

The taxonomic position of *Phormidium gardneri* Muzafarov (*Oscillatoriaceae*, *Cyanophyceae*)

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Ahrar Muzafarovich Muzafarov [Muzaffarov; Ахрар Музафарович Музафаров] (1909–1987), Soviet and Uzbek phycologist, hydrobiologist and lecturer, published a paper on new species and forms of cyanobacteria recorded in water bodies of Amu-Darya River basin in Uzbekistan (Muzafarov 1959). In this article he proposed a “comb. nov.”, “*Phormidium gardneri* (N.L.Gardner) Muzafarov” for *Phormidium corium* var. *capitatum* N.L.Gardner, 1927.

Gardner (1927a: 4) recorded that *Phormidium corium* var. *capitatum* was discovered and collected in the several locations forming flocculent masses in association with other Myxophyceae [cyanobacteria], on rocks in streams, etc. in China: Province of Fukien [Fujian - 福建省 (Fújiàn Shěng)], Kuliang [Guling - 谷嶺], near Foochow [Fuzhou - 福州市], leg. Prof H.H. Chung, nos. A294, A303; and in Kushan [Gushan - 鼓山], near Foochow, leg. Prof. H.H. Chung, nos. A341, A344, A358, A402, A416. Gardner (1927a) also indicated type as no. A402 deposited in Farlow Herbarium at Harvard (FH). A syntype was discovered as NY 00953587 (A344) (Fig. 3), annotated by Francis Drouet: “*Symploca muscorum* (Ag.) Gom. (Isotype, *Phormidium corium* var. *capitatum* Gardn. VI 1939)”. Later, presumably based on this material, Drouet (1939: 47) included *P. corium* var. *capitatum*, as well as another variety described by Gardner (1937b), *P. interruptum* var. *capitatum* N.L.Gardner, as synonyms of *Symploca muscorum* Gomont.

In his monograph on the blue-green algae of the USSR, Elenkin (1949: 1498) presented his opinion on the systematic position of *P. corium* var. *capitatum*, [from the Russian] “...it is quite possible that it is a separate distinct species, since it differs from *P. corium* in the significantly larger width of the trichomes and the character of the apical cells”. Elenkin, however, made no firm taxonomic proposal. Komárek & Anagnostidis (2005: 477–8) included *P. corium* var. *capitatum* in a list of “Unrevised species”.

While Muzafarov (1959: 30) claimed to be making a new combination, he was effectively proposing a new species name which included *Phormidium corium* var. *capitatum* N.L.Gardner. *Phormidium gardneri* Muzafarov is valid as it was provided with a Latin description and an illustration (Art. 44.2, Turland & al. 2025), effectively the type (Art. 40.3).

As this cyanobacterium was found a number of times and noted under different names in Uzbekistan (Muzafarov 1959, 1960, as *P. gardneri*); French Polynesia (Payri 1987, Payri & N’Yeurt 1997, as *P. corium* var. ?*capitatum*, Vieira & al. 2023, as *P. gardneri*); Hawaii, USA (Sherwood 2004, as *P. corium* var. *capitatum*); India (Gupta 2012, as *P. corium* var. *capitatum*); Egypt (Ali & al. 2013, as *P. gardneri*); Hungary (Németh & Buczkó 2024, as *P. gardneri*), Iraq (Rasul & al. 2026, as *P. gardneri*); we propose to adopt the taxonomic position of *P. gardneri* according to the results of Drouet’s re-examination of type materials.

Symploca muscorum Gomont ex Gomont *Annales des Sciences Naturelles, Botanique, Série 7* 16: 110, pl. II [2]: fig. 9, 1892 (‘*Muscorum*’)

Synonyms: *Phormidium corium* var. *capitatum* N.L.Gardner (1927: 4, pl. 1, fig. 1) (Fig. 1).

Syntype (of *Phormidium corium* var. *capitatum*): NY 00953587 (Gardner A344), Kushan, China near Foochow on wet rock in a mountain stream, altitude 500 m a.s.l., leg. H.H. Chung, 17 August 1926.

Phormidium interruptum var. *capitatum* N.L.Gardner, (1927: 44, no fig.).

Holotype (of *Phormidium interruptum* var. *capitatum*): NY 00953587; Puerto Rico, on the side of the road near Humacao, 18.171255°N 65.831229°W, WGS84, leg. J.N.F. Wille No. 540, 20 January 1915.

Phormidium gardneri Muzafarov (1959: 30, fig. 3: 3; Fig. 2).

Note: Muzafarov (1959) reported this species from Uzbek SSR [Uzbekistan], Surhan-Darya [River], shoal distributary (armlet) of Tupalan R. [in Muzafarov (1960: 153) indicated as Tupolang R.].

Komárek & Anagnostidis (2005: 493) retained *Symploca muscorum* Gomont ex Gomont and included *Lyngbya muscorum* (Gomont ex Gomont) Compère (1985: 488) in synonymy. With regard to habitat they noted: “Subaerophytic, among and epiphytic on mosses, on moist, unpolluted soils, less edaphic and epilithic on rocks, stones, mud, also in caves and in greenhouses; data about free-floating (!?) populations or from submersed objects in stagnant or slow-flowing waters and from brackish water in the marine littoral must be revised; possibly distributed worldwide, cosmopolitan.” Very little is known of the collection site of *Phormidium interruptum* var. *capitatum* N.L.Gardner, but *Phormidium gardneri* Muzafarov is clearly not “subaerophytic” and should may perhaps prove, using the “polyphasic approach” to be a separate species.

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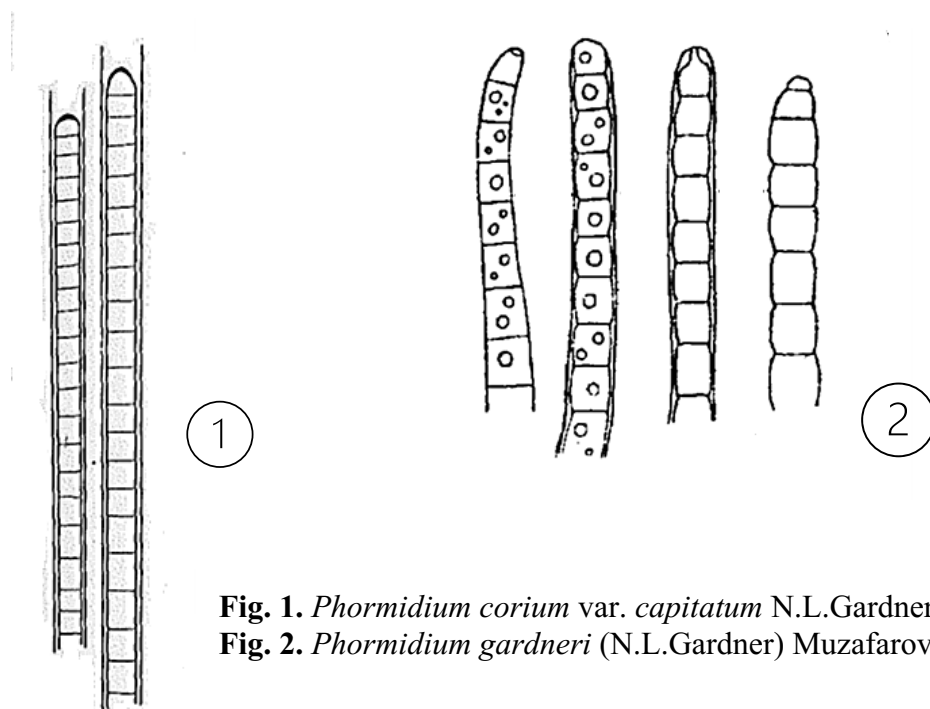


Fig. 1. *Phormidium corium* var. *capitatum* N.L.Gardner (after Gardner 1927a).

Fig. 2. *Phormidium gardneri* (N.L.Gardner) Muzafarov (after Muzafarov 1959).



Fig. 3. Digital image of the herbarium sheet with an isotype of *Phormidium corium* var. *capitatum* N.L.Gardner deposited in The New York Botanical Garden Herbarium (NY 00953587, A344) (<https://macroalgae.org/portal/collections/individual/index.php?occid=1118633&clid=0>). The annotation by Francis Drouet is enlarged.