

SPARGANIACEAE BUR-REED FAMILY

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Herbaceous monoecious perennials. ROOTS fibrous. STEMS from extensive creeping rhizomes, with erect or floating, simple or branched stems. LEAVES sessile, alternate, 2-ranked, elongate-linear, flaccid and floating or stiff and erect, basally sheathing. INFLORESCENCES of densely flowered, somewhat regularly disposed capitate-globular, sessile or pedunculate, heads on the upper part of the stem or its branches, with staminate heads above, with pistillate below, subtended by caducous or persistent leaf-like bracts. STAMINATE FLOWERS of 3-5 minute chaffy perianth segments, each subtending a stamen, the filaments slender, free or partly united, much longer than the anthers and greatly exceeding the bracts. PISTILLATE FLOWERS sessile or shortly pedicellate, with a calyx-like perianth of 3-6 linear to spatulate or obovate-flabellate scales; pistil simple or sometimes 2-carpellate; style elongate, simple or forked; ovary 1(-2)-celled, each locule 1-ovuled. FRUITS achene-like with a strong beak, suborbicular, obovoid, broadly fusiform or truncate-pyriform, indehiscent, 1-2 seeded, albuminous with mealy endosperm. —A monogeneric family with 15-20 spp. of aquatic habitats; temperate and arctic regions of N. Hemisphere and Australasia.

Sparganium L. Bur-reed

Characters of family. —(Greek: *sparganion* = a swaddling band, referring to the long narrow leaves). Reveal, J. 1977. Sparganiaceae. Pp. 456-468 in A. Cronquist et al. (eds.), *Intermountain Flora* 6.

1. Stigmas 2(-1); plants coarse, 5-20 dm high; mature achenes truncate-pyriform, narrowing abruptly to the beak; inflorescences usually branched *S. eurycarpum*
- 1' Stigmas 1(-2); plants slender, mostly less than 10 dm tall; mature achenes essentially fusiform, narrowing gradually to the beak; inflorescences usually simple.
2. Staminate heads usually 2 or more, the anthers 0.8-1.5 mm long, less than 1/2 as wide as long; fruit beak 3-4(-5) mm long including the stigma; leaves (5-)6-12(-15) mm wide ...
..... *S. emersum*
- 2' Staminate heads solitary (rarely 2), the anthers 0.3-0.6(-0.8) mm long; fruit beak 1-1.5 mm long including the stigma; leaves (2-)3-6(-8) mm wide *S. minimum*

Sparganium emersum Rehmman (emergent) Bur Reed. —STEMS simple, 1.5-10 dm tall, erect but sometimes slender. LEAVES (1.5-)2-8(-10) dm long, (5-)6-12(-15) mm wide, much longer than the stem, linear, flat, but slightly keeled to triangular-keeled especially toward the somewhat expanded scarious-margined base. INFLORESCENCES simple, to 2 dm long; staminate heads 3-8, congested or confluent; pistillate heads 2-5, 1.8-3 cm in diam. when mature, the lowermost occasionally axillary or supra-axillary, or pedunculate on a slender peduncle to 12 cm long. STAMINATE FLOWERS: perianth scales 2-4 mm long, oblanceolate, with a broadened erose apex; anthers 1-1.5 mm long, elliptic-clavate. PISTILLATE FLOWERS: perianth scales (1-)1.5-2 mm long, oblanceolate, with a broadened erose apex; stigma linear, simple, (1-)1.5-2 mm long. FRUITS 1-seeded, stipitate, the stipes 2.5-3.5(-6) mm long, the fruits 4-6 mm long, brown to greenish brown, fusiform, often constricted at the middle gradually to somewhat abruptly narrowing to a stylar beak, this 1.5-4(-5) mm long including the stigma.

$2n = 30$. [*S. simplex* Huds. var. *emersum* (Rehmann) Asch. & P. Graebn.]. —2 vars., 1 in AZ; temperate regions.

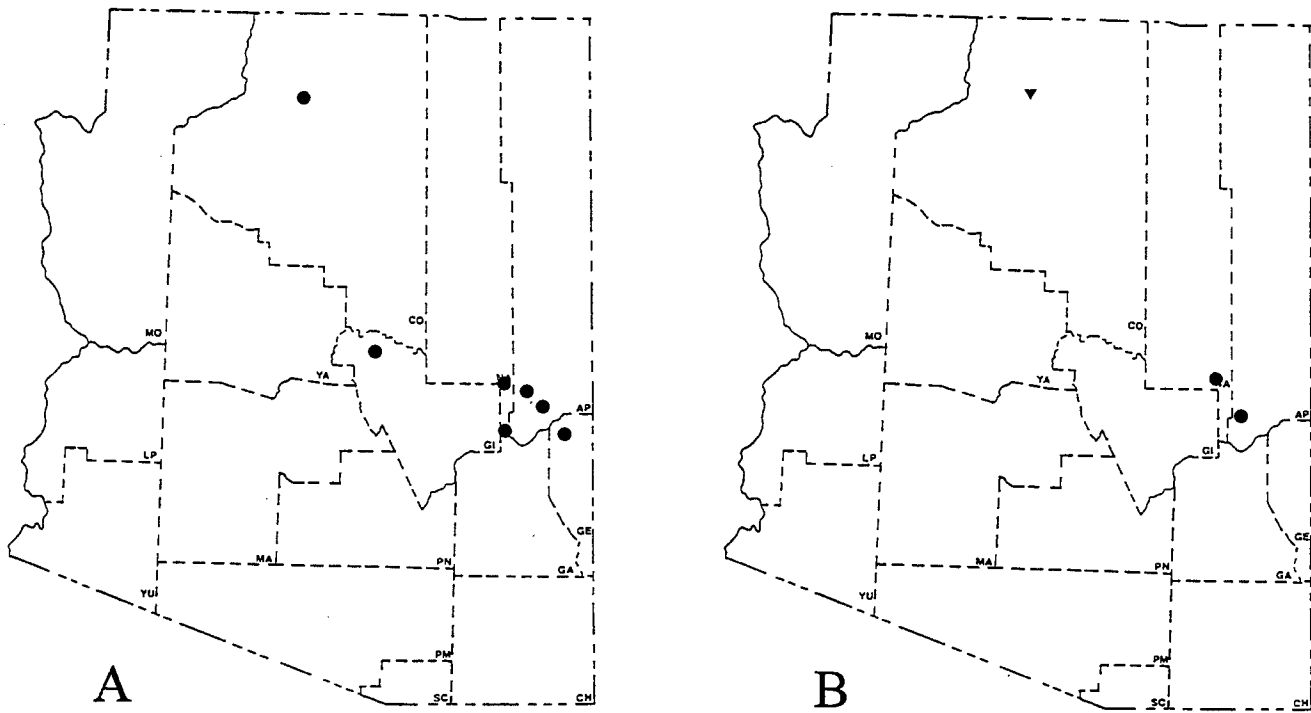
Var. ***multipedunculatum*** (Morong) Reveal (many peduncles). —LEAVES not strongly keeled, but somewhat V-shaped in cross-section. FRUITS ca. 10 mm long including stipe and beak. [*S. simplex* Huds. var. *multipedunculatum* Morong; *S. multipedunculatum* (Morong) Rydb.; *S. subvaginatum* Meinsh.; *S. simplex* var. *subvaginatum* (Meinsh.) Asch. & P. Graebn.] —Shallow ponds and lakes, marshes and along slow-moving streams and rivers: Apache, Coconino, Gila, Navajo cos.; 1800-2650 m (6000-8700 ft) Jun-Sep (fr. Jul-Nov); common in temperate regions of n hemisphere.

Sparganium eurycarpum Engelm. (broad fruited). Broadfruited Bur-reed. —Stems 5-25 dm tall, erect, stout, branching. LEAVES 3-10 dm long, 7-17 mm wide, equalling to shorter than the inflorescence, flat, somewhat keeled below. INFLORESCENCES branched, 1.5-5 dm long, the upper branches with 5-12 staminate heads, these sessile or peduncled, 2-3 cm in diam. when mature; pistillate heads 2-6 on the main stem or on branches, sessile or usually peduncled, 2-2.5 cm diam. in fruit. STAMINATE FLOWERS: perianth scales 3-7 mm long, clawed, expanded and spatulate with irregularly lobed hyaline margined apex; anthers 1-1.5 mm long, elliptic-clavate. PISTILLATE FLOWERS: perianth scales almost as long as the fruits, long-clawed, expanded and spatulate, with irregularly lobed hyaline-margined apex; style branches 2, rarely simple, filiform, 1.8-2 mm long. FRUITS mostly 2-seeded, 6-10 mm long, 4-8 mm wide at apex, sessile, hard and thick at maturity, cuneate-obpyramidal, irregularly and obtusely 3-5-angled, the tip truncate to depressed or very shallowly rounded, the stout beak 2-3 mm long. (*S. californicum* Greene; *S. greenei* Morong; *S. eurycarpum* var. *greenei* (Morong) P. Graebn.; *S. ramosum* sensu Amer. authors, non Huds.). —Wet meadows and along streams: Apache, Navajo cos.; 2100-2150 m (7000-7100 ft); May-Sep; (fr. Jun-Oct); N. Amer.

Sparganium minimum (L.) Fries (small). Arctic Bur-reed. —STEMS 1-8(-10) dm long, slender, submersed and floating, or weakly suberect, not obviously branched. LEAVES 1-8(-10) dm long, (2-)3-6(-8) mm wide, about as long as the inflorescence, flat, without an evident keel, usually flaccid, dark green. INFLORESCENCES simple, rarely over 6 cm long, the upper heads solitary, staminate, or with both staminate and pistillate flowers; lowermost heads pistillate or mixed, 1-3 in upper axils, 0.8-1.5 cm in diam. when mature, on slender pedicels 1-6 cm long. STAMINATE FLOWERS: perianth scales oblanceolate, 1-1.2 mm long, the apex essentially entire; anthers 0.3-0.6 mm long, 0.1-0.3 mm wide, broadly elliptic. PISTILLATE FLOWERS: perianth scales elliptic to cuneate-spatulate, 1/2-2/3 as long as the achene; styles simple; stigma 0.8-1 mm long. FRUITS sessile or stipitate, 3.5-5 mm long including the 1-1.5 mm long beak and stigma, ellipsoid to obovoid-fusiform, the body somewhat centrally constricted; stipes, if present, 0.7-0.9 mm long. $2n = 30$. —Shallow water of lakes: Coconino co.; ca. 2450 m (8200 ft.); Jun-Sep (fr. Jul- Oct); temperate n hemisphere.



Sparganiaceae Fig. 1. *Sparganium eurycarpum*. a and b, 1-seeded and 2-seeded fruits (cross sections), $\times 1.5$; c, mature fruit, $\times 1.5$; d, paired staminate flowers, usually with 1 broad perianth scale and several long-clawed scales expanding into a spatulate apex, the anthers elliptic clavate, $\times 6$; e, staminate inflorescence showing globose heads, $\times 0.2$; f, young, sessile pistillate flowers, showing the perianth scales with spatulate apex, the scales broader than those of the staminate flowers, $\times 4$; g, young fruit cluster, $\times 0.66$; h, habit of plant, $\times 0.12$; i, mature fruit cluster, the styles broken off, $\times 0.8$. Reproduced with permission from *A Flora of Marshes of California* by Herbert L. Mason (1957), University of California Press, Berkeley. Copyright (c) 1957 Regents of the University of California, (c) renewed 1985 Herbert Mason.



Sparganiaceae. Fig. 2. Distribution of: A, *Sparganium emersum* var. *multipedunculatum*; B, *S. eurycarpum* (dot) and *S. minimum* (triangle).