

## The occurrence of *Fimbristylis bisumbellata* and *F. squarrosa* (Cyperaceae) in Greece

Kit Tan<sup>1</sup>, Burkhard Biel<sup>2</sup> & Andreas Schuler<sup>3</sup>

<sup>1</sup> Institute of Biology, University of Copenhagen, Øster Farimagsgade 2D, DK-1353 Copenhagen K, Denmark, e-mail: kitt@bi.ku.dk (author for correspondence)

<sup>2</sup> Am Judengarten 3, D-97204 Höchberg, Germany, e-mail: b.biel@arcor.de

<sup>3</sup> Wallstrasse 28, D-89231, Neu-Ulm, Germany, e-mail: andreasschuler@gmx.net

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**Abstract.** Two species of *Fimbristylis* were independently collected during investigations on the flora of Samothraki in 1998 and 2006. Both taxa, originating from tropical and warm temperate regions, have now spread to S Europe. *F. bisumbellata* is a new record for the island of Samothraki and *F. squarrosa* was found to be new for the flora of Greece. The occurrence in Greece is also the first documented record of the plant's existence in the Balkan Peninsula and SE Europe. In Europe, it was previously known only from NW and WC Italy.

**Key words:** adventive species, Balkans, *Fimbristylis* (Cyperaceae), flora of Greece

*Fimbristylis* Vahl is a genus of c. 300 species widespread in pantropical and warm temperate regions of the world. Most of the species are concentrated in the Old World, in SE Asia, Malesia and NE Australia. Annual species often occur in temporarily wet places.

*F. squarrosa* Vahl is an herbaceous tufted annual easily distinguished from *F. bisumbellata* (Forsskål) Bubani by its narrower leaves (0.2–0.4 mm broad), and aristate glumes which give the spikelet a “squarrose” appearance.

In the autumn of 2006, one of the authors (B. Biel) collected a *Fimbristylis* from the northeastern coast of Samothraki, an island of the N Aegean, Greece. It was growing together with *Crypsis schoenoides*, *Juncus hel-dreichianus*, *Lythrum borysthenicum*, *Mentha spicata*, *Persicaria lapathifolia*, *P. maculosa*, *Sagina procumbens* and *Sparganium* at the eastern edge of a pond drying out in the summer. This pond had a saline influence situated as it was directly behind a coastal rampart. Plants associated with the habitat in May include *Alisma*, *Callitriche*, *Elatine*, *Juncus acutus*, *J. effusus*, *Ranunculus ophioglossifolius*, *R. peltatus* and

*Thelypteris palustris*. Biel's collection was provisionally labelled as *F. bisumbellata*, distinguished by angular spikelets with mucronulate glumes. The species is of scattered occurrence in Greece having been recorded from the mainland and the Peloponnese; the habitats include roadside ditches, lake shores, river banks and deltas. It is a characteristic species of *Isoëto-Nanojuncetetea*-communities and is of high constancy in the associations *Fimbristylido bisumbellatae-Cyperetum fuscii* Oberdorfer 1952 nom. corr. Raus 1997 and *Dichostylido-Fimbristylidetum bisumbellatae* Horvatić 1954 nom. corr. Raus 1997 (Bergmeier & Raus 1999). Biel's collection was later correctly re-determined as *F. squarrosa*, a new discovery for the flora of Greece.

Unknown to Biel, A. Schuler had independently collected *F. bisumbellata* on Samothraki in a coastal habitat not far away. Recent identification of his gathering revealed the existence of two species from the same site. Both species were growing in pure stands at the edge of a small pond drying out slowly in the summer. At the time of collecting, *F. bisumbellata* was

growing on already dried-out, soil-exposed ground, a little distance from the water's edge. *F. squarrosa* developed later as the water level lowered and was still in damp places near the water. *Juncus articulatus*, *Mentha pulegium*, *Plantago major* subsp. *intermedia*, *Samolus valerandi* and *Teucrium scordium* subsp. *scordioides* were observed as accompanying species.

It is possible more records of *F. squarrosa* exist elsewhere in Greece but the lack of documentation may be linked with misidentifications for other *Fimbristylis* species. *Fimbristylis sieberiana* Kunth (syn: *F. ferruginea* (L.) Vahl) is known from Rodos and eastern Crete (west of Ierapetra). Records of *F. dichotoma* (L.) Vahl certainly refer to *F. bisumbellata*.

The nomenclature, diagnostic features and distribution on Samothraki for the two species are summarized as follows:

### ***Fimbristylis* Vahl, Enum. Pl. 2: 285 (Oct-Dec 1805), nom. cons.**

#### **Sect. *Fimbristylis***

*Fimbristylis bisumbellata* (Forsskål) Bubani, Dodecanthea 30 (March 1850).

Syn: *Scirpus bis-umbellatus* Forsskål, Fl. Aegypt.-Arab. 15 (1775) — [Egypt] in locis littoreis inundatis Insularum Niloticarum, ann. 1761, P. Forsskål (holo. C-Forsskål!, microfiche 96:13-14).

Style-base glabrous, deciduous. Nut longitudinally ribbed and transversely striate. Glumes with mid-vein shortly excurrent to less than 0.5 mm.

Greece. Nomos Evrou, Eparchia Samothrakis: Samothraki camping site, dry to wet pioneer habitat near the sea, 1–3 m, 40°30' N, 25°37' E, 26 August 1998, Schuler 98/399 (C, herb. Schuler).

New to Samothraki.

External distribution: Mediterranean region, tropical and warm temperate regions of the Old World including New Zealand and New South Wales in Australia. Marshy places and alluvial ground, along lakes, rivers, ditches and irrigation channels; a common weed of rice fields in India. Observed flowering in all months although July to October reported to be the most frequent period.

#### **Sect. *Pogonostylis* (Bertol.) Pax.**

*Fimbristylis squarrosa* Vahl (as *squarrosus*), Enum. Pl. 2: 289 (Oct-Dec 1805).

— [S America] Ex herbario antiquo, forte Loefflingii, matrici habui (holo. C-Vahl! microfiche 31).

Style-base somewhat persistent, fringed with long deflexed hairs adpressed to nut and covering  $\frac{1}{2}$ – $\frac{3}{4}$  of it. Nut  $\pm$  smooth. Glumes with arista 0.5–1.5 mm.

Greece. Nomos Evrou, Eparchia Samothrakis: Samothraki camping site, dry to wet pioneer habitat near the sea, 1–3 m, 40°30' N, 25°37' E, 26 August 1998, Schuler 98/399a (herb. Kit, herb. Schuler); ESE of Therma, coastal wetland in alluvial forest, 2 m, 40°29' N, 25°38' E, 1 October 2006, Biel 06.424 (herb. Biel, Fig. 1).

New to Greece, the Balkans and SE Europe.

External distribution: tropical and warm temperate regions of Asia, Africa and S America; in Europe naturalized in NW and WC Italy. Not recorded from N America. In rice fields and similar wet places. Flowering August to October.



Fig. 1. *Fimbristylis squarrosa* (photo B. Biel)

#### **References**

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