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**TAXONOMIC NOTE ON REEFAL MILIOLACEA  
(PROTISTA: FORAMINIFERIDA)  
FROM THE UPPER TRIASSIC TETHYS**

BY

**Baba SENOWBARI-DARYAN <sup>1</sup> and Louisette ZANINETTI <sup>2</sup>**

The occurrence of highly specialized porcelaneous Foraminifera in the reefal environments (reef facies) of the Upper Triassic Tethys has been reported in the past years in numerous publications (see bibliography).

However, the taxonomy of these Foraminifera is by far not clear. There are differences of interpretation between the authors as far as generic and suprageneric attributions are concerned. Some authors even consider certain unquestionable Foraminifera as *Incertae sedis*.

In a previous taxonomic note, ZANINETTI *et al.* (1982a) have proposed to place some of these Miliolacea in the following subfamilies of the Milioliporidae:

- Milioliporinae BRÖNNIMANN and ZANINETTI *in* BRÖNNIMANN, ZANINETTI, BOZORGNIA, DASHTI and MOSHTAGHIAN, 1971
- Galeanellinae ZANINETTI, ALTINER, DAGER and DUCRET, 1982
- Pseudocucurbitinae ZANINETTI, ALTINER, DAGER and DUCRET, 1982a (Herein elevated to family rank).

In 1984, a fourth subfamily has been added to the Milioliporidae, the Altinerinae ZANINETTI, CIARAPICA, DECROUEZ and MICONNET, 1984, herein also elevated to family rank.

However, the recent discovery in the Triassic reefs of Sicily of new taxa (SENOWBARI-DARYAN, 1983; ZANINETTI *et al.*, 1984), which do not belong to any of these subfamilies, makes it necessary to propose for them a new classification with the following new taxonomic units:

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Spiriamphorellinae, n. subfam.

Costiferinae, n. subfam.

Siphoniferidae, n. fam.

and the new genus *Siculocosta*, n. gen. (Costiferinae, n. subfam., Nubeculariidae).

## SYSTEMATICS

Miliolina DELAGE and HEROUARD, 1896, emend. BRÖNNIMANN and ZANINETTI *in* BRÖNNIMANN, ZANINETTI, BOZORGNIA, DASHTI and MOSHTAGHIAN, 1971.

Miliolacea EHRENBERG, 1839, emend. BRÖNNIMANN and ZANINETTI, 1971.

### I *Family Nubeculariidae* JONES, 1875

Wall porcelaneous without perforations or any other structure; Middle?, Upper Triassic-Recent.

#### 1) *Subfamily Nubeculariinae* JONES, 1875

Genus: *Nubecularia* DEFRANCE, 1825; Middle?, Upper Triassic-Recent.

Type-species: *Nubecularia lucifuga* DEFRANCE, 1825 (not Triassic)

#### 2) *Subfamily Ophthalmidiinae* WIESNER, 1920

Genera:

*Ophthalmidium* KÜBLER and ZWINGLI, 1870

Middle Triassic-Recent.

Type-species: *Oculina liasica* KÜBLER and ZWINGLI, 1866 (not Triassic)

*Karaburunia* LANGER, 1968

Middle Triassic (Anisian).

Type-species:

*Karaburunia rendeli* LANGER, 1968

Middle Triassic (Anisian).

*Paraophthalmidium* SAMUEL and BORZA, 1981

Upper Triassic.

Type-species:

*Paraophthalmidium carpathicum* SAMUEL and BORZA, 1981  
Upper Triassic.

*Hydrania* SENOWBARI-DARYAN, 1983  
Upper Triassic (Carnian).

Type-species:

*Hydrania dulloi* SENOWBARI-DARYAN, 1983  
Upper Triassic (Carnian).

3. *Subfamily Nodobaculariinae* CUSHMAN, 1927

Genus: *Nodophthalmidium* MACFADYEN, 1939  
Middle?, Upper Triassic-Recent.

Type-species: *Nodobacularia compressa* RHUMBLER, 1906 (not Triassic).

4. *Subfamily Spiriamphorellinae* SENOWBARI-DARYAN and ZANINETTI, n. subfam.  
Upper Triassic.

Test free, early stage as in *Ophthalmidium*, involute; adult slightly unrolled, with very thick unperforated wall; aperture simple, terminal.

Type-genus:

*Spiriamphorella* BORZA and SAMUEL, 1977.  
Upper Triassic.

Type-species:

*Spiriamphorella carpathica* BORZA and SAMUEL, 1977.  
Upper Triassic (Carnian).

5. *Subfamily Costiferinae* SENOWBARI-DARYAN and ZANINETTI, n. subfam.

Test free, unrolled and slightly irregular; chambers as in *Nubecularia*, very thick unperforated (?) wall with cross longitudinal ribs; aperture simple terminal; Upper Triassic (Norian).

Type-genus: *Costifera* SENOWBARI-DARYAN, 1983.

Costiferinae with longitudinal ribs separated from the test by distinct wall.  
Upper-Triassic (Norian).

Types-species: *Costifera cylindrica* SENOWBARI-DARYAN, 1983.  
Upper Triassic (Norian).

Other genus:

*Siculocosta* SENOWBARI-DARYAN and ZANINETTI, n. gen.  
Upper Triassic (Norian).  
Costiferinae with longitudinal ribs not separated from the test by distinct wall.

Type-species:

*Costifera battagliensis* SENOWBARI-DARYAN, 1983  
Upper Triassic (Norian).

## II *Family Pseudocucurbitidae* ZANINETTI, ALTINER, DAGER and DUCRET, 1982a

Wall porcelaneous, wall structures present(?), occurrence of very fine spines for anchorage (SENOWBARI-DARYAN, in press);  
Upper Triassic.

Type-genus:

*Pseudocucurbita* BORZA and SAMUEL, 1978  
Upper Triassic (Carnian).

Type-species: *Pseudocucurbita globosa* BORZA and SAMUEL, 1978

(synonym?: *Cucurbita infundibuliformis* JABLONSKY, 1983)  
Upper Triassic (Carnian).

## III *Family Milioliporidae* BRÖNNIMANN and ZANINETTI in BRÖNNIMANN, ZANINETTI, BOZORGNIA, DASHTI and MOSHTAGHIAN, 1971

Wall porcelaneous, perforated and showing dichotomic structures (perforations?) in thick recrystallized wall;  
Upper Triassic.

### 1. *Subfamily Milioliporinae* BRÖNNIMANN and ZANINETTI, 1971

Upper Triassic (Carnian-Rhetian).

Type-genus: *Miliolipora* BRÖNNIMANN and ZANINETTI *in* BRÖNNIMANN, ZANINETTI, BOZORGNIA, DASHTI and MOSHTAGHIAN, 1971

Upper Triassic (Norian-Rhetian).

Type-species:

*Miliolipora cuvillieri* BRÖNNIMANN and ZANINETTI, 1971

Upper Triassic (Norian-Rhetian).

Other genera:

*Ophthalmipora* ZANINETTI and BRÖNNIMANN, 1972

Upper Triassic (Carnian).

Type-species:

*Ophthalmipora dolomitica* ZANINETTI and BRÖNNIMANN, 1972

Upper Triassic (Carnian).

*Bispiranella* SAMUEL, SALAJ and BORZA, 1981

Upper Triassic (Carnian).

Type-species:

*Bispiranella subcarinata* SAMUEL, SALAJ and BORZA, 1981

Upper Triassic (Carnian).

2. *Subfamily Galeanellinae* ZANINETTI, ALTINER, DAGER and DUCRET, 1982a

Upper Triassic (Carnian-Rhetian).

Type-genus:

*Galeanella* KRISTAN, 1958, emend. ZANINETTI and BRÖNNIMANN, *in* BRÖNNIMANN, CADET, RICOU and ZANINETTI, 1973

Upper Triassic (Carnian-Rhetian).

Type-species:

*Galeanella tollmanni* (KRISTAN 1957)

Upper Triassic (Rhetian).

Other genus:

*Orthotrinacria* ZANINETTI, SENOWBARI-DARYAN, CIARAPICA and CIRILLI, 1985

Upper Triassic (Norian).

Type-species:

*Galeanella expansa* ZANINETTI, ALTINER, DAGER and DUCRET, 1982b  
Upper Triassic (Norian).

IV *Family Siphonoforidae* SENOWBARI-DARYAN and ZANINETTI, n. fam.

Wall porcelaneous, unperforated in early whorls, late stage with uninterpreted lines (growing lines? chambers? or structures as in *Galeanella*?);  
Upper Triassic (Norian).

Type-genus: *Siphonofera* SENOWBARI-DARYAN, 1983.

Upper Triassic (Norian).

Type-species:

*Siphonofera pilleri* SENOWBARI-DARYAN, 1983  
Upper Triassic (Norian).

V. *Family Altinerinidae* ZANINETTI, CIARAPICA, DECROUEZ and MICONNET, 1984.

Wall porcelaneous, perforated in late stages; early stage trochospiral (?), adult with slightly irregular enrollment; presence of spines for anchorage (SENOWBARI-DARYAN, CIARAPICA, CIRILLI and ZANINETTI, in press).

Upper Triassic (Norian).

Type-genus:

*Altinerina* ZANINETTI, CIARAPICA, DECROUEZ and MICONNET, 1984  
Upper Triassic (Norian).

Type-species:

*Altinerina meridionalis* ZANINETTI, CIARAPICA, DECROUEZ and MICONNET, 1984  
Upper Triassic (Norian).

*N. B.* The Foraminifera described by SADATI (1981) from the reefal Upper Triassic of the Hohe Wand, Austria, have not been considered for this revised classification. They may belong to particularly well preserved Spiriamphorellinae, n. subfam., or to Costiferinae, n. subfam.

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