

HERPETOLOGICAL JOURNAL, Vol. 6, pp. 30-31 (1996)

**THE TAXONOMIC STATUS OF  
TYPHLONECTES VENEZUELENSE  
FUHRMANN (AMPHIBIA:  
GYMNOPHIONA:  
TYPHLONECTIDAE)**

MARK WILKINSON

*School of Biological Sciences, University of Bristol,  
Bristol, BS8 1UG, UK*

At the turn of the last century, the genus *Typhlonectes* comprised three distinctive species, *T. compressicaudus* (Duméril & Bibron), *T. natans* (Fischer) and *T. kaupii* (Berthold) (= *T. dorsalis* Peters) from Northern South America, all of which showed some degree of lateral compression of the body and development of a dorsal 'fin' that set them apart from all other caecilians and indicated adaptation to a distinctive aquatic existence. In a classic early monograph on the aquatic caecilians, Fuhrmann (1914) described a new variety, *Typhlonectes compressicaudus venezuelense*, for a form represented by two specimens from Caracas and Maracaibo, Venezuela, distinguished from the Amazonian and Guyanan form *T. c. compressicaudus* by minor and subtle differences in head shape. Dunn (1942), who examined many more specimens than were available to Fuhrmann, considered this form to be a junior synonym of *T. natans*, and he also considered *natans* to be no more than a variety of *compressicaudus*.

Taylor's (1968) treatment of *Typhlonectes* introduced radical changes. *T. kaupii* was transferred to a new genus, *T. natans* was resurrected to species status, and *T. c. venezuelense* was removed from the synonymy of *T. natans* and elevated to specific status. In addition, Taylor (1968) described three new species of *Typhlonectes*. One of these new species, *T. eiselti*, is a highly distinctive lungless caecilian that has been transferred to the genus *Atretochoana* (Nussbaum & Wilkinson, 1995). Taylor's other new species cannot be diagnosed on the basis of any features that reliably distinguish them from *T. compressicaudus* and are considered junior synonyms of that species (Wilkinson, 1991). Nussbaum & Wilkinson (1989) noted that *T. venezuelense* was of doubtful validity and did not include this species in their synopsis of the content of *Typhlonectes*. My aims here are to clarify the taxonomic status of *T. venezuelense*, describe simple distinguishing features for the species of *Typhlonectes*, and raise concerns over the taxonomic status of a recently described species.

Taylor's (1968: 255) diagnosis of *Typhlonectes venezuelense* indicates that it has a distinctly higher (less flattened) head than does *T. natans*, but includes no other features that might distinguish these forms [the diagnosis states "Head distinctly flatter than the head of *natans*." and "flatter" is corrected to "higher" in an Errata, that, unfortunately, is not included in all copies of the work]. Neither Taylor nor I have been able to locate the holotype of *T. venezuelense*, a specimen catalogued in the Berlin Museum and which is presumed lost, but I have examined available type material of both *T. venezuelense* (ZMH A00257,

TABLE I. Morphometric and meristic data for *Typhlonectes natans* and *T. venezuelense*.

	<i>Typhlonectes venezuelense</i>		<i>Typhlonectes natans</i>	
	ZMH A00257		ZMB 9523	LACM
	Paratype		Cotype	67435      67436
Total length	350		500	345      343
Circumference at mid-body	43		43	41      39
Primary annuli	92		93	88      90
Head length	10.7		12.7	10.8      10.7
Head width at eye	9.3		9.7	8.8      8.5
Head depth at eye	5.5		5.5	5.3      5.2
Head width at occiput	11.1		11.9	10.8      10.7
Head depth at occiput	7.3		6.5	7.0      6.7
Interorbital distance	7.1		7.7	6.9      6.6
Internarial distance	4.6		4.4	4.6      4.5
Eye-narial distance	4.8		5.7	4.9      4.8
Eye-tentacle distance	4.3		4.9	4.5      4.4
Tentacle-narial distance	0.7		0.7	0.5      0.5
Premax-maxillary teeth	44		46	42      39
Vomeropalatine teeth	45		39	42      44
Dentary teeth	34		36	34      32
Splenic teeth	12		10	9      8

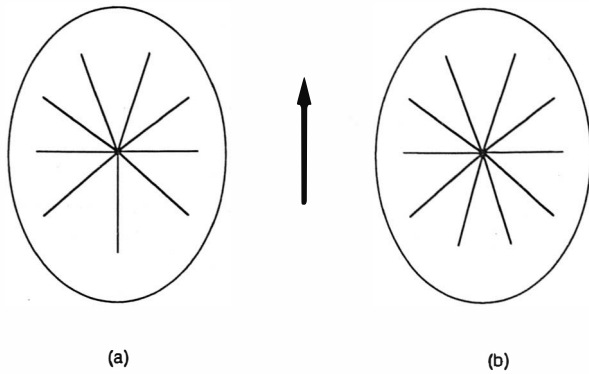


FIG. 1. Diagrammatic representation of the patterns of denticulations surrounding the vent that can be used to distinguish those species of *Typhlonectes* with low numbers of splenial teeth. (a) *T. natans* (b) *T. compressicaudus*. Arrow is directed posteriorly.

paratype) and *T. natans* (ZMB 9523 cotype) as well as several hundred specimens of *T. natans*. I can find no differences between the types that warrants their recognition as distinct species. Differences in the shape of the head exist, but the relatively flat skull of the cotype of *T. natans* is attributable to the fact that the skull and cranial musculature are extensively macerated. Certainly, other *Typhlonectes* from the vicinity of the type of *T. natans* in the Rio Magdalena-Rio Cauca drainage in Colombia, and which were readily assigned to *T. natans* by Taylor (1968, 1973), have less flattened heads than does the cotype and do not differ in this respect from the type material of *T. venezuelense*. Morphometric and meristic data for the type material, together with data for two specimens that were assigned by Taylor (1973) to *T. natans*, are summarised in Table 1. The latter specimens are from a single locality, close to the type locality of *T. natans*, and they are similar in total length to the paratype of *T. venezuelense*. As can be seen from Table 1, they agree closely with the paratype of *T. venezuelense* in their measures and counts, including those that reflect the shape (width and depth) of the head. Fuhrmann (1914) described some minor differences in the disposition of the lungs and urinary bladder of *T. venezuelense* and *T. natans* which are attributable to intraspecific variation.

These observations support Dunn's (1942) earlier conclusion that, in the absence of any significant differences, *Typhlonectes venezuelense* must be considered a junior synonym of *T. natans*. In contrast, there are several major morphological differences between *T. natans* and *T. compressicaudus*, (e.g. in the dentition, relative lengths of left and right lungs and the form of the cloacal disk [Taylor, 1968; Wilkinson, 1991]) that do not support Dunn's view that these forms are merely geographic races of the same species. For the purposes of identification, *T. natans* and *T. compressicaudus* can be distinguished most readily by the arrangements of the denticulations that radiate from the vent to form the cloacal disk (Fig. 1).

The type specimens of *Typhlonectes venezuelense* are reported to be from Caracas and from Maracaibo, Venezuela. Other specimens of *T. natans* have been collected in the region of Maracaibo as recently as 1981 (Wilkinson, submitted). In contrast, no other specimens of *T. natans* are known from Caracas, and whether the Caracas specimen originated in the vicinity of Caracas, or was collected elsewhere in the region, is uncertain.

Cascon *et al.* (1991) recently described a new species of *Typhlonectes*, *T. cunhai* from Manaus, Brazil, an area that has also yielded many specimens of *T. compressicaudus*. Unfortunately, the diagnosis of this new species, which, as in *T. compressicaudus*, has 10 denticulations about the vent, emphasises features of the body shape and fin that are notoriously variable in *T. compressicaudus*, and provide no compelling evidence that their new form is specifically distinct. The uncertain status of *T. cunhai* represents the major unresolved problem in the species level taxonomy of *Typhlonectes*.

**Acknowledgements.** I am grateful to Rainer Günther, Universitat Humboldt Zoologisches Museum (ZMB), H. W. Koepke, H. Wilkens, and R. Dohse, Universitat Hamburg Zoologische Museum (ZMH), and J. Wright, Los Angeles County Museum (LACM) for facilitating my studies of the important specimens in their care. I thank Ron Nussbaum for his comments on the manuscript. This work was supported in part by NERC grant GST/02/832

#### REFERENCES

- Cascon, P., Lima-Verde, J. S. & Marques, R. B. (1991). Uma nova espécie de *Typhlonectes* da Amazônia Brasileira (Amphibia: Gymnophiona: Typhlonectidae). *Bol. Mus. Para. Emilio Goeldi sér. Zool* 7, 95-100.
- Dunn, E. R. (1942). The American caecilians. *Bull. Mus. Comp. Zool. Harvard* 91, 339-540.
- Fuhrmann, O. (1914). Le genre *Typhlonectes* [sic]. *Mém. Soc. Sci. Nat. Neuchâtel* 5, 112-138.
- Nussbaum, R. A. & Wilkinson, M. (1989). On the classification and phylogeny of caecilians (Amphibia: Gymnophiona), a critical review. *Herpetol. Monogr.* 3, 1-42.
- Nussbaum, R. A. & Wilkinson, M. (1995). A new genus of lungless tetrapod: a radically divergent caecilian (Amphibia: Gymnophiona). *Proc. Royal Soc. B.* 261, 331-335.
- Taylor, E. H. (1968). *The Caecilians of the World*. Lawrence: University of Kansas Press.
- Taylor, E. H. (1973). A caecilian miscellany. *Univ. Kansas. Sci. Bull.* 50, 187-231.
- Wilkinson, M. (1991). Adult tooth crown morphology in the Typhlonectidae (Amphibia: Gymnophiona): a reinterpretation of variation and its significance. *Z. zool. Syst. Evolut.-forsch.* 29, 304-311.

Accepted: 12.5.95