

***Lucaniaspongia gigantea* n. gen., n. sp., a „sphinctozoan“
sponge from the Ladinian of the Apennines/Italy**

by

Baba SENOWBARI-DARYAN, Benedetto ABATE, Pietro RENDA & Mariano TRAMUTOLI

with 3 figures and 2 plates

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Addresses of the authors:

BABA SENOWBARI-DARYAN
Institute of Paleontology
University of Erlangen-Nürnberg
Loewenichstr. 28
D-91054 Erlangen
Germany.

BENEDETTO ABATE; PIETRO RENDA
Dipartimento di Geologia e Geodesia
Università di Palermo
Corso Tuköry 131
90134 Palermo
Italia.

MARIANO TRAMUTOLI
Centro di Geomorfologia integrata per l'area del Mediterraneo
Viale Dante 126
85100 Potenza
Italia.

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Abstract

A new sphinctozoan sponge, *Lucaniaspongia gigantea* n. gen. n. sp., is described. It was collected from large clasts of a Ladinian (Carnian ?) megabreccia exposed south of the village of Abriola (Lagonegro basin, Lucania/Italy). These megabreccia fragments are embedded in the Carnian Monte Facito Formation. Relationships of *Lucaniaspongia* to similar organisms are discussed.

Riassunto

Viene descritta una nuova spugna sfinctozoa *Lucaniaspongia gigantea* n. gen., n. sp. Ladinico (Carnico?) proveniente dalle megabreccie affioranti a Sud del paese di Abriola (Bacino di Lagonegro, Lucania, Italia). Questa megabreccia è intercalata nella Formazione Monte Facito (Carnico). Vengono considerate le relazioni tra *Lucaniaspongia* e gli organismi simili già noti.

1. Introduction

Sphinctozoan sponges are the most important rock-forming sponges within Triassic reef biotopes. While many sphinctozoan sponges are known from Upper Triassic reefs in the southern Europe (e. g., in Sicily, Greece and in Turkey, SENOWBARI-DARYAN & SCHÄFER 1983, 1986, SENOWBARI-DARYAN & ABATE 1986, SENOWBARI-DARYAN 1990), they have been reported only rarely from the Middle Triassic of this area. MASTANDREA & RETTORI (1989), CIARAPICA et al. (1990), ZAMPARELLI (1993) and NORI et al. (1994) described some sphinctozoan sponges from „exotic“ Ladinian boulders embedded in the Carnian Monte Facito Formation. These sponges include *Colospongia catenulata catenulata* OTT, *Follicatena cautica* OTT, *Solenolmia manon manon* (MÜNSTER), *Paravesicocaulis* sp. and *Uvanella irregularis* OTT. Ladinian and Carnian sphinctozoan sponges are usually small and are represented by moniliform or glomerate growth forms. Massive, globular types, like *Lucaniaspongia* described here, have not been previously described from these or other Ladinian or Carnian Triassic localities. Similar massive, globular and extremely large sponges with very low and flattened chambers, like *Lucaniaspongia*, occur in Upper Permian, Norian/Rhaetian and in Jurassic reefs. *Lucaniaspongia*, described here, is the first sphinctozoan sponge with a globular shape and very low chambers found in rocks of Ladinian or Carnian(?) age.

2. Geologic setting

Carnian siliciclastic and clastic-carbonate deposits crop out in Basilicata, south of Potenza, among the buildings in the vicinity of Marsico Nuovo, Tito and Abriola. The sequence is well-known in the literature as the Monte Facito Formation (SCADONE 1967, MONTANARI & PANZANELLI FRATONI 1990).

The studied area is situated near the buildup area of Abriola, where a resistant succession of these deposits crops out (Fig. 1). These rocks that are observable near the basal boundary of the Lagonegro Unites.

Lower units of the succession are represented by marls and yellowish or green silty clays that alternate with thin quartzose micaceous sandstones, which are fine- to very fine-grained (Fig. 2). These lower beds are overlain by thin siltstone and fine-grained sandstone layers, that are interbedded with marls and wine-red and green shales. Flu-



Fig. 1: * Locality in which the *Lucaniaspongia gigantea* has been found.

te casts are common at base of the sandy beds. These layers are associated with beds of polygenetic conglomerate, banks of calcarenites, and green oolitic calcarenites.

The terrigenous beds are overlain by a series of silty laminated marls that include rare interbedded layers of pink-red micritic limestone (calclutite).

These rocks make up the terrigenous member of the Monte Facito Formation. Several units of carbonate breccia, or single blocks of neritic limestone, occur within this section (Fig. 2). These carbonate blocks and breccias have been differently interpreted by previous authors as units of bioconstructions (e. g. SCANDONE 1967), or as olistolith levels of reworked clasts (WOOD 1981). A lenticular carbonate unit,

some tens of meters thick, is exposed at the southern edge of the village of Abriola. That carbonate unit occurs in the dominantly terrigenous-derived deposits of the Monte Facito Formation and consists of conglomerate and carbonate breccias. Clasts in the unit include algal biolithites, and biolithites with corals, gastropods and lamellibranches. The fragments from which we collected the new sponge species, described here, came from this unit (Fig. 2).

Lucaniaspongia gigantea occurs within a megabreccia fragment that is about 10 m in diameter. In addition to the abundant specimens of *Lucaniaspongia*, some corals were also found.

GEOLOGICAL SCETCH OF ABRIOLA AREA (SOUTHERN ITALY)

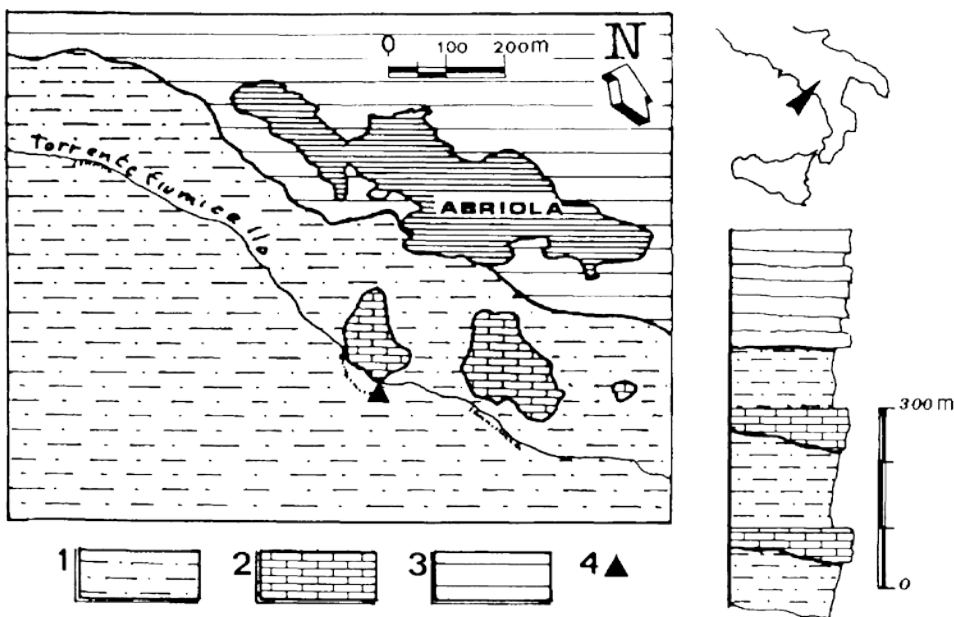


Fig. 2: Marls, sandstones and clays (1) of the „Monte Facito Formation“ (Carnian) with intercalations of calcarenites and carbonate megabreccias (2) (Ladinian) and calcilutites with chert nodules (3) (Upper Triassic). 4: locality of *Lucaniaspongia gigantea* n. gen., n. sp.

3. Systematic Paleontology

- Phylum Porifera GRANT 1872
- Class Demospongia SOLLAS 1875
- Order Permosphincta TERMIER & TERMIER 1974
- Suborder Porata SEILACHER 1962
- Family Gigantothalamiidae SENOWBARI-DARYAN 1994

Diagnosis: See SENOWBARI-DARYAN 1994: 417.

Lucaniaspongia n. gen.

Derivatio nominis: From the Province Lucania in South Apennines/Italy.

Diagnosis: Massive globular to irregularly shaped sponge with numerous flattened and laterally extended chambers. Chamber walls are pierced by numerous small regularly distributed, and unbranched pores. No filling structures and no vesiculae within the chamber interiors.

Type species: *Lucaniaspongia gigantea* n. gen., n. sp.

Discussion

The new sponge superficially resembles stromatolites or some Paleozoic stromatoporoids. However, the segmentation of the skeleton and the perforated walls are easily recognizable with a hand-lens. These features distinguish *Lucaniaspongia* from stromatolites or stromatoporoids. In longitudinal section the new sponge appears similar to the Permian genus *Subascosymplegma* DENG (1981), and especially the Permian species *S. oussifensis* (TERMIER & TERMIER, in TERMIER et al. 1977, see SENOWBARI-DARYAN & RIGBY 1988), to *Platythalamiella* SENOWBARI-DARYAN & RIGBY (1988) and to the Triassic genus *Cinnabaria* SENOWBARI-DARYAN (1990). All of these sponges have flattened chambers. However, *Subascosymplegma* and *Cinnabaria* are characterized by stacked elongate tubelike segments that have crescentic cross sections. The flattened and laterally extended chambers of *Lucaniaspongia* distinguishes it from the sponge genera listed above. Some similarities exist between *Lucaniaspongia* and the Upper Triassic (Norian/Rhaetian) genus *Lamellata* FLÜGEL & SY (1959), an organism placed doubtfully to the Hydrozoans. *Lucaniaspongia* differs from *Lamellata* by lacking vertical elements (pilae)

and by having perforated horizontal elements (chamber or segment walls).

The arched tabular shape of chambers in *Lucaniaspongia* are similar to those in *Zanklithalamia* and *Gigantothalamia*, sphinctozoan sponges, described by SENOWBARI-DARYAN (1990, 1994) from Norian/Rhaetian reef limestones of the Northern Calcareous Alps (Austria) and from the Antalya area (Southern Turkey). However, the new genus differs from *Zanklithalamia* by having very low chambers, regularly perforated chamber walls and by lacking pillar-like filling structures within the chamber interior and by lacking a spongocoel. *Lucaniaspongia* differs from *Gigantothalamia* by its very fine perforation of extremely thin segment walls. No other organism appears similar to the new sponge described here.

***Lucaniaspongia gigantea* n. sp.**
(pl. 1, figs. 1-4, pl. 2, figs. 1-7)

1990 „Spongiomorphide“. - TORRE & ZAMPARELLI, p. 730, Fig. 9/d.

1993 „Sezion trasversale oblique di „chetetide“.- ZAMPARELLI, pl. 3, fig. 8.

Derivatio nominis: Because of the large size of the sponge.

Holotype: All thin sections and polished slabs figured in pls. 1 and 2 (not pl. 2, fig. 3) were made from the same specimen (holotype).

Paratype: Pl. 2, fig. 3.

Locus typicus: Fiumarella di Abriola creek, directly on the southern edge of the village of Abriola (see fig. 1 and 2).

Stratum typicum: Ladinian (Carnian?) boulders in a megabreccia of the Monte Facito Formation (Carnian).

Material: 5 specimens.

Repository: Staatssammlung für Paläontologie und historische Geologie in Munich (holotype: 2 thin section, Inventar-Nr. BSP 1991 III/3-4, and 5 polished slabs, Inventar-Nr.: BSP 1991 III/5-9; one of paratypes: 1 thin section, Inventar-Nr. BSP 1991 III/10 and 2 pieces, Inventar-Nr. BSP 1991 III/11-12).

Diagnosis: See the diagnosis of the genus.

Description

The massive globular to irregularly-shaped sponge usually has diameters of approximately 20 cm, but some individuals are up to 50 cm in diameter. The holotype is broken and has a diameter of at least 20 cm.

The sponge resembles stromatolites or some Paleozoic stromatoporoids but differs from these fossils by having clearly defined segmentation, visible even with a hand-lens. All chambers are very low and flattened. Heights of the chambers range from 0.25 to 0.5 mm. Distances between two consecutive chambers (chamber interior and chamber wall) is almost 1 mm. Chamber walls are usually 0.1-0.2 mm thick, but may reach 0.4 mm thick. Chamber walls are pierced by numerous circular to oval or star-like and unbranched small pores 0.1-0.2 mm in diameter. The pores

are distributed regularly throughout the chamber walls.

A spongocoel is absent. In two areas in the holotype, however, the chamber walls turn up and form a bundle (diameter: 1.2 mm) of tubes which persist through several segments (pl. 2, fig. 6). These tubes could possibly end as astrorhizal structures on the summit of the sponge.

Chamber walls are laterally extended and wavy, and may locally grow together (pl. 2, fig. 4-5). The chamber interiors which are filled by micrite may be changed with the perforated chamber walls which appear white in transmitted light. No filling structures nor vesiculae occur within the chambers. The skeleton of *Lucaniaspongia* is recrystallized and now preserved as neomorphic calcite. Spicules were not observed.



Fig. 3: *Lucaniaspongia gigantea* n. gen., n. sp.. The segment walls are characterized by areas appearing white in submitted light. The segment interiors are filled by micrite surrounding also the sponge skeleton. Thin section L4, 10x

Association

Four thin sections have been made of the rock surrounding *Lucaniaspongia* and of the associated coral bafflestones. No index fossils indicating the age of the rock have been found. The bafflestones or bioclastic wackestones contain only some duostominid foraminifers and echinoderms.

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Plate 1

Fig. 1-4: *Lucaniaspongia gigantea* n. gen., n. sp. (holotype).

1. Enlargement of the lower part of fig. 4. Polished slab, 1.6x.
 2. Enlargement of the upper part shown in pl. 2, fig. 1. Polished slab, 1.6x.
 3. Enlargement of the upper part of fig. 4. Polished slab, 1.6x.
 4. Enlargement of fig. 1 in pl. 2. Polished slab, 0.9x.
-

Plate 2

Fig. 1-2, 4-7: *Lucaniaspongia gigantea* n. gen., n. sp. (holotype).

1. Polished slab. The flattened chambers are recognizable. 0.7x.
2. Longitudinal section. Thin section L2, 1.4x.
3. Longitudinal section. Paratype. Thin section L3, 1x.
4. Enlargement of the chambers. The chamber walls (white areas) are pierced by numerous small pores. Thin section L2, 7x.
5. Same as fig. 4. Thin section L2, 10x.
6. View of the bundle of canals within the sponge skeleton. Thin section L2, 7x.
7. Oblique section through the skeleton showing the pores (dark) within the chamber walls (white areas). Thin section L2, 7x.

PLATE 1

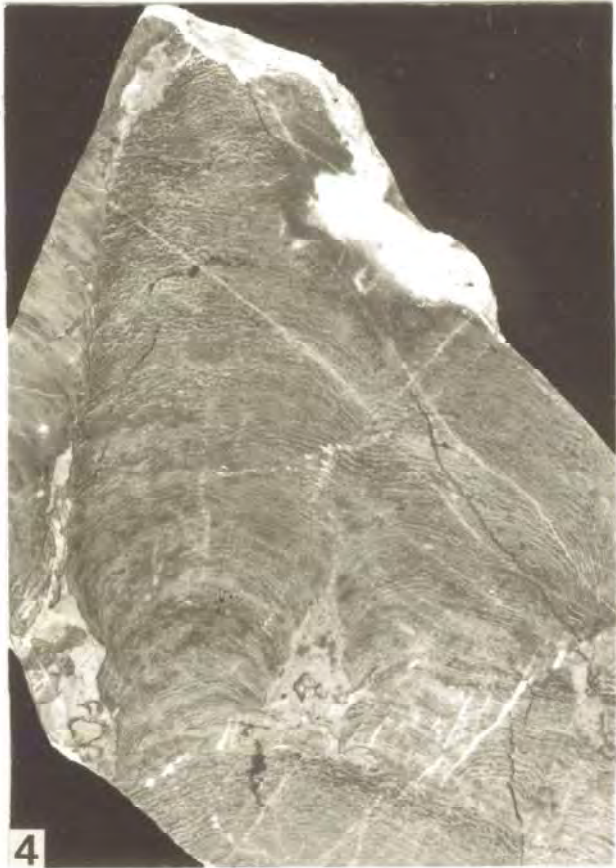
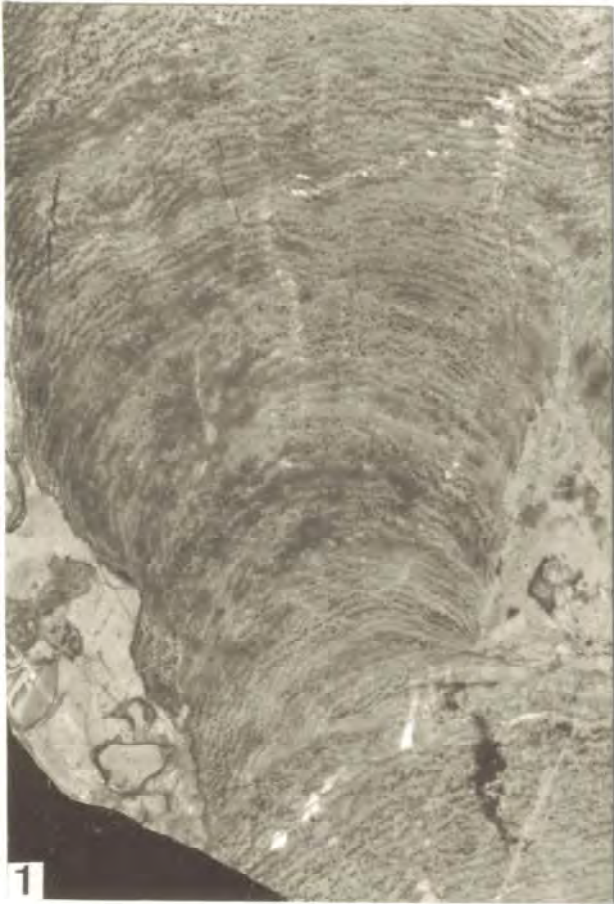


PLATE 2

