



First records of *Asbestopluma hypogea* Vacelet and Boury-Esnault, 1996 (Porifera, Demospongiae Cladorhizidae) on seamounts and in bathyal settings of the Mediterranean Sea

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Abstract

The carnivorous sponge *Asbestopluma hypogea*, was known only from shallow submarine caves (-15 to -26 m) in the Western Mediterranean Sea and the Adriatic. Herein *A. hypogea* is reported from outside of caves, on seamounts in the Alboran Sea (-167 m), off the Balearics (-100 m) and north off Sicily (-660 m), and along steep bathyal escarpments in the Strait of Sicily (~700 m). These deeper ROV-based findings of *A. hypogea* are conform to the typical deep-sea occurrence of the Cladorhizidae.

Key words: Cladorhizidae, western Mediterranean, carnivorous sponges

Introduction

Cladorhizidae (Demospongiae) are considered typical deep-sea organisms (e.g. Hartman 1982, Hajdu & Vacelet 2002), with a maximum depth of -8.840 m in the north Pacific reported by Koltun (1970) for *Asbestopluma occidentalis* Lambe, 1893. In the Mediterranean, this family of sponges is represented by *Cladorhiza abyssicola* Sars, 1872 and *Asbestopluma hypogea*. While *C. abyssicola* has been found in deeper waters (Boury-Esnault *et al.* 1994), *A. hypogea* has yet been known only from shallow waters in particular cave settings (Bakran-Petricioli *et al.* 2007, and references therein). Cladorhizidae comprise carnivorous sponges whose morphology differs from the typical filter-feeding organization of most Porifera, and is interpreted as an adaptation to nutrient-poor deep-sea environments. In particular, species of *Asbestopluma* have appendages to catch small swimming prey like tiny crustaceans (Vacelet & Boury-Esnault 1995, Vacelet & Duport 2004).

In the Mediterranean, *Asbestopluma hypogea* is the only species of the genus described to date. It was discovered in a shallow cave (Trois Pépès cave) near La Ciotat (east of Marseille, France), at -15 to -26 m depth (Vacelet & Boury-Esnault 1995, 1996; Figure 1., Table 1). Subsequently, *A. hypogea* has been recorded in two more submerged karstic caves in Southern France (Jarre Island near Marseille) and Croatia (Veli Garmenjak Island) (Bakran-Petricioli *et al.* 2007). The Jarre population was found on rocky outcrops and small boulders at -15 to -17 m depth, 70 m inside the cave in an aphotic setting. The Garmenjak population was found on rock walls and detached stones at -24 to -26 m depth, in a dim light setting near the cave entrance (Bakran-Petricioli *et al.* 2007; Figure 1, Table 1). In all three caves, their descending passages cause cold winter water masses to be trapped inside, with a minimum temperature of ~14°C, similar to that of the deep Mediterranean Sea (Vacelet *et al.* 1994, Vacelet & Boury-Esnault 1996, Bakran-Petricoli *et al.* 2007). This lead to the speculation that *A. hypogea* in submarine caves may be a representative of bathyal fauna (Boury-Esnault *et al.* 1993), and that consequently its distribution range should be wider, including deeper sites (Vacelet & Boury-Esnault 1996, Bakran-Petricioli *et al.* 2007).

Here, we present several new Mediterranean records of *A. hypogea* from relatively deep seamount sites and from steep bathyal escarpments, which are the first findings outside shallow caves.