

# Addition of *Passiflora vesicaria* var. *vesicaria* (Passifloraceae) to the Flora of India

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**Abstract:** *Passiflora vesicaria* L. var. *vesicaria* (Passifloraceae), collected from the northern part of Maharashtra state, is presented here as a new taxonomic addition to the Flora of India. The current species falls under section *Dysosmia*, exhibiting a distinctive orange-yellow fruit at maturity, in contrast to *P. foetida* var. *foetida*, which bears green fruit. This discussion encompasses taxonomic classification, comprehensive morphological descriptions, geographic distribution, and colour images to aid in accurate identification.

**Keywords:** *Passiflora*, *vesicaria*, taxonomic addition, North Maharashtra, India.

## Introduction

*Passiflora* L., with more than 570 species, is the largest and most diverse genus in the family Passifloraceae (Pérez & d'Eeckenbrugge, 2017). Most species are distributed throughout Central and South America, as well as in both the Old and New World tropics (Feuillet & MacDougal, 2003), with approximately 24 species native to Asia and Australia (Vanderplank, 2013). The genus primarily consists of perennial vines, herbaceous climbers, and weak-stemmed trees that climb using long tendrils. *Passiflora* is distinguished by several key morphological characteristics, including extrafloral (often petiolar) nectaries, glandular-tipped bracts, a raised androgynophore, and a corona composed of 1–7 series of filaments, making it a unique genus. With few exceptions,

most species also possess a five-merous calyx and corolla, three fused carpels, and five stamens (Ulmer & MacDougal, 2004). The genus exhibits remarkable variation in leaf morphology, prompting Killip (1938) to remark that few, if any, other plant groups display as much diversity in leaf form as *Passiflora*.

Killip (1938) classified 22 subgenera, several sections, and series encompassing 354 species and numerous varieties. Feuillet and MacDougal (2003) later revised this classification, recognizing four sub-genera viz., *Astrophea*, *Deidamioides*, *Decaloba* and *Passiflora*, which were sub-divided into super-sections and series. *Passiflora* section *Dysosmia* of the super-section and *Stipulata* within the genus *Passiflora*, with most variations seen among leaf morphology. Previously classified as a subgenus by Killip (1938), *Passiflora* sect. *Dysosmia* was revised by Vanderplank (2013), a small group comprising 21 closely related species and 10 varieties totaling 31 taxa. This section is characterized by ovate, denticulate, dentate, filiform, segments with gland tipped margins. Stipules and petioles bear stiff hairs and may be glandulate or eglandulate. The bracts are pinnatifid, pinnatisect or tri-pinnatisect, while leaves possess epidermal glands or glandular trichomes on the abaxial surface (Svoboda & Ballard Jr., 2018). Flowers are of medium size, with 3–7 series of corona filaments. The styles are free or united at the base, projecting from the center of the ovary (Vanderplank, 2013).

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During the taxonomic assessment of the Flora of Jalgaon District, Maharashtra, India, the authors conducted extensive field surveys between 2021 and 2023. During these surveys, they identified a densely proliferating hispid climber occupying a substantial area in the Chalisgaon region of Jalgaon District. A thorough analysis of the species, supported by existing valid literature (Almeida, 2018; Chen *et al.*, 2022; Cooke, 1903; Feuillet & MacDougal, 2003; Green, 1972; Harms, 1925; Killip, 1938; Linnaeus, 1759; Singh, 2001; Svoboda *et al.*, 2016, 2018; Undirwade & Bhuktar, 2025; Vanderplank, 2013) confirmed its identify as *Passiflora vesicaria* L. var. *vesicaria*. While exhibiting morphological similarities to *P. foetida* L., it is distinguished by its orange-yellow fruits upon maturity. A review of the literature revealed that the stem anatomy of this taxon has been previously examined (Rajput *et al.*, 2016), and no formal taxonomic inclusion for the *Flora of India* has been published. Consequently, the present study represents a new taxonomic contribution to the *Flora of India*.

### Taxonomic Treatment

***Passiflora vesicaria*** L., Amoen. Acad. 5: 382. 1760. var. ***vesicaria***. Type: JAMAICA, Without locality, *P. Browne s.n.*)

*Passiflora hispida* DC. ex Triana & Planch., Ann. Sci. Nat., Bot., ser. 5, 17: 172. 1873. *P. foetida* var. *hispida* (DC. ex Triana & Planch.) Killip, Bull. Torrey Bot. Club 58: 408. 1931; Chen & Hu, Ex. Orn. Pl., Taipei 103: 1976; Kao Fl. Tai., vol. 3. ed. 2, Taipei, 839:1993; Wu *et al.* Taiwania 55 (2): 153: 2010.

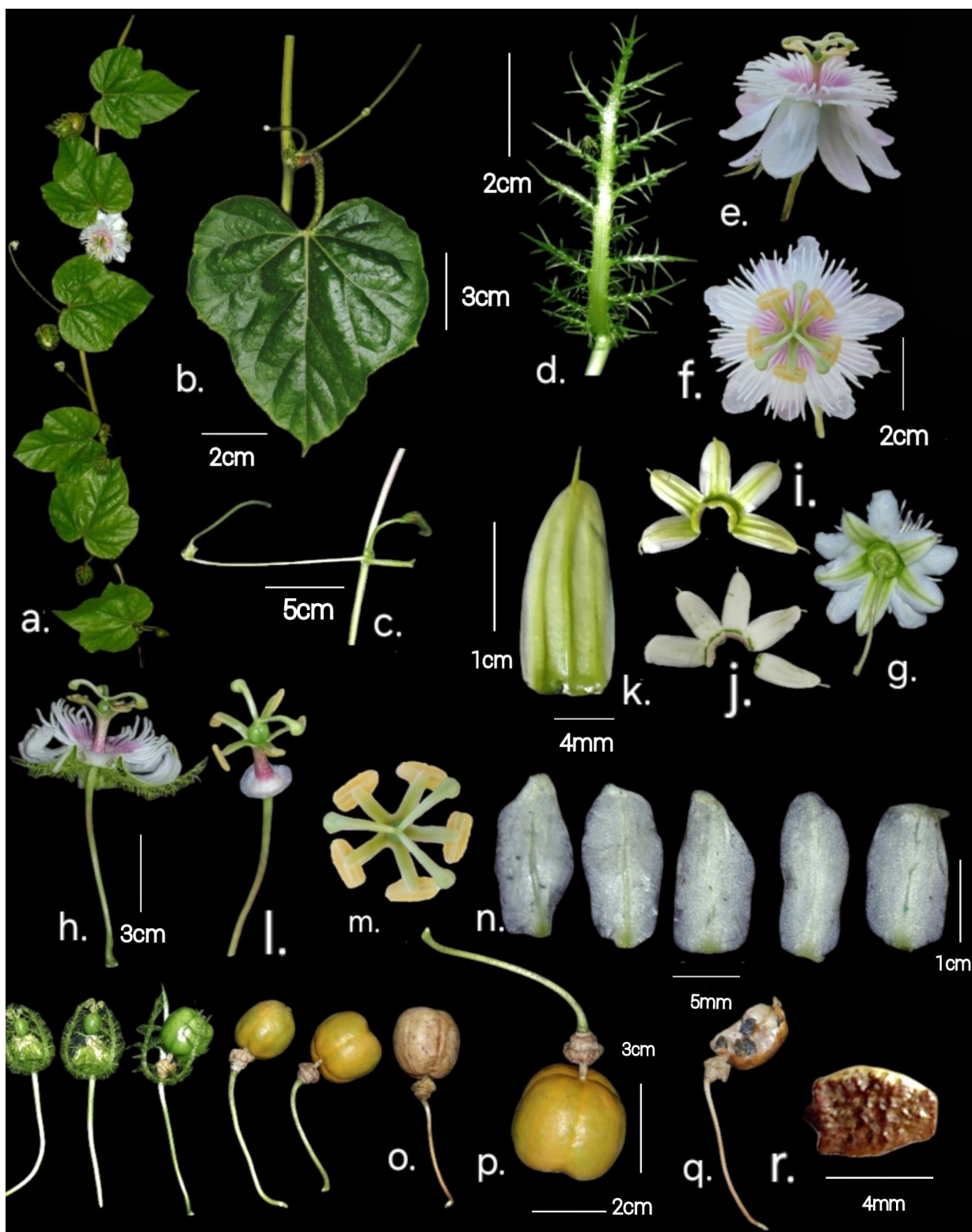
*Passiflora foetida* L., in Sp. Pl. 959: 1753; Cooke, Fl. Pres. Bombay 1:557. 1958 (Repr.); Almeida Fl. Mah. 2: 305. 1998; Singh, Fl. Mah. 2:48. 2001; Liu *et al.*, Man. Tai. Vas. Pl. 3. ed. 2. Taipei 228: 2000; Chung, Ill. Fl. Tai., 4: 64: 2017.

Hirsute climbers, persistent. Stem cylindrical, hispid, dark green, fading at maturity, widely branching. Stipules 5–7 mm long. Tendrils,

pale yellow, cylindrical, coiled, smooth, and seldom hairy 15–22 cm. Petioles hispid, rarely glabrous with several dispersed filiform glands, 3–6 cm long. Leaves vary in form and size, predominantly hispid and seldom glabrous, having a cordate base, appressed, softly hairy, slightly five-lobed, occasionally three-lobed and measuring 3–15 × 5–12 cm. Lobes are ovate to acute, with the central lobe being large, ovate, and acute at the apex. The margin is entire or serrulate, with gland-tipped cilia. Green or somewhat yellowish hairy peduncles 5–9 cm long, one per node or two. Bracts 5–7 cm long, expanding with the fruit, pubescent or glabrous, bi- or tri-pinnatisect segments with glandular tips, tightly interwoven, and deciduous as fruit matures. Flowers c. 4–5 cm wide, are white and mauve. Sepals are ovate-lanceolate, 1.5–2 cm long and 0.7 cm wide, with a white adaxial surface and a green, hispid, ribbed abaxial surface with a slender, small hairy protrusion at the tip. Petals oblong, lanceolate, thin-membranous, white-surfaced 1–1.8 cm long and 0.5 cm wide. Corona filaments have 5–6 series; the outer two are filiform, 1–1.6 cm long, and basal third to half mauve and upper section white. The inner 3, 4, and 5 series are erect, 1–2 mm tall, decreasing in length toward the base, and white or white with mauve or purple tips. Operculum narrow, erect, 1–2 mm tall, white base, mauve or lilac apex. Limen erect, white, lilac, 1–1.5 mm tall. Androgynophore is 8–11 mm high, cream-colored with purple at the base. Yellow-green anthers are 5–7 mm long. Pollens spherical, light yellow. Ovary subglobose, slightly lobed in early stages, glabrous, 1–2 mm in diameter, pale green or green, pubescent at base. Stigma olive-green. Fruit 2–3.2 cm across, ovoid to globose, glabrous or slightly hispid, deep yellow to orange when mature. Fully matured fruit has white, thin, membranous, juicy, sweet arils. Symmetrical, flattened seeds with reticulate-foveate patterns on both sides, bi-dentate at the base and tri-dentate at the apex, with a triangular beak, 2–4 mm long and 2–2.5 mm wide.

**Flowering & Fruiting:** Flowering and fruiting from December to April.

**Habitat & Ecology:** Wild, grows along road side, found growing along fences, in gardens.



**Fig. 1.** *Passiflora vesicaria* L. var. *vesicaria*: **a.** Habit; **b.** Leaf; **c.** Tendril; **d.** Bract; **e.** Flower side-view; **f.** Flower front-view; **g.** Flower showing sepals; **h.** Flower cut through the middle; **i.** Calyx-back view; **j.** Calyx-front view; **k.** Sepal; **l.** Androgynophore-side view; **m.** Androgynophore-upper view; **n.** Petals; **o.** Fruit showing different stages of development; **p.** Matured fruit; **q.** Fruit dehisced; **r.** Seed (All photos taken by D.N. Undirwade).

*Distribution:* Native to Bahamas, Bolivia, Brazil North, Brazil Northeast, Brazil Southeast, Brazil West-Central, Colombia, Costa Rica, Cuba, French Guiana, Ecuador, Guyana, Jamaica, Leeward Is., Panama, Peru, Puerto Rico, Suriname, Trinidad-Tobago, Venezuela, Windward islands. Introduced to Aldabra, Borneo, Caroline Is., Cook Is., Fiji, Gilbert Is., Marianas, Nauru, New Caledonia, Taiwan, Australia and Asia. (Vanderplank, 2013).

*Specimens examined:* INDIA, **Andaman & Nicobar Islands**, Near to Vicas Nagar, Kamorta, Nicobar, 07.10.2011, S. Prabhu & R. Sathiyaseelan 353 (PBL [PBL0000031062] digital image!). **Andhra Pradesh**, Sunnapu Botlu, Neridi, 28.07.2015, S. Nagaraju & K. Prasad 5874 (BSID [BSID0015909] digital image!). **Bihar**, Baraila wetland, 08.11.2017, K. Avinash Bharati 64219 (CAL [CAL0000032496] digital image!). **Telangana**, Kompalli, 26.05.2007, K. Chandra Sekar 142 (BSID [BSID0012028] digital image!). **Odisha**, Majhipada section, 10.11.2014, K.C. Mohan 6153 (BSID [BSID0010832] digital image!)

*Taxonomic notes:* *Passiflora foetida* L. and its close relatives within sect. *Dysosmia* have been a source of taxonomic confusion since the late 18th century. According to Svoboda (2018), the historical relationship between *P. vesicaria* and *P. foetida* is particularly complex. Linnaeus first described *P. foetida* in *Species Plantarum* (1753), referencing five polynomials published across seven separate works, including *Passiflora florum involucris triphyllis multifido-capillaribus*. Three years later, Patrick Browne (1756) used this polynomial in *The Civil and Natural History of Jamaica* as the basis for what he considered a distinct taxon, which he named *Passiflora* 1. *Vesicaria*. However, Browne did not consistently use this name in his work, and since it was never validly published, it holds no nomenclatural standing.

Linnaeus (1759) acknowledged Browne's observations and recognized that some of

the polynomials originally assigned to *P. foetida* actually represented a different taxon. Consequently, he formally named the new species *P. vesicaria*, referencing "327," the page number where Browne (1756) had identified the taxon, thereby establishing a valid binomial name. Only one specimen is known to serve as original material for this name—a pressed plant collected by Browne in Jamaica (S08-4074), which bears the species name in Linnaeus' handwriting. This specimen was first cited as original material by Jarvis (2007: 727) and later confirmed by Vanderplank (2013: 349), who cited it as a holotype. However, this designation does not affect typification under Articles 7.10 and 9.23 of the Shenzhen Code (Turland et al., 2018). Here, the herbarium specimen S08-4074 is formally designated as the lectotype of *P. vesicaria*.

*Notes:* The coloration of mature fruit is a characteristic feature of the genus *Passiflora*, as observed by Vanderplank (2013). The ripe fruits of *P. ciliata* Dryand, *P. foetida* L., and *P. vesicaria* L. are red, green, and orange-yellow, respectively. As a result, the identification of *P. foetida* var. *hispida* and *P. foetida*, long employed in India, will be revised to *P. vesicaria*, which has proliferated throughout India. Although it has not been officially recorded. After examining the literature on *P. vesicaria*, it is evident that there is currently insufficient data concerning its occurrence in India. Rajput et al. (2016) examined the stem anatomy of *Passiflora* spp., including the indicated species, although did not thoroughly discuss it from a taxonomic standpoint.

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