

## Society Islands plants: 1. *Typha* L. (Typhaceae)

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**Abstract.** A general simplified description of the genus *Typha* is provided. The *Typha* common in the lowlands of the Society Islands, French Polynesia, commonly considered introduced, is described as *Typha domingensis* var. *sachetiae* Fosberg.

**Key words:** Society Islands; *Typha*.

*Typha* has generally been considered as introduced in Polynesia, except New Zealand and possibly Fiji. The Forsters found it in New Zealand in 1774 (Forster, 1786) and Seemann in Fiji in 1861 (Seemann, 1865-1873), reporting it under the names *Typha latifolia* L. and *Typha angustifolia* L. respectively. Two species are regarded as indigenous in Australia, dealt with critically by Briggs and Johnston (1968). Finding *Typha* widespread in marshes in the Society Islands during our several recent visits, Dr. M.-H. Sachet and I were struck by a character, constant in plants we observed there, which we had not noticed elsewhere, conspicuously arcuate staminate spikes. We collected material from several islands intending to check its identity and to look into its history in the archipelago. Dr. Sachet did not live to look further into the matter.

I have found that very early accounts that I have read of Society Island botany or geography do not make any mention of these cattail (*Typha*) marshes, now a conspicuous feature of the coastal lowlands of these islands. Pancher (in Cuzent, 1860) records that a *Typha* was introduced into Tahiti in 1830 by M. Masette. It was said by Butteaud (1891) to have been used by coopers to caulk casks.

Early Pacific records of *Typha* have been as *T. latifolia* (Forster, 1786) and *T. angustifolia* (Pancher in Cuzent, 1860; Seemann, 1868; Jouan, 1876; Butteaud,

1891; Graebner, 1900), but these are Northern Hemisphere species (*T. latifolia* L. sparingly introduced in Australia; Briggs and Johnston, 1968), not, except for Australia, found in the south Pacific. The Tahiti plant was correctly identified and reported as *T. domingensis* Persoon, by Setchell (1926). On both pages 144 and 249 he clearly indicated that he considered it an introduction.

Some doubt as to the identity of our Society Island plants, and difficulty in understanding brief published descriptions of the genus led me to take a careful look at our specimens, and, with the aid of the discussion of the Australian species by Briggs and Johnston (1968), to confirm that our plants fall within the limits of *T. domingensis* Pers. as interpreted by them. To enable others interested in Society Island plants to avoid the difficulty I had in understanding the morphology and terminology of these plants a general description of the genus in simple terms, based on our material, is offered, with notes on the Society Islands occurrences known to me.

TYPHA L., Sp. Pl. 971, 1753; Gen. Pl., ed. 9, 418, 1753.

Rhizome horizontal, thick, with tardily caducous overlapping amplexicaul cataphylls (subterranean in mud, usually under standing water), sending up rather hard but pithy erect round stems ordinarily 1-2 m tall,

but reaching 4 or even 5 m; leaves basal or mostly so, distichous, sheaths open, tightly wrapped concentrically around stems, margins thin and scarious, ligule none (or not seen), transition to blade gradual, or abrupt and auriculate, blades elongate, linear. Stems terminating in two superposed spikes of flowers, the lower pistillate, the upper staminate, these either contiguous or separated by an interval of up to several cm. Each spike is subtended by an early caducous foliaceous bract, the staminate in some species by more than one bract, then each subtending a section of the spike. The lower, or pistillate spike is cylindric, both ends rounded, the outer surface formed by the crowded stigmas, carpidia and "bract" apices (if these are present). The staminate spike is more slender and, when mature, shaggy-looking from the loosely packed anthers.

The flowers are reduced to stamens and pistils without perianths. They are accompanied by hairs, and in some species by non-vascular structures commonly called "bracts", which could as easily be interpreted as hairs, except that there is some suggestion that they may subtend the flowers. They could scarcely be bracts, morphologically, as they are not at all vascularized, but are not related to the hairs on the gynophores of the pistillate flowers, as they are usually several or more cells thick.

The staminate flowers are reduced to simple clusters of (1-) 2-4(-7) stamens, the filaments fused nearly to the top, anthers broadly linear, basifixed, 4-loculed, with projecting connective, opening longitudinally by two slits, pollen grains single (or in tetrads in *T. latifolia* L.). The flowers are accompanied by very curious "hairs", either simple or expanded and variously cut, toothed or irregularly lobed apically. These do not seem to be morphologically homologous with the hairs on the pistillate flowers, but seem more likely to correspond to the "bracts" in the pistillate inflorescence.

Pistillate flowers are either fertile or sterile, the sterile of two sorts. The fertile are composed of a basal filiform stalk or "gynophore" bearing one or more whorls of capillary hairs, above this a long-stipitate swelling, the ovary, above which is a hairlike style, flattened toward the summit into a scarcely, to notably, widened acute or acuminate stigma. One type of sterile flower is similar to the fertile but the ovary and stigma are imperfect. The other kind is a club-shaped structure called a carpidium, stipitate from a "gynophore" with hairs. The carpidium is rounded or

subtruncate at the top, with a tiny apiculus-like vestigial pistil (or stylode) in the center, or this lacking or only slightly developed.

The fruit is a tiny ellipsoid follicle that, when ripe is shed with its gynophore and hairs, forming an effective airborne dispersal mechanism, like a wisp of cotton. It eventually splits to release the seed.

Superficially all species of *Typha* look much alike, except for size, but the above-described structures are very real and, though variable, separate a number of distinct-enough species.

The Society Island plant is a form of *Typha domingensis* but it is not known from whence it was introduced. The uniformly arcuate staminate spike could give a clue to the population of origin, if this feature were described. We have not noticed it elsewhere, nor seen it referred to in descriptions.

***Typha domingensis*** Persoon, Syn. Pl. 2: 532, 1807.

*Typha angustata* Bory & Chaub., in Chaub. Nuov. Fl. Pelop. 4, 1838.

This name has been used for Pacific Island and Australasian plants, including those in the Society Islands. The range of the species is pantropical and warm temperate.

In the following brief description only such characters are listed as in any way qualify or differentiate the Society Islands form of *T. domingensis* from the generalized description of *Typha* given above, or distinguish it from related species.

I am naming the Society Island plant at the rank of *varietas*, as in its ensemble of features, especially in the arcuate staminate spike, it seems to be a distinctive local population of this widespread species.

***Typha domingensis* var. *sachetiae*** Fosberg, var. nov.

Planta monoica spica staminata valde arcuata, 1-2 cm supra spicam pistillatam cinnamoneam opacam.

Strong robust shoots, to at least 3-4 m tall; orifice of the leaf-sheath open and changing gradually to blade, not at all auriculate, blade narrow, strongly plano-convex and somewhat thickened in lower part, becoming broadly concave upward (when dry) to flat and thin, distally narrowing to a bluntly acutish point. The two spikes are usually subequal, 25-30 cm long, or

the staminate somewhat shorter, rarely contiguous, usually 1-2, rarely 3 cm apart, the pistillate straight and cylindric, cinnamon-brown, the staminate notably arcuate, smooth when young, shaggy when mature, becoming a bare rhachis as the anthers and "bracts" become weathered off. Staminate flowers with anthers 2-2.5 mm long, connective apex thickened, fleshy, obtuse to rounded, chestnut brown, anther thecae cream color, free part of filament very reduced. "Hairs" or "bracts" long-stipitate, stipe flattened, capillary, brownish, "blade" chestnut colored, from linear and entire to variously and irregularly expanded, branched or cut, multiple apices capillary-aristate. Pistillate flowers with several whorls of long uniseriate hairs on the basal part or "gynophore", this then prolonged into a bare filiform stipe, which becomes swollen upward into a narrowly elliptic ovary, this chestnut brown, the style about equalling the stipe, stigma narrow, linear-lanceolate, apex prolonged into a chestnut colored hair-like process. The mass of these seen together, unmagnified, give a smooth dull cinnamon colored surface to the spike.

Specimens examined: Society Islands: *Tahiti*: s.l., *U.S. Expl. Exped.* (US) (sterile specimen, probably this). *Moorea*: large marshes seen by me in 1981 and 1984 near airport. *Huahine*: along road from Belt Road to airport, 0.3-0.4 km from junction, very common in tangled swamp-marsh mixture. *Fosberg 61222* (BISH). *Raiatea*: between Uturoa and Airport, in roadside marsh, *Fosberg & Sachet 63341* (US, BISH). *Taha'a*: Patio, abundant, dominant in marsh back of shore,

*Fosberg 63496* (US, holotype; BISH, Papeete, P, MO, isotypes). *Maupiti*: Motu Auira, west end, in pond inland from lagoon beach, *Fosberg & Sachet 64981A* (US).

Other records: Setchell (1926) found it in Tahiti in Faaa, "forming extended and dense patches of considerable area and 12-15 feet high, edge of lagoon moat."

A *Typha* introduced on Oahu, Hawaiian Islands, has been determined not to be *T. domingensis* var. *sachetiae*. Its identity will be dealt with later when more information is available.

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## 社會群島植物：1. 香蒲屬

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有關香蒲屬植物之特徵及描述術語皆不易了解，本文特加以說明。法屬玻里尼西之社會群島低濕地常見之香蒲在過去被誤認為引進種，經研究後確定其為一新變種，並命名為 *Typha domingensis* var. *sachetiae* Fosberg.

