Systema Porifera: A Guide to the Classification of Sponges, Edited by John N.A. Hooper and Rob W.M. Van Soest

Family Halisarcidae Schmidt, 1862

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Halisarcidae Schmidt (Demospongiae, Halisarcida) are characterised by the presence of irregular tubular choanocyte chambers and the lack of any fibrous or mineral elements in the skeleton. The order contains one family and one genus (*Halisarca*) with 24 nominal species, however, many are so poorly described that they are unrecognisable, a number are certainly ascidians, and the number of valid species is probably around ten.
Keywords: Porifera; Demospongiae; Halisarcida; Halisarcidae; *Halisarca*.

DEFINITION, DIAGNOSIS, SCOPE

Synonymy

Halisarcinae Schmidt, 1862. Halisarcidae Vosmaer, 1885b; Lévi, 1956a; Vacelet, 1959; Bergquist, 1980b; Bergquist, 1996; Bajalidae Lévi, 1958; Bergquist, 1996: 24.

Definition

Halisarcida in which the choanocyte chambers are tubular, branched, and wide mouthed. Larvae are incubated dispherulae with simple undifferentiated histology and cilia of uniform length, skeleton is fibrillar collagen only, there are no fibrous or mineral elements present, ectosomal and subectosomal collagen is highly organised and structurally diversified.

Scope

A single genus, *Halisarca*.

History and biology

The family was first recognised as a formal unit by Vosmaer (1885b), however, an earlier reference by Schmidt (1862) to the Halisarcinae takes precedence under the ICZN (Anon., 1999). Until the work of Lévi (1956a) little was known of the biology of the Halisarcidae and most references were to the type species. The genus has a wide distribution in temperate and tropical shallow waters. The small size and fragile texture of these sponges render it unlikely that they would be detected in fixed or deep water dredge samples, and consequently they may be more widespread than present data indicate.

Previous reviews

Lévi, 1956a; Bergquist, 1996.

HALISARCA DUJARDIN, 1838

Synonymy

Halisarca Dujardin, 1838: 7, pl. 1 fig. 5; Johnston, 1842: 192, pl. 16 fig. 8. *Bajalus* Lendenfeld, 1885: 5.

Type species

Halisarca dujardini Johnston, 1842 (by monotypy).

Diagnosis

Halisarcidae with two to three distinct ectosomal collagenous layers.

Previous reviews

Lévi, 1956a; Bergquist, 1996.

Description of type species

Halisarca dujardini Johnston, 1842 (Figs 1–3).

Synonymy. *Halisarca dujardini* Johnston, 1842: 192; Lévi, 1956a: 184; Chen, 1976: 113–139; Bergquist, 1996: 24–27.

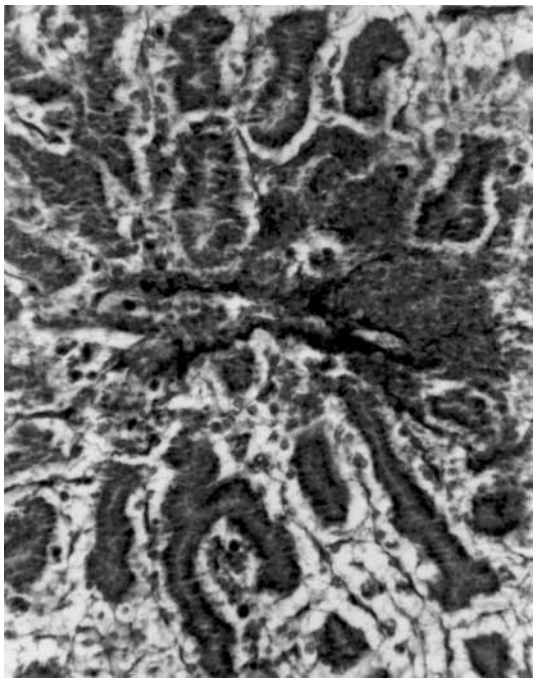

Fig. 1. *Halisarca dujardini*. Tubular, branching choanocyte chambers.

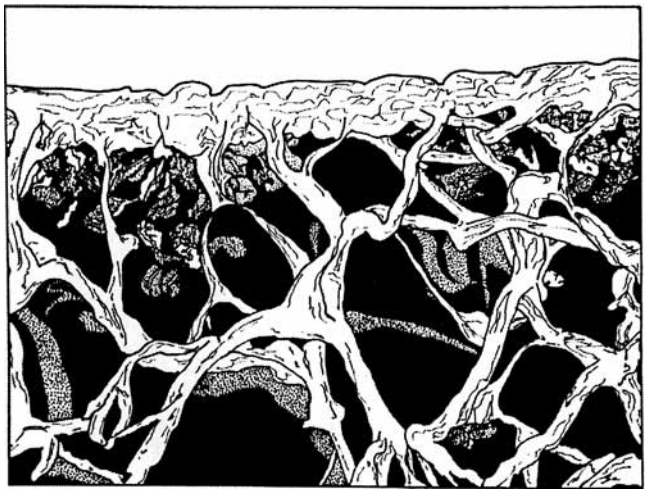

Fig. 2. *Halisarca dujardini*. Diagram after a scanning electron micrograph showing the complex ectosomal region with superficial collagen and cellular layer, interlaced collagen fibrils in tracts form a middle layer which contains few cells.

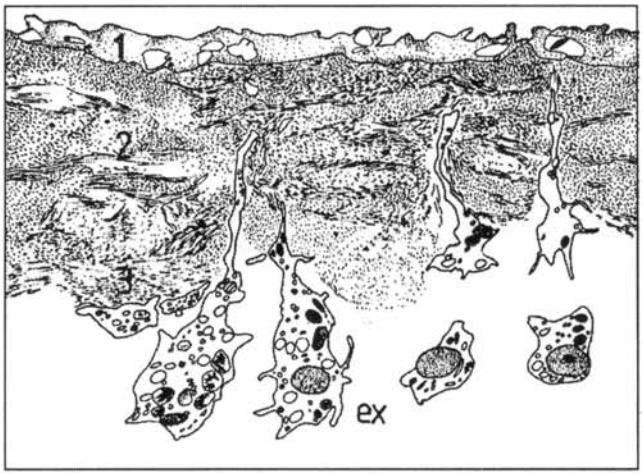

Fig. 3. *Halisarca dujardini*. Diagram after a transmission electron micrograph to show superficial pinacoderm with collagen reinforcing, a layer of organised collagen bundles, and the pendant cell bodies of the exopinacocytes connecting to the surface by fine extensions. (1) Cuticle; (2) Collagen-reinforced layer; (3) Concentration of pinacocyte cell bodies.

Material examined. Holotype BMNH (lost) – Holy Island, Lindesfarne. No specimen or slide found in the BMNH collections (Hooper & Wiedenmayer, 1994). Neotype (here designated): BMNH 1960.1.7.1 – Black Rock, Brighton, English Channel (epizooic on algae).

Description. Growth form thin 0.7–2.0 mm, forming smooth crusts on shallow water hard surfaces, and frequently a fouling organism on shallow subtidal mussels. Colour is yellow-beige to pale brown, and consistency is soft and gelatinous, slightly elastic. Oscules are scattered, 0.2–0.4 mm diameter, pores are dispersed. The ectosomal region, up to 24 μm deep, has three layers (Figs 2–3) a thin, external coat of T-shaped exopinacocytes surrounded by diffuse collagen and mobile cells, deep to this is an almost acellular layer containing interlaced collagen fibrils organised into strong tracts, the innermost region is a condensed collagen layer 3–5 μm thick. The ectosomal region is traversed at intervals by a structured network of collagen bundles producing a contractile ectosomal region. The choanosome makes up the bulk of the sponge thickness, it contains the meandering tubular wide mouth choanocyte chambers which vary in abundance and size depending on season. During active growth they are 250–600 μm long, 24–100 μm diameter, length and abundance reduce during the reproductive phase. Reproduction can proceed at low levels all year with a peak in early summer. The sponge is dioecious. Larvae are sub-spherical to oval dispherulae, a curious larval form found only in *Halisarca*, 100–200 μm in diameter, completely ciliated but only sparsely so at the posterior pole.

Remarks. The type species is thought to be cosmopolitan throughout temperate seas. With its preference for encrusting on mussels it can easily be introduced by fouling of ships hulls. Its occurrence in major harbours in the southern hemisphere supports this conclusion.