, 1993**

**Material:** Central Africa - Cameroon: 3 adult dd, 7 q q (2 adults), NHMW No. 13289; Maka District, 10 specimens, all dried, Haberer coll. 24.V.1907 (with *Sudanonautes africanus*) [1907.X], NHMW No. 13290.

**Genus Liberonautes BOTT, 1955**

Synonymy provided by BOTT (1955).

**Liberonautes latidactylus (DE MAN, 1903)**

*Potamon (Potamonastes) latidactylum* DE MAN 1903: 41-47, pl. 9, fig. 1-6

*Liberonautes latidactylus* BOTT 1955: 306-308, pl. XXIX, fig. 102, 103.


**Material:** West Africa - Sierra Leone: Freetown. 1 adult, 1 juv. d, 1 juv. q Zechmeister coll. 15.X.1903 [1903.VIII.1], NHMW No. 13381. - Guinea: Futa Djallon, 1 juv. d CW 35, A. Klapotocz coll. [1915.XIV], NHMW No. 2128.

**Remarks:** *Liberonautes latidactylus* is the commonest freshwater crab in the West African region west of Ghana. These localities fall within the known range of this species.

**Genus Potamonautes MACLEAY, 1838**

Sixteen species of *Potamonautes* are represented in the collection of the NHMW. A number of these species had been previously identified under a different name, and the collection was found to include many more species than previously thought. The species
are arranged chronologically and by geographical regions. None of the subgenera of *Potamonautes* erected by BOTT (1955) are recognised here.

**Potamonautes paecilei (A. MILNE-EDWARDS, 1886)**

*Potamon paecilei* CAPART, 1954: 841-842, figs 34, 37.

*Potamonautes (Longipotamonautes) paecilei* BOTT 1955: 242-243, figs 21, 71, pl. VI, figs 2a-d.


Remarks: The complete synonomy is provided by BOTT (1955). *Potamonautes paecilei* is found in the rain forest zone from Nigeria to lower Zaire. These specimens show a number of differences from the type of *P. paecilei* from Gabon, and further studies may lead to the recognition of two distinct species.

**Potamonautes ecorssei (MARCHAND, 1902)**


*Potamonautes (Platypotamonautes) eorssei* BOTT 1955: 236-237, figs 13, 67, pl. IV, figs 2a-d; BOTT 1959: 1001-1002, fig. 9a-c; MONOD 1969: 78-79, fig. 4-7; MONOD 1977: 1212-1213, figs 71-82, 86-92; MONOD 1980: 382-383, pl. VI, fig. 32.


Remarks: The complete synonomy is provided by BOTT (1955). *Potamonautes eorssei* is found only in the rivers of West Africa, notably the Niger and the Volta. No exact localities could be established for this material, but Alfred Weidholz was known to have travelled in West Africa, and this region is the most likely origin of this material.

**Potamonautes walderi (COLOSI, 1924)**

*Potamon walderi* CAPART, 1954: figs 16, 35.

*Potamonautes (Tripotamonautes) walderi* BOTT 1955: 264, fig. 32, 33, pl. XIII fig. 2a-d.

Material: **Central Africa - Republic of the Congo**: (Brazzaville) NE de Pointe Noire, Route de Sounda, 5 ♂♂ (CW 29 adult, CW 25 subadult), A. Crosnier coll. 18.VI.1964, NHMW No. 13293; NE de Pointe Noire, region de Sounda, 1 juv. ♂ CW 18.5, A. Crosnier coll. 26.VIII.1964, NHMW No. 13294; (Brazzaville) NE de Pointe Noire, 1 juv. ♂ CW 23, 2 juv. ♂♂ CWs 15.5, 17.5, A. Crosnier coll., NHMW No. 13295; Brazzaville, 2 juv. ♂♂, CWs 20, 25.5, A. Crosnier coll., NHMW No. 13296.

Remarks: The complete synonymy is provided by BOTT (1955). This species is recognised by a distinct gonopod 1 whose terminal segment has a large medial fold, about twice as high as the lateral fold. *Potamonautes walderi* is found in the rivers of the lower Zaire river basin.

**Potamonautes triangulus BOTT, 1959**

*Potamonautes (Platypotamonautes) triangulus* BOTT 1959: 1002-1004, fig. 10a-b; MONOD 1977: 1212-1213, fig. 83-85; MONOD 1980: 382-383, pl. VI, fig. 35.

Material: **West Africa - Ghana**: Ashante, 1 adult ♂, 1 juv. ♂, E. Reitter coll. [1885.V.1], NHMW No. 13297.
Remarks: *Potamonautes triangulus* is recognised by a distinct triangular flap on the terminal segment of gonopod 1. This rare species is known only from the rivers of Ghana.

**Potamonautes berardi** *(Audouin, 1826)*


*Potamonautes (Rotundopotamonautes) berardi berardi* BOTT 1955: 288-289, fig. 53a-b, pl. XXIII fig. 1a-d; MONOD 1980: 382-383, pl. V, fig. 28.

**Material:** North Africa - Egypt: Assuan, 2 juv. ♀♀ CWs 15, 16, 2 juv. ♀♀ CWs 12.5, 15, Th. Kotschy coll., NHMW No. 13298; Assuan, 2 sub-adult ♀♀ CWs 15, 17, Th. Kotschy coll., NHMW No. 13299; Suez, 2 sub-adult ♀♀ CWs 18.4, 22.6, 1 juv.♂ CW 18, coll. Konsul Mayer, 5.1.1905, NHMW No. 13300; Nile, 1 adult ♂ CW 24.3, 1 sub-adult ♂ CW 21, 1 sub-adult ♀ CW 20, don. Zool. Inst. Uni Wien [1929.XXI], NHMW No. 13301; Assuan, 4 juv. ♀♀ CWs 12 - 17, 1 juv. ♂ CW 14.6, Th. Kotschy coll., NHMW No. 13221; 10 adults, Th. Heuglin coll. [1856.II], NHMW No. 13375; 2 adult ♀♀, 1 adult ♀ (ovigerous), Th. Heuglin coll. [1856.II], NHMW No. 13376.

Remarks: The complete synonymy is provided by BOTT (1955). *Potamonautes berardi* can be recognised by a deep and complete sulcus between sternites 2 and 3, by a faint almost absent postfrontal crest, by the lack of an epibranchial tooth, and by the lack of a vertical sulcus on the ischium of the third maxilliped. This is a small species found in the river Nile which reaches maturity at CW 23.

**Potamonautes niloticus** *(H. Milne Edwards, 1837)*

*Potamon niloticus* CAPART 1954: 841; figs 35, 16.

*Potamonautes (Acanthothelphusa) niloticus* BOTT 1955: 260, pl. XIII fig. 1a-c, fig. 30a-b; PRETZMANN 1962: 305-306; MONOD 1980: 382-383, pl. IV, fig. 22.

**Material:** North Africa - Egypt: Assuan, 7 specimens, NHMW No. 13383; Cairo, Nilufier, 1 adult ♀ CW 42.5, H. Sattmann coll. 6.VIII.1982 (1990.XIII.2), NHMW No. 13341; 1 juv. ♂ CW 14, Kotschy coll., NHMW No. 13222; Assuan, 1 adult ♀, NHMW No. 13303; Insel Sehayl an den 1. Nilcataracten, 2 juv. ♀♂, Wedl coll., NHMW No. 13304; Insel Sehayl an den 1. Nilcataracten, 2 juv. ♀♂ CWs 16.8, 14.6, Wedl coll. NHMW No. 13306; Assuan, 2 juv. ♀♂ CWs 16, 14, 1 juv. ♀ NHMW No. 13307; Assuan, 1 adult ♀, NHMW No. 13355; Cairo, 6 juv., CWs 9.0 - 19.5, Wedl coll. NHMW No. 13336; Assuan, 1 adult ♂ (dried), NHMW No. 13382. - Sudan: Wadi Halfa, 1 sub-adult ♀, Lesona coll. 1899 [1900.VI.2], don. Mus. Turin, NHMW No. 13337; Sennar, Blue Nile, 1 adult ♀, CW 40, 3 sub adult ♀♀, CWs 33 - 34, F. Werner coll. February 1914 [III.1915], NHMW No. 1876; 6 km S Wadi Halfa, kleine Lacke am Ostufer des Nil, 1 adult ♀ CW 39.5, J. Eiselt coll. 8.II.1962, NHMW No. 3240.

East Africa: Lake Victoria, 1 sub-adult ♀ CW 39, Rolle coll. March 1907 [1936.XXI], NHMW No. 13339; wahrscheinlich Viktoria Nianzza, 3 adult ♀♀ CWs 46, 48, 61, 1 sub-adult ♀ CW 35, Rolle coll. 28.III.1907 (1920.XXV), NHMW No. 13340.

Remarks: The complete synonymy is provided by BOTT (1955). This species is easily recognised by the series of sharp spines on the anterolateral margins of the carapace. *Potamonautes niloticus* is found throughout the entire length of the Nile, from Cairo to Lake Victoria and its tributaries.

**Potamonautes perlatus** *(H. Milne Edwards, 1837)*

*Potamon perlatus* CAPART 1954: 842, figs 38, 18.

*Potamonautes (Potamonautes) perlatus perlatus* BOTT 1955: 254, pl. XI, fig. 2a-c, 3, fig. 26.

**Material:** Southern Africa - South Africa: Cape of Good Hope, 1 ♀, G. v. Frauenfeld coll., "Novara", [1866.I.61], NHMW No. 1448; vermutlich nicht Madras, 3 ♀♀ (1 subadult, 2 juv.), 2 juv. ♂ (syntypes of

Remarks: The complete synonymy is provided by Bott (1955). NHMW Nos. 13342, 13379, 13380 are syntypes of Thelphusa corrugata Heller, 1865; this name is a junior synonym of Potamonautes perlatus. The label gives the collection locality of T. corrugata as Madras, but this must be an error: this species is only found in southern Africa.

Potamonautes bayonianus (CAPELLO, 1864)

Potamonautes (Potamonautes) bayonianus bayonianus Bott 1955: 251-252, pl. X, fig. 2a-d, fig. 28.


Remarks: This is a large species distributed over a wide area of southern Africa from Zimbabwe to Namibia to South Africa.

Potamonautes obesus (A. MILNE-EDWARDS, 1868)

Potamonautes (Rotundapotamonautes) obesus obesus Bott 1955: 257, pl. XXII fig. 2a-d, fig. 19, 80; Pretzmann 1977: 238, figs 7-12.


Remarks: The carapace and gonopod 1 of the adult male specimen from Baidoa (NHMW No. 4374) were described and photographed in Pretzmann (1977) who provided the exact coordinates for all of the geographical localities. Bott (1955) considered Potamonautes obesus to be a synonym of Potamon (Potamonautes) bottegoi De Man, 1898; this view is not accepted here. Potamonautes obesus is indeed close to Potamon (Potamonautes) bottegoi De Man, 1898, but the two species can be recognised by a number of differences. The sidewalls of P. obesus are completely smooth and are divided into 2 parts by the epimeral sulcus, while those of P. bottegoi are heavily granular and are divided into 4 parts by two vertical sulci; the subterminal segment of gonopod 1 of P. obesus is broader than that of P. bottegoi, and the sternum of P. obesus lacks all 4 episternal sulci (from 4 through to 7), which are all present in P. bottegoi.

Potamonautes johnstoni (MIERS, 1885)

Potamonautes (Lirrangapotamonautes) johnstoni johnstoni Bott 1955: 265-266, figs 36a,b, pl. XV, fig. 2a-d.
Material: 


Remarks: 

Bon (1955) synonymized this species with 7 published taxa. However, examination of the type material of some (but not all) of the synonymized taxa here raises doubts about the validity of Bott's (1955) synonymy which is not accepted. The specimens in the NHMW correspond well to Miers' (1885) male type specimen of *Thelphusa depressa* var. *johnstoni* from Kilimanjaro (Tanzania) held in the NHM. The specimens in the NMHW from Tanzania and Zaire are not similar to the male type of *Potamon (Potamonautes) johnstoni* from Ruwenzori, Uganda (NHM # 1906.6.11.6-7). *Potamonautes johnstoni* can be recognised by the following characters: the suborbital margins and the anterolateral margins of the carapace have small low teeth, the epibranchial tooth is small but distinct, the exorbital angle tooth is pointed, the vertical sulcus on the side-walls in the subhepatic region is distinct and granular, episternal sulci 4-7 are all clearly marked, there is a distinct vertical sulcus on the ischium of the third maxilliped, and there is no raised longitudinal crest running along the centre of the terminal segment of gonopod 1.

*Potamonautes emini* (HILGENDORF, 1892)

*Potamon emini* CAPART 1954: 832, figs 19, 32.

*Potamonautes (Rotundopotamonautes) emini emini* Bott 1955: 290-291, pl. XXIV fig. 1a-d, fig. 54.

Material: "Africa": Eldana Ravine, 1 juv. ♀ CW 17, pleopods small, abdomen slim like a male, very young specimen, Golsch coll. 1906 [1907.1], NHMW No. 13355.

Remarks: The lectotype of *Telphusa emini* is a male (ZMB #8406) from the bay of Bukoba, on the west coast of Lake Victoria in western Tanzania, East Africa. Bott (1955) synonymized *P. emini* with *Potamon mutandensis* CHACE, 1953 from lake Mutanda, Uganda. However, comparison of the type of *P. mutandensis* with illustrations of the carapace and gonopod 1 of *P. emini* in Bott (1955) and Capart (1954) raises doubts about the validity of Bott's (1955) synonymy, which is not accepted here. *Potamonautes emini* can be recognised by the lack of sternal sulcus 2 between sternites 2 and 3, a weak, faint postfrontal crest, a faint vertical sulcus on the ischium of the third maxilliped, and the lack of an epibranchial tooth on the anterolateral margin of the carapace. This species matures between CW 30 and CW 45.

*Potamonautes bottegoi* (DE MAN, 1898)


Remarks: The carapace and gonopod 1 of the adult male specimen from Afmedu (NHMW No. 4368) were described and photographed in Pretzmann (1977 figs 1-6),
who provided the exact coordinates for all of the geographical localities. The juvenile male specimen from Macequece Mozambique (NHMW No. 4375) is included here as *P. bottegoi*; this specimen was considered by Pretzmann (1977 figs 13-16) to be a possible undescribed subspecies of *P. obesus*.

*Potamonautes bottegoi* is close to *P. obesus*. Bott (1955) treated *P. bottegoi* as a junior synonym of *Potamonautes (Rotundopotamonautes) obesus obesus*. The two taxa share the following characters: the dorsal surface of the carapace is smooth and highly vaulted, and the major cheliped of adult males is longer than the carapace width. However, *P. bottegoi* is treated here as a valid species on the basis of the following differences with *P. obesus*: the sidewalls of *P. bottegoi* are divided into four parts by two additional granulated raised lines in the subhepatic and pterygostomial regions, and the sidewalls are heavily granulated, not smooth as in *P. obesus*. Moreover, the episternal sulci 4-7 (between sternites 4-7 and episternites 4-7) are all deep and distinct (these same sulci are absent in *P. obesus*), and the first gonopods of the two taxa (shown in Pretzmann 1977) are by no means identical.

*Potamonautes neumanni* (Hilgendorf, 1898)

*Potamon neumanni* Capart 1954: 839, figs 30, 33.

*Potamonautes* (Platypotamonautes) *neumanni* Bott 1955: 238-239, pl. V, fig. 2a-d, fig. 14, 69.


Remarks: The lectotype of *Telphusa neumanni* is a male (ZMB #11386) from Ngare Longai, Masailand 36°W 1.5°S, East Africa. Bott (1955) synonymized this species with *Potamon jeanneli* Bouvier, 1921. However, comparison of *P. jeanneli* with the lectotype of *P. neumanni* raises doubts about the validity of Bott’s (1955) synonymy, which is not accepted here. *Potamonautes neumanni* can be recognised as follows. There is no visible episternal sulcus between sternite 4 and episternite 4, and the ischium of the third maxilliped lacks a vertical sulcus. The medial and lateral folds on the terminal segment of gonopod 1 are of equal size and there is a large rounded shoulder on the medial margin of the subterminal segment close to the junction between the segments. *Potamonautes neumanni* from East Africa is a small species, reaching maturity at CW 24.

*Potamonautes pilosus* (Hilgendorf, 1898)

*Potamon pilosus* (Hilgendorf, 1898)

*Potamonautes (Platypotamonautes) pilosus* Bott 1955: 237-238, figs 16, 68, pl. V, fig. 1a-d.


Remarks: The lectotype of *Telphusa pilosa* is a male from Manuagu, East Africa (ZMB #13387), which was figured by Bott (1955). Bott (1955) synonymized *P. pilosus* with *Potamon (Potamonautes) odhneri* Colosi, 1924. However, comparison of a female syntype of *Potamon (Potamonautes) odhneri* from near Meru, Kenya (Museum Stockholm #11852) with the type of *P. pilosus* raises doubts about the validity of Bott’s (1955) synonymy, which is not accepted here. The largest male in the NHMW material has
distinct fields of short dense hairs on the sidewalls, but these hairs are lacking in other specimens in the same lot. Episternal sulci 4-7 are all faint, and the medial fold on the terminal segment of gonopod 1 is wider and higher than the lateral fold. The postfrontal crest is incomplete: the epigastric crests do not meet the postorbital crests, and these crests do not meet the anterolateral margins.

**Potamonautes aloysiisabaudiae (NOBILI, 1906)**

*Potamon (Potamonautes) johnstoni* CALMAN. 1909: 51-56, Abb. 9, 10, 12 [non Johnsoni MIERS].

*Potamonautes (Lobopotamonautes) aloysiisabaudiae* BOTT 1955: 281-283, Taf. XVIII, Fig. 2a, 3a, Taf. XX, Fig. 2a-d, Fig. 1, 2, Abb. 48, 50, 87, 88, 89.


Remarks: BOTT (1955) synonymized this species with a number of published taxa. However, comparisons between the type material of some (but not all) of BOTT's (1955) synonymized taxa raises doubts about the validity of BOTT's (1955) conclusions, which are not accepted here. The specimens in the NHMW correspond well with *Potamon (Potamonautes) johnstoni* from Ruwenzori which was described and illustrated by CALMAN (1909). The specimen of *P. aloysiisabaudiae* from Ruwenzori used by NOBILI (1906) to describe the species is apparently lost, and NOBILI's (1906) original description was brief; CALMAN's (1909) specimens from Ruwenzori are therefore used here as examples of the species. *Potamonautes aloysiisabaudiae* can be recognised by the following characters: the suborbital margins and the anterolateral margins of the carapace are completely smooth, the epibranchial tooth is low or absent, the exorbital angle is low, the vertical sulcus on the sidewalls in the subhepatic region is faint, the 4th episternal sulcus is missing, there is no vertical sulcus on the ischium of the third maxilliped, and there is a small raised longitudinal crest running along the centre of the terminal segment of gonopod 1.

**Potamonautes loveni (COLOSI, 1924)**

*Potamon (Potamonautes) loveni* COLOSI, 1924: 13-15, Fig. 9, Taf. 1 (4).

*Potamonautes (Rotundopotamonautes) granviki* COLOSI. 1924: 16-19, Fig. 11, Taf. 1 (5).

*Potamonautes (Rotundopotamonautes) granviki* BOTT 1955: 286-288, Taf. XII, Fig. 2a-d, Abb. 52, 90.

Material: East Africa - Uganda: Buhngu (Mount Elgon), 1 adult ♂, 1 adult ♀, R. Kmunke coll. 1912, NHMW No. 13387.

Remarks: BOTT (1955) synonymized this species with 6 published taxa. However, comparison here of the NHMW specimens with the type material of some of the synonymized taxa raises doubts about the validity of all of BOTT's (1955) synonymy, which is not accepted here. It is likely that *Potamon (Potamonautes) granviki* and *Potamon (Potamonautes) loveni* are synonyms. This opinion agrees with that of WILLIAMS (1991), who provides detailed arguments for the recognition of this taxon as *P. loveni.*
Genus *Platythelphusa* A. MILNE-EDWARDS, 1887


Remarks: *Platythelphusa* is treated here as a valid genus, and subgenus and subspecies categories are not recognised. There are at least 7 species of *Platythelphusa* in Lake Tanganyika; two of these are represented in the collection of the NHMW.

*Platythelphusa armata* A. MILNE-EDWARDS, 1887

*Potamonautes* (*Platythelphusa*) armata armata BOTT 1955: 226-227, pl. II, fig. 1a-d, fig. 9a-b.

Material: **Central Africa - Zaire**: Lake Tanganyika, NW-Ufer, 1 adult ♂, 1 adult ♀, Grauer coll. 28.II.1910, NHMW No. 13363; NW-Ufer, 1 adult ♂, 1 adult ♀, Grauer coll. 28.II.1910, NHMW No. 13364.

Remarks: BOTT (1955) synonymized *P. armata* with *Limnothelphusa maculata* CUNNINGTON, 1899. However, comparison of the type of *P. armata* with Cunnington’s male type of *L. maculata* indicates that these two taxa are each valid species.

*Platythelphusa conculata* CUNNINGTON, 1907

*Potamonautes* (*Platythelphusa*) armata conculata BOTT. 1955: 228-229, fig. 10a-b, pl. II, fig. 2a-d.


Remarks: BOTT (1955) considered *P. conculata* to be a subspecies of *P. armata*. *Platythelphusa conculata* is recognised here as a valid species following comparison of the type material of *P. armata* and *P. conculata*.

Genus *Hydrothelphusa* A. MILNE-EDWARDS, 1872

Remarks: The complete synonymy is provided by BOTT (1965). BOTT (1965) included 2 species in this genus, *H. agilis* and *H. humhloti*, both of which are represented in the collection of the NHMW.

*Hydrothelphusa agilis* (A. MILNE-EDWARDS, 1872)

*Hydrothelphusa agilis agilis* BOTT, 1965: 340-341, fig 4, pl. 2 fig. 8, 9, pl. 4, fig. 18.

Remarks: **Bott** (1965) recognised 2 subspecies, *H. a. agilis* and *H. a. madagascariensis*; each of these taxa is considered here to be a valid species.

*Hydrothelphusa madagascariensis* (**A. Milne-Edwards, 1872**)


Remarks: *Hydrothelphusa madagascariensis* is treated here as a valid species due to a number of differences between *H. agilis* and *H. madagascariensis*. NHMW 2731 is the type of *Bottia madagascariensis reticulata* **Pretzmann**, 1961 which was reassigned to *Hydrothelphusa agilis madagascariensis* (**A. Milne-Edwards, 1872**) by **Bott** (1965).

*Hydrothelphusa humbloti* (**Rathbun, 1904**)

Material: **Madagascar**: Antsampandrano Bach, Ankaratragebirge, 2000 m, 1 ♂ CW 25, CL 18, Starmühlner coll. 25.VII.1958, (Österreichische Madagaskar Expedition FM95), NHMW No. 2730.

Remarks: The complete synonymy is provided by **Bott** (1965). Photographs of the carapace, together with illustrations of gonopod 1 and the mandibular palp of *H. humbloti* are given in **Bott** (1965 figs 5, 6, pl. 3 figs 12, 13).

**Genus Gecarcinautes** **Bott**, 1960

*Gecarcinautes goudoti* (**A. Milne-Edwards, 1872**)

*Gecarcinautes goudoti* **Bott** 1965: 338-339, pl. 2 fig. 6, 7.


Remarks: The complete synonymy is provided by **Bott** (1965). *Gecarcinautes goudoti* is recognised as a valid species on the basis of characters of the carapace and gonopod 1. **Bott** (1965) referred *G. goudoti* to the subfamily Gecarcinucinae in the family Potamonidae. **Bott** (1969, 1970b) later included the African and Indian species of Gecarcinucinae in the family Gecarcinucidae, but made no mention of the Madagascan fauna. Comparison of the mandibular palp of *G. goudoti* with that of *Hydrothelphusa agilis* and *H. madagascariensis* indicates a close correspondence between all three taxa, and does not appear to warrant the assignment of *G. goudoti* to a different genus, subfamily, and family. A definitive judgement, however, awaits a detailed study of the entire Madagascan freshwater crab fauna.
Acknowledgements

I am grateful to Drs. P. Dworschak, H. Satimann, V. Stagl, and J. Gruber, and all of the staff of the 3. Zoologische Abteilung of the NHMW for their help and support while working at the museum. I especially thank Dr. Dworschak for his kind hospitality and helpfulness, and Dr. Dworschak, Dr. Stagl and Paul Clark (NHM) for their critical reading of the manuscript.

References


CUMBERLIDGE, N. & SACHS, R. 1989a: A key to the crabs of Liberian freshwaters. – Zeitschrift für Angewandte Zoologie 76: 221-229.


MACLEAY, W. S. 1838: Brachyurous Decapod Crustacea. – In: A. SMITH (ed.): Illustrations of the Zoology of South Africa; Consisting Chiefly of Figures and Descriptions of the Objects of Natural History Collected During an Expedition into the Interior of South Africa, in the Years 1834, 1835, and 1836; Fitted Out by "The Cape of Good Hope Association for Exploring Central Africa,". (Invertebrates). 75 pp., London.


CUMBERLIDGE: The African and Madagascan freshwater crabs in the NHMW


