

## Historical change in a Caribbean reef sponge community and long-term loss of sponge predators

Magdalena Łukowiak\*, Katie L. Cramer, Daniel Madzia, Michael G. Hynes, Richard D. Norris, Aaron O’Dea

\*Corresponding author: mlukowiak@twarda.pan.pl

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Table S1. Spicule morphogroups observed in the Punta Donato reef sediment core. The sponge groups in bold are dominant bearers of the morphogroups.

Morphogroup	Description of spicules classified into the morphogroup	Sponge groups characterized by presence of these spicule types
Amphitriaenes	Very distinctive spicules that look like fused short-shafted triaenes (Fig. 4.49)	<b>Single samid species (<i>Samus anonymus</i>)</b>
Aspidasters	Flat, discoid spicules (Fig. 2.25–27)	<b>Single erylinin species (<i>Erylus formosus</i>)</b>
Calthrops	Tetralaxial spicules with equal all rays (Fig. 4.48a, b)	Homoscleromorph sponges
Oxeas	Spicules with simple monaxial morphology as oxeas (Fig. 2.1–6), strongyles (Fig. 2.7), and styles (Fig. 2.8–10)	<b>Haplosclerida (Petrosiidae, Phloeodictyidae, Chalinidae, Niphatidae, Callyspongiidae)</b> , Axinellida (Axinellidae, Halichondriidae, Heteroxyidae) but also appear to lesser degree in Spirophorida, Clionaida, Tethyida, Tetractinellida, Astrophorida, Poecilosclerida, Bubarida, and Polymastiida
Spherasters/ Anthasters	All the remaining spherical spicules that were neither selenasters nor sterrasters (Fig. 3.28–34)	<b>Chondrosida (Chondrillidae)</b> , Hadromerida (Spirastrellidae), Tethyida (Tethyidae), Clionaida (Placospongiidae) and some geodiids and ancorinids
Triaenes	Spicules with tetralaxial symmetry and with one unequal ray (Fig. 4.50–60)	Tetractinellids and spirophorids
Tylostyles	Monaxial spicules with characteristic bulb endings (Fig. 2.11–14)	<b>Clionaida (Clionaidae, Placospongiidae)</b> , Suberitida, Hadromerida, Polymastiida, and some poecilosclerids
Sterrasters/ Selenasters	Spherical and ovoid spicules (Fig. 3.23a, b, 24a b)	<b>Placospongia (placospongiid hadromerid) and Geodia (geodiid astrophorid)</b>

Table S2. Percent abundance (of total spicules) of the ten spicule morphogroups (images of taxa representing each morphotype are shown in Figs. 2–4).

Year AD	Oxeas	Sterrasters/ selenasters	Spherasters/ anthasters	Tylostyles	Aspidasters	Triaenes	Calthrops	Amphitriaenes	Triods	Others
1956	66.80	29.30	2.00	0.70	0.90	0.20	0.00	0.10	0.00	0.00
1923	82.80	12.40	3.10	1.30	0.00	0.20	0.00	0.00	0.00	0.20
1662	86.00	8.50	1.10	3.10	0.90	0.20	0.10	0.10	0.00	0.00
1612	93.60	2.70	1.30	2.10	0.10	0.10	0.00	0.10	0.00	0.00
1465	93.00	4.00	0.40	2.10	0.00	0.10	0.00	0.20	0.00	0.20
1220	94.70	0.60	0.70	3.40	0.10	0.00	0.00	0.10	0.00	0.40
1025	92.90	3.50	1.10	1.30	0.70	0.00	0.00	0.10	0.10	0.30