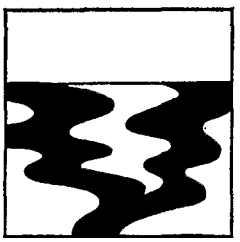

A review of the clariid catfishes (Siluroidei, Clariidae) occurring in southern Africa

Paul H. SKELTON (1) and Guy G. TEUGELS (2)

ABSTRACT

The identity and current status of clariid catfishes in southern African waters is reviewed. A single species each of Clariallabes *and* Heterobranchus *and six species of* Clarias *occur in this region. Brief morphological descriptions and detailed distribution maps are provided for each species. The six* Clarias *species include the first recognition of* Clarias liocephalus *within the area.*

KEY WORDS : Taxonomy — Southern Africa — Clariidae — Distribution — *Clarias* — *Clariallabes* — *Heterobranchus*.

RÉSUMÉ

RÉVISION DES POISSONS-CHATS CLARIIDÉS (SILUROIDEI, CLARIIDAE) DU SUD DE L'AFRIQUE

L'identité et la position taxinomique des poissons-chats du sud de l'Afrique appartenant à la famille des Clariidae ont été étudiées. Une seule espèce des genres Clariallabes *et* Heterobranchus *et six espèces du genre* Clarias *existent dans cette région. Pour chaque espèce, une courte description ainsi qu'une carte détaillée de la distribution ont été présentées. La présence de* Clarias liocephalus *dans cette région est signalée pour la première fois.*

MOTS CLÉS : Taxinomie — Sud de l'Afrique — Clariidae — Distribution — *Clarias* — *Clariallabes* — *Heterobranchus*.

INTRODUCTION

Clariid catfishes are among the most prominent and the most widespread of African freshwater fishes. They often form a large part of the catches in artisanal fisheries and certain species are of increasing use in fish culture. *Clarias gariepinus* (BURCHELL, 1822) is recognized as one of the most promising aquaculture species in Africa (HECHT *et al.*, 1988). The taxonomy of *Clarias* is complicated, and over 100 nominal African species have been described. Recently TEUGELS (1986a) provided a detailed systematic revision of the 120 nominal species of African *Clarias* Scopoli, 1777, numerically the most important genus. Only 32 species were retained as valid. TEUGELS *et al.* (1990) revised the genus *Heterobranchus* Geoffroy-Saint-Hilaire, 1809 and recognized only four out of eleven nominal species as valid. With the revision of other genera

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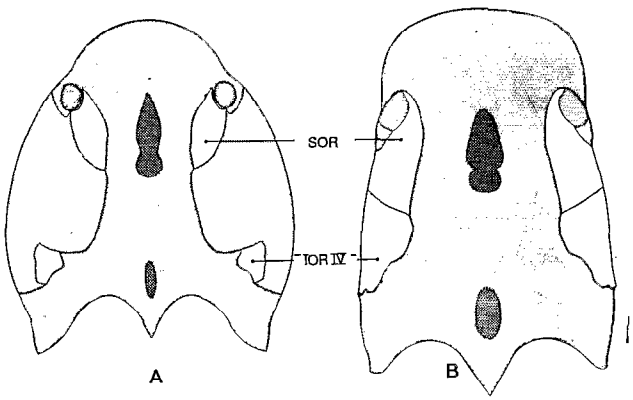

FIG. 1A. — Postorbital region of *Clariallabes platyprosopos* showing greatly reduced supraorbital and 4th infraorbital bones.
Région postorbitale chez Clariallabes platyprosopos *indiquant le supraorbital et le 4e infraorbital nettement réduits.*

FIG. 1B. — Postorbital region of *Clarias* species, showing well developed and united supraorbital and 4th infraorbital bones.
Région postorbitale chez Clarias, *indiquant le supraorbital et le 4e infraorbital, bien développés et unis.*

still in progress, TEUGELS (1986b) lists 74 currently accepted species of African clariids, within 12 genera.

Several nominal species from three genera have been reported from southern Africa, defined here as the region south of the northern divide of the Cunene, Okavango and Zambezi river systems, excluding Lake Malawi. All, except two species, are assigned to *Clarias*; with a single species each in *Heterobranchus* and *Clariallabes* Boulenger, 1900.

In view of Teugels' (1986a) revision it became clear that the identity of some of the *Clarias* species reported from southern Africa was inaccurate. This applies particularly to *Clarias submarginatus* Peters, 1882, cited to occur in the Zambezi river system by JUBB (1967), POLL (1967) and BELL-CROSS (1972, 1974), but which, according to Teugels (1986a), is confined to the Kribi and Lobi rivers in southern Cameroon.

The present paper aims at establishing the identity and extent of distribution of clariid species in southern Africa based on material in the major collections of the region.

MATERIAL AND METHODS

All clariid specimens housed in the J.L.B. Smith Institute of Ichthyology (RUSI) and the Albany Museum, Grahamstown (AMG), South Africa, were examined and identified on their morphological features. Detailed lists of these specimens with relevant collection data are available from the respective institutions. In addition, collections in certain other institutions in southern Africa (State Museum, Windhoek, Namibia [SMW] and the Natural History Museum of Zimbabwe, Bulawayo [NMZ]) and abroad (Museum of Zoology, University of Michigan [UMMZ], the United States National Museum, Washington DC [USMN], Academy of Natural Sciences, Philadelphia [ANSP], and the American Museum of Natural History [AMNH]) that were not included in TEUGELS' (1986a) revision, were considered for distribution purposes, although not all the specimens were examined or their records plotted on the maps.

Measurements and meristic counts were made according to TEUGELS (1986a) and TEUGELS *et al.* (1990). Vertebrae were counted from x-ray radiographs. Institutional abbreviations follow LEVITON *et al.* (1985). Other abbreviations include Standard length — SL, Head length — HL, and Total length — TL.

RESULTS

Our study confirms the presence of three clariid genera, *Clarias*, *Clariallabes* and *Heterobranchus*, in southern Africa. Six species of *Clarias* are recognized and a single species each in the latter two genera. To assist identification we provide a key to the genera, a brief generic description, a key to the species and descriptions of the species including synonyms and summaries of their biology and distribution.

KEY TO THE GENERA

1a Postorbital margin not completely covered with bones; supraorbital and 4th infraorbital greatly reduced (fig. 1a).
Clariallabes

1b Postorbital margin completely or largely covered with bones, supraorbital and 4th infraorbital not reduced (fig. 1b).
2

2a Large adipose fin (24,3-32,8 % SL) present between rayed dorsal fin and caudal fin, rayed dorsal fin extends to over anterior half of anal fin.
Heterobranchus

2b Adipose fin lacking or relatively short (5,9-12,5 % SL), dorsal fin extends to over the posterior half of the anal fin.
Clarias

Clarias Scopoli, 1777

Clarias species are characterized by having an elongated body; a soft-rayed dorsal fin extending to,

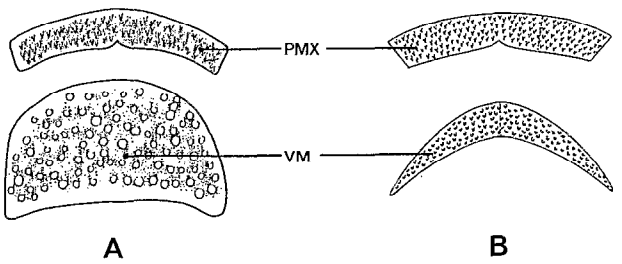

FIG. 2A. — Premaxillary (PMX) and vomerine (VM) toothplate of *Clarias ngamensis*.
Bande prémaxillaire (PMX) et vomérienne (VM) chez Clarias ngamensis.

FIG. 2B. — Premaxillary (PMX) and vomerine (VM) toothplate of *Clarias gariepinus*.
Bande prémaxillaire (PMX) et vomérienne (VM) chez Clarias gariepinus.

or nearly to, the caudal fin base ; a soft-rayed anal fin extending from just behind the anus to the caudal fin base ; pectoral fins each with a serrated anterior bony spine ; head depressed, covered largely by firmly sutured, surface-sculptured bony plates forming a protective helmet ; four pairs of flagellate barbels (nasals, maxillaries, inner and outer mandibulars) ; air-breathing organs derived from the 2nd and 4th epibranchials within a suprabranchial chamber.

TEUGELS (1982a, 1986a) recognised six subgenera, five of which occur in southern Africa, as follows :

Clarias (Dinotopteroides) Fowler, 1930

These species have a large head (28-34 % SL) and a small but distinct adipose fin between the rayed dorsal and the caudal fin. This adipose fin is supported by extended neural spines (TEUGELS, 1983a). One species, *Clarias ngamensis* Castelnau, 1861, occurs in southern Africa.

Clarias (Clarias) Scopoli, 1777

A large depressed head (28-34 % SL) is characteristic of these species, as well as numerous slender, closely-set gill rakers on the anterior arch. *Clarias gariepinus* (BURCHELL, 1822), one of the two species assigned to this subgenus, is widespread and common in southern Africa.

Clarias (Platycephaloides) Teugels, 1982

Characteristic features are a head length (24.5-28.8 % SL) intermediate between the above subgenera with large heads and subgenera where the species have smaller heads ; head width (16,3-21,9 % SL) and the lateral position of the eyes. One species, *Clarias stappersii* Boulenger, 1915 occurs in southern Africa.

Clarias (Brevicephaloides) Teugels, 1982.

Species have a relatively short (17,8-26,3 % SL) broad head ; a large interorbital distance ; pectoral spines with anterior serrations only. One species, *Clarias liocephalus* Boulenger, 1898 is found in southern Africa.

Clarias (Anguilloclarias) Teugels, 1982.

The characteristic features include a short head ; anguilliform body ; long dorsal and anal fins ; pectoral spines serrated along both edges. Two closely related species are present in southern African waters : *Clarias theodorae* Weber, 1897 and *C. cavernicola* Trewavas, 1936.

KEY TO THE SPECIES

1a Small adipose fin (5,9-12,5 % SL) present between dorsal and caudal fin ; vomerine toothplate long (5,9-14,4 % HL), up to 3 times length of premaxillary toothplate ; vomerine teeth granular (fig. 2A).

Clarias ngamensis

1b No adipose fin present ; dorsal fin reaching or nearly reaching the caudal ; vomerine toothplate length as long as or a little longer than premaxillary length (fig. 2B).

2

2a Head long (head length 28-34 % SL) ; gill rakers on anterior arch numerous (from about 24 at SL 20-30 mm to >100 in large specimens >4-500 mm SL).

Clarias gariepinus

2b Head length < 29 % SL ; fewer than 20 relatively widely spaced gill rakers on anterior gill arch.

3

3a Head length 25-28, 8 % SL (m = 27,2 %) ; barbels short, their length less than the head length ; 8 to 10 gill rakers on anterior gill arch.

Clarias stappersii

3b Head length 18,4-24, 5 % SL ; maxillary barbels always longer than head length ; up to 19 gill rakers on the first branchial arch.

4

4a Pectoral spines serrated only on outer edge (fig. 3A) ; bones behind orbits (supraorbital and 4th infraorbital bones) not joined.

Clarias liocephalus

4b Pectoral spines serrated on the outer and inner edges (fig. 3B) ; bones behind orbits (supraorbital and 4th infraorbital) joined by suture.

5

5a Pigment lacking ; eyes absent or vestigial, covered with skin.

Clarias cavernicola

5b Deeply pigmented (dark brownish-black) ; eyes small but well developed.

Clarias theodorae

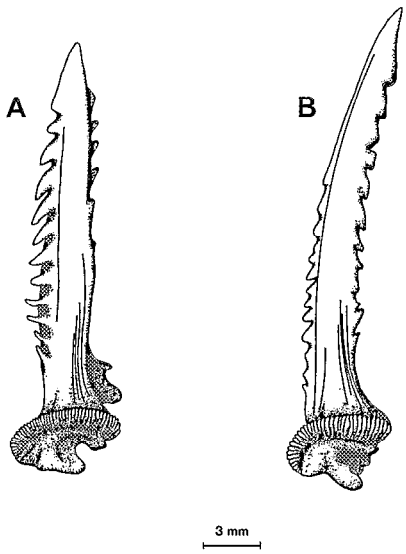

FIG. 3A. — Pectoral spine of *Clarias liocephalus*.
Épine pectorale chez Clarias liocephalus.

FIG. 3B. — Pectoral spine of *Clarias theodorae*.
Épine pectorale chez Clarias theodorae.

Clarias ngamensis Castelnau, 1861

TYPE LOCALITY : Lake Ngami, Botswana.

SYNONYMS (after TEUGELS, 1983b, 1986a)

Clarias mellandi Boulenger, 1905 : 644.

Dinotopterus jallae Gilchrist et Thompson, 1917 : 556.

Dinotopteroides prentissgrayi Fowler, 1930 : 42.

ETYMOLOGY

Named for the type locality, Lake Ngami, Botswana.

DESCRIPTION (fig. 4)

A detailed description of this species is given by TEUGELS (1983b, 1986a). A brief description highlighting diagnostic features is given below.

Diagnostic features of *C. ngamensis* include a relatively well developed adipose fin over the caudal peduncle between the rayed dorsal and the caudal fin ; a relatively deep (long) vomerine toothplate with granular or blunt teeth (fig. 2A) ; dorsal fin short with 56-62 rays ; gill rakers 18-32, relatively short and well spaced on anterior arch.

Head large, broad and depressed, its length 3 to 3,4 times in SL. Eyes small, lateral to dorso-lateral, widely spaced. Snout short, less than one quarter HL. Nostrils with separate anterior and posterior nares, anterior nares short tubes, posterior nares small slits behind base of nasal barbels. Mouth broad, slightly less than head width, terminal or slightly sub-terminal. Nasal barbels shorter than head ; maxillaries longest, reaching to pectoral base ; inner mandibulars short, not reaching free edge of branchiostegal membrane ; outer mandibulars reach from behind the lateral corners of mouth to beyond branchiostegal membrane. Branchiostegal membranes entirely free behind, deeply divided in ventral midline. Maxillary and mandibular toothplates short, broad with numerous sharp villiform teeth along anterior halves but teeth become granular and blunt posteriorly. Vomerine toothplate semi-ovoid in shape with numerous blunt or granular teeth. Anterior gill arches with 18-32 slender gill rakers (number increasing with size).

Body ovoid behind head, compressed caudad. Caudal peduncle relatively deep (in excess of 50 % body depth) due to extended neural spines supporting adipose fin. Dorsal fin extends from short distance behind head to anterior base of adipose fin. Anal fin origin nearer caudal base than tip of snout. Anal fin extends from behind genital aperture to base of caudal fin. Caudal fin rounded. Pectoral fins

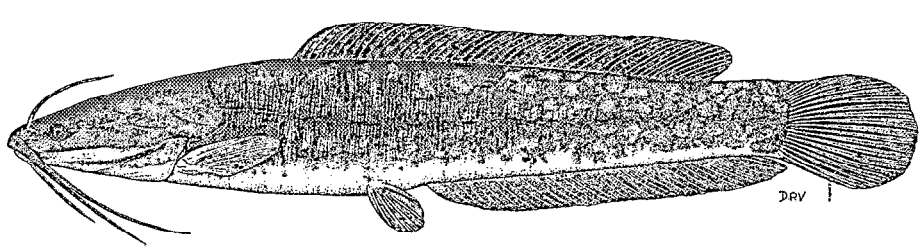

FIG. 4. — *Clarias ngamensis*, RUSI 28529, 220 mm SL. Drawn by D. VOORVELT.
Clarias ngamensis, *RUSI 28529, 220 mm LS. Dessin par D. VOORVELT.*

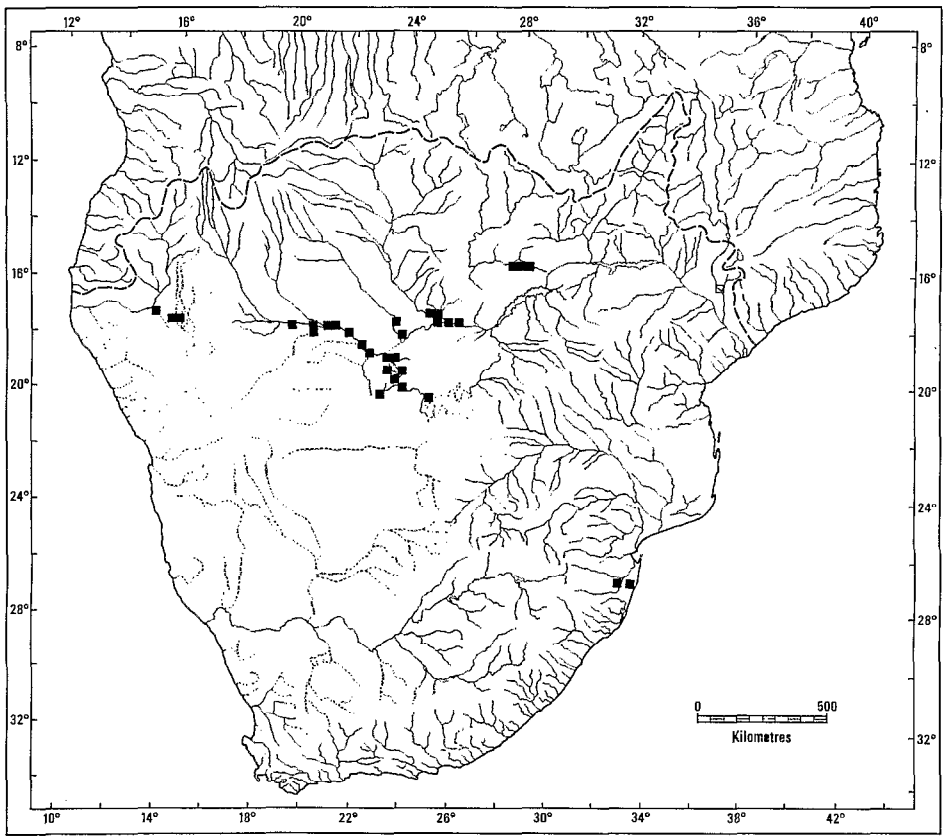

FIG. 5. — Distribution of *Clarias ngamensis* in southern Africa, based on records in RUSI, AMG, NMZ, SMW, UMMZ, USNM, and ANSP.

Distribution de Clarias ngamensis *dans le Sud de l'Afrique, basée sur des collections déposées au RUSI, AMG, NMZ, SMW, UMMZ, USNM, et ANSP.*

horizontal with a strong anterior spine, serrated only along the leading edge. Pelvic fins short, in postero-abdominal position.

Colour and pigmentation varies according to habitat but generally darkly mottled grey and black dorsally and laterally, ventral head and body cavity off-white, extending as narrow band above anal fin base.

COMPARISON WITH OTHER SPECIES

Externally this species resembles *Clarias gariepinus,* and in the collections examined we regularly found specimens of both species together, especially small-sized specimens. In small-sized specimens the adipose fin feature may not always be a reliable character because *C. gariepinus* are found regularly with a fairly distinct gap between dorsal and caudal fins. However the number of dorsal fin rays may then be used to distinguish the two species : *C. ngamensis,* with its shorter dorsal fin has 56 to 62 fin rays while *C. gariepinus* has 61 to 79 fin rays. Likewise, considering equally sized specimens, *C. ngamensis* has fewer gill rakers. The highest gill raker number observed in *C. ngamensis* was 32 in a specimen of 435 mm standard length while in a 386 mm standard length *C. gariepinus* 66 gill rakers were counted. The gill rakers in *C. ngamensis* are shorter and more distantly spaced. In addition the barbels of *C. ngamensis* are usually relatively thicker at the base than those of *C. gariepinus.*

DISTRIBUTION (fig. 5)

Generally widespread from the middle and upper Zambezi River system including Lake Ngami, the Okavango delta and the Kavango and Kwando

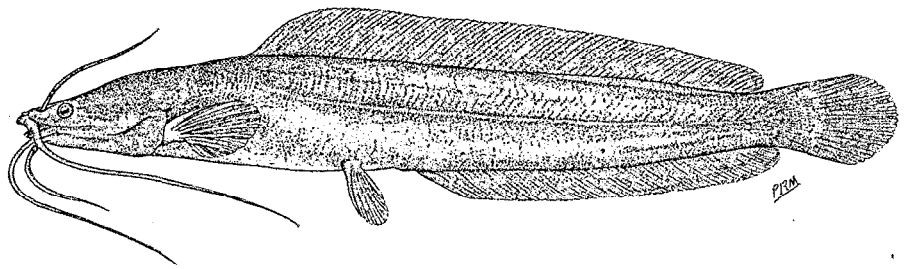

FIG. 6. — *Clarias gariepinus*, AMG/P 7862, 109 mm SL. Drawn by P. MEAKIN.
Clarias gariepinus, *AMG/P 7862, 109 mm LS. Dessin par P. MEAKIN.*

(Cuando) rivers; the Cunene and Cuvelai system in northern Namibia, the Kafue River floodplain. The most southern records are from the Phongola River system in South Africa. *Clarias ngamensis* is reported also from Lake Malawi and the Shire River including the lower Shire (TWEDDLE and WILLOUGHBY, 1979), the Save, Limpopo, and Incomati rivers in Mozambique (BELL-CROSS and MINSHULL, 1988) and the Kasai, upper Lualaba and the Moeru-upper Luapula-Bangwelu system (TEUGELS, 1986 a).

Clarias gariepinus (Burchell, 1822)

TYPE LOCALITY : The precise type locality of this species is the site on the Vaal River (Ky-Gariep) visited by BURCHELL on the 3 November 1811 and where he made sketches and described the species (BURCHELL, 1822). This site is given as locality no 63 by MCKAY (1943) and is marked on BURCHELL's (1822) map as the "Second Hippopotamus Station".

SYNONYMS

There are at least 20 junior synonyms of this species (see TEUGELS, 1982b, 1986a, b for details). Of these 20 nominal species two were originally described from southern Africa, namely *Clarias capensis* Valenciennes, 1840 and *C. mossambicus* Peters, 1852. BURCHELL (1822) originally described the species under the name *Silurus (Heterobranchus) gariepinus*.

ETYMOLOGY

From "Gariep", an early indigenous name for the Orange River. (The name Ky-Gariep refers to the Vaal River above the confluence with the Orange River).

DESCRIPTION (Fig. 6)

TEUGELS (1986a) gives a detailed description of this species. A re-description of the species based on a neotype and series of specimens from the Vaal River is being prepared by TEUGELS and SKELTON *(in press)*.

Diagnostic features of *Clarias gariepinus* include : a large head (2,85 to 3,75 times in SL, mean 3,2 times); numerous (between 24 and 110 increasing with size) closely spaced, slender pointed gill rakers; short broad vomerine toothband with sharp villiform teeth; dorsal fin extends to shortly before the base of the caudal fin.

A large clariid catfish reaching 1,4 m TL and up to 59 kg mass (BRUTON, 1976). Head large, heavy boned, its length from 2,85 to 3,75 times in SL; broad (width in head length 1,56) and depressed (head length 2,64 times head depth). Eyes small, lateral to dorso-lateral. Nostrils widely separated, anterior nares tubular, posterior slit-like. Barbels flagellate, nasals short, in adults reaching behind the orbits; maxillaries longest, extending, in adults, to the anterior base of pectoral fins; inner mandibulars short; outer mandibulars to base of pectorals. Branchiostegal membrane broad, entirely free behind, deeply divided in midline, gill-slit extending above base of pectorals. Maxillary, vomerine and mandibular toothplates all short and broad with numerous fine, sharply pointed teeth. Anterior gill arches elongate with numerous long, slender, closely spaced gill rakers. Suprabranchial organs well developed, arborescent, fill suprabranchial chamber.

Body ovoid behind head, compressed caudad. Dorsal fin from behind head to, or close to, base of caudal fin, covered in thick skin. Anal fin origin closer to caudal fin base than tip of snout. Anal fin extends from behind genital apertune to base of caudal fin. Caudal fin rounded. Pectoral fins slender with strong anterior spine, serrated along leading edge only. Pelvic fins relatively slender, postero-abdominal.

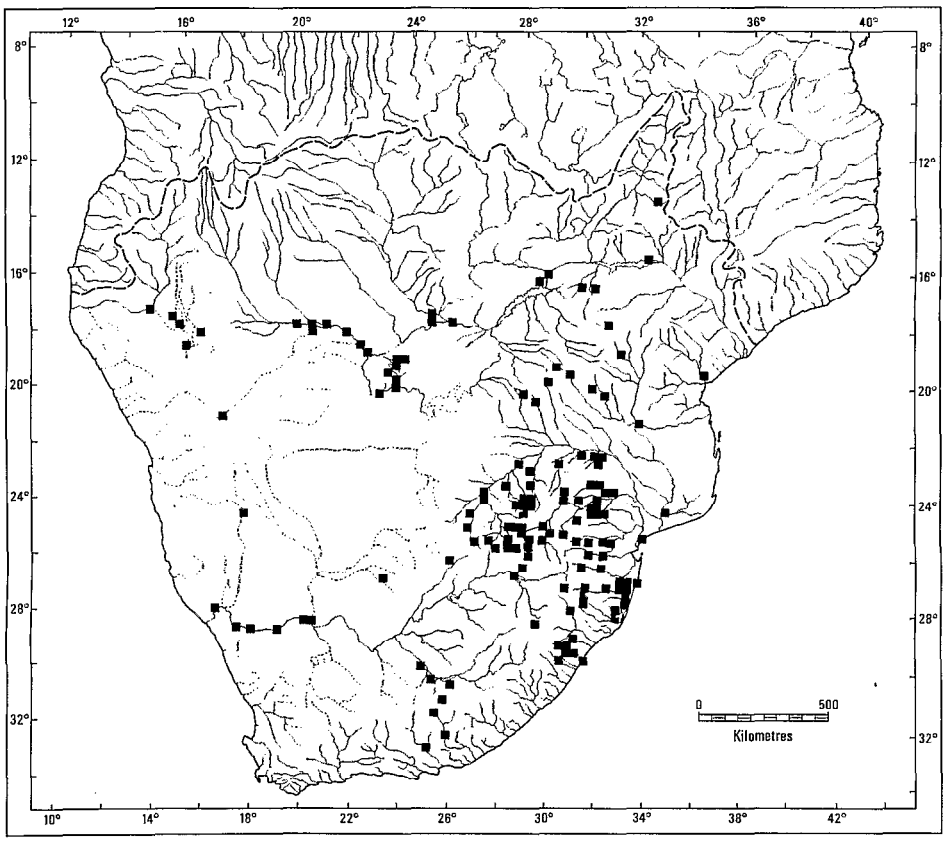

FIG. 7. — Distribution of *Clarias gariepinus* in southern Africa, based on records in RUSI, AMG, NMZ, SMW, UMMZ, USNM, and ANSP.

Distribution de Clarias gariepinus *dans le Sud de l'Afrique, basée sur des collections déposées au RUSI, AMG, NMZ, SMW, UMMZ, USNM, et ANSP.*

Colour and pigment varies with habitat, mottled or plain, olive-grey to dark brown or black, ventral parts off-white. Fins often with red infusions distally.

COMPARISON WITH OTHER SPECIES

In southern Africa most similar to *C. ngamensis*, both species characterised by relatively large heads, well developed suprabranchial organs, and pectoral fin spines with serrations only along leading edge. Separation of these two species is given under *C. ngamensis* above. Smaller specimens may be confused with other species but the large head and numerous gill rakers of small *C. gariepinus* are diagnostic.

DISTRIBUTION (fig. 7)

Clarias gariepinus is extremely widespread in southern Africa being absent only from certain Cape coastal systems. Its natural southern range limits are the Orange River system in the west and the Umtamvuna River in the east. These limits have now been extended by translocation to several Cape coastal systems including the Sundays, Great Fish, and Keiskamma in the south-eastern Cape and to the Eerste and possibly other rivers of the southwest Cape (de MOOR and BRUTON, 1988) (actual specimens from the Keiskamma and from the southwest Cape have not been seen by us and are therefore not reflected in Figure 7).

Elsewhere *C. gariepinus* occurs throughout the Afro-tropical region and beyond to the Levant and southern Turkey (TEUGELS, 1986a).

Clarias stappersii Boulenger, 1915

TYPE LOCALITY : "Ruisseau affluent de la Lukinda", The Lukinda is a river draining the northern side of Lake Mweru (Zaire/Zambia).

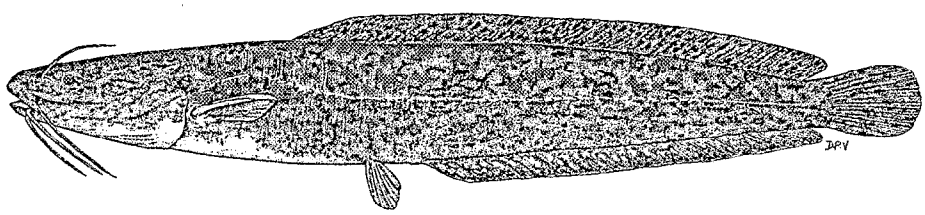

FIG. 8. — *Clarias stappersii,* RUSI 21037, 185 mm SL. Drawn by D. VOORVELT.
Clarias stappersii, *RUSI 21037, 185 mm LS. Dessin par D. VOORVELT.*

ETYMOLOGY

Named after Dr Louis STAPPERS, a Belgian naturalist associated with the Musée royal de l'Afrique centrale, Tervuren (Belgium) early this century, and collector of the holotype.

DESCRIPTION (fig. 8)

TEUGELS (1986a) provides a detailed description of this species based on populations originating from different parts of the distribution range. Measurements and meristic counts on specimens from southern Africa are given in table 1.

Diagnostic features include head shape, head length, which is intermediate between that of *Clarias gariepinus* and *C. ngamensis* and that of the "short-headed" species such as *Clarias theodorae* and *C. cavernicola*; postorbital bones well developed but not sutured together; short barbels; few (8-10) short widely spaced gill rakers on the anterior arch; anterior gill arch attached ventrally to wall of mouth; and dark heavily blotched pigmentation with the lateral line demarcated in white.

A moderate-sized clariid reaching 300 mm SL. Head 3,5 to 4 times in SL, snout obtuse. Eyes small, lateral to dorso-lateral. Mouth terminal to subterminal, broad, 60 % of head width. Barbels relatively short, in adults all less than head length. Branchiostegal membrane broad, entirely free behind and deeply divided in midline. Maxillary, mandibular and vomerine toothbands short and broad with numerous sharp or sub-granular teeth. Ventral section of anterior gill arch attached to mouth-wall; 8-10 well-spaced, pointed gill rakers. Suprabranchial organs not filling suprabranchial chamber, with lamelliform branches.

Body ovoid behind head, compressed caudad. Dorsal fin origin more than 50 % of head length behind head, extending the above caudal base. Origin of anal fin about equidistant from tip of snout and base of caudal fin (or slightly nearer base of caudal). Anal fin to below caudal base. Caudal fin rounded. Pectoral fins short, anterior spine serrated along leading edge only. Pelvic fins short, postero-abdominal.

Colour dark brown with black blotches, ventral side of head and body cavity region light brown. Head pores and lateral line clearly demarcated in cream.

TABLE 1

Proportional measurements and meristic data for *Clarias stappersii* from southern Africa (n = 17)
Mensurations et caractères méristiques proportionnels pour Clarias stappersii *du Sud de l'Afrique (n = 17)*

Measurement	Mean	Min	Max	Sd
Standard length (mm)		91.5	372.0	
AS PERCENTAGE SL				
Predorsal length	35.0	31.2	37.9	1.64
Head length	23.0	20.1	25.4	1.63
Dorsal fin base	63.5	56.1	66.8	5.39
Pectoral fin	10.7	9.1	14.4	1.33
Pelvic fin	7.2	4.8	9.5	1.1
Anal fin base	49.4	47.2	52.4	1.36
Body depth	16.7	12.8	20.5	2.0
Body width	15.5	12.4	17.1	1.38
Caudal Peduncle length	2.1	1.5	3.0	0.48
AS PERCENTAGE HEAD LENGTH				
Head depth	61.9	52.2	73.8	7.0
Head width	80.9	74.2	92.7	4.66
Head to dorsal fin	58.2	47.5	78.7	8.18
Snout length	38.0	35.4	42.8	1.79
Orbit diameter	9.9	7.9	13.5	1.34
Post orbit	58.8	56.3	61.7	1.6
Interorbit	50.4	46.5	53.4	1.84
Mouth width	54.9	48.4	60.8	3.93
Nasal barbel	48.6	33.3	95.5	15.81
Maxillary barbel	77.2	51.1	146.1	24.65
Inner mandibular barbel	53.4	34.4	91.6	15.15
Outer mandibular barbel	67.0	44.3	123.6	21.23
AS PERCENTAGE CAUDAL PEDUNCLE LENGTH				
Caudal peduncle depth	60.5	38.2	81.8	13.5
MERISTICS (n = 9)				
Dorsal rays		62	79	
Anal rays		55	64	
Vertebrae		57	62	
Abdominal vertebrae		15	17	
Caudal vertebrae		42	47	
Predorsal vertebrae		2	5	
Preanal vertebrae		15	18	

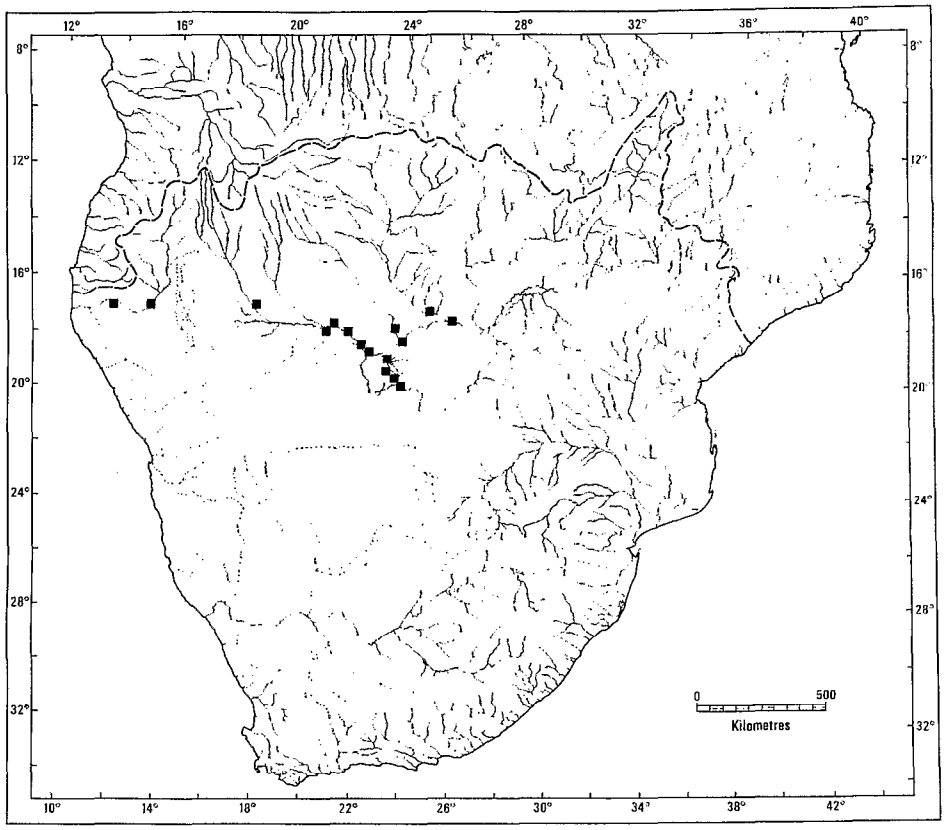

FIG. 9. — Distribution of *Clarias stappersii* in southern Africa, based on records in RUSI, AMG, NMZ, SMW, UMMZ, USNM, and ANSP.

Distribution de Clarias stappersii *dans le Sud de l'Afrique, basée sur des collections déposées au RUSI, AMG, NMZ, SMW, UMMZ, USNM, et ANSP.*

DISTRIBUTION (fig. 9)

In southern Africa this species occurs in the Cunene, Okavango, Kwando, upper Zambezi and Kafue River systems. Beyond southern Africa found in the Kasai, upper Lualaba, and the Mweru-upper Luapula-Bangwelu system (TEUGELS, 1986a).

REMARKS

In southern African collections the identity of *C. stappersii* sometimes has been confused with the species *Clarias submarginatus* Peters, 1882. However, the latter is quite distinct (TEUGELS, 1986a) and only occurs in two small coastal basins in Cameroon.

Clarias theodorae Weber, 1897

TYPE LOCALITY : "Umhloti-Fluss". The Mdloti River near Verulam, Natal, South Africa.

SYNONYMS (after TEUGELS, 1986a, b)

Clarias amplexicauda Boulenger, 1902
Clarias fouloni Boulenger, 1905
Clarias macrurus Boulenger, 1915

ETYMOLOGY

Named after Theodora Jacoba SLEESWIJK-VAN BOSSE, a Dutch artist and the niece of Professor M. WEBER's wife, who accompanied him on his expedition to South Africa, where he collected the type specimen of this species (JACKSON, 1979).

DESCRIPTION (fig. 10)

TEUGELS (1986) description was based on specimens originating from various localities over the distribution range of this species. Our description is restricted to southern African specimens. Measurements and meristic counts are given in table II.

Diagnostic features are a long slender form (body depth 6-7 times in SL), short head (head length 4-5

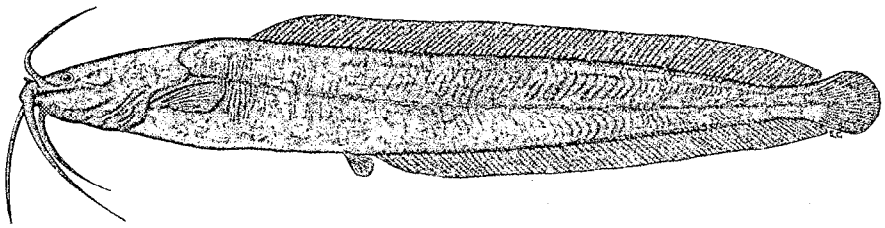

FIG. 10. — *Clarias theodorae,* RUSI (28547, OK 85-63), 176 mm SL. Drawn by E. GRANT.
Clarias theodorae, *RUSI (28547, OK 85-63), 176 mm LS. Dessin par E. GRANT.*

times in Sl, relatively long barbels (all reaching to or beyond the hind margin of the head), pectoral spine with serrations on anterior and posterior edges. In addition maximum size is relatively small (approximately 350 mm SL).

Head short (4-5 times in SL), obtuse, moderately depressed. In adults the head of males appears broader and more rounded than of females and this difference may be enhanced during breeding activity. Snout short, obtuse. Eyes small, latero-dorsal. Mouth terminal to sub-terminal, broad (approximately 55 % head width). Barbels all relatively long, nasals reach posterior edge of head; maxillaries to behind pectoral fins; inner mandibulars to free margin of branchiostegal membrane; outer mandibulars to beyond branchiostegal membrane. Postorbit region bony, supraorbital and fourth infraorbital bones sutured in specimens larger than 80-90 mm SL. Maxillary, mandibular toothplates relatively narrow with short pointed teeth, vomerine toothplate with blunt granular teeth. Anterior gill arch with 13-19 slender gill rakers (number increasing with size). Suprabranchial organs weakly developed, thick stubby branches, not filling suprabranchial chamber.

Body ovoid behind head, tapered and compressed caudad. Caudal peduncle depth about 1/3 body depth. Dorsal fin origin 1/3-1/2 head length behind head, extends to caudal fin base, last ray partly attached to caudal fin. Origin of anal fin closer to tip of snout than caudal fin base, extending to base of caudal, last ray partly attached to caudal. Caudal fin rounded. Pectoral fins short, anterior spines serrated along both edges. Pelvics short, postero-abdominal.

Colour uniform or mottled, dark brown tending to black, antero-ventral parts usually lighter brown. Lateral line forms thin white line along mid-flanks.

COMPARISON WITH OTHER SPECIES

Clarias theodorae is easily differentiated from *C. gariepinus* and *C. ngamensis* on account of its much smaller head, more slender elongate body and dark pigmentation. It sometimes may be confused with juvenile *C. stappersii* but the two species may be separated using head size, barbel length, pectoral spine serrations, the nature of the anterior gill arch (partly attached in *C. stappersii*, free in *C. theodorae*) and the form of the suprabranchial organs (lamellate in *C. stappersii,* bluntly branched in *C. theodorae*). Although similar in shape the marked differences in pigmentation and development of the eyes easily

TABLE II

Proportional measurements and meristic data for *Clarias theodorae* from southern Africa (n = 35)
Mensurations et caractères méristiques proportionnels pour Clarias theodorae *du Sud de l'Afrique (n = 35)*

Measurement	Mean	Min	Max	Sd
Standard length (mm)		33.5	228.5	
AS PERCENTAGE SL				
Predorsal length	28.4	20.2	32.7	2.36
Head length	18.3	16.3	20.6	1.12
Dorsal fin base	70.6	60.5	77.6	2.97
Pectoral fin	8.9	6.1	11.9	1.09
Pelvic fin	5.5	4.1	7.9	0.69
Anal fin base	55.5	45.2	59.3	2.64
Body depth	14.5	11.5	17.5	1.53
Body width	11.8	9.7	15.0	1.23
AS PERCENTAGE HEAD LENGTH				
Head depth	59.3	47.3	68.5	5.53
Head width	84.9	75.3	94.4	4.41
Head to dorsal fin	39.2	26.9	59.9	7.43
Snout length	37.7	29.1	46.2	3.82
Orbit diameter	9.5	7.1	13.5	1.42
Post orbit	60.6	53.3	83.1	4.96
Interorbit	50.6	44.8	55.4	2.75
Mouth width	56.0	44.6	67.8	6.12
Nasal barbel	87.7	60.9	115.7	12.40
Maxillary barbel	111.6	76.4	145.6	15.28
Inner mandibular barbel	104.0	59.7	144.1	16.72
Outer mandibular barbel	84.2	51.5	113.7	14.7
MERISTICS				
Dorsal rays (n=39)		71	94	
Anal rays (n=39)		60	89	
Vertebrae (n=43)		54	67	
Abdominal vertebrae (n=43)		12	15	
Caudal vertebrae (n=43)		41	48	
Predorsal vertebrae (n=37)		2	4	
Preanal vertebrae (n=38)		12	15	

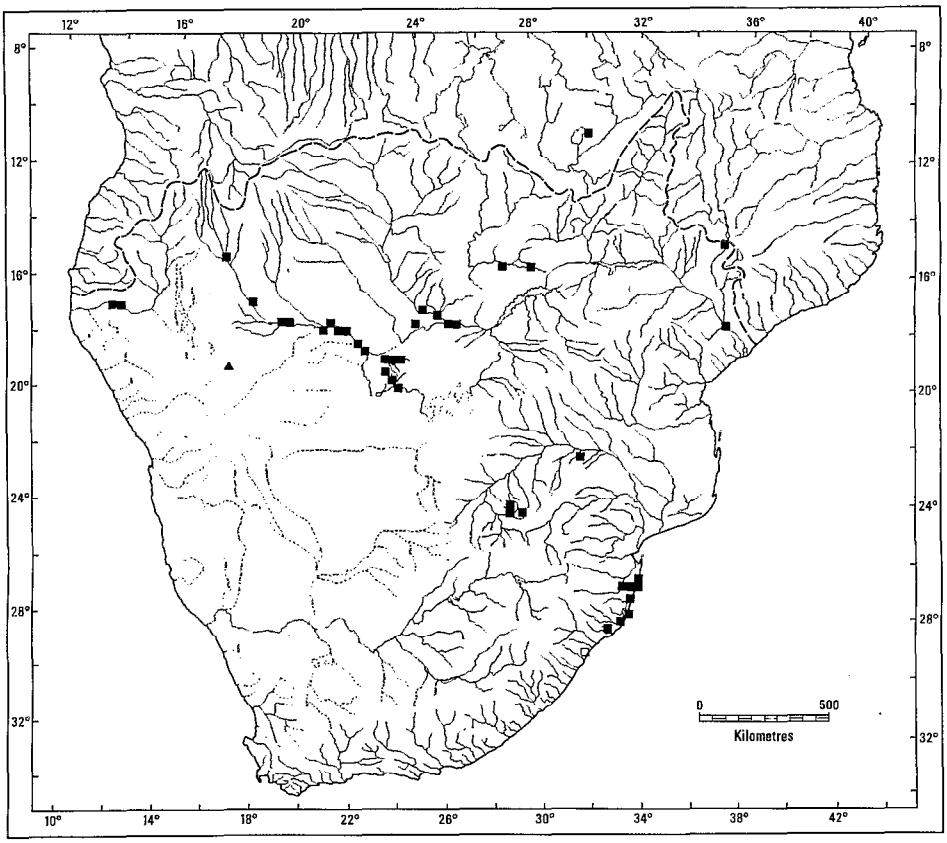

FIG. 11. — Distribution of *Clarias theodorae* ■ and *C. cavernicola* ▲ in southern Africa, based on records in BMNH, RUSI, AMG, NMZ, SMW, UMMZ, USNM, and ANSP.

Distribution de Clarias theodorae ■ *et* C. cavernicola ▲ *dans le Sud de l'Afrique, basée sur des collections déposées au BMNH, RUSI, AMG, NMZ, SMW, UMMZ, USNM, et ANSP.*

separate *C. theodorae* and the site-restricted *C. cavernicola.*

DISTRIBUTION (fig. 11)

Found in the Cunene, Okavango, Kwando, upper Zambezi, Kafue, lower Shire and lower Zambezi, Magalakwyn and Nwanedi (Transvaal) tributaries of the Limpopo River, north-eastern Natal from the Phongola River floodplain and Kosi lake system south to the Enseleni River. There is no recent record from the type locality, the Mdloti River, which is the southernmost record. Beyond southern Africa the distribution of *C. theodorae* (TEUGELS 1986a : fig. 60) extends to the Zaire River basin including the Kasai, upper Lualaba, Mweru-Luapula-Bangwelu and the central Zaire basin, Lake Malawi and the lower Rufigi River in Tanzania.

Clarias cavernicola Trewavas, 1936

TYPE LOCALITY : "Aigamas Cave, north of Otavi".

ETYMOLOGY

Derived from the latin words *caverna,* a cave and *colere,* to dwell, in reference to the habits and habitat of this species.

DESCRIPTION (fig. 12)

A detailed description of the species is given by Teugels (1986a). Finray and vertebral counts are given in table III.

Diagnostic features are the absence of pigmentation in living and preserved specimens, the lack of, or greatly reduced (vestigial) eyes and the elongate body form.

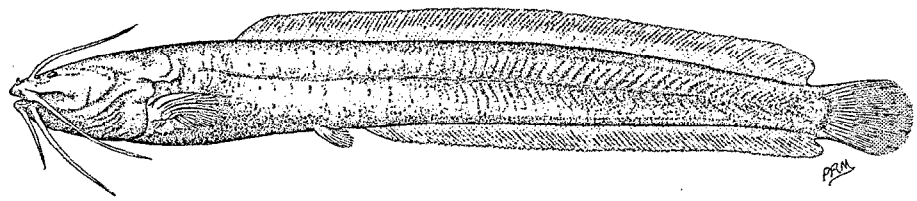

FIG. 12. — *Clarias cavernicola*, AMG/P 2679, 155 mm SL. Drawn by P. MEAKIN.
Clarias cavernicola, *AMG/P 2679, 155 mm LS. Dessin par P. MEAKIN.*

Head obtuse, short (4,9 times in SL), broad (length 1,25 times width) and depressed (length 1,76 times depth). Eyes absent or vestigial, without free borders. Mouth terminal to subterminal, broad, up to 60 % head width. Nasal barbels reach posterior border of head; maxillaries longest reach beyond bases of pectoral fins; inner mandibulars shortest reach beyond branchiostegal membrane; outer mandibulars reach beyond pectoral fin bases. Premaxillary, vomerine and mandibular tooth bands short and broad with numerous villiform teeth. Anterior gill arch with 12-15 well spaced slender gill rakers. Suprabranchial organs moderately developed, branches thick, blunt, not filling suprabranchial chamber.

Body elongate and slender (body depth 7,5 times in SL), ovoid behind head, compressed and gently tapered caudal, caudal peduncle depth about 50 % body depth. Dorsal fin origin 1/3 to 1/2 head length behind head, extends to above base of caudal fin. Anal fin origin nearer tip of snout than caudal fin base. Anal fin extends to below caudal fin base. Caudal fin rounded. Pectoral fins short, rounded, anterior spine serrated along inner edge only. Pelvic fins short, postero-abdominal. Lateral line incomplete terminating before the caudal region.

Colour in life creamish flushed with pink or orange, small dark pupils present in some specimens.

COMPARISON WITH OTHER SPECIES

Lack of pigmentation and reduced eyes distinguish *Clarias cavernicola* from the otherwise similar *C. theodorae*. These two species are easily separated from all other clariids in southern Africa by their small heads and elongate bodies with the origin of the anal fin distinctly closer to the tip of the snout than to the caudal fin base.

DISTRIBUTION (fig. 11)

Known only from a cave on the farm Aigamas, north of Otavi, Namibia (19° 26′ 30″ S, 17° 17′ 26″ E). (This locality was incorrectly plotted in TEUGELS 1986a : figure 75).

Clarias liocephalus Boulenger, 1898

TYPE LOCALITY : Kinyamkolo, Lake Tanganyika.

SYNONYMS (after TEUGELS, 1986a, b)

Clarias carsonii Boulenger, 1903
Clarias neumanni Hilgendorf, 1905
Clarias phillipsi Norman, 1925
Clarias youngicus Ricardo-Bertram, 1940
Clarias ornatus Poll, 1943

TABLE III

Proportional measurements and meristic data for *Clarias cavernicola* from Aigamas cave, Namibia (n = 18)
Mensurations et caractères méristiques proportionnels pour Clarias cavernicola *d'Aigamas cave, Namibie (n = 18)*

Measurement	Mean	Min	Max	Sd
Standard length (mm)		83.1	161.8	
AS PERCENTAGE SL				
Predorsal length	28.9	23.9	30.8	1.55
Head length	18.9	15.3	20.8	1.32
Dorsal fin base	70.4	63.8	74.8	2.58
Pectoral fin	8.8	7.1	11.0	1.07
Pelvic fin	5.5	3.8	7.1	0.97
Anal fin base	54.1	51.7	57.3	1.57
Body depth	13.6	7.9	15.6	1.61
Body width	13.3	8.0	16.0	1.52
AS PERCENTAGE HEAD LENGTH				
Head depth	59.1	50.3	67.5	5.32
Head width	88.6	79.8	104.2	6.02
Head to dorsal fin	40.0	31.2	46.4	4.89
Mouth width	58.4	50.2	67.4	4.86
Nasal barbel	88.8	42.0	126.0	20.04
Maxillary barbel	131.4	74.0	213.4	39.64
Inner mandibular barbel	90.9	57.8	131.6	21.91
Outer mandibular barbel	85.1	25.4	145.5	42.07
MERISTICS				
Dorsal rays (n=11)		64	76	
Anal rays (n=11)		51	64	
Vertebrae (n=11)		45	57	
Abdominal vertebrae (n=10)		13	14	
Caudal vertebrae (n=9)		38	43	
Predorsal vertebrae (n=10)		3	3	
Preanal vertebrae (n=9)		11	14	

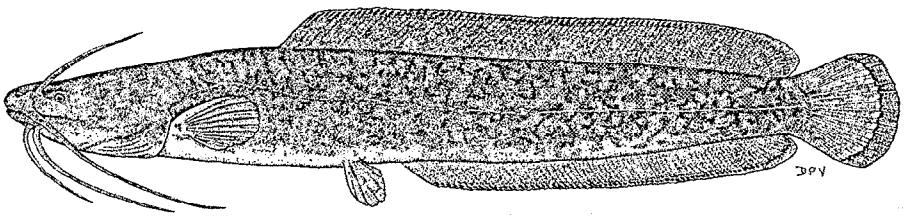

FIG. 13. — *Clarias liocephalus*, RUSI 86-31, 128 mm SL. Drawn by D. VOORVELT.
Clarias liocephalus, *RUSI 86-31, 128 mm LS. Dessin par D. VOORVELT.*

ETYMOLOGY

From the Greek λειος and κεφαλη, meaning "soft head", in reference to the reduced casque (reduced dermal bones behind the orbits).

DESCRIPTION (fig. 13)

This description is based on material from the upper Zambezi and Okavango Rivers. Certain differences between this and the description given by TEUGELS (1986a) are noted. Morphometric and meristic data are given in table IV.

Diagnostic features are a relatively short broad head, postorbit region covered in part only by widely separated bones (supraorbital and 4th infraorbital), the relatively large space between the head and dorsal fin, pectoral spines serrated along outer edge only; suprabranchial organs feebly developed.

Head nearly as broad as long (length 1,2 times width), length in SL 4-5 times, depressed (length 2 times depth). In larger specimens postorbit region bulges perceptably. Snout fleshy, obtuse. Eyes small, with free borders, dorsal. Mouth terminal to subterminal, moderately broad (approximately 50 % head width), lips fleshy. Nasal barbels reach to hind margin of head; maxillary barbels longest, reach to beyond bases of pectoral fins; inner mandibulars reach to beyond free border of branchiostegal membrane; outer mandibulars reach to beyond bases of pectoral fins. Premaxillary, mandibular and vomerine toothplates broad and slender, teeth villiform. Anterior gill arch with 2 + 11 well-spaced, slender, pointed gill rakers. Suprabranchial organs absent or forming a simple peg-like projection in small specimens or a blunt trifid projection in larger specimens examined, not filling suprabranchial chamber.

Body depressed to ovoid behind head, compressed caudad. Dorsal fin origin slightly less than half the head length behind head, extends to above caudal fin base. Origin of anal fin more-or-less equidistant from tip of snout and caudal fin base. Anal fin extends to below caudal fin base. Pectoral fins rounded, anterior spines serrated along leading edge, weakly serrated on inner edge. Pelvic fins in postero-abdominal, reach anterior base of anal fin. Lateral line straight along mid body to base of caudal fin.

Colour mottled brown, lighter brown on ventral side of head and abdomen. Dorsal and anal fins with

TABLE IV

Proportional measurements and meristic data for *Clarias liocephalus* from southern Africa (n = 5)
Mensurations et caractères méristiques proportionnels pour Clarias liocephalus *du Sud de l'Afrique (n = 5)*

Measurement	Mean	Min	Max	Sd
Standard length (mm)		22.0	120.0	
As PERCENTAGE SL				
Predorsal length	36.2	33.3	38.6	4.99
Head length	21.7	20.0	22.7	0.97
Dorsal fin base	63.4	62.7	65.0	0.84
Pectoral fin	15.5	14.0	17.3	1.09
Pelvic fin	6.8	4.4	9.8	2.12
Anal fin base	48.9	47.0	51.4	1.77
Body depth	15.3	12.6	18.6	2.19
Body width	13.1	11.8	14.6	0.92
Caudal Peduncle length	3.6	2.7	4.4	0.63
AS PERCENTAGE HEAD LENGTH				
Head depth	59.9	52.7	70.0	5.67
Head width	90.9	88.5	94.0	1.99
Head to dorsal fin	69.2	59.2	78.0	6.04
Snout length	39.7	36.9	44.0	2.60
Orbit diameter	11.2	8.2	14.7	2.20
Post orbit	59.1	55.0	63.7	3.28
Interorbit	52.9	49.2	56.0	2.21
Mouth width	54.4	50.0	61.5	4.06
Nasal barbel	97.4	76.9	111.8	12.10
Maxillary barbel	152.3	115.4	191.2	25.53
Inner mandibular barbel	90.5	73.9	110.8	12.70
Outer mandibular barbel	130.1	116.4	164.7	17.92
AS PERCENTAGE CAUDAL PEDUNCLE LENGTH				
Caudal peduncle depth	179.0	109.4	231.3	42.11
MERISTICS (n = 9)				
Dorsal rays		69	74	
Anal rays		51	62	
Vertebrae		58	60	
Abdominal vertebrae		15	18	
Caudal vertebrae		42	43	
Predorsal vertebrae		4	6	
Preanal vertebrae		15	18	

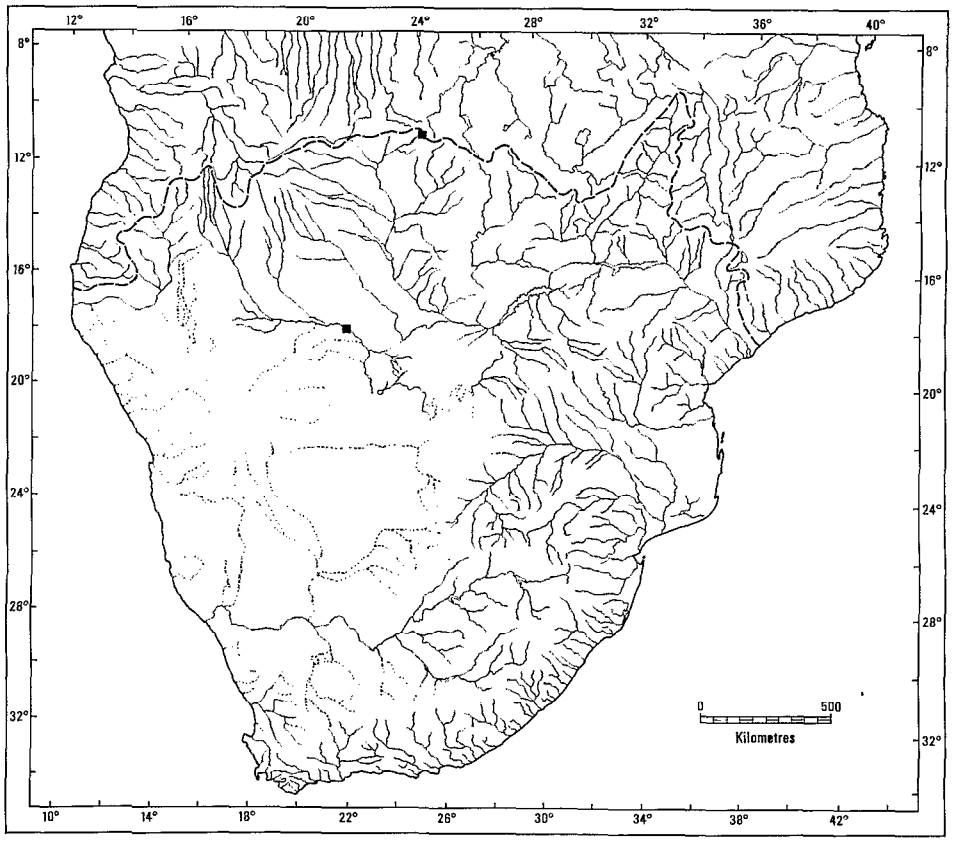

FIG. 14. — Distribution of *Clarias liocephalus* in southern Africa, based on records in RUSI and AMG.
Distribution de Clarias liocephalus *dans le Sud de l'Afrique, basée sur des collections déposées au RUSI et AMG.*

darker edges. Distal third of caudal a distinct dark band.

COMPARISON WITH OTHER SPECIES

This species is most similar to *Clariallabes platyprosopos* but differs in the following external features : the postorbital plates are smaller in *C. platyprosopos*; the dorsal fin is closer to the head in *C. liocephalus* (less than 1/2 head length, but more than 1/2 head length in *C. platyprosopos*); the pectoral spine is serrated only along the inner edge in *C. liocephalus* but along both the inner and outer edges in *C. platyprosopos*. Another very similar species is *Clarias dumerilii*. *Clarias liocephalus* differs from this latter species by shorter barbels, smaller toothplates, a shorter and broader frontal fontanel and by the absence of a lateral notch in the fourth infraorbital (TEUGELS, 1986a).

DISTRIBUTION (fig. 14)

There are records of this species from the Okavango River at Popa rapids, and from a headwater stream of the upper Zambezi in Zambia. Beyond southern Africa the distribution extends through the Bangweulu-Mweru drainage (upper Luapula), and the catchments of Rift Valley lakes including Lakes Malawi, Rukwa, Tanganyika, Kivu, George, Edward and Lake Victoria (TEUGELS, 1986a, fig. 88). It is also recorded from the Tana River in East Africa.

Clariallabes Boulenger, 1900

Species of *Clariallabes* differ from *Clarias* on account of the lack of dermal bony elements behind the eye. The dorsal and anal fins are united with the caudal fin in some species. The genus requires revision and redefinition. One species is recorded from southern Africa.

Clariallabes platyprosopos Jubb, 1964

TYPE LOCALITY : "Upper Zambezi River about 15 miles above the Victoria Falls".

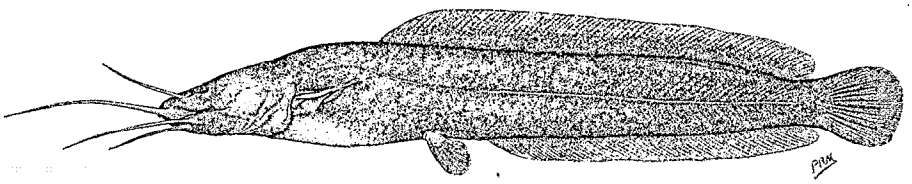

FIG. 15. — *Clariallabes platyprosopos,* AMG/P 3184, 287 mm SL. Drawn by P. MEAKIN.
Clariallabes platyprosopos, *AMG/P 3184, 287 mm LS. Dessin par P. MEAKIN.*

ETYMOLOGY

From the Greek πλατυς meaning flat and προσωπον, a mask or face, describing its characteristic broad, depressed head.

DESCRIPTION (fig. 15)

Based on the holotype and 7 specimens. Morphometric proportions and meristic characters are given in table V.

Diagnostic features include a broad depressed head with bulging cheeks (post orbital areas) in adults, suprabranchial organ vestigial or absent.

Head broad, depressed, cheeks bulge characteristically. Head length 4,2-4,8 times in SL, slightly longer than broad, covered with thick fleshy skin. Snout obtuse, narrower than postorbit. Eyes small, dorsal, widely spaced. Mouth terminal or slightly sub-terminal, straight, 0,6 times head width, lips fleshy. Teeth villiform in broad curved bands on premaxillae, vomer and lower jaw. Nasal barbels reaching beyond posterior margin of the head; maxillaries longest reach beyond the posterior margins of pectoral fins; inner mandibulars shortest, reach free edge of branchiostegal membrane, their bases slightly medial to the lateral corners of the mouth and in advance of the bases of the outer mandibular barbels; the outer mandibular barbels reach beyond the bases of the pectoral fins. Suprabranchial organs absent, vestigial gill-fan on third arch only, with upper gill filaments thickened but separate except near their bases. Anterior gill arch with 12-13 spaced, pointed gill rakers, increasing in size from ventral to dorsal along arch.

Body ovoid behind head, compressed caudad. Dorsal fin origin more than one half head length behind head, fin extends to nearly above the caudal fin base, fin covered by thick skin. Anal fin origin equidistant from tip of snout and mid-base of caudal fin, extends to below caudal fin base, covered by thick skin. Caudal fin rounded. Pectoral fins rounded, horizontal, spine about half fin length, serrated along both edges, inner serrations directed distally, outer serrations directed proximally. Pelvics postero-abdominal, rounded, reaching base of anal fin. Anus and genital pore behind pelvic bases, adjacent to origin of anal fin. Lateral line thin, straight, mid-lateral.

In life adults are almost black, juveniles tend to be mottled. Preserved colour uniform or mottled, dark brown with lighter brown over ventral head and

TABLE V

Proportional measurements and meristic data for *Clariallabes platyprosopos* from southern Africa (n = 8)
Mensurations et caractères méristiques proportionnels pour Clariallabes platyprosopos *du Sud de l'Afrique (n = 8)*

Measurement	Mean	Min	Max	Sd
Standard length (mm)		112.2	283.0	
AS PERCENTAGE SL				
Predorsal length	34.6	33.2	36.0	1.03
Head length	21.8	20.8	23.5	0.87
Dorsal fin base	63.1	60.6	65.0	1.53
Pectoral fin	12.6	11.2	13.6	0.79
Pelvic fin	8.1	6.0	9.4	0.95
Anal fin base	48.0	46.0	49.2	1.06
Body depth	14.5	12.3	16.1	1.30
Body width	15.2	13.6	17.1	1.21
Caudal Peduncle length	2.7	1.8	3.6	0.72
AS PERCENTAGE HEAD LENGTH				
Head depth	49.6	44.6	57.1	3.74
Head width	89.2	80.3	98.2	5.83
Head to dorsal fin	68.1	60.9	80.8	5.98
Snout length	39.7	36.0	41.8	1.78
Orbit diameter	10.0	7.5	12.6	1.45
Post orbit	52.0	46.2	58.6	4.00
Interorbit	55.7	51.1	60.9	3.15
Mouth width (n=7)	54.8	47.1	61.9	4.40
Nasal barbel	68.6	36.4	90.0	14.52
Maxillary barbel	136.2	96.4	154.8	17.28
Inner mandibular barbel	58.6	30.0	103.6	19.64
Outer mandibular barbel	100.3	60.0	117.7	16.87
AS PERCENTAGE CAUDAL PEDUNCLE LENGTH				
Caudal peduncle depth	46.8	35.4	75.0	11.77
MERISTICS (n = 7)				
Dorsal rays		73	82	
Anal rays		56	63	
Vertebrae		57	59	
Abdominal vertebrae		14	18	
Caudal vertebrae		39	44	
Predorsal vertebrae		5	7	
Preanal vertebrae		17	18	

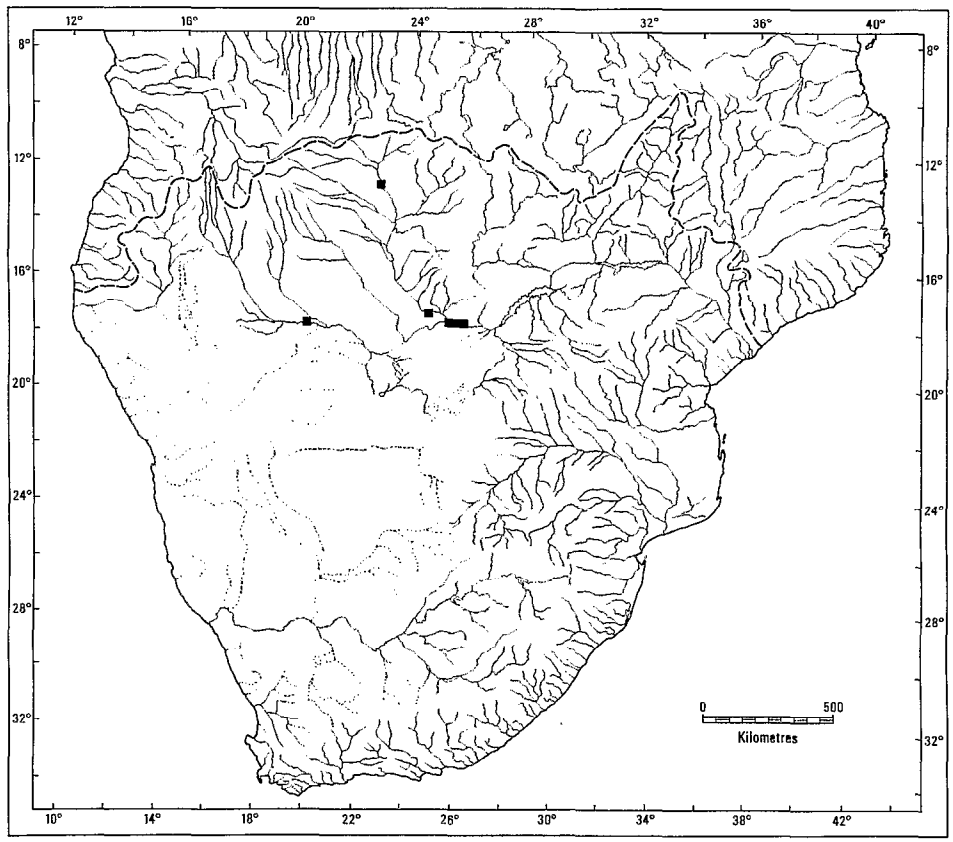

FIG. 16. — Distribution of *Clariallabes platyprosopos* in southern Africa, based on records in RUSI, AMG, and NMZ.
Distribution de Clariallabes platyprosopos *dans le Sud de l'Afrique, basée sur des collections déposées au RUSI, AMG et NMZ.*

abdominal region. Thin dark sub-perimental band on caudal and posterior parts of dorsal and anal fins evident in some specimens.

COMPARISON WITH OTHER SPECIES

Most similar to *Clarias liocephalus* and *C. dumerilii*, but differs in having smaller more widely separated post-orbital dermal plates (supraorbital and 4th infraorbital), in the origin of the dorsal fin being more than 50 % of the head length behind the head and by the pectoral spine having serrations along both edges (in *C. liocephalus* and *C. dumerilii* the inner serrations are weak or absent). The short wide head of *C. platyprosopos* distinguishes it from other species of *Clariallabes*.

DISTRIBUTION (fig. 16)

Known only from rapids in the upper Zambezi and the Okavango rivers.

REMARKS

The similarities between this species and the two *Clarias* subgenus *Brevicephaloides* species (*C. liocephalus* and *C. dumerilii*) are such that a review of the genus *Clariallabes* may indicate that *C. platyprosopos* is incorrectly allocated.

Heterobranchus Geoffroy-Saint-Hilaire, 1809

This genus has been recently revised by TEUGELS *et al.* (1990) from which only essential points are extracted here.

Diagnostic features of *Heterobranchus* include a large adipose fin between 20-30 % SL, supported by 21-27 extended neural spines, and a relatively short (26-45 rays), soft-rayed dorsal fin.

Four species of *Heterobranchus* are described, one occurs in southern Africa.

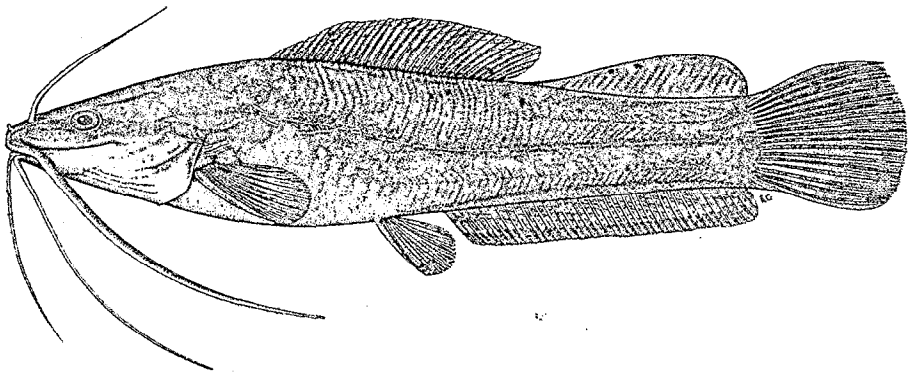

FIG. 17. — *Heterobranchus longifilis*, AMG/P 71, 205 mm SL. Drawn by E. GRANT.
Heterobranchus longifilis, *AMG/P 71, 205 mm LS. Dessin par E. GRANT.*

Heterobranchus longifilis Valenciennes, 1840

TYPE LOCALITY : "le Nil"

SYNONYMS (after TEUGELS *et al.* 1990)

Heterobranchus laticeps Peters, 1852
Clarias loangwensis Worthington, 1933
Heterobranchus platycephalus Nichols & La Monte, 1934

ETYMOLOGY

The specific name refers to the characteristic long barbels of this species.

DESCRIPTION (fig. 17)

The following description is condensed from TEUGELS *et al.* (1990).

Diagnostic features within the southern African region are as for the genus.

Head large and depressed, its length 2,7-3 times in SL. Head bony above with complete casque. Snout broadly rounded. Eyes supero-lateral with interorbital distance less than half the head length. Mouth terminal, broad. Teeth villiform, vomerine and mandibular teeth sub-granular; toothplates large. Suprabranchial organ well developed, in form of extensive dendritic structure.

Body ovoid behind head, compressed caudad. Dorsal fin origin less than 1/2 head length behind the head. Rayed dorsal fin with 31-39 rays, longer than adipose fin. Adipose fin from posterior dorsal base to caudal fin base. Anal fin origin below posterior portion of rayed dorsal fin, nearer base of caudal fin than tip of snout. Caudal fin rounded. Pectoral fin spines strongly serrated on leading edge, inner edge smooth or with weak serrations only. Lateral line straight and thin.

Colour variable from dark olive or greyish brown to reddish brown, lighter over ventral head and abdomen. Scattered dark blotches, a dark posterior tip to the adipose fin and a concentric dark and light band over the basal portion of the caudal fin characteristic of juveniles.

DISTRIBUTION (fig. 18)

In southern Africa known from the middle and lower Zambezi including the lower Shire river. Possibly also in the Pungwe and Buzi rivers in Mozambique (JUBB, 1961) but no specimens known to support this range. Widespread beyond southern Africa including certain Rift Valley lakes, the Zaire system, the Nile and West Africa to the Gambia river (distribution illustrated in TEUGELS *et al.*, 1990, fig. 8).

COMPARISON WITH OTHER SPECIES

For a comparison of *H. longifilis* with other species of this genus refer to TEUGELS *et al.*, 1990. It is a distinctive species in southern Africa.

REMARKS

In spite of its large size (maximum recorded 53 kg) and considerable reputation as an angling species, the southern African populations of this species have not been studied in any detail.

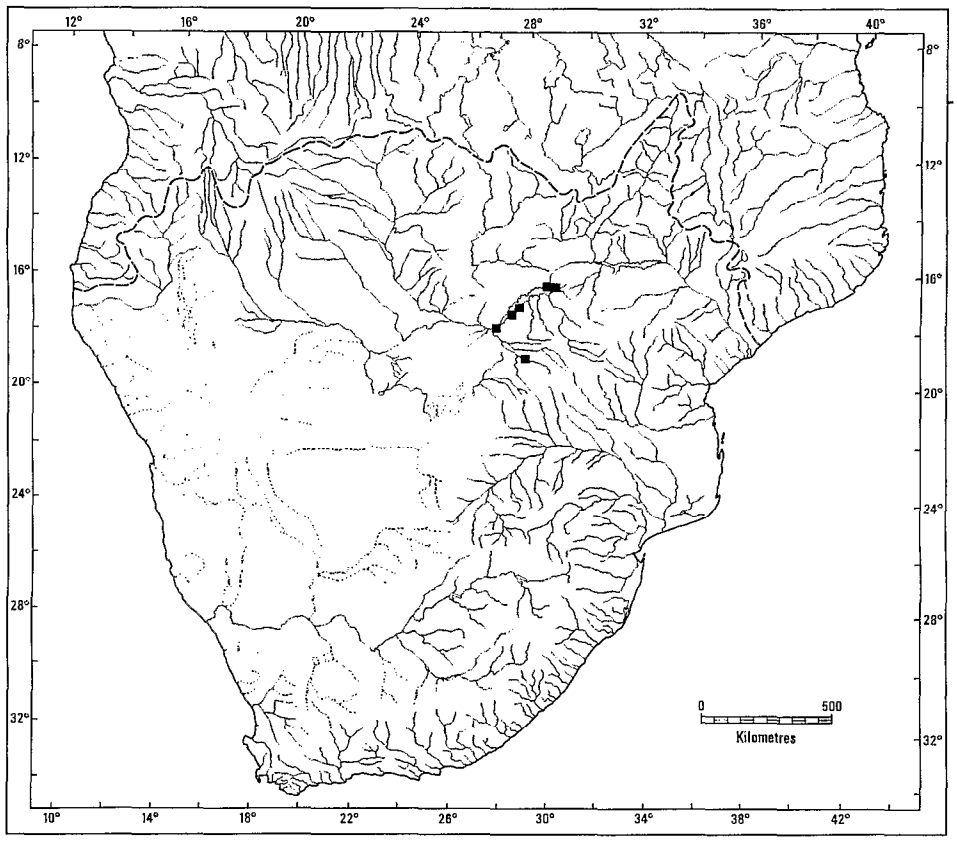

FIG. 18. — Distribution of *Heterobranchus longifilis* in southern Africa, based on records in AMG and NMZ.
Distribution de Heterobranchus longifilis *dans le Sud de l'Afrique, basée sur des collections déposées au AMG et NMZ.*

CONCLUSION

The works of TEUGELS (1982, 1986) and TEUGELS *et al.* (1990) have cleared many of the taxonomic and identification problems of clariid fishes generally including those found in southern Africa. Some of these problems included the synonymies of *Clarias gariepinus* and *Clarias ngamensis*, the correct identity of *C. stappersii* and especially *C. liocephalus*, the latter identified from the southern Africa region herein for the first time.

In addition we have established accurate distribution maps based on existing collections. These maps are valuable entities for biogeographers and also in that they allow observers to appreciate the importance and significance of specimens in recognized collections. Thus one can draw immediate attention to a marked lack of specimen records for the well-known vundu *(Heterobranchus longifilis)* — especially from systems such as the Pungwe and Buzi in Mozambique. Specimens of this species are also required for further taxonomic and anatomical descriptions and investigations. This is particularly important now that this species is beginning to be used more extensively in aquaculture (LEGENDRE, 1986; 1990), especially for cross-breeding with the sharptooth catfish *C. gariepinus* (HECHT and LUBLINKHOF, 1985; LEGENDRE *et al., in press*).

Clarification of the identity of the less common *Clarias* species in southern Africa allows for a better appreciation of the geographical distribution of these species to be made. The recognition of *C. liocephalus* specimens in collections from the Zambezi and Okavango rivers extends the known range of the species considerably even though the pattern thereby attained is concordant with the known range of several other fish species and is not altogether surprising.

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