



A check-list of the pentastomid parasites of crocodilians and freshwater chelonians

K. JUNKER and J. BOOMKER*

Department of Veterinary Tropical Diseases, University of Pretoria
Private Bag X04, Onderstepoort, 0110 South Africa

ABSTRACT

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Based on published records and own data a summary is given of the geographical distribution of the currently known species of pentastomid parasites infecting crocodiles and alligators, as well as freshwater chelonians. A brief generic diagnosis is provided for each genus.

Fourteen out of the currently 23 living crocodilian species have been recorded as being host to one or more pentastomes. Out of the 32 pentastome species six are considered *species inquirendae*. Presently, six genera of crocodilian pentastomes, *Agema*, *Alofia*, *Leiperia*, *Sebekia*, *Selfia* and *Subtriquetra* are recognized. African crocodiles harbour eight pentastome species, six of which have been recorded from the Nile crocodile, *Crocodylus niloticus*. Three species belong to the genus *Sebekia*, *Alofia* being represented by two and *Leiperia* by only one species. Two species, *Alofia parva* and *Agema silvae-palustris*, occur in the dwarf crocodile, *Osteolaemus tetraspis*, and the slender-snouted crocodile, *Crocodylus cataphractus*, exclusively, but a single *Sebekia* species is shared with the Nile crocodile. The genus *Agema* is endemic to the African region. Infective stages of the pentastome *Subtriquetra rileyi*, thought to utilize Nile crocodiles as final hosts, have been recovered only from fishes. The largest number of pentastome species is found in the Australasian region. Of these, the Indo-Pacific crocodile, *Crocodylus porosus*, harbours seven, representing the genera *Alofia*, *Sebekia*, *Leiperia* and *Selfia*. *Selfia* is exclusive to the latter host. The genus *Subtriquetra* has been reported from “Indian crocodiles”, a term possibly referring to either *Crocodylus palustris*, *Crocodylus porosus* or *Gavialis gangeticus*. Ten species of pentastomes parasitizing the crocodilian genera *Alligator*, *Caiman*, *Crocodylus* and *Melanosuchus* have been recorded from the Neotropical region including the southern states of the North American continent. The two most wide-spread pentastome genera, *Alofia* and *Sebekia*, have been recorded together with representatives of the genus *Subtriquetra* and immature and larval forms of *Leiperia*.

To date the two monospecific genera, *Pelonia*, from two terrapin species, *Pelusios sinuatus* and *Pelomedusa subrufa*, in South Africa, and *Diesingia* from *Hydraspis geoffroyana* and *Hydromedusa tectifera* in South America, are the only chelonian pentastomes recovered world-wide. A possible exception is the crocodilian pentastome *Sebekia mississippiensis* which can reach maturity in experimentally infected terrapins.

Keywords: *Agema*, *Alligator*, *Alofia*, *Caiman*, *Crocodylus*, *Diesingia*, *Gavialis*, *Hydraspis*, *Hydromedusa*, *Leiperia*, *Melanosuchus*, *Pelomedusa*, *Pelonia*, Pentastomida, *Phrynops*, *Sebekia*, *Selfia*, *Subtriquetra*, terrapins

* Author to whom correspondence is to be directed. E-mail: jboomker@op.up.ac.za

INTRODUCTION

The pentastomid parasites of chelonians and crocodylians are currently divided into the family Sebekidae and Subtriquetridae. The former comprises seven genera, namely, *Agema*, *Alofia*, *Selfia*, *Sebekia*, *Leiperia*, *Diesingia* and *Pelonia*. While the first four genera inhabit the lungs and bronchioles of the crocodylian host, *Leiperia* occurs in the trachea and bronchi (Riley, Spratt & Winch 1990; Riley 1994; Riley & Huchzermeyer 1996; Riley, Hill & Huchzermeyer 1997). *Diesingia* and *Pelonia* parasitize the lungs of chelonian final hosts (Junker & Boomker 2002; Junker, Riley & Boomker 2003).

A single member of *Sebekia*, *Sebekia mississippiensis*, might be able to reach maturity in chelonians, too, but as yet no mature specimens have been collected from naturally infected hosts (Dukes, Shealy & Rogers 1971). Members of the monogeneric family Subtriquetridae inhabit the nasopharynx of their crocodylian final hosts, but *Subtriquetra rileyi*, of which currently only infective larvae have been recovered, needs verification (Winch & Riley 1986a; Junker, Boomker & Booyse 1998).

During the past 10 years renewed progress has been made as regards the taxonomy of crocodylian pentastomes. The older genera, *Alofia*, *Sebekia* and *Leiperia*, have been revised, and examination of new material has led to the description of several new genera and species (Riley 1994; Riley *et al.* 1990, 1997; Riley & Huchzermeyer 1996; Junker *et al.* 1998). However, there is a dearth of data concerning the chelonian pentastomids.

In order to provide a quick reference tool, this check-list consists of two parts, following the example of Sambon (1922). The first part lists the parasites under their scientific names, their synonyms and their authorities. A short generic diagnosis precedes each genus and the parasites are grouped according to the geographic distribution of their respective hosts. The list starts with Africa, followed by Australasia. South and North America are listed last.

The second part of the check-list alphabetically lists the hosts and their synonyms, and, also in alphabetical order, their respective parasites. The nomenclature and synonyms of the crocodylian and chelonian hosts are according to Getz (2002).

Only references dealing with mature pentastomes are included in the check-list, but for completeness' sake the intermediate hosts of pentastome species of which only larval forms are known are listed.

PARASITE/HOST CHECK-LIST OF THE PENTASTOMIDA

FAMILY SEBEKIDAE SAMBON, 1922

Genus *Agema* Riley, Hill & Huchzermeyer, 1997

GENERIC DIAGNOSIS: Overall shape typical of smaller members of the Sebekidae; males claviform, females with more uniform diameter and conical posterior terminating in a small blunt point; adult hooks smooth; blades smoothly curved without abrupt right-angled bend near to base; blade on anterior hook pair larger than that of posterior pair; fulcrum without cowl; mouth ovoid and sides of cadre united anteriorly and posteriorly by segments of chitin which appear as two crescents; copulatory spicules delicate and elongate; basal section without a hooked collar (Riley *et al.* 1997).

AFRICA

1. *Agema silvaepalustris* Riley, Hill & Huchzermeyer, 1997

Crocodylus cataphractus

Riley, Hill & Huchzermeyer (1997), Republic of the Congo

Osteolaemus tetraspis

Riley, Hill & Huchzermeyer (1997), Republic of the Congo

Genus *Alofia* Giglioli, 1922

GENERIC DIAGNOSIS: Size small; body banana-shaped; hooks large with long, narrow, slightly curved blade and a slender base; absence of chitinous formation at the base of the anterior hook; chitinous buccal cadre large and U-shaped; intestine as in *Sebekia*; found in crocodiles (Fain 1961 in Riley 1994); caudal extremity of female bluntly rounded, often swollen into a bulb (Riley 1994); hooks usually smooth (rarely with patches of minute spines [see *Alofia nilotici* and *Alofia parva* (Riley & Huchzermeyer 1995a, b)], blades finely canaliculated, bent through almost a right angle at the base; peg-like extension of oral cadre projects into oesophagus; copulatory spicules with double-hooked collar on the shorter of the two anterior extensions (Riley & Huchzermeyer 1995a, b; Junker, Boomker & Bolton 1999).

AFRICA

1. *Alofia nilotici* Riley & Huchzermeyer, 1995

Crocodylus niloticus

- Riley & Huchzermeyer (1995a), Botswana
Junker, Boomker & Bolton (1999), South Africa
2. *Alofia parva* Riley & Huchzermeyer, 1995
Crocodylus cataphractus
Riley & Huchzermeyer (1995b, 2000), Republic of the Congo
Osteolaemus tetraspis osborni
Riley & Huchzermeyer (1995b, 2000), Republic of the Congo
3. *Alofia simpsoni* Riley, 1994
Unknown crocodilian
Riley (1994), Ghana
Crocodylus niloticus
Riley & Huchzermeyer (1995a), Botswana
Junker, Boomker & Bolton (1999), South Africa
- AUSTRALASIAN REGION
4. *Alofia ginae* Giglioli, 1922
Unknown crocodilian
Sambon (1922), Samoa
Most probably *Crocodylus porosus*, as it is the only crocodilian whose range extends as far as Fiji in the Pacific Ocean and it is known to have colonized many small islands as far as nearly 1 000 km from land (Ross 1989).
Crocodylus porosus (?)
Riley (1994), Philippines
The collector did not specify the host, but Riley (1994) concludes it to be *C. porosus*, as the only other Philippinian crocodile, *Crocodylus mindorensis*, does not occur in the region from which the parasites were recovered.
5. *Alofia merki* Giglioli, 1922
Sebekia merki Heymons, 1941
Unknown crocodilian
Sambon (1922), Samoa
Most probably *Crocodylus porosus*, as it is the only crocodilian whose range extends as far as Fiji in the Pacific Ocean and it is known to have colonized many small islands as far as nearly 1 000 km from land (Ross 1989).
- Crocodylus porosus*
Riley (1994), Northern Territory, Australia
Riley (1994), Philippines
6. *Alofia indica* (Von Linstow, 1906) Hett, 1924, *species inquirenda*
Gavialis gangeticus
Hett (1924), India
- SOUTH & NORTH AMERICAN REGION
7. *Alofia platycephala* (Lohrmann, 1889) Giglioli, 1922
Pentastomum platycephalum Lohrmann, 1889;
Porocephalus platycephalus Shipley, 1898; *Reighardia platycephala* Sambon, 1910
Unknown crocodilian
Lohrmann (1889), South America
Caiman crocodilus
Self & Rego (1985), Brazil
Caiman latirostris
Heymons (1941), Paraguay
- Comment: Hirst (1922) described *Alofia adriatica* (Hirst, 1922) Giglioli, 1922 from an unknown host from the Adriatic. As crocodilians do not occur in the Adriatic this species will have to remain *species inquirenda* until further material becomes available.
- Genus *Leiperia* Sambon, 1922**
- GENERIC DIAGNOSIS: Female with spirally coiled abdomen; broad bands of chloride cells; hooks smooth, flat-topped with sharply curved blade; oral cadre V-shaped with large anterior flanges, numerous pores around the pharynx; copulatory spicules heavily chitinized with complex internal supporting structures, shorter of the two anterior extensions forms a smooth collar (double in *L. australiensis*) around the longer spatulate extension; cirrus tip modified into a flattened trumpet of longitudinally-striated chitin (Riley & Huchzermeyer 1996; Junker, Boomker, Swanepoel & Taraschewski 2000).
- AFRICA
1. *Leiperia cincinnalis* (Vaney & Sambon, 1910) Sambon, 1922
Reighardia cincinnalis Vaney & Sambon, 1910;

Porocephalus nematoides De Beauchamp, 1918

Crocodylus cataphractus

Fain (1961), Central Africa: infective larva

Crocodylus niloticus

Vaney & Sambon (1910), Uganda

Sambon (1922), Zimbabwe

Rodhain & Vuylsteke (1932), Democratic Republic of the Congo

Junker, Boomker, Swanepoel & Taraschewski (2000), South Africa

nipple-like from the abdomen, ventral surface continuous with that of the abdomen; mouth subterminal and shaped like an inverted 'U'; oral cadre oval to elongate, highly variable in shape, without long, parallel sides and generally united anteriorly; hooks small, equal or subequal, claw-shaped, with convex or flat dorsal surface; all hooks spiny (rarely only the anterior pair); all fulcra often with spinous anterior extension (rarely only the anterior pair); hook barb curved, strongly united and continuous with shank; spicules generally obpyriform, with one or two fine sclerotized rods supporting membranous region distally. Parasites of the lungs of crocodylians, rarely of chelonians (Riley *et al.* 1990).

AUSTRALASIAN REGION

2. *Leiperia australiensis* Riley & Huchzermeyer, 1996

Crocodylus johnsoni

Riley & Huchzermeyer (1996), Northern Territory, Australia

Crocodylus porosus

Riley & Huchzermeyer (1996), Northern Territory, Australia

SOUTH & NORTH AMERICAN REGION

3. *Leiperia gracilis* Diesing, 1936, *species inquirenda*

Pentastoma gracile Diesing, 1836 (*partim*); *Pentastomum gracile* Leidy, 1856; *Pentastoma gracilis* Parona, 1891; *Porocephalus gracilis* Shipley, 1898; *Porocephalus crocodili* Wheeler, 1915 (*partim*); *Leiperia neotropica* Heymons & Vitzthum, 1935

Immature and larval forms were recovered from the following hosts, but adults have not been collected.

Alligator mississippiensis

Leidy (1856, in Sambon 1922), locality unknown, North America

Crocodylus acutus

Heymons (1935), South America

Caiman crocodilus

Heymons (1935), Brazil

Genus *Sebekia* Sambon, 1922

GENERIC DIAGNOSIS: Body short and squat with 58–94 compressed annuli; lateral lines conspicuous; cephalothorax small, wedge-shaped and projecting

AFRICA

1. *Sebekia cesarisi* Giglioli, 1922

Crocodylus sp.

Sambon (1922), Africa

Crocodylus niloticus

Riley & Huchzermeyer (1995a), Botswana

Junker, Boomker & Bolton (1999), South Africa

2. *Sebekia okavangoensis* Riley & Huchzermeyer, 1995

Sebekia cesarisi Riley, Spratt & Winch, 1990

Crocodylus cataphractus

Riley & Huchzermeyer (2000), Republic of the Congo

Crocodylus niloticus

Riley & Huchzermeyer (1995a), Botswana

Junker, Boomker & Bolton (1999), South Africa

Osteolaemus tetraspis

Riley & Huchzermeyer (2000), Republic of the Congo

3. *Sebekia wedli* Giglioli, 1922

Pentastoma oxycephalum var. *minor* Wedli, 1861; *Sebekia oxycephala* Self & Rego, 1985

Crocodylus niloticus

Devos (1939), Democratic Republic of the Congo

Riley, Spratt & Winch (1990), Uganda

Riley & Huchzermeyer (1995a), Botswana

Junker, Boomker & Bolton (1999), South Africa

AUSTRALASIAN REGION

4. *Sebekia johnstoni* Riley, Spratt & Winch, 1990
Crocodylus johnsoni
 Riley, Spratt & Winch (1990), Northern Territory, Australia
Crocodylus porosus
 Riley, Spratt & Winch (1990), Northern Territory, Australia
5. *Sebekia multiannulata* Riley, Spratt & Winch, 1990
Crocodylus johnsoni
 Riley, Spratt & Winch (1990), Northern Territory, Australia
Crocodylus porosus
 Riley, Spratt & Winch (1990), Northern Territory, Australia
6. *Sebekia purdieae* Riley, Spratt & Winch, 1990
Crocodylus porosus
 Riley, Spratt & Winch (1990), Northern Territory, Australia
7. *Sebekia jubini* (Vaney & Sambon, 1910) Sambon, 1922, *species inquirenda*
Porocephalus jubini Vaney & Sambon, 1910
Crocodylus siamensis
 Sambon (1922), locality unknown, south-east Asia
8. *Sebekia novaeguineae* Riley, Spratt & Winch, 1990
Crocodylus novaeguineae
 Riley, Spratt & Winch (1990), Papua New Guinea

SOUTH & NORTH AMERICAN REGION

9. *Sebekia acuminata* Travassos, 1924, *species inquirenda*
 Unknown crocodilian
 Travassos (1924), Brazil
10. *Sebekia divestei* Giglioli, 1922
Crocodylus acutus
 Sambon (1922), locality unknown, Neotropical region
11. *Sebekia microhamus* Self & Rego, 1985

Caiman crocodilus

- Self & Rego (1985), Brazil
12. *Sebekia mississippiensis* Overstreet, Self & Vliet, 1985
Pentastoma oxycephalum Diesing, 1836 (*partim*); *Pentastomum gracile* (syn. *Leiperia gracilis*) Leidy, 1856
Alligator mississippiensis
 Deakins (1971), USA
 Hazen, Aho, Murphy, Esch & Schmidt (1978), USA
 Overstreet, Self & Vliet (1985), USA
13. *Sebekia oxycephala* (Diesing, 1836) Sambon, 1922
Pentastoma proboscideum Rudolphi, 1819 (*partim*); *Pentastoma oxycephalum* Diesing, 1836 (*partim*); *Pentastoma gracile* Diesing, 1836 (*partim*); *Pentastomum oxycephalum* Diesing, 1850 (*partim*); *Pentastomum gracile* Diesing, 1850 (*partim*); *Pentastomum heterodontis* Leuckart, 1860; *Pentastomum oxycephalum* Chatin, 1882; *Porocephalus oxycephalus* Stiles, 1893; *Pentastoma proboscideum crocodili scleropis* Rudolphi (Shiple in Sambon 1922); *Reighardia oxycephala* Vaney & Sambon, 1910; *Porocephalus crocodili* Wheeler, 1913 (*partim*); *Sebekia oxycephala* Sambon, 1922 (*partim*); *Bdukus ichthyus* Holl, 1929; *Leiperia heterodontis* Heymons & Vitzthum, 1935; *Sebekia crocodili* Heymons & Vitzthum, 1935
Alligator mississippiensis
 Sambon (1922), locality unknown
Caiman crocodilus
 Sambon (1922), locality unknown
 Winch & Riley (1986b), Trinidad, South America
Caiman latirostris
 Heymons (1941), locality unknown
Crocodylus acutus
 Sambon (1922), locality unknown
14. *Sebekia samboni* Travassos, 1924, *species inquirenda*
 Unknown crocodilian
 Travassos (1924), Brazil
15. *Sebekia trinitatis* Riley, Spratt & Winch, 1990

Caiman crocodilus

Riley, Spratt & Winch (1990), Trinidad,
South America

Genus *Selfia* Riley, 1994

GENERIC DIAGNOSIS: Size small, cephalothorax minute in comparison with diameter of the abdomen; 78–82 well defined annuli; abdomen strongly curled ventrally; caudal extremity of female abruptly tapered to blunt point; hooks very small, with tiny blade only slightly offset from transversely creased and folded shank; rear of anterior hooks enveloped by soft, spinous cowl which forms an extension of the fulcrum; buccal cadre somewhat variable in shape, being oval to more U-shaped, but lacking parallel sides; copulatory spicule of male like that of *Alofia* (Riley 1994).

AUSTRALASIAN REGION

1. *Selfia porosus* Riley, 1994

Crocodylus porosus

Riley (1994), Northern Territory, Australia

Genus *Diesingia* Sambon, 1922

GENERIC DIAGNOSIS: Hooks smooth, flat-topped, with sharply curved blades; fulcra with anterior cowl-like extension, extension smooth in posterior and spiny in anterior fulcra; oral cadre open anteriorly with an oesophageal peg similar to that in *Alofia*; copulatory spicule with cowry shell-shaped base, the short, ventral extension is transformed into a structure resembling the collembolan fulcrum, and is connected to the base by a joint (Junker, Riley & Boomker 2003).

SOUTH & NORTH AMERICAN REGION

1. *Diesingia megastoma* (Diesing, 1836) Sambon, 1922

Pentastoma megastomum Diesing, 1836; *Pentastomum megastomum* Leuckart, 1860; *Porocephalus megastomus* Shipley, 1898; *Sebekia megastoma* Travassos, 1923; *Sebekia crocodilli* Heymons & Vitzthum, 1935; *Diesingia megastoma* Heymons; 1941; *Butantanella megastoma* Da Fonseca & Ruiz, 1956; *Sebekia megastoma* Self & Rego, 1985

Phrynops Geoffroyanus

Diesing (1836), Brazil

Hydromedusa tectifera

Da Fonseca & Ruiz (1956), Brazil

Genus *Pelonia* Junker & Boomker, 2002

GENERIC DIAGNOSIS: Hooks smooth, dorsally convex, with sharply bent blades, fulcra without extensions; oral cadre more or less U-shaped, closed anteriorly by delicate chitinous fibres; copulatory spicules almost identical to those of *Sebekia wedli*, with cowry shell-shaped base and the short anterior extension ending in a smooth collar, the long spatulate extension carries small chitinous teeth (Junker & Boomker 2002).

AFRICA

1. *Pelonia africana* Junker & Boomker, 2002

Pelomedusa subrufa

Junker & Boomker (2002), South Africa

Pelusios sinuatus

Junker & Boomker (2002), South Africa

FAMILY SUBTRIQUETRIDAE FAIN, 1961

Genus *Subtriquetra* Sambon, 1922

GENERIC DIAGNOSIS: Body elliptical, ventrally flattened and dorsally dome shaped with flattened margins; hooks simple, slender and sharply pointed, disposed in a curved line; oral cadre rounded (Fain 1961; Winch & Riley 1986a; Junker *et al.* 1998).

AFRICA

1. *Subtriquetra rileyi* Junker, Boomker & Booyse, 1998

Infective larvae:

Tilapia rendalli swierstrae

Junker, Boomker & Booyse (1998), South Africa

Oreochromis mossambicus

Junker, Boomker & Booyse (1998), South Africa

AUSTRALASIAN REGION

2. *Subtriquetra megacephala* (Baird, 1853) Sambon, 1922

Pentastoma megacephalum Baird, 1853; *Porocephalus megacephalus* Shipley, 1898

Crocodylus palustris

Sambon (1922), Sunderbunds, India

Crocodylus palustris, *Crocodylus porosus* or

Gavialis gangeticus? ("Sangor crocodile")
Sambon (1922), Bengal, India

3. *Subtriquetra shipleyi* Hett, 1924

Crocodylus palustris *Crocodylus porosus* or
Gavialis gangeticus? ("Indian crocodile")
Hett (1924), India

SOUTH & NORTH AMERICAN REGION

4. *Subtriquetra subtriquetra* (Diesing, 1836)

Pentastoma proboscideum Bresmer, 1824 (*partim*); *Pentastoma subtriquetrum* Diesing, 1836; *Pentastomum subtriquetrum* Diesing, 1850; *Pentastomum pusillum* Diesing, 1856; *Linguatula subtriquetra* Railliet, 1883; *Linguatula pusilla* Shipley, 1898

Caiman crocodilus

Sambon (1922), South America

Winch & Riley (1986a), Trinidad, South America

Melanosuchus niger

Sambon (1922), South America

HOST/PARASITE CHECK-LIST OF THE PENTASTOMIDA

Crocodylia

FAMILY ALLIGATORIDAE (CUVIER, 1807)
(Alligators and caimans)

Genus *Alligator* Cuvier, 1807

1. *Alligator mississippiensis* (Daudin, 1801) Daudin, 1802 (American alligator)

Crocodylus mississippiensis Daudin, 1801

Leiperia gracilis, *species inquirenda*, larval forms only

Sebekia mississippiensis

Sebekia oxycephala

Genus *Caiman* Spix, 1825

1. *Caiman crocodilus* (Linnaeus, 1758) (Common or Spectacled caiman)

Lacerta crocodilus Linnaeus, 1758; *Caiman sclerops* Schneider, 1801 (fide Medem 1981); *Perosuchus fuscus* Cope, 1868; *Alligator (Jacare)*

chiapasius Bocourt, 1876

Alofia platycephala

Leiperia gracilis, *species inquirenda*, larval forms

Sebekia microhamus

Sebekia oxycephala

Sebekia trinitatis

Subtriquetra subtriquetra

2. *Caiman latirostris* (Daudin, 1801) (Broad-snouted caiman)

Crocodylus latirostris Daudin, 1801; *Caiman fissipes* Spix, 1825; *Champsia fissipes* Wagler, 1828 (fide Hoogmoed & Gruber, 1983); *Alligator cynocephalus* Duméril & Bibron, 1836; *Jacare latirostris* Gray, 1862; *Alligator latirostris* Boulanger, 1886; *Jacaretinga latirostris* Vaillant, 1898

Alofia platycephala

Sebekia oxycephala

Genus *Melanosuchus* Gray, 1862

1. *Melanosuchus niger* (Spix, 1825) (Black caiman)

Caiman niger Spix, 1825

Subtriquetra subtriquetra

FAMILY CROCODYLIDAE (CUVIER, 1807)
(Crocodiles)

SUBFAMILY CROCODYLINAЕ (CUVIER, 1807)

Genus *Crocodylus* Laurenti, 1768

1. *Crocodylus acutus* (Cuvier, 1807) (American crocodile)

Crocodylus acutus Cuvier, 1807

Leiperia gracilis, *species inquirenda*, larval forms only

Sebekia divestei

Sebekia oxycephala

2. *Crocodylus cataphractus* Cuvier, 1825 (Slender-snouted crocodile)

Crocodylus cataphractus Falconer, 1846

Agema silvaepalustris

Alofia parva

Leiperia cincinnalis, infective larva

Sebekia okavangoensis

3. *Crocodylus johnsoni* Krefft, 1873 (Australian freshwater crocodile)

Tomistoma krefftii Gray in Krefft, 1873 (*nomen nudum*); *Crocodylus (Philas) johnstoni* Gray, 1874; *Crocodylus johnstoni* Cogger, 2000

Leiperia australiensis

Sebekia johnstoni

Sebekia multiannulata

4. *Crocodylus niloticus* Laurenti, 1768 (Nile crocodile)

Crocodylus vulgaris Cuvier, 1807; *Crocodylus multiscutatus* Rüppell in Cretzschmar, 1826; *Crocodylus marginatus* Geoffroy, 1827; *Crocodylus madagascariensis* Grandidier, 1872; *Crocodylus vulgaris* var. *madagascariensis* Boettger, 1877

Alofia nilotici

Alofia simpsoni

Leiperia cincinnalis

Sebekia cesarisi

Sebekia okavangoensis

Sebekia wedli

5. *Crocodylus novaeguineae* Schmidt, 1928 (New Guinea crocodile)

Sebekia novaeguineae

6. *Crocodylus palustris* Lesson, 1831 (Mugger, Marsh crocodile)

Subtriquetra megacephala

Subtriquetra shipleyi ("Indian crocodile")

7. *Crocodylus porosus* Schneider, 1801 (Indo-Pacific or Saltwater crocodile)

Crocodylus natans Meyer, 1795; *Crocodylus porosus* Schneider, 1801; *Crocodylus oopholis* Schneider, 1801; *Crocodylus biporcatus* Cuvier, 1807; *Crocodylus biporcatus raninus* Müller & Schlegel, 1844; *Oopholis pondicherianus* Gray, 1862; *Crocodylus porosus australis* Deraniyagala, 1953; *Crocodylus porosus minikanna* Deraniyagala, 1953

Alofia ginae (possibly *Crocodylus mindorensis*, but distributionally unlikely)

Alofia merki

Leiperia australiensis

Sebekia johnstoni

Sebekia multiannulata

Sebekia purdieae

Selfia porosus

Subtriquetra shipleyi ("Indian crocodile")

8. *Crocodylus siamensis* Schneider, 1801 (Siamese crocodile)

Crocodylus galeatus Cuvier, 1807

Sebekia jubini, species *inquirenda*

Genus *Osteolaemus* Cope, 1861

1. *Osteolaemus tetraspis* Cope, 1861 (Dwarf crocodile)

Crocodylus frontatus Murray, 1862; *Halcrosia afzelii* Lilljeborg, 1867; *Halcrosia nigra* Gray, 1867; *Halcrosia nigra* Gray, 1870; *Osteoblepharon osborni* Schmidt, 1919; *Osteolaemus tetraspis tetraspis* Wermuth & Mertens, 1961

Agema silvaepalustris

Alofia parva

Sebekia okavangoensis

FAMILY GAVIALIDAE ADAMS, 1854 (Gharials)

Genus *Gavialis* Opper, 1811

1. *Gavialis gangeticus* (Gmelin, 1789) (Gharial)

Lacerta gangetica Gmelin, 1789

Subtriquetra megacephala ("Indian crocodile")

Subtriquetra shipleyi ("Indian crocodile")

CHELONIA

Suborder Pleurodira (Side-necked turtles)

FAMILY PELOMEDUSIDAE COPE, 1868

Genus *Pelomedusa* Wagler, 1830

1. *Pelomedusa subrufa* (Lacépède, 1788) (Cape terrapin)

Testudo subrufa Lacépède, 1788; *Testudo galeata* Schoepff, 1792; *Testudo badia* Donndorf, 1798; *Testudo rubicunda* Suckow, 1798; *Emys olivacea* Schweigger, 1812 (*non Emys olivacea* Gray, 1855); *Pentonyx capensis* Duméril & Bibron, 1835; *Pentonyx gehafie* Rüppell, 1835; *Pentonyx americana* Cornalia, 1849; *Pelomedusa mozambica* Peters (*nomen nudum*) in Gray 1855 (?); *Pelomedusa mossambicensis* Peters (*nomen nudum*) in Lichtenstein 1856; *Pelomedusa*

nigra Gray, 1863; *Pelomedusa gasconi* Rochebrune, 1884; *Pelomedusa galeata* Boulanger, 1889; *Pelomedusa galeata* var. *disjuncta* Vaillant & Grandidier, 1910; *Pelomedusa galeata orangensis* Hewitt, 1935; *Pelomedusa galeata devilliersi* Hewitt, 1935; *Pelomedusa galeata damarensis* Hewitt, 1935; *Pelomedusa subrufa wettsteini* Mertens, 1937; *Testudo emys arabica* N.-Ehrenberg in Stresemann 1954

Pelonia africana

Genus *Pelusios* Wagler, 1830

1. *Pelusios sinuatus* (Smith, 1838) (Serrated hinged terrapin, African serrated mud turtle)

Sternotherus sinuatus Smith, 1838; *Sternotherus dentatus* Peters, 1848 (*nomen nudum*); *Sternotherus sinuatus* Boulanger, 1889; *Sternotherus bottegi* Boulanger, 1895; *Pelusios sinuatus zuluensis* Hewitt, 1927; *Pelusios sinuatus leptus* Hewitt, 1927

Pelonia africana

FAMILY CHELIDAE GRAY, 1825 (Snake-necked turtles)

Genus *Hydromedusa* Wagler, 1830

1. *Hydromedusa tectifera* Cope, 1869 [1870] (South American snake-necked turtle, Uruguay snake-necked turtle)

Hydromedusa platanensis Gray, 1873; *Hydromedusa wagleri* Günther, 1884

Diesingia megastoma

Genus *Phrynops* Wagler, 1830

1. *Phrynops geoffroanus* (Schweigger, 1812) Gorzula & Señaris, 1999 (Geoffroy's side-necked turtle)

Emys geoffroana Schweigger, 1812; *Emys geoffreana* Schweigger, 1812 (fide Boulanger, 1886); *Emys depressa* Merrem, 1820 (*non Emys depressa* Spix, 1824); *Emys viridis* Spix, 1824 (?); *Emys geoffroyana* Gray, 1831; *Platemys geoffreana* Duméril & Bibron, 1835; *Platemys neuwiedii* Duméril & Bibron, 1835; *Platemys waglerii* Duméril & Bibron, 1835; *Platemys tuberosa* Peters, 1870; *Platemys geoffroyana* Boulanger, 1886; *Hydraspis geoffroyana* Boulanger, 1889; *Hydraspis wagleri* Boulanger, 1889; *Hydraspis tuberosa* Boulanger, 1889; *Hydraspis boulangeri* Bohls,

1895; *Phrynops geoffroana* Mertens *et al.*, 1934; *Phrynops geoffroana geoffroana* Müller, 1939; *Phrynops tuberosa* Mertens *et al.*, 1934; *Phrynops geoffroana tuberosa* Müller, 1939

Diesingia megastoma

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