

## A NEW POLYPLACOPHORAN SUBGENUS FOR THE NORTHEAST ATLANTIC (ISCHNOCHITONIDAE: CALLISTOPLACINAE)

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**Key Words:** *Allerychiton* subg. nov., *Callistochiton* (*A.*) *pachylasmae*, Northeast Atlantic, Mediterranean, *Callistochiton*, biogeography.

**Abstract:** *Allerychiton* subg. nov. is here introduced for *Callistochiton pachylasmae* (Monterosato, 1879), on the base of peculiarities of the sculpture of the intermediate and end valves. Its isolated position within the genus *Callistochiton* Dall, 1879 [ex Carpenter MS] is supported by the available geographic data on the species of the genus.

**Riassunto:** *Allerychiton* subg. nov. viene qui proposto per *Callistochiton pachylasmae* (Monterosato, 1879), sulla base di peculiarità nella scultura delle piastre intermedie (una sola costa radiale), e delle piastre terminali (con scultura differente tra le due piastre). L'identificazione di una linea filetica distinta nell'ambito del genere *Callistochiton* Dall, 1879 [ex Carpenter MS], è supportata dall'isolamento geografico di *pachylasmae* sulla base dei dati disponibili sulla distribuzione delle altre specie del genere.

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### Introduction

The genus *Callistochiton* Dall, 1879 (type species *C. palmulatus* Dall, 1879) is presently included (KAAS & VAN BELLE, 1994) in the subfamily Callistoplacinae (family Ischnochitonidae) together with *Callistoplax*, *Calloplax*, *Ceratozona* and *Ischnoplax*, mainly differentiated on perinotum characters. It is characterised by the tegmentum conspicuously sculptured and the end valves and lateral areas of intermediate valves with strong radial ribs. Characteristically, the lateral areas are bicostate on either side (FERREIRA, 1979). *Callistochiton* presently includes 36 validly recognised species according to KAAS & VAN BELLE (1994) all from warm temperate and tropical waters (Tab. 1). Many taxa are known only by the holotype or the type series, hampering a good knowledge of the actual range of each species.

The sole NE Atlantic and Mediterranean species is *C. pachylasmae* (MONTEROSATO, 1879), with only three specimens so far known (see PIZZINI & OLIVERIO, 1993: the specimen from the Atlantic coast of Morocco (KAAS, 1991) was unfortunately lost). Two loose valves have been recently found (see below), widening the known range.

The species is very peculiar in the ambit of the genus *Callistochiton* because of the sculpture of the valves. The intermediate valves bear only a single elevated rib on each lateral area. The posterior end valve has a sculpture different from that of the head valve, a feature very rare within the Polyplacophora. These two features characterise *C. pachylasmae* within the genus, and the biogeographical data point out the isolation of this species in the world pattern. It is the sole East Atlantic species so far known, while the genus is well represented throughout the Indo-Pacific and the Caribbean-Brazilian tropical and subtropical areas (see Tab. 1). A *Callistochiton* species was present in the Mediterranean Pliocene of Italy (DELL'ANGELO & VAZZANA, unpublished data): only the first plate is known of the fossil specimen, the sculpture is similar to that of *pachylasmae* and its belonging to the same lineage would witness for an established history of the *pachylasmae*-lineage. We consider *C. pachylasmae* as representing a distinct lineage within the genus, and propose for it a subgenus on its own, dedicated to the author of

the species who first noticed and described the differences in the end valve, a character overlooked for more than one century.

## Systematics

Family ISCHNOCHITONIDAE Dall, 1889  
Subfamily CALLISTOPLACINAE Pilsbry, 1893  
Genus *Callistochiton* Dall, 1879 [ex Carpenter MS]  
Subgenus *Allerychiton* **subg. nov.**

**Diagnosis.** Tegmentum with rough sculpture, uniformly covered with large quincunxially set tubercles; cephalic valve with 7 large radial ribs; lateral areas of intermediate valves with a single elevated radial rib; posterior valve with one (smaller) radial rib on either side of the mucro. Perinotum (girdle) wide, covered on the external surface with imbricating and deeply grooved scales, bearing spherules on the upper margin; ventral surface with radiating rectangular scales.  
Type species: *Callistochiton pachylasmae* (Monterosato, 1879).

### *Callistochiton* (*Allerychiton*) *pachylasmae* (Monterosato, 1879)

- Chiton Pachylasmae* - Tiberi, 1878: 150 (*nomen nudum*)  
*Chiton Pachylasmae* Seg. ms - Monterosato, 1878: 77 (*nomen nudum*)  
*Chiton Pachylasmae* - Monterosato, 1879: 24  
*Chiton pachylasmae* (Seg. Msc.) Monter. - Carus, 1893: 180  
*Chiton pachylasmae* (Seguenza MS) Monterosato - Pilsbry, 1894: 95  
*Callistochiton pachylasmae* (Monterosato) - Sabelli, 1971: 561  
*Callistochiton pachylasmae* (Monterosato, 1879) - Sabelli, 1974: 76  
*Callistochiton pachylasmae* - Ferreira, 1979: 463  
*Callistochiton pachylasmae* (Seguenza in Monterosato, 1878) - Piani, 1980: 176  
*Callistochiton pachylasmae* (Di Monterosato, 1879) - Van Belle, 1981: 151  
*Callistochiton pachylasmae* (di Monterosato, 1879) - Van Belle, 1984: 136  
*Callistochiton pachylasmae* - Bedulli et al., 1985: 60  
*Callistochiton pachylasmae* (Seguenza in Monterosato, 1878) - Gaglini, 1985: X, pl. 2  
*Callistochiton pachylasmae* (Seguenza in Monterosato, 1878) - Bruschi et al., 1985: 44  
*Callistochiton pachylasmae* (Monterosato, 1878 ex Seguenza G. ms.) - Sabelli et al., 1990: 7, 116  
*Callistochiton pachylasmae* (Di Monterosato) - Kaas, 1991: 93  
*Callistochiton pachylasmae* (Seguenza in Monterosato, 1879) - Poppe & Goto, 1991: 59  
*Callistochiton pachylasmae* (Monterosato, 1878 ex Seguenza G. ms.) - Sabelli et al., 1992: 352  
*Callistochiton pachylasmae* (Monterosato, 1879) - Giovine & Dell'Angelo, 1993: 163  
*Callistochiton pachylasmae* (Monterosato, ex Seguenza G. MS) - Pizzini & Oliverio, 1993: 41, Fig. 1  
*Callistochiton pachylasmae* (Seguenza MS, di Monterosato) - Kaas & Van Belle, 1994: 123, Fig. 48, map 34  
*Callistochiton pachylasmae* (Monterosato, 1878 ex Seguenza ms.) - Nicolay & Angioy, 1994: 29, Fig. 1  
*Ischnochiton pachylasmae* (Monterosato) - Arduino et al., 1995: 10

## Material

Holotype, from the Messina Strait (Sicily, Italy), in ZMR 5.5 mm length and 3 mm width (Figs 1-3). One specimen from Pantelleria Is. (UR92-7#2 stn., 36°49'24" N - 012°00'53" E -53.4 m: Pizzini & Oliverio, 1993) 3 mm length and 1.2 mm width (Figs 8-13). One head valve from Punta Longa "Secca Galera" (Favignana Is.), -33 m (coll. Quadri). One intermediate valve from Ormos Panagias, -35/40 m Sithonia Is., Greece, (A. Lugli leg. 8/82, - coll. Dell'Angelo No P185/1: Figs 4-7).

## Description

Animal small, 3-5 mm length, 1.2-3 mm width. Colour yellowish-white. Head valve semicircular, with seven large wrinkled radial ribs, that start from the edge of an apparently smooth mucronal area. The interstices are quincunxially granulated.

Intermediate valves (Figs 4-7) moderately elevated, subcarinated, with the posterior margin nearly straight and apex slightly prominent. One highly elevated radial rib on either side, starts from the apex, covered by scaly tubercles. The central area is sculptured by quincunxially disposed tubercles. Posterior valve with the antemucronal area sculptured by large scaly tubercles. One wrinkled radial rib on either side a little behind the antemucronal-postmucronal boundary. Postmucronal area quincunxially granulated, but with the quincunxes arranged along concentric lines.

The ventral side of the intermediate valves is perlacaeous, has two deep lateral dimples near the apical area, with a marked radial groove. The insertion plate to the perinotum is divided by one deep cut on either side in two smooth teeth. Teeth formula 8/2/?. Apophysis not well preserved, small and triangular.

Dorsal surface of the girdle (Figs 10-12) covered with imbricating, roughly rectangular, close scales (65-85x35-50 mm), the major sides regularly curved. The scales are externally sculptured by 12-13 axial riblets with 4-5 spherules (8-10 mm) on the upper margin, the external ones sometimes fusing with the riblets. Ventral surface (Fig. 13) covered with slender and more regularly rectangular scales (54x13 mm), smooth, radially arranged.

Radula of a 3 mm long specimen (UR92-7#2 stn.), about 1.1 mm long with nearly 37-38 rows of mature teeth. The central tooth is enlarged anteriorly with sharp blade. First laterals subquadrangular (the presence of a knobby protuberance on the outer side was not evident in all teeth, in the optical pre-prepare). The second lateral is unicuspid, with a slender and narrow tip. The outer marginals are markedly slender and elongated.

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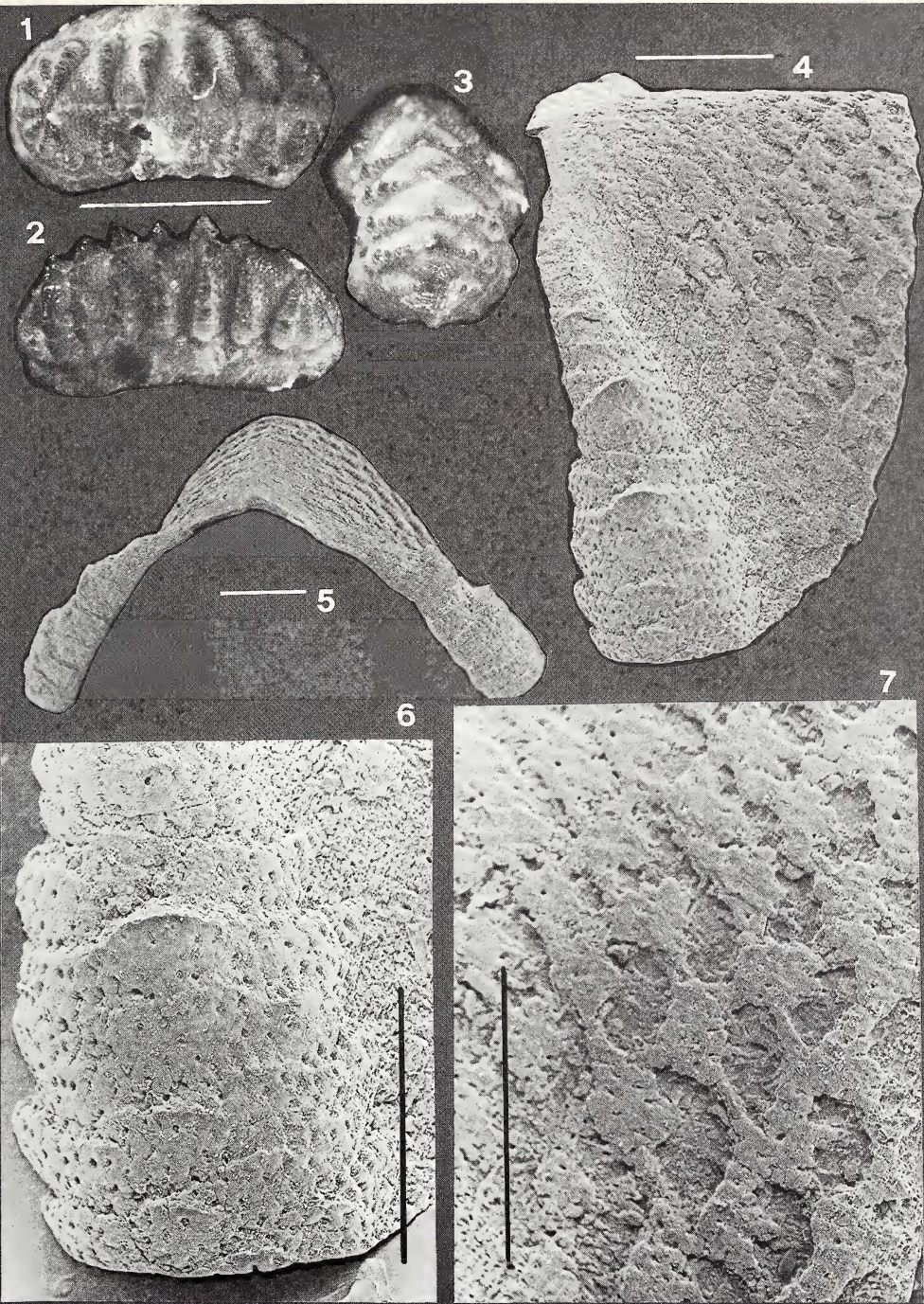
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Table 1. The known species of *Callistochiton* with their geographic range; four species are known only by the type series (\*), and twelve only by the holotype (\*\*).

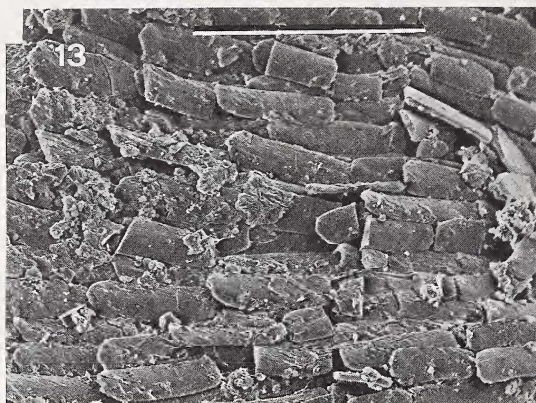
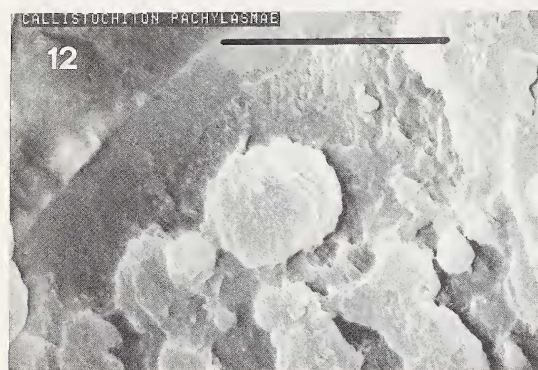
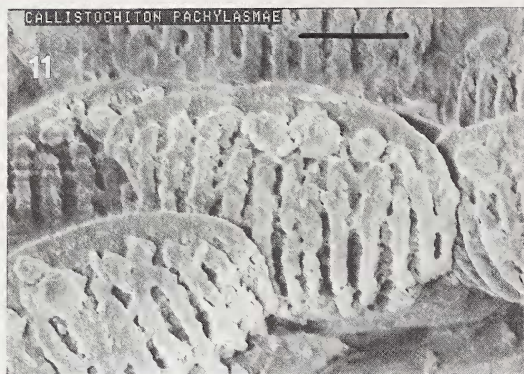
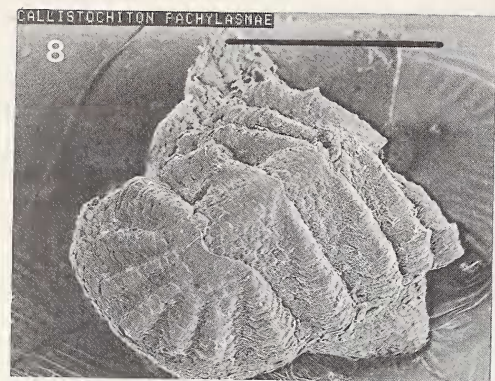
n°	species	range	*/**
1	<i>C. (C.) adenensis</i> (E.A.Smith, 1891)	Aden	
2	<i>C. (C.) antiqus</i> (Reeve, 1847)	Australia	
3	<i>C. (C.) augustensis</i> Ashby & Cotton, 1937	Australia	**
4	<i>C. (C.) asthenes</i> (Berry, 1919)	California, Messico	
5	<i>C. (C.) barnardi</i> Leloup, 1981	Madagascar	
6	<i>C. (C.) belliatius</i> Kaas & Van Belle, 1994	Papua New Guinea	*
7	<i>C. (C.) biakensis</i> Kaas & Van Belle, 1994	New Guinea	**
8	<i>C. (C.) broomensis</i> Ashby & Cotton, 1934	Australia	**
9	<i>C. (C.) carpenterianus</i> Kaas, 1956	Indonesia	**
10	<i>C. (C.) clenchi</i> Ashby & Cotton, 1934	Australia	**
11	<i>C. (C.) colimensis</i> (A.G.Smith, 1961)	Messico, Panama	
12	<i>C. (C.) crassicosatus</i> Pilsbry, 1893	California, Messico	
13	<i>C. (C.) crosslandi</i> Sykes, 1907	Kenya, S.Africa	
14	<i>C. (C.) decoratus</i> Carpenter MS, Pilsbry, 1893	California, Messico	
15	<i>C. (C.) elenensis</i> (Sowerby, 1832)	Messico, Ecuador	
16	<i>C. (C.) expressus</i> (Carpenter, 1865)	Messico, Ecuador	
17	<i>C. (C.) generos</i> (Iredale & Hull, 1925)	Australia	
18	<i>C. (C.) granifer</i> Hull, 1923	Australia	
19	<i>C. (C.) indicus</i> Leloup, 1953	Chagos	**
20	<i>C. (C.) jacobaeus</i> (Gould, 1859)	Giappone	
21	<i>C. (C.) laticostatus</i> Kaas & Van Belle, 1994	Brazil	**
22	<i>C. (C.) leei</i> Ferreira, 1979	Messico	*
23	<i>C. (C.) mawlei</i> Iredale & May, 1916	Australia	
24	<i>C. (C.) occiduus</i> Ashby & Cotton, 1934	Australia	**
25	<i>C. (C.) omanensis</i> Kaas & Van Belle, 1994	Oman	
26	<i>C. (C.) palmulatus</i> Carpenter MS, Dall, 1879	California, Messico	
27	<i>C. (C.) philippinarum</i> Thiele, 1910	Filippine	**
28	<i>C. (C.) porosus</i> Nierstrasz, 1905	Brazil	*
29	<i>C. (C.) portobelensis</i> Ferreira, 1976	Panama, Florida	*
30	<i>C. (C.) pulchellus</i> (Gray, 1828)	Chile, Galapagos	
31	<i>C. (C.) pulchrior</i> Carpenter MS, Pilsbry, 1893	Nicaragua, Colombia	
32	<i>C. (C.) righii</i> Kaas & Van Belle, 1994	Brazil	**
33	<i>C. (C.) rotundus</i> Leloup, 1981	Madagascar	**
34	<i>C. (C.) shuttleworthianus</i> Pilsbry, 1893	Florida, Caribbeans	
35	<i>C. (C.) squamigercostatus</i> Kaas & Van Belle, 1994	Papua New Guinea	**
36	<i>C. (Allerychiton) pachylasmae</i> (Monterosato, 1879)	NE Atlantic	





**Figg 1-7.** *Callistochiton (Allerychiton) pachylasmae*. 1-3 Holotype, Strait of Messina (Monterosato's collection, ZMR). 4-7 Intermediate valve, Ormos Panagias, -35/40 m Sithonia Is., Greece (Dell' Angelo coll. No P185/1). Scale bars: 1 mm (1-3), 500 mm (4), 200 mm (5-7).





**Figg 8-13.** *Callistochiton (Allerychiton) pachylasmae*. Pantelleria Is. (UR92-7#2 stn., 36°49'24" N - 012°00'53" E -53.4). Scale bars: 1 mm (8), 500 mm (9), 100 mm (10, 13), 20 mm (11), 10 mm (12).