

**Palliolium tigerinum (Müller, 1776) versus P. gerardi (Nyst, 1835):
a final reaction (Bivalvia: Pectinidae)**

A.W. JANSSEN

Nationaal Natuurhistorisch Museum, Postbus 9517, 2300 RA Leiden

& H.H. DIJKSTRA

Zoölogisch Museum Amsterdam, Postbus 94766, 1090 GT Amsterdam

The arguments brought forward by Van der Burg (1996) to contradict our opinion on the identification of a fossil pectinid shell with a colour pattern (Van der Burg, 1995, fig. 1) are discussed. We maintain our opinion that this shell belongs to *Palliolium tigerinum* (Müller, 1776), and not to *P. gerardi* (Nyst, 1835).

Key words: Bivalvia, Pectinidae, *Palliolium*, taxonomy, colour pattern.

Van der Burg (1996), in his reaction on our paper (Janssen & Dijkstra, 1996) in which we questioned the identification of a pectinid shell with a colour pattern from the Pliocene of the Peel area, maintained his original identification of the Pliocene pectinid as *Palliolium gerardi* (Nyst, 1835), giving a number of characteristics that are supposed to contradict our identification of the specimen as *P. tigerinum* (Müller, 1776).

Our table with ten descriptive features was meant for general application, and did not apply exclusively to the specimen in question. Therefore a number of characteristics (4, 5, 7 and 9 according to Van der Burg, but also 2 and 3 in our opinion) in this specific case indeed do not lead to a reliable identification. Among the remaining four characters there are two important facts that are incorrectly applied by Van der Burg, which we would like to discuss here.

1. The colour pattern of *Palliolium gerardi*

The central light coloured spot visible on the outside of most well-preserved specimens of *P. gerardi* according to Van der Burg has nothing to do with a colour pattern, but merely is a 'mirror image' or (see his abstract) 'the image of a corrosion remnant' of the inner aragonitic shell layer, visible through the thin and more or less transparent calcitic outer shell layer. This opinion can be ruled out by two observations.

First, the white central spot as visible from the outside is always bounded by oblique, but virtually straight lines, whereas the inner limits of the aragonitic layer (in well-preserved specimens) not only are irregular but also occupy a wider surface of the shell, beyond the two oblique lines visible from outside. Further, it is difficult to imagine how a disappeared aragonitic layer can be visible from the outside.

Additionally, it could easily be demonstrated that the white central spot is preserved in the outer calcitic layer of the shell. From several specimens of undoubted *P. gerardi* we removed the inner aragonitic layer completely by means of formic acid: the colour pattern, although slightly less vivid, remains visible. The same phenomenon, of course, is already clear when studying specimens in which the inner aragonitic layer had disappeared by natural post mortem processes.

Exactly the same results were obtained, by the way, by a treatment with formic acid of identically coloured specimens of *Amusium cristatum* (Bronn, 1827) from the Pliocene of northern Italy.

After all, even if Van der Burg is right in writing that the white central spot of *P. gerardi* is not a colour pattern, this feature is never found in *P. tigrinum*, and therefore, if present, is a reliable distinguishing characteristic between these two taxa.

2. Measurement of the umbonal angle

The umbonal angle of the illustrated specimen (Van der Burg, 1995: 30, fig. 1) is 90° when the early growth stage is measured. In later ontogeny the sutures are anti-marginally slightly diverged, enclosing an umbonal angle of over 100°. The value of 90°, as found in Van der Burg's specimen is, admittedly, somewhat larger than in 'typical' *P. tigrinum*, although examined Recent material of *P. tigrinum* f. *laevis* (Pennant, 1777) from the Irish Sea and from the English Channel (Dijkstra collection, 21 specimens) is similar to Van der Burg's illustrated specimen (similar umbonal angle, sculpture and colour pattern). Our table should be adjusted in this respect!

Among the remaining characters, as discussed by Van der Burg in his application of our table, no. 1 is of relative value only and depends on personal interpretation, no. 2 is valid for both species. The differences in convexity, given as no. 3, are especially meant for articulated specimens and are of restricted value for isolated valves. The radial riblets on the anterior auricle (no. 6) of Van der Burg's specimen are also similar to those in *P. tigrinum* (more prominent and less in number than in *P. gerardi*).

Finally, in his 'Application of the table of Janssen & Dijkstra' Van der Burg states under no. 10 that his specimens show 'no maculations', which is curious, as these are clearly visible in his first illustration, and in fact, were the reason for his paper on the subject.

Such maculations do not occur in *P. gerardi*, but are well-known from a number of Recent pectinids (Van der Burg rightly referred to Abbott & Dance, 1991). Among the related pectinids from the North Sea Basin's Pliocene, however, it is only *P. tigrinum* in which such maculations are known. Van der Burg's paper records the first observation of this colour pattern in fossil material of that species.

The new illustrations given by Van der Burg (1996, figs. 1 and 3) indeed represent *P. gerardi*, but for the reasons stated above, we maintain our identification of *P. tigrinum* for the specimen with the colour pattern (Van der Burg, 1996, fig. 2).

This opinion still is based only on Van der Burg's illustrations, as the specimen in question has not been made available to us.

REFERENCES

- BURG, W.J. VAN DER, 1995. Remnants of a colour pattern on *Pseudamusium gerardi* (Nyst) (Bivalvia: Pectinidae) from the Pliocene of the northern Peel district, the Netherlands). — *Basteria* 59: 29-30.
- —, 1996. The identity of a fossil valve with a colour pattern from the Pliocene of the northern Peel district, the Netherlands. — *Basteria* 60: 79-82.
- JANSSEN, A.W., & H.H. DIJKSTRA, 1996. Morphological differences between two species of *Palliolium* (Bivalvia: Pectinidae). — *Basteria* 59: 107-113.