

The genus *Pachy bathron* (Gastropoda)

by

H.E. COOMANS

Zoölogisch Museum, Amsterdam

In 1845 C.B. Adams described *Erato* (?) *cypraeoides* from Jamaica. Adams was not convinced that the species was properly placed in *Erato*. The smooth white shell had a brown coloured line at the suture, the length was 8.2 mm, width 5.1 mm. The outer lip was crenulated inside, and the parietal shield had a number of long teeth. A lectotype of Adams' species was designated and figured by Clench & Turner (1950: 271, pl. 33 fig. 11).

Unaware of Adams's description Gaskoin (1853) described the genus *Pachy bathron*, together with some new species of *Marginella*. According to Gaskoin the genus possessed characters of *Marginella*, of *Cassis*, and of *Cypraea*, but Gaskoin was not able to place *Pachy bathron* in any of the families Marginellidae, Cassidae, or Cypraeidae. The fact that he described the new genus together with some new species of *Marginella* may indicate that he preferred to associate *Pachy bathron* with the Marginellidae. Two species were assigned to *Pachy bathron*: *P. cassidiforme* and *P. marginelloideum*, both figured by Gaskoin (1853, pl. 12 figs. 1-6).

Pachy bathron cassidiforme, type locality St. Vincent, is opaque white, with three pale grey spiral bands over the last whorl. The shell is covered with many transverse ribs; aperture narrow, outer lip thickened and denticulate within. A columellar shield bears twelve to fourteen distant linear teeth. The length of the shell is 6.3 mm, width 3.8 mm.

Pachy bathron marginelloideum, type locality West Indies, is smooth and of almost the same size, length 7.1 mm, width 4.1 mm. The colour is opaque white, with four reddish brown, interrupted, arrow-shaped spiral bands over the last whorls, and a brown mark around the spire. The columellar shield bears twelve to thirteen teeth.

From the original description it is evident that "*Erato*" *cypraeoides* C.B. Adams also belongs to the genus *Pachy bathron*. Adams' species has been considered a worn and faded specimen of *P. marginelloideum* by E.A. Smith (1910: 21) and Schilder (1932:

245). We agree with this opinion; therefore *P. marginelloideum* Gaskoin, 1853, becomes a junior synonym of *P. cypraeoides* (C.B. Adams, 1845).

SYSTEMATIC POSITION OF PACHYBATHRON

As mentioned before, Gaskoin did not know where to place *Pachybatron*. Adams & Adams (1858, vol. 1: 194, vol. 3: pl.20 fig. 4) placed *Pachybatron* in the Marginellidae, since the two species most resemble the genus *Persicula* of that family. According to Chenu (1859: 209) *Pachybatron* belonged to the Cassi(di)dae. Unfortunately "*Pachybatron*" was misspelt by Chenu, and he had interchanged the names of Gaskoin's species with his figures 1141 and 1142. The genus was classified with the Cypraeidae by Mörch (1877: 51).

Tryon (1885: 270, 283) again placed *Pachybatron* in the Cassi(di)dae, the genus being related to *Morum* (= *Oniscia*), and a number of modern authors agree with this opinion: Bayer (1935: 115), Wenz (1941: 1049), and M. Smith (1948: 42). Thiele (1929: 279) apparently was doubtful and included the genus in the Cassi(di)dae adding a question mark.

Clench & Abbott (1943), Clench (1944), and Abbott (1968: 7-42) do not consider *Pachybatron* as Cassidae, since they did not mention this genus in their revisions of the Cassidae.

There is certainly no uniformity concerning the type-species of *Pachybatron*. Gaskoin (1853) did not indicate which of the two species he considered the type-species, but *P. cassidiforme* was mentioned first. Adams & Adams (1858) considered *P. cassidiforme* the type-species, whereas Tryon (1885: 270) used *P. marginelloideum*. Thiele (1929) mentioned *P. marginelloideum* in the text; however, he figured *cassidiforme*. Wenz (1941: 1049) clearly designated *P. marginelloideum* as the type-species.

DISTRIBUTION

Information concerning the distribution of the species of *Pachybatron* is very scarce. The specimen of "*Erato*" *cypraeoides* C.B. Adams was from Jamaica. The shells described by Gaskoin did come from the West Indies (*P. marginelloideum*) and St. Vincent (*P. cassidiforme*).

Tryon (1885: 283) mentioned *P. cassidiforme* from St. Vincent, Bonaire, and Curaçao, the locality of *P. marginelloideum* remained

simply the West Indies. Paetel's mollusc collection (1888: 221) contained *P. cassidiformis* from Curaçao. No more locality records are known to us from the literature, from which it can be concluded that the species must be rather rare. Also, all known figures of *Pachybatron* species given by the authors of both the 19th and 20th century have been copied from the original figures of Gaskoin, except for the photograph in Clench & Turner (1950, pl.33 fig. 11).

In the collection of the Zoological Museum in Amsterdam *P. cassidiforme* is not represented. The following lots of *P. cypraeoides* (= *marginelloideum*) are present:

- 3 specimens, West Indies (coll. Schepman);
- 7 specimens, Netherlands Antilles (N.A.);
- 3 specimens, N.A., Aruba, Pova Beach, 1957 (coll. Coomans);
- 2 specimens, N.A., Aruba, beach near Caribbean Hotel, XII. 1959 (coll. Coomans);
- 1 specimen, N.A., Aruba, Reef off Oranjestad, 28.X.1957 (coll. Coomans);
- 1 specimen, N.A., Aruba, III. 1960 (coll. mrs. N. Ervin);
- 1 specimen, N.A., Curaçao;
- 33 specimens, N.A., Curaçao, 1925 (coll. Gorsira);
- 4 specimens, N.A., Bonaire, Paloe Lechi, 15.IX.1957 (coll. Coomans).

We have studied more specimens of *P. cypraeoides* in the collection of K.M. de Jong, from Curaçao, Westpunt, and from Aruba, Oranjestad.

Although *P. cassidiforme* was mentioned from Bonaire and Curaçao by Tryon (1885: 283) and Paetel (1888: 221), this species was not collected by us on the Netherlands Antilles, but we do know *P. cypraeoides* from these islands. This makes it doubtful whether the identifications of Tryon and Paetel are correct. They might have used the interchanged names of the two species as figured by mistake by Chenu (1859). This may particularly apply to Paetel, who also copied the wrong spelling of the name ("*Pachybatron*" for *Pachybatron*) from Chenu.

MATERIAL STUDIED

With few exceptions all specimens studied can be compared with the description of C.B. Adams for *P. cypraeoides*. Most of our specimens are completely white, but some do have the brown colour

around the spire. Only a few specimens vaguely show the rows of arrow-pointed marks as described by Gaskoin for *P. marginelloideum*. It seems therefore that fresh specimens of this species have a spire encircled with brown, and four spiral rows of arrow-pointed marks on the last whorl. We have never collected a live specimen, and since about half of the material in the Zoological Museum is worn, we suppose that this *Pachybathron* species is living in deeper water. This is supported by the only lot of this species with a proper locality, present in the collection of the Rijksmuseum van Natuurlijke Historie in Leiden, consisting of one fresh specimen collected near Little Curaçao in water 60 m deep.

The colour of the shell in *P. cypraeoides* fades very rapidly; fresh looking specimens are also white, only the colour band around the spire is more persistent. However, it is not impossible that the four spiral rows of arrow-pointed marks are also remains of a more complex pattern. One specimen shows a system of wavy lines (figs. 3-4), the arrow-shaped bands from Gaskoin's description participating in these zigzag lines. We therefore believe that the normal fresh colour pattern of *Pachybathron cypraeoides* (= *marginelloideum*) consists of transverse brownish zigzag lines on the last whorl, and a brown band encircling the apex. The brown colour is not persistent, and easily fades away as follows:

- 1) the thin parts of the zigzag lines, which leaves the shell with four bands of arrow-pointed marks and a brown line around the spire (these specimens agree with the description of *Pachybathron marginelloideum* Gaskoin);
- 2) the four bands with arrow-pointed marks, which results in a white shell with only a lightbrown band around the spire (these specimens agree with Adams' description of "*Erato*" *cypraeoides*);
- 3) finally, the brown line around the spire fades, leaving a completely white shell (figs. 1-2).

Table 1 indicates the colour and some measurements of 17 specimens of *P. cypraeoides* in the collection of the Zoological Museum, Amsterdam.

DISCUSSION

Although a number of recent authors have followed Chenu (1859) and placed *Pachybathron* in the Cassidae, since the shell looks like a small *Morum*, we agree with Adams & Adams (1858) that the genus should be placed in the Marginellidae. This is done on the following grounds:

locality	colour of the shell	length in mm	width in mm	number of teeth on parietal shield
Aruba	white, with brown spire	7.9	5.0	13
Aruba, reef off Oranjestad	white	8.0	5.2	15
Curaçao	vague arrowmarks and brown spire	6.9	4.4	11
Curaçao	do.	8.3	5.3	13
Curaçao	do.	8.0	4.9	13
Curaçao	vague arrowmarks	7.8	5.1	12
Curaçao	white, brown spire	7.5	4.8	13
Curaçao	do.	7.5	4.5	13
Curaçao	do.	7.1	4.4	13
Curaçao	white (figs. 1-2)	8.4	5.0	14
Curaçao	white	7.9	5.1	14
Curaçao	do.	7.2	4.7	13
Bonaire, Paloe Lechi	do.	5.6	3.2	12
Bonaire, Paloe Lechi	do.	5.2	2.9	12
West Indies	brown zigzag lines and brown spire (figs. 3-4)	7.3	4.8	13
West Indies	white	8.2	5.4	13
West Indies	do.	7.9	5.2	12

Table 1. Data of 17 specimens of *Pachy bathron cypraeoides* (C.B. Adams).

- a. the size of the shell of *Pachy bathron* fits better in with the small Marginellidae than in the larger Cassidae;
- b. some genera of the Marginellidae (*Persicula*, *Gibberula*) also have a more or less well developed parietal shield with teeth, although the stronger developed folds at the base of the columella are not present in *Pachy bathron*;
- c. *Pachy bathron* has a depressed spire like a number of Marginellidae, whereas the Cassidae have a higher spire;
- d. the zigzag pattern on the last whorl of *P. cypraeoides* (figs. 3-4) is also found in a number of *Persicula* species, cf. *Persicula catenata* (Montagu), figs. 5-6.



Figs. 1-6. West Indian Marginellidae. 1-4. *Pachybathron cypraeoides* (C.B. Adams), syn. *P. marginelloideum* Gaskoin. 1-2. Curaçao, length 8.4 mm, white shell. 3-4. West Indies, length 7.3 mm, with zigzag lines, and brown circle around the spire. 5-6. *Persicula catenata* (Montagu), Curaçao, length 5.0 mm, with zigzag lines. Specimens in Zoological Museum, Amsterdam. Photographs L.A. van der Laan.

Although there seems to be a relationship between *Persicula* and *Pachyathron*, both should retain their own generic status. With *Pachyathron* in the Marginellidae, this family is now enlarged with two genera recently transferred from other families. In 1963 *Afrivoluta* Tomlin, 1947, was removed from the Volutidae to the Marginellidae by Barnard.

SUMMARY

Pachyathron Gaskoin, 1853, is a rare deeper water genus with a very limited distribution in the southern Caribbean. The genus was wrongly placed in the Cassidae for a long time, but shell characters indicate that the genus is more closely related to the Marginellidae, i.e. the genus *Persicula*. *Pachyathron cypraeoides* (C.B. Adams, 1845) syn. *P. marginelloideum* Gaskoin, 1853, was collected on the Netherlands Antilles. The colour pattern of this species is more complex than was known before.

LITERATURE

- ABBOTT, R.T., 1968. The Helmet Shells of the world (Cassidae). Part 1. Indo-Pac. Moll. 2 (9): 7-201.
- ADAMS, C.B., 1845. Specierum Novarum Conchyliorum, in Jamaica Repertorium, Synopsis. Proc. Boston. Soc. Nat. Hist. 2: 1-17.
- ADAMS, H., & A. ADAMS, 1858. The genera of recent Mollusca 1: i-xl, 1-484. London.
- BARNARD, K.H., 1963. The family position of *Afrivoluta pringlei* Tomlin. J. Conch. 25: 198-199.
- BAYER, Ch., 1935. Catalogue of the Cassididae in the Rijksmuseum van Natuurlijke Historie. Zool. Meded. 18: 93-120.
- CHENU, J.C., 1859. Manuel de Conchyliologie 1: 1-508. Paris.
- CLENCH, W.J., 1944. The genera *Casmaria*, *Galeodea*, *Phalium* and *Cassis* in the Western Atlantic. *Johnsonia* 1 (16): 1-16.
- _____, & R.T. ABBOTT, 1943. The genera *Cypraeacassis*, *Morum*, *Sconsia* and *Dalium* in the Western Atlantic. *Johnsonia* 1 (9): 1-8.
- _____, & R.D. TURNER, 1950. The Western Atlantic marine Mollusks described by C.B. Adams. Occ. Pap. Moll. 1: 233-403.
- GASKOIN, J.S., 1853. On the genus *Pachyathron*, and some new species of *Marginella*. Ann. Mag. Nat. Hist. (2) 11: 356-360.
- MÖRCH, O.A.L., 1877. Synopsis molluscorum marinarum Indiarum

- occidentalium imprimis Insularum Danicarum. Malakoz. Blätt. 24: 14-66.
- PAETEL, Fr., 1888. Catalog der Conchylien-Sammlung, 4te Neubearb. 1: 1-639. Berlin.
- SCHILDER, F.A., 1932. Cypraeacea. Fossilium Catalogus 1, Animalia 55: 1-276. Berlin.
- SMITH, E.A., 1910. Notes on the genus Erato, with a list of the known recent species. Proc. Malac. Soc. London 9: 13-22.
- SMITH, M., 1948. Triton, Helmet and Harp Shells: 1-57. Winter Park, Florida.
- THIELE, J., 1929-1931. Handbuch der systematischen Weichtierkunde 1: 1-778. Jena (quoted as Thiele, 1929).
- TRYON, G.W., 1885. Manual of Conchology 7: 1-309. Philadelphia.
- WENZ, W., 1938-1944. Gastropoda, allgemeiner Teil und Prosobranchia. Handb. Paläozool. 6 (1): 1-1639. Berlin (quoted as Wenz, 1941).