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A note on some molluscs from the Caprivi Strip, South West Africa (Namibia)

A.C. VAN BRUGGEN

Dept. of Systematics and Evolutionary Biology of the University,
c/o Rijksmuseum van Natuurlijke Historie, Leiden, Holland

Recently the Musée Royal de l'Afrique Centrale, Tervuren (Belgium), has acquired some interesting mollusc material (shells) obtained by the bird collector M.O.E. Baddeley at Andara, Okavango River, 18° 04'S 21° 29'E, in the western Caprivi Strip, South West Africa (Namibia) (for details of collector and locality see Clancey, 1980). This material was submitted for identification and further study to the present author by Prof. P.L.G. Benoit of the Tervuren museum. Since mollusc material from the Caprivi Strip has been rarely reported upon (scattered records in Connolly, 1939; see also Connolly, 1931), it was thought worth while to report the data below. Dr. D.S. Brown (London) has kindly identified or checked the identity of some of the freshwater gastropod species; duplicates of most of the material have been deposited in the Rijksmuseum van Natuurlijke Historie, Leiden, Holland.

The following species are represented:
Pila wernei (Philippi, 1851), abundant;
Lanistes ovum Peters, 1845, 13;
Bellamya capillata sambesiensis (Sturany, 1898), 3;
Melanoides tuberculata (Müller, 1774), common;
Lymnaea natalensis Krauss, 1848, 2;
Bulinus globosus (Morelet, 1866), common;
Bulinus forskali (Ehrenberg, 1831), common;
Rhachistia sticta (Von Martens, 1859), 5;
Xerocerastus burchelli (Gray, 1834), common;
Achatina schinziana Mousson, 1887, abundant;
Gonaxis gwandaensis (Preston, 1912), 2;
Caelatura kunenensis (Mousson, 1887), abundant;
Mutela dubia (Gmelin, 1793), 1.

A number of the above species call for comments. Two species, *Xerocerastus burchelli* and *Gonaxis gwandaensis*, have not been recorded from the Caprivi Strip before; the latter species is even altogether new for the South West African list.

For the streptaxid *Gonaxis gwandaensis* Andara is a new locality just north of two other known localities, viz. the Aha Mountains and Dobe (ca. 15 km north of the Aha Mts.), both within the borders of Botswana (see Van Bruggen, 1963, fig. 5; Van Bruggen, 1966). The specimens measure (maximum length x maximum diameter) 17.5 x 12.4 and 17.4 x 12.5 mm and thus closely agree with the shells from the two nearby Botswana localities. The Baddeley specimens were obtained from forest humus.

The distribution of the genus *Xerocerastus* has been discussed in detail by Van Bruggen (1964). From these data it appears that it reaches its northernmost limits in South West Africa somewhere south of the Cunene River in Ovamboland, but that towards the east the northern limits are considerably further south, i.e. somewhere around 19° S (Van Bruggen, 1964, fig. 1). The species *X. burchelli* is confined wholly within the 20 inches = 500 mm isohyet which gives a northern limit of just south of 21° S. A northward extension of the known distribution to ca. 18° S is therefore considerable. Recent climatic data (see e.g., Schulze & McGee, 1978) show that the western Caprivi Strip is within the zone of 400-600 mm mean annual rainfall. It now appears that *X. burchelli* occurs in areas with more than 200 and less than 600 mm mean annual rainfall rather than strictly within the 500 mm isohyet.

Measurements of shells of the Andara, the northernmost known, population may be summarized as 12.3-13.1 x 5.3-5.9 mm, l/d 2.19-2.35 (l/d stands for the ratio length/major diameter of the shell). This is within the known measurements of the species (Van Bruggen, 1970: 58): 11.0-17.5 x 4.7-7.1 mm, l/d 1.84-2.53. The Andara population obviously has small but comparatively slender shells.

Achatina schinziana inhabits a restricted area in South West Africa (Ovamboland) and Botswana. The northern limits are apparently the Cunene and Okavango Rivers; there are no records from Angola. The western limits are probably towards the coast of the Atlantic Ocean; southernmost records are in South West Africa the Omuramba River at approximately 21° S (Zilch, 1939: 237) and in Botswana Maun (except for one record, the type locality of the doubtful var. *degenerata* Boettger, 1910, Kakia or Khakea in southern Botswana). It is uncertain how far the species reaches to the east. It may not cross the Okavango River so that Maun and Andara might be the easternmost localities (Van Bruggen, 1967: 16, further references may be traced through this paper).

Most of the abundant material consists of juvenile shells from ca. 20 mm length. The few adult or large shells measure:

59.1 x 30.0 mm, l/d 1.97 , 8¼ whorls
58.7 x 31.9 mm, l/d 1.84 , 8 whorls
56.9 x 29.8 mm, l/d 1.91 , 8 whorls
54.5+x 30.2 mm, l/d 1.80+, apex damaged and body whorl repaired
50.5 x 29.2 mm, l/d 1.73 , 7½ whorls

Compared to earlier data (see particularly Van Bruggen, 1966) this is a population with small and fairly slender shells; collation of all earlier data gives 60.7-70.5 x 28.0-40.5 mm, l/d 1.74-1.96. All specimens have the characteristic distant flame pattern. The present material was compared to the two Maun specimens collected by G.D. Hale Carpenter and mentioned by Connolly [1939: 317, British Museum (Natural History), London, 1931.6. 4.16-17] and were found to agree well.

The four adult specimens of *Rhachistia sticta* all have 6½ whorls and measure:

18.0 x 10.2 mm	17.7 x 9.8 mm
18.0 x 10.0 mm	17.4 x 10.1 mm

The Andara population is from near the other Caprivi record (Van Bruggen, 1969: 31 and fig. 32) and the measurements seem to agree. These Caprivi records represent the westernmost localities known for the species and at the same time the populations with the smallest shells in southern Africa. All southern African data may be collated as follows: 17.4-29.1 x 9.6-14.2 mm, 6½-8 whorls.

The freshwater species call for little comment. Both ampullariids reach fair sizes, although *Pila wernei* grows to more than twice the length recorded below in the Congo basin and the Sudan (Pain, 1961).

Pila wernei	*Lanistes ovum*
59.7 x 55.3 mm	59.8 x 47.5+mm, labrum damaged
59.7 x 55.2 mm	56.8 x 43.4 mm
57.0 x 52.4 mm	
55.5 x 50.5 mm	

length largest operculum 43.2 mm.

As regards the freshwater bivalves, the single specimen of *Mutela dubia* measures 98.8 x 38.3 mm, and the largest shell of *Caelatura kunenensis* 49.7 x 34.0 mm. All material of the latter species belongs to what Appleton (1979) calls the 'typical form'.

Zoogeographically the thirteen species obtained present a mixed picture. Three freshwater species reach their southernmost limits somewhat further south: *Pila wernei*, *Caelatura kunenensis* and *Mutela dubia*. The other six freshwater species are widely distributed in Africa south of the Sahara (or even further afield). Only four terrestrial gastropods are represented, all near the limits of their distribution, viz., *Xerocerastus burchelli* (northern limits), *Achatina schinziana* (northeastern limits), *Rhachistia sticta* (western limits) and *Gonaxis gwandaensis* (northwestern limits). The Caprivi Strip is generally considered to be an area of great interest at the crossroads of the faunae of southwestern, central southern, southeastern and central Africa. The here discussed small collection amply shows that this applies to molluscs as well.

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