

## *Physalis lagascae*, an invasive species found in Odisha, India

Many Solanaceae genera, including *Physalis* Linnaeus (1753) (Solanaceae, Solanoideae, Physalinae), have a variety of economically significant species, from edible and ornamental. It is an American genus with about 90 species (Martinez 1998). Mexico and Central America have the highest species diversity, followed by the rest of North America and South America.

About six *Physalis* species have been identified in India, but there are discrepancies in the opinions of the various authors/researchers. Two invasive species, *Physalis minima* and *P. peruviana*, as well as one garden species, *P. angulata* are described in the Flora of British India (Hooker 1885). Deb (1980) identified four domesticated species, including *P. alkekengi* L. and *P. angulata* L. as garden plants, *P. peruviana* L. and *P. ixocarpa* Brot. for their edible fruit, and two invasive taxa, *P. minima* L. and *P. virginiana* Mill. var. *sonorae* (Torr.) Waterfall with a distribution throughout India. Haines (1921) reported two species *Physalis minima* and *P. angulata*.

In a study of southern India, Ganapathi et al. (1991) identified four invasive *Physalis* species which are *P. pubescens* L., *P. peruviana*, *P. minima*, and *P. angulata*. Among these, *P. pubescens* L., and *P. peruviana* are found in high altitude and the other two species *P. minima* and *P. angulata* are both widespread. Later, while doing the flora of Odisha, these two species were even reported by Saxena & Brahmam (1995). While working on the flora of

Eastern Ghats, Kottaimuthu & Kalidass (2015) reported *P. prinuosa* as one of the new species from the state of Tamil Nadu.

During the revisionary studies of the family Solanaceae of Eastern Ghats, we collected some interesting specimens of *Physalis* from Balesore District, Odisha. A detailed examination with relevant literature (Flora of North America and the Flora of the World online) revealed it to be *P. lagascae* Roem. & Schult. Therefore, it has been a new record for Odisha as a result of the species occurrence there. For simple identification and recognition, images have been included with the nomenclature, a brief explanation of the ecology and the phenology of the species.

***Physalis lagascae*** Roem. & Schult. Syst. Veg. 4: 679 (1819); *Physalis lagascae* var. *glabrescens* O.E.Schulz Symb. Antill., 6: 147 (1909); *Physalis parviculea* S.F. Blake Contr. U.S. Natl. Herb., 24: 20 (1922).

Erect to decumbent or prostrate, weak or occasionally ± robust, ± dichotomously much branched, annual herb, (0.05) 0.1–1 m high (elsewhere said to reach 1.5 m). Branches angular or angular-ribbed, striate, drying ± sulcate, sparingly villous, with ± long hairs mainly on the emergent parts and also short and minute hairs somewhat localized near the nodes, occasionally sub glabrous. Leaves solitary or geminate; petiole 0.5–4.5(8) cm long, often slightly winged, rather sheathing at the base;



*Physalis lagascae* Roem. & Schult.: A—Habit | B—A view of single flower | C—A view of stamens arrangement | D—single flower in each node | E—Fruting with calyx closeup.

lamina membranous or  $\pm$  fleshy, 1.5–7.5 (10.5)  $\times$  0.8–4.5 (7.5) cm, ovate to lanceolate, sometimes rhombic, ovate-oblong, elliptic or oblanceolate, base shortly cuneate or attenuate, sometimes obtuse, rounded, truncate or subcordate, rarely dentate, the teeth unequal,  $\pm$  triangular, obtuse, the sinuses rounded, both surfaces  $\pm$  sparsely

pilose or subglabrous but pubescent along the nerves and near the margins; minor leaves with lamina 0.5–0.7  $\times$  0.3–0.4 cm, elliptic, sometimes present. Flowers solitary, inserted by the side of the petiole base appearing axillary, erect to pendulous; pedicel 2–5(9) mm long, villous or puberulous, occasionally subglabrous. Flowers

solitary, inserted by the side of the petiole base appearing axillary, erect to pendulous. Calyx (1.5) 2–3.5 (4) mm long, 1.5–2.5(3) mm across at the base of the lobes, campanulate, sub-angled-ribbed, truncate or invaginated at the base, in fruit greenish, usually drying purple-veined, (10) 12–20 (23) × (8)10–15(20) mm, globose to ± ovoid, 10-angled-ribbed or 10-ribbed, slightly obtuse or apiculate at the summit, half to almost filled by the fruit, subglabrous to pilose, mostly with long hairs especially along the ribs and nerves, often the ribs with widely spaced small teeth or enations derived from the hair bases, the lobes (0.5)1–2.5 (3) × 1–2 mm. Corolla greenish-yellow or yellow to white or greenish-cream, slightly purplish marked or apparently unmarked, more rarely blotched with 5 ± dark purple to brown markings not strongly contrasting with the surrounding limb, (3) 4–5 (7) mm long, tubular-campanulate. Stamens included or slightly exerted, equal or subequal; filaments (1) 1.5–3 (3.5) mm long, filiform, attached to the corolla tube near the base, furnished with few hairs; anthers yellowish, sometimes blue margined, 0.8–1 mm long, ± oblong or elliptic in outline, straight after anthesis. Disk 0.2–0.3 mm high, fleshy, glabrous pistil ovary 0.8–0.9 × 0.6–0.7 mm, ellipsoid or ± globose, glabrous; style 2–3 mm long, filiform, ± curved upwards. Fruit greenish-yellow or pale yellow, occasionally yellow, sessile or with a gynobase up to 1mm long on the invaginated base of the erect to pendulous calyx, (5) 6–10 mm in diameter, ± globose or slightly ovoid, viscid seeds light brown or yellowish, (1.5) 1.8–2 × (1.5) 1.6–1.8 (2) mm, ovate to orbicular in outline, sometimes reniform, reticulate-foveolate.

**Flowering & Fruiting:** June to July

**Habitat:** Sunny to somewhat shaded fields, gardens, wastelands, fallow fields, along roadsides, in open forests and forest margins.

**Distribution:** Central & South America; Alien invasive species in India (Kerala, Tamil Nadu, & Odisha -- districts of Balesore (Baliapal) and Khordha (Bhubaneswar).

**Specimen examined:** India, Eastern Ghats, Odisha, Baleswar, Baliapal, 21.5051 N; 86.8905 E, Madhusmita Mallia & PK Das RPRC-11211, 10.vi.2020.

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