

CALIFORNIA

SCHIZYMENIA DUBYI (Chauvin ex Duby) J. Agardh 1851: 171 (SCHIZYMENIACEAE).—Monterey Co., attached to floating docks Monterey Marina, Monterey Harbor, Monterey. 36°36'07"N, 121°53'25"W. Thalli cystocarpic and sterile (13 September 2006 (UC 1934344), 15 July 2007 (UC 1934344), 8 November 2007 (UC 1934345), 6 March 2008 (UC 1934346), J. R. Hughey).

Previous knowledge. Native to Europe, Africa, Asia, New Zealand, and Australia (M. D. Guiry and G. M. Guiry, *AlgaeBase*. World-wide electronic publication, National University of Ireland, Galway. <http://www.algaebase.org>; searched on 24 May 2008). Type locality: Cherbourg, Manche, France (P. C. Silva, P. W. Basson & R. L. Moe, *Catalogue of the Benthic Marine Algae of the Indian Ocean*, 1996: 323). First reported from Pacific North America based on material from Esquimalt, British Columbia (W. H. Harvey 1862, *Journal of the Linnean Society of London: Botany* 6: 174). Citing Harvey, W. A. Setchell and N. L. Gardner (1903, *University of California Publications Botany* 1:356) included *S. dubyi* in their list of algae from northwestern America. They admitted however "we know nothing of this plant, but suspect that we may have included it under *Sarcophyllis californica*." [*Dilsea californica* (J. Agardh) Kuntze 1891: 892]. Y. Yamada (1928, *Scientific Reports of the Tohoku Imperial University, Biology* 3:497–534) reported *S. dubyi* from Japan, but it was later removed from the flora by I. A. Abbott (1967, *Bulletin of the Southern California Academy of Sciences* 66:162) who treated Japanese specimens as conspecific with *Schizymenia pacifica* (Kyllin) Kyllin 1932: 10. Based on a recent phylogenetic analysis of the large subunit of ribulose-1, 5-biphosphate carboxylase/oxygenase gene (*rbcL*), Gavio et al. (2005, *Gulf of Mexico Science* 83:38–57) demonstrated that *S. dubyi* from Japan is conspecific with *S. dubyi* from the Atlantic ocean, but different from *S. pacifica* from the northeastern Pacific. However, the two earlier reports of *S. dubyi* from the eastern Pacific have gone without comment by later workers.

Significance. Previously misidentified specimens (as *S. pacifica*) include: 26 May 1978, R. Setzer (AHF 84371 in UC); 14 July 1977, I. A. Abbott (GMS 13296); 24 May 1974, I. A. Abbott (GMS 13187); 17 June 1972, I. A. Abbott (GMS 11395); 8 May 1970, L. A. Midon & J. N. Norris (AHF 80259 in UC); 24 June 1966, N. L. Nicholson (GMS 2121 & 2122). *Schizymenia dubyi* also occurs in Ventura Co. just east of Carpinteria (13 January 1957, E. Y. Dawson, AHF 63782 in UC) and in Los Angeles Co. in the upper mid-littoral at Royal Palms (26 June 1972, R. Setzer (AHF 78717 in UC); 8 March 1972, R. Setzer (AHF 77975 in UC)). Mature thalli of *S. dubyi* can usually be distinguished from *S. pacifica* by their darker color (maroon rather than brown-pink), ruffled margins, longer stipe (3 mm vs. 1 mm or lacking), and ostioles that are approximately twice as large (45–60 µm) as those found in *S. pacifica* (25–40 µm). Our identification was confirmed by analyzing *rbcL* gene sequences following the methods described by J. R. Hughey et al. (2008, *Phycologia* 47:124–155). Two specimens were analyzed and found to be identical in sequence (GenBank FJ013041 & FJ013042), but differed from *S. dubyi* from Brittany, France (AY294389) and Iwateken, Japan (AY294388) by 5 nucleotides. In comparison, an *rbcL* sequence of *S.*

pacifica from Washington (AY294393) differed from *S. dubyi* by 69 nucleotides. These data confirm the presence of *S. dubyi* in California, but highlight the need for further investigations into the life history and taxonomy of species of *Schizymenia* in the northeast Pacific.

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