

# A new variety of *Habenaria* (Orchidaceae, Habenariinae) from French Polynesia

Hanna B. Margońska

Department of Plant Taxonomy and Nature Conservation, Gdańsk University, Al. Legionów 9, 80-441 Gdańsk, Poland, e-mail: dokhbm@univ.gda.pl

**Abstract:** A new variety of *Habenaria tahitensis* (Orchidaceae, Habenariinae) from Tahiti and the Marquesas Islands (French Polynesia) is described, illustrated and compared to its closest relatives.

**Key words:** French Polynesia, *Habenaria*, Habenariinae, Orchidaceae, taxonomy

## 1. Introduction

The genus *Habenaria* Willd. was described in 1805 and is one of the largest genera of orchids in the world (ca. 2381 taxa by Index Kewensis 2008). They are terrestrial plants with cauline leaves, decreasing in size upwards, or basal, almost radical, ground-hugging, usually sessile or subsessile, terminal, many-flowered inflorescences. Flowers are of various sizes, mostly small to medium, resupinate, green or white. Sepals almost always are subsimilar in shape, petals are usually bipartite, labellum trilobed, spur long, usually filiform to cylindrical. The most distinguishing characters of *Habenaria* flowers without any doubt are connected with gynostemium morphology. The gynostemium is short and massive, with auriculae usually small, sometimes large and bilobed, or very inconspicuous. The stigma is bi-lobed, with each of the lobes forming prominent, but relatively short stigmaphores, often pendent, with most of the upper surface fertile. Rostellophores are subequal in length to antherophores. The anther is erect or bent back up to an angle of 90°, rounded at the apex and elongate at the base in short processes (=antherophores), with 2, obovoid to ellipsoid, pollinia. Caudiculae are elastic, usually as long as or longer than pollinia.

## 2. Material and methods

While researching the taxonomy of French Polynesia orchids (Margońska & Szlachetko 2010) I studied mate-



**Fig. 1.** The type of *Habenaria tahitensis* var. *tahitensis* Nadeaud (isoelectotype, Nadeaud 274, P 00311914). (Photograph H. B. Margońska)

rials collected from the area, over 1100 herbarium specimens and 30 specimens preserved in liquid. The specimens originated from 23 scientific institutions, such as e.g. AK, BISH, G, K, P, PAP and UGDA (the complete list in the Acknowledgments). Additionally, I verified over 560 field records, iconography, bibliography, etc. During the preparation of this article over 100 specimens of the above-mentioned taxonomic materials were used.

The conventional taxonomy method, with obligatory referring to the original taxonomic materials such as type-specimens and protologues, has been used. The herbaria acronyms follow *Index Herbariorum* (Holmgren *et al.* 1990). The nomenclature of authors' name abbreviations follows Brummitt & Powell (1992).

### 3. Results

Two species of *Habenaria* are reported from Tahiti, i.e. *H. tahitensis* Nadeaud and *H. marquisensis* Brown (Margońska *et al.* 2009). However, among specimens

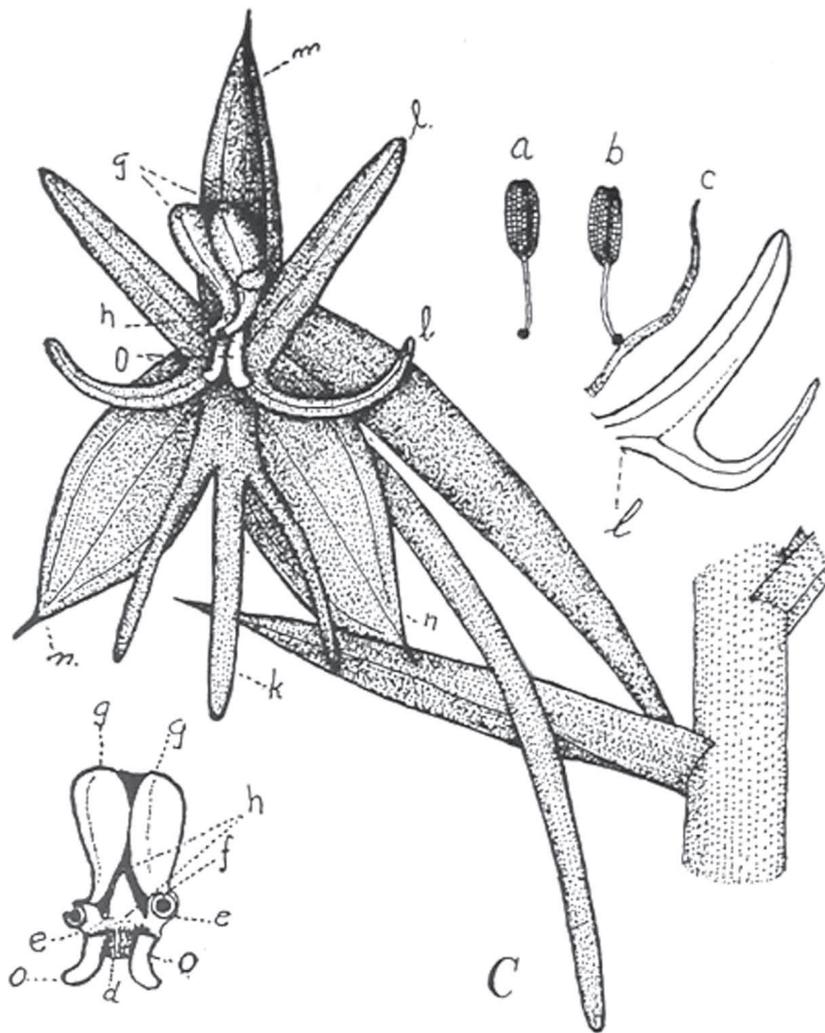
of *H. tahitensis* from Tahiti I found not only typical specimens of this species, but also plants with some elements of flowers being distinctly different. Analyses of the preserved specimens, abundant in flowers, let me decide that the differences are evident and constant. I propose these plants as a new subspecies.

*Habenaria tahitensis* Nadeaud, Enum. Pl. Tahiti: 38. 1873.

TYPE: French Polynesia, The Society Islands, Tahiti, Tearapeau, 1100 m, 29.5.1859, *Nadeaud* 274 (Lecto P 00311913!, photo BISH 455108!, isolecto-P 00311914! lectotype designed by Margońska & Szlachetko (2010). (Figs. 1-2)

var. *fredjacqi* Marg., var. nov.

*Plantarum habitus pro H. tahitensem typicus. Petala bipartita sed inferiorum partium, qui abbreviatae maxime superiorum partium longitudinis triens attingentes anguste lanceolatae sunt, magnitudine formaque typi forma differunt. Calcar brevius, floris ovarii pedicellique longitudinem tantum subaequans.*



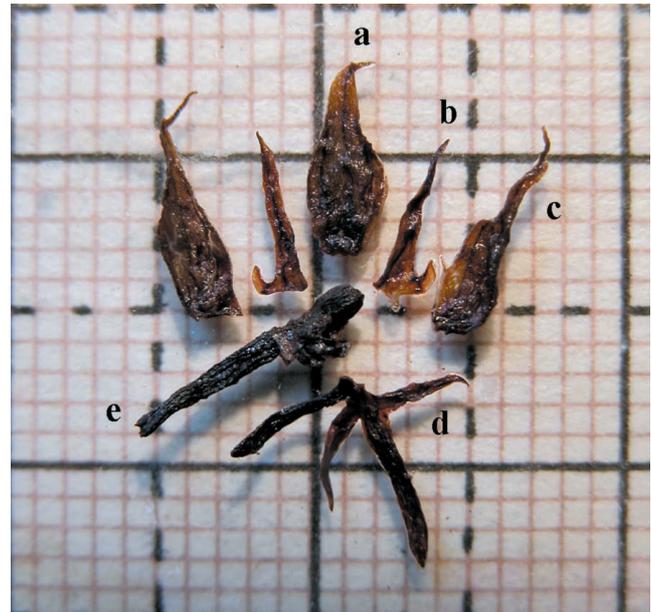
**Fig. 2.** Icon of a flower of *Habenaria tahitensis* var. *tahitensis* Nadeaud.

Explanations: a – pollinium, b and c – pollinium and caudicule, d – stigmatophore, e – rostellum lateral lobe, f – antherophores, g – anther thecae, h – rostellum middle lobe, k – lip, l – petal, m – dorsal sepal, n – lateral sepal, o – auriculae (ex F. Brown 1931, pl. 17.C.). (Photograph H. B. Margońska)



**Fig. 3.** The type of *Habenaria tahitensis*. Nadeaud var. *fredjacqi* Marg., var. nov. (holotype, *Vesco sn*, P 00311916). (Photograph H. B. Margońska)

Plants middle-sized, 75-95 cm high. Leaves 7-10; leaf blade 10-25 cm long, 3.5-7 cm wide, oblanceolate to oblong obovate, distinctly attenuate towards apex, acuminate, basally longly cuneate, the upper one diminishing to floral bracts. Inflorescence 30-60 cm long, distinctly longer than leaves; raceme 7-35 cm long, ca. 20-40-flowered, dense. Several sterile bracts, 1-7 cm long, narrow, attenuate and acuminate at the apex. Flowers 1.3-1.5 cm in diameter (without spurs), greenish to bright green. Floral bracts subequal to ovary and pedicel, erect, lanceolate, acuminate. All tepals thin and delicate, lustrous. Sepals 0.55-0.65 cm long (without apicule), subequal and subsimilar, ovate to oblong ovate, at the distal part markedly attenuate, with a distinct, up to 0.15 mm long apicule at the external surface of apex. Dorsal sepal ca. 0.3 cm wide, erect, slightly concave. Lateral sepals gently oblique, spread, flattened. Petals bi-partite, oblique, divergent, brighter than sepals, especially at the base; upper parts ca. 0.54-0.58 cm long, close to the dorsal sepal, nearly sinuate, oblong, lanceolate; lower parts only ca. 0.1-0.15 cm long, narrowly lanceolate, spread, erect to incurved. Lip 3-lobed, thick, green to nearly white at the base and spur entrance;



**Fig. 4.** The flower of *Habenaria tahitensis*. Nadeaud var. *fredjacqi* Marg., var. nov.

Explanations: a – dorsal sepal, b – petal, c – lateral sepal, d – lip, e – pedicel and ovary with gynostemium at the top (isotype, *Vesco sn* P 00311917). (Photograph H. B. Margońska)

middle lobe ca. 0.58-0.63 cm long, oblong, distally obtuse; lateral lobes slightly shorter and thinner than middle lobe, linear, subobtuse to acute, usually at least slightly spread. Spur shorter than at the type-taxon, subequal to a total length of flower ovary and pedicel, cylindrical, slightly swollen at the distal part. Gynostemium ca. 0.3 cm long, greenish white with yellowish elements. Auriculae large, clavate. Stigmaphores abbreviate. Rostellum middle lobe broadly triangular-obtuse, lateral lobes oblong. Caudiculae filiform.

**HOLOTYPE:** French Polynesia, Society Islands, Tahiti, 1000 m, 1847., *J.N.E. Vesco sine no.* (P 00311916, isotype: P 00311917). (Figs. 3-4)

**ETYMOLOGY:** Dedicated to Frédéric Jacq, Ingénieur Ecologue et Consultant en Aménagement Forestier, Polynésie Française, and true naturalist. I would also like to thank him for his assistance during my field researches on the Society Islands (French Polynesia) and for making available his excellent photograph collection.

**ECOLOGY:** Terrestrial; forming colonies of various size; in humus or on volcanic clay soil, usually covered by leaf litter and/or mosses; mostly at higher elevations, in cooler, shady and moist conditions; on slopes and in ravines, along watercourses, in forest. Flowering plants recorded in May.

**NOTE:** *H. tahitensis* var. *fredjacqi* (Figs. 3-4) is easily distinguishable from *H. tahitensis* subsp. *tahitensis* (Fig. 1), generally by the size and shape of petal lower parts and the lip spur. *H. tahitensis* var. *tahitensis* petals are



**Fig. 5.** *Habenaria tahitensis*. Nadeaud var. *fredjacqi* Marg. from The Marquesas Islands; inflorescence (photograph J.-F. Butaud)



**Fig. 6.** *Habenaria tahitensis*. Nadeaud var. *fredjacqi* Marg. from The Marquesas; flowers (photograph J.-F. Butaud)

nearly erect, lower parts reaching over 2/3 length of the upper parts and nearly linear, whereas the lip spur is longer than the total length of the flower ovary and pedicel (Fig. 2).

Recently *H. tahitensis* var. *tahitensis* has also been discovered on the Marquesas Islands (Margońska *et al.* 2009.). I recognised the newly proposed taxon also between plants recorded by J.-F. Butaud at Nuku Hiva, the Marquesas Islands (Figs. 5-6).

*Habenaria tahitensis* var. *fredjacqi* is endemic to French Polynesia. The taxon should be treated as critically endangered due to e.g. its rarity, destruction of natural forest and invasive species such as *Miconia*.

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