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THE SYSTEMATIC STATUS OF *CATHECTORHINUS MELANOCEPHALUS* DUMÉRIL & BIBRON, 1844 (SERPENTES: TYPHLOPIDAE)

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(with one text-figure)

ABSTRACT.— Examination of the holotype of *Cathetorhinus melanocephalus* reveals that it cannot be allocated to any presently diagnosed genus or species. The history of the Baudin Expedition is retraced in reference to the collection of *Cathetorhinus melanocephalus* without any significant clues as to its origin. The genus *Cathetorhinus* is resurrected as a valid taxon in the family Typhlopidae. The provenance of the species remains unknown: it is certainly Old World and may be from (in order of probability) Timor, Australia, Mauritius, or Tenerife.

KEY WORDS.— Typhlopidae, *Cathetorhinus melanocephalus*, Baudin Voyage.

INTRODUCTION

The black-headed blind snake, *Cathetorhinus melanocephalus*, described by Duméril and Bibron (1844) has a mysterious and unsettled history. The specific locality of the holotype (MNHN 138) and only known specimen is unknown. The original invoice data reporting that the specimen originated in Peru is in error (R. Roux-Estève in Dixon and Hendricks, 1979:8). It was actually collected on the Nicolas T. Baudin Expedition, consisting of two ships, the *Géographie* and the *Naturaliste*, which F. Péron and C. A. Lesueur joined as naturalist and artist, respectively, between 19 October 1800 and 25 March 1804 (Girard, 1857). The round trip voyage went from France to the Canary Islands (Tenerife), around (but not landing on) the Cape of Good Hope to Mauritius, to Australia and finally Timor (Kupang). If *Cathetorhinus melanocephalus* was collected on the Baudin Expedition, it had to have originated from either Timor, Australia, Mauritius, or Tenerife. Although snakes are unknown from the Canary Islands, a small typhlopoid like *Cathetorhinus melanocephalus* could possibly exist there and escape detection. There is a remote possibility

that association with the Péron voyage is erroneous.

Partly because of its unknown origin, but also in part due to its unusual features, the taxon has had a tumultuous history and is currently classified *incertae sedis* (Hahn, 1980; McDiarmid et al., 1999). Jan (1863, 1864) and Jan and Sordelli (1860) transferred *Cathetorhinus* to *Typhlops*, recognizing *melanocephalus* as a valid species in the subgenus *Typhlina* (= *Ramphotyphlops*), presumably because of a similar absence of a preocular shield and superficial resemblance to *Ramphotyphlops lineatus*. Peters (1865, 1881) then recognized *Cathetorhinus* as a valid genus. Boulenger (1893) once again synonymized *Cathetorhinus* with the genus *Typhlops* and recognized *T. melanocephalus* as a valid species of unknown origin. This arrangement was followed by Werner (1921) and Loveridge (1957). Roux-Estève (1974) transferred *Cathetorhinus* to the synonymy of *Rhinotyphlops* without mentioning to which species she was referring it or the reasoning for the change. Dixon and Hendricks (1979) suggested *Cathetorhinus* was a *Ramphotyphlops* with affinity to the *R. guentheri* group of Indonesia. Hahn (1980) also con-

sidered it probably belonging to the genus *Ramphotyphlops*. However, Broadley (1983) offered the opinion that it was a *Typhlops*. Williams and Wallach (1989) again transferred *Cathetorhinus* to *Ramphotyphlops*, considering it a synonym of *R. olivaceus*. Shea examined the type in Paris and concluded that it definitely was not a *Ramphotyphlops* (pers. comm., 1998).

BAUDIN VOYAGE

Captain Baudin's *Géographie* explored alongside the *Naturaliste* for part of the voyage but it also explored alone and in the company of the *Casuarina* at other times. It is not known which ship collected *Cathetorhinus* but Péron was stationed on the *Géographie* with Capt. Baudin, and Duméril (1853) attributed the snake as Péron's new species. The *Géographie* participated in three campaigns, the first two with the *Naturaliste* and the last one with the *Casuarina*. The first campaign (October 1800–December 1801) took the ships to Santa Cruz, Tenerife Island in the Canaries (2 Nov. 1800) and Port North-West, Mauritius for supplies (16 Mar.–25 Apr. 1801). Then on to Australia where landfall was first made at Cape Leeuwin, Western Australia (31 May 1801). Exploration northward along the coast included Rottnest Island (18 June 1801), Louis Napoleon Island (14–28 June 1801), Bernier and Dorre Islands in Shark Bay (28 June–12 July 1801), Dirk Hartog Island and the Péron Peninsula (18 July–5 Sept. 1801), Cape Murat (19 July 1801), Depuch and Forestier Islands (Amirauté Islands) in the Dampier Archipelago (28–30 July 1801), and the Bonaparte Archipelago (19 Aug. 1801). The ships then travelled to Kupang, Timor (22 Aug.–13 Nov. 1801) for supplies (Baudin and Cornell, 1974).

The second campaign (Nov. 1801–June 1802) began with a voyage to Tasmania (Nov.–Dec. 1801) where exploration included the d'Entrecasteaux Channel and Bruny Island (13–17 Jan. 1802), Port North-West and upriver to the north (17 Jan.–17 Feb. 1802), then along the eastern coast of Tasmania to Maria Island (18–26 Feb. 1802), Schouten Island (27 Feb. 1802), Swan Island (9–14 Mar. 1802), and Watherhouse Island (19–28 Mar. 1802). Crossing the Bass Strait, coastal Victoria localities included the Wilson Promontory (28 Mar. 1802), Port Western (30 Mar. 1802), Alouette and Dragon

Islands, and Cape Marengo and Duquesne (1–2 Apr. 1802). Continuing westward along the South Australian coast, the explorers stopped at Baudin Rocks and Lacépède Bay (7 Apr. 1802), Encounter Bay and Flinders (8–9 Apr. 1802), Kangaroo Island (9 Apr. 1802), St. Vincent Gulf (12–14 Apr. 1802), Spencer Gulf (15–16 Apr. 1802), Eyre Peninsula (26 Apr. 1802), St. Francis Islands and the Nuyts Archipelago (1–8 May 1802), and St. Peters Island (9 May 1802). Adventure Bay and Bruny Island (20–22 May 1802) were explored in Western Australia and then the ships returned to Tasmania (4 June 1802) and on to Port Jackson, New South Wales (20 June–17 Nov. 1802) (Baudin and Cornell, 1974). Other specific localities where animals were collected include Kupang Bay, *Géographie* Bay, the coasts of Edels, de Witt, and Eendracht, Dorre Island, Perdrix Island, and the Sonde Islands (Jangoux, 2005).

The third campaign (Nov. 1802–Aug. 1803) began with exploration of King Island and Bass Strait (7–13 Dec. 1802), Sea Elephant Rock (10–24 Dec. 1802), and Sea Elephant Bay of Victoria (27–31 Dec. 1802); the south coast of Kangaroo Island (1–3 Jan. 1803), the north coast of Kangaroo Island and Eastern Cove and Pelican Lagoon in St. Vincent Gulf (5–6 Jan. 1803), the south coast of Eyre Peninsula (3–6 Feb. 1803), Nuyts Archipelago, St. Francis Island, and St. Peter's Island (6 Feb. 1803), and Denial and Murat Bays of South Australia (7–11 Feb. 1803); King George Port (17 Feb. 1803), Royal Princess Bay, Huitres Bay, Cape Vancouver, and Two People Bay (17–28 Feb. 1803), King George Sound (1 Mar. 1803), Cape Leeuwin, St. Allouan Island, and *Géographie* Bay (9–10 Mar. 1803), Péron Peninsula (16–22 Mar. 1803), Shark Bay (23 Mar. 1803), the North-West Cape (23–26 Mar. 1803), and Delambre Island and the Dampier Archipelago (26–30 Mar. 1803), Depuch Island (1–7 Apr. 1803), Cape Gantheaume and Roebuck Bay (7–12 Apr. 1803), Dampier Land, Lacépède Island, and the Buccaneer Archipelago (12–24 Apr. 1803), and Cape Voltaire, the Bonaparte Archipelago, Cassini Island, and the Holothurian Bank (24–29 Apr. 1803) of Western Australia. The expedition then sailed again to Kupang, Timor for a month (6 May–3 June 1803). Returning to Australia, exploration began with the North-West Cape,

Holothurian Bank, Joseph Bonaparte Gulf of Western Australia, Cape Dombey, and Péron Island of the Northern Territory (3–27 June 1803), Melville Island and Cape Van Diemen (27 June 1803), and finally into the Arafura Sea. On 7 July 1803 the *Géographie* was 200 miles west of Cape Vals (Walsh), Papua New Guinea. The return trip from the Arafura Sea to Mauritius took one month (7 July–7 Aug. 1803). Capt. Baudin died of tuberculosis while in Mauritius (16 Sept. 1803). The *Géographie* set sail for France on 16 Dec. 1803 and finally returned home to Lorient, France on 25 Mar. 1804 (Baudin and Cornell, 1974).

There is no mention of a small blind snake or lizard comparable to *Cathetorhinus* in the records of the Baudin Expedition or Péron (Girard, 1857; Baudin and Cornell, 1974; Ly-Tio-Fane, 2003; Jangoux, 2005) so it appears that the Muséum is responsible for attributing *Cathetorhinus* to the Baudin Expedition.

REDESCRIPTION

Snout-vent length 178 mm, tail length 5 mm, tail/total length ratio 2.7%, midbody diameter 2 mm, body width contained in total length 91.5 times, midtail diameter 2 mm, tail length/width ratio 2.5. There are 18 scale rows throughout, ca. 524 middorsals, and 20 subcaudals. Dorsal head profile rounded, head narrower than neck, rostral subcircular, its midpoint diameter 2/3 the width of the head at eye level, nearly extending to interocular level; frontal with rounded posterior border, twice as broad as deep, slightly broader than equally rounded supraoculars, which are transversely oriented and insert between the postocular and ocular; postfrontal as broad as frontal (Fig. 1). Lateral head profile with weak rostral beak consisting of a corneal keel tapering to a blunt point (as in *Ramphotyphlops multilineatus* or *Typhlops depressiceps* but not acutely pointed), nasal large, semidivided with inferior nasal suture contacting second supralabial, lacking superior nasal suture, nostril directed laterally and oriented at a 60° angle to the horizontal; preocular absent (presumably fused with nasal), ocular with vertical orientation and faintly discernible eyespot in middle of shield, one elongate postocular; supralabials 4 with a T-II imbrication pattern, second and third supralabials twice as long as tall and twice the

size of first supralabial, fourth supralabial three times as large as second and third, with ventral notch (indicating fusion with lowermost postocular). Ventral rostral very broad and flat, lacking preoral concavity, mental pentagonal, infralabials 3, tail with a minute terminal spine. Coloration in preservative (probably faded): head blackish-brown, dorsum tan with lighter venter.

DISCUSSION

In comparing *Cathetorhinus* to other typhlopids genera, mention must be made of certain recent changes in generic nomenclature of the Typhlopidae. Worldwide members of the Typhlopidae were considered to belong to a single genus, *Typhlops* Oppel (1811), by all early workers (Boulenger, 1893; Werner, 1921). Robb (1966) was the first researcher to subdivide *Typhlops* when she resurrected the name *Ramphotyphlops* Fitzinger (1843) for the mainly Australian and East Indian species (but also a few Southeast Asian forms) of the genus. Roux-Estève (1974) then revived another Fitzinger (1843) name, *Rhinotyphlops*, for several groups of derived African species with broad ventral rostrals, most species also having a corneal ridge on the ventral rostral and a tapered lateral head profile. For the next 20 years those three genera remained stable (Hahn, 1980) until In den Bosch and Ineich (1994) described *Cyclotyphlops* of Sulawesi, Indonesia. This was followed by Wallach (1995) establishing *Acutotyphlops* for the derived New Guinea-Solomon Island species group and Wallach and Ineich (1996) erecting *Xenotyphlops* for a bizarre Malagasy species. Six genera were recognized until the end of the Twentieth Century (McDiarmid et al., 1999). Broadley and Wallach (2000, 2007) resurrected *Letheobia* Cope (1869) from the synonymy of *Rhinotyphlops* for the groups of small, mainly blind and pigmentless, African typhlopids. Wallach (2003) revalidated the genus *Grypotyphlops* Peters (1881) for the giant Indian species *Typhlops acutus* that had recently been transferred to *Rhinotyphlops* (Wallach, 1994). Finally, *Austrotyphlops* was established for the clade of Australian-New Guinea snakes previously known as *Ramphotyphlops* (Wallach, 2006).

In their description of *Cathetorhinus melanocephalus*, Duméril and Bibron (1844) erroneously list the type as having 388 middorsals and

Table 1. Comparison of *Cathetorhinus* characters with other typhlopod genera and the *Typhlops ater* species group. ACU = *Acutotyphlops*, AUS = *Austrotyphlops*, CAT = *Cathetorhinus*, CYC = *Cyclothyphlops*, GRY = *Grypotyphlops*, RAM = *Ramphotyphlops*, RHI = *Rhinotyphlops*, TYP = *Typhlops*, XEN = *Xenotyphlops*, Mad. = Madagascar, N.G. = New Guinea, N.W. = New World, Sula. = Sulawesi, W. = worldwide, "()" separates variable conditions, "()" indicate rare condition.

Character	Taxon	Year	1844	—	1996	2000	1974	2003	1966	1995	1994	1811	
Range		O.W.	E. I.	Mad.	Afr.	Afr.	Ind.	Aust.	E. I.	N.G.	Sula.	O.W.	N.W.
Midbody scale rows		18	16-24	20-22	18-30	18-44	24-34	16-24	18-28	26-36	22	16-36	16-24
Ant.-post. reductions >1		0	0/+	0/+	0/+	+	+	0	0/+	+	0	0/+	0(+)
Total middorsals		524	263-780	469-482	345-732	234-624	448-526	263-750	209-709	334-526	299	216-600	195-566
Length/width ratio		92	20-89	64-86	27-120	18-56	38-79	20-120	18-104	18-58	32	20-130	16-77
Subcaudals		20	8-29	20-22	5-17	5-13	7-13	8-29	7-45	12-30	15	5-28	5-16
Relative tail length (%)		2.7	1.0-5.1	3.2-3.7	0.7-2.3	0.8-2.6	0.8-1.9	0.9-6.4	1.3-9.0	1.0-3.1	3.1	0.4-4.4	0.8-4.3
T-II supralabial pattern		+	(+)	0	0(+)	50-70	0	0	0	0	0	0	0(+)
Relative rostral width (%)		70	20-45	70-85	45-85	50-70	50-80	25-75	35-65	10-25	45	25-65	20-45
Multiple rostral glands		0	+	0	0	0	0	0	0	0	0	0	0
Precocular absent		+	0	+	10(+)	0	0	0	0(+)	0	+	0	0
Postoculars		1	1-4	3	2-4	2-7	3-4	1-3	1-4	3-5	3	2-7	1-2 (3)
Superior nasal suture absent		+	0	+	0	0	0	0	0	0	+	0	0
Ventral rostral beaked		+	+ / 0	+	0	0	+	0(+)	0(+)	0	0	+	+
Eye visible		+	+	0	0(+)	+	0(+)	+	0	+	0	+	0
Head black		+	0	0	0	0	0	0(+)	0	0	0	0	0

1962:63; Broadley, 1983:37, 1990:37; McDiarmid et al., 1999:89.

Rhinotyphlops Roux-Estève, 1974:157; Welch, 1994:57.

Ramphotyphlops Dixon and Hendricks, 1979:8; Hahn, 1980:77; Williams and Wallach, 1989:27; Smith and Smith, 1993:497, 725; Matison, 1999:146.

Typhlopidae incertae sedis Hahn, 1980:77; McDiarmid et al., 1999:126.

Diagnosis.—*Cathetorhinus* can be distinguished from all typhlopidae genera by the presence of a T-II supralabial imbrication pattern in conjunction with the absence of a discrete preocular (presumably fused with the nasal).

Cathetorhinus melanocephalus Duméril and Bibron, 1844 (Fig. 1)

Holotype.—MNHN 138, an adult specimen of unknown sex, collected on the Capt. Baudin Expedition (voyage of Péron and Lesueur on the *Géographie*, October, 1800–March, 1804).

Type locality.—unknown but in the Old World; landfalls during the Péron and Lesueur voyage with known snake faunas include Timor, Australia, and Mauritius.

Cathetorhinus melanocephalus Duméril and Bibron, 1844:270; Duméril and Duméril, 1851:203; Duméril, 1853:422; Duméril, Bibron and Duméril, 1854:17; Girard, 1857:143; Peters, 1862:43, 1865:263, pl. fig. 6–6c; 1881:70; Hoffmann, 1890:1624; Bauer et al., 1995:210D (fig. 6), 211, 411.

Onychophis olivaceus, Duméril and Duméril, 1851:204; Gray in Duméril, Bibron and Duméril, 1854:17.

Typhlops (Typhlina) melanocephalus, Jan and Sordelli, 1860 in 1860–1866:livr. 1, pl. 5, fig. 8, livr. 1, pl. 6, fig. 8; Jan, 1863:10; Jan, 1864:8.

Typhlops melanocephalus, Boulenger, 1893:15–16; Werner, 1921:289; Loveridge, 1957:240; Hahn, 1980:77; Frank and Ramus, 1995:254; McDiarmid et al., 1999:126.

Ramphotyphlops cf. *guentheri*, Dixon and Hendricks, 1979:8.

Ramphotyphlops olivaceus, Williams and Wallach, 1989:27.

Rhinotyphlops melanocephalus, Welch, 1994:57.

Ramphotyphlops melanocephalus, Matison, 1999:146.

Definition.—*Cathetorhinus melanocephalus* is readily separable from all members of the Typhlopidae by the following combination of characters: head black, dorsal rostral broad (70% head width), ventral rostral beaked in lateral profile, scale rows 18–18–18, middorsals greater than 500, and lacking discrete preocular and superior nasal suture.

CONCLUSIONS

Examination of the holotype of *Cathetorhinus melanocephalus* reveals that it cannot be relegated to any current genus or species and should be recognized as a valid taxon. The Baudin Expedition made landfall at Santa Cruz Island (Tenerife), Mauritius (Port North-West), Australia (western, southern, and northern coasts and offshore islands), and Timor (Kupang). It is possible that *Cathetorhinus* originated from any of these four localities, with Australia being the most likely based upon collecting time and known scolecophidian fauna. Regardless of its unknown provenance, the recognition of *Cathetorhinus melanocephalus* seems warranted since it cannot be allied with any known genus or species and it is here considered a valid monotypic genus.

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