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Chrysonephos lewisii (Sarcinochrysidales, Chrysophyceae), a New Record for the Mediterranean Algal Flora

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Chrysonephos lewisii (Taylor) Taylor, belonging to the order Sarcinochrysidales (Chrysophyceae), is reported from the Tuscan coastline. Previously only reported from the Bermuda Islands and Florida, this is the first record from the Mediterranean. Vegetative and reproductive morphology, habitat and seasonal pattern of the plants are outlined, together with some ultrastructural features of the vegetative cells.

Introduction

Multicellular benthic chrysophytes have been rarely reported from the Mediterranean. True marine species are actually represented only by two taxa with filamentous and palmelloid habit respectively *Tribonema marinum* J. Feldmann and *Pulvinaria giraudii* (Derbès *et* Solier *in* Castagne) Bourrelly. *Tribonema marinum* (Tribonematales, Tribophyceae) occurs in the western area of the Mediterranean (Feldmann 1941, Coppejans and Boudouresque 1983, Ballesteros *et al.* 1986, Sartoni and Sonni 1991). *Pulvinaria giraudii* (Sarcinochrysidales, Chrysophyceae) is known from the Mediterranean (Castagne 1851, Verlaque 1987) and the Red Sea (Nasr 1941).

During a field survey along the Tuscan Archipelago shores a pseudodichotomously branched chrysophyte, whose morphology agrees with *Chrysonephos lewisii* (Taylor) Taylor, was found growing as delicate epiphytic tufts on various macroalgae, bryozoans and on the surface of dead portions of gorgonians.

Our specimens have been compared with type material (Algae of Bermuda, Wm. Randolph Taylor and A. J. Bernatowicz coll., n. 49-1722, 11. iv. 1949, in MICH!) and found to be identical.

The monotypic genus *Chrysonephos* was established by Taylor (1952) to replace *Chrysophaeum* nom. illegit., using material collected in Florida and Bermuda (Taylor 1951). For many years *C. lewisii* was not reported from any other localities, but recently this species has been found in the Pacific Ocean (Lobban, pers. comm.).

In spite of its relative abundance during spring and summer months at the various sites investigated, this species has not been previously recorded in the Mediterranean. The purpose of this paper is to describe the habit, the vegetative and reproductive morphology and some ultrastructural features of the plants collected in the Tuscan Archipelago.

Materials and Methods

Field observations and collections of specimens were made by SCUBA diving at several locations on the Tuscan Archipelago, at irregular intervals from August 1992 to September 1993: Secca della Croce (Giglio Island) 18. viii. 1992, and 8. vi. 1993; Punta del Fenaio (Giglio Island) 26. viii. 1992 and 3. ix. 1992; Baia del Campese (Giglio Island) 2. ix. 1992, 23. iv. 1993, 17. v. 1993, 7. vi. 1993, 28. vi. 1993, 20. vii. 1993, 4. xi. 1993; Argentarola (Argentario) 12. ix. 1992; Rio Marina (Elba Island) 25. ix. 1992; Cala Cupa (Giglio Island) 29. ix. 1993.

Light microscopical observations were carried out using a Zeiss Axiophot microscope fitted with interference contrast optics; photographs and camera lucida drawings were made from living material. For TEM observations, material was prefixed in 2.5 glutaraldehyde in 0.1 M cacodylate buffer, postfixed in 1% OsO_4 in 0.1 M cacodylate buffer, dehydrated in a methanol series and embedded in Epon/araldite mixture, sectioned with a LKB ultramicrotome, and stained with uranyl acetate and lead citrate. Observations were made using a Philips EM 201 C microscope.

Herbarium specimens are held at the Herbarium Universitatis Florentinae (FI).

Description of Plants

Plants appear as delicate, whitish or yellowish tufts 2–4 cm in height composed of uniseriate, rarely pluriseriate, pseudodichotomously branched filaments (Figs 1A, 2). The inconspicuous holdfast, consisting of a few-celled prostrate filament, develops only one erect axis, sparsely branched below at intervals of 2–3(5) mm, progressively becoming more densely branched above at intervals of 200–450 μm. The lower filaments are 30–40 μm in diameter with cells 1.5–5 times as long as wide, surrounded by a mucilaginous sheath up to 12 μm in thickness. Filaments