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### NOTE

#### **AN EXTENDED DISTRIBUTION OF NATESH'S CAPE-PONDWEED *APONOGETON NATESHII* (*APONOGETONACEAE*), A NEW RECORD TO THE STATE OF GOA**

Rutuja Rajendra Kolte, Anup Satish Deshpande, Prabha  
Muraleedharan Pillai & Shrirang Ramchandra Yadav

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**AN EXTENDED DISTRIBUTION OF  
NATESH'S CAPE-PONDWEED  
APONOGETON NATESHII (APONOGETONACEAE),  
A NEW RECORD TO THE STATE OF GOA**

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The genus *Aponogeton* L.f. comprises 57 species (The Plant List 2013). Recently two species have been added to the list (Yadav et al. 2015; Manawaduge et al. 2016). In India, eight species represent this genus (Yadav & Gaikwad 2003; Yadav et al. 2015) and except for *Aponogeton lakhonensis* A. Camus, all are found in the Western Ghats. *A. bruggenii* S.R.Yadav & Govekar, *A. nateshii* S.R. Yadav, and *A. satarensis* Sundararagh., A.R. Kulk. & S.R. Yadav are endemic to the northern part of the Western Ghats; and *A. appendiculatus* H. Bruggen is endemic to the southern part of the Western Ghats. The present authors collected specimens of *Aponogeton* from Dhargal, North Goa and after perusal of relevant literature (Yadav & Gaikwad 2003; Yadav et al. 2015; Kambale et al. 2016), they were identified as *A. nateshii*, an unreported species from the state. A detailed description, photographs and notes on morphological variations have been provided.

***Aponogeton nateshii***

S.R. Yadav, Rheedea 25(1): 9–13,  
2015; Kambale et al., JoTT. 8(4):  
8742–8744, 2016.

Natesh's Cape-pondweed is a submerged freshwater aquatic perennial herb. Tubers around, 1.5–2 cm in diam., fibrous roots from top of the tuber. Leaves petiolate, elliptic-lanceolate; petioles 45–65 cm long. Leaf lamina 30–40×3.5–4.5 cm, undulate, elliptic lanceolate, central nerve prominent and broad, two parallel nerves on either side of lamina (3<sup>rd</sup> at periphery), cuneate at base, obtuse at apex. Peduncle cylindrical, 55–85 cm long; spike simple, up to 17cm long; spathe c. 2.5cm long, enclosing young inflorescence; flowers arranged all around axis. Tepals 2, persistent, 1×1–1.2 mm, obovate, fleshy. Stamens 6, two whorled, filaments narrow at tip, 0.8–1 mm long; anthers basifixed, yellow to brown. Carpels 3, c. 1mm long; ovules two per carpel. Follicles ovoid, beaked, surfaces rough, 8–9 mm diameter, slightly curved, c. 5mm long; pericarp smooth; embryo globular, 6–7 mm across, slightly pointed at base; appendages elliptic-lanceolate, 12–15 in number, spirally arranged in upper 3/4<sup>th</sup> part of embryo.

Specimen examined: India. Goa: North Goa, Dhargal (15.6832833°N & 73.834758°E), 28.vi.2016, R.R. Kolte, A.S. Deshpande & P.M. Pillai 470 (BSI Pune, SUK and Herbarium of Department of Botany, Goa University India, Goa).

Flowering and fruiting: July–September.

Distribution: So far this species has been reported only from two localities. One is the low altitude lateritic plateau at Rajapur (Maharashtra), which is a type locality (Yadav et al. 2015). The other is the high altitude lateritic



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**Figure 1.** Distribution map of *Aponogeton nateshii* S.R. Yadav: a - Rajapur population (Maharashtra); b - Chorla/Surla population (Karnataka); c - Dhargal population (Goa)

plateau of Surla/Chorla (Karnataka), which is at the intersection of Maharashtra, Goa and Karnataka states (Kambale et al. 2016). And the present collection is from a seasonal pond in a paddy field at Dhargal (Goa). The species is endemic to the northern Western Ghats (Fig. 1).

**Habitat:** Habitat of this species is fresh water seasonal pond.

**Conservation status:** *Aponogeton nateshii* is assessed as Data Deficient (IUCN 2010) and now known only from three localities (including Goa). The pond in which it grows in Goa is a junction very close to the National

Highway no. 66 which is a road that leads to the proposed airport of Goa at Mopa.

**Note:** This species prefers varied type of habitats from seasonal ponds at low altitude lateritic plateau to high altitude lateritic plateau and seasonal ponds in paddy fields. Variation in habitat preference has resulted in variation in morphology of this species which is shown in Table 1. It shows variability in leaf morphology and embryo appendages at three localities of its occurrence. The presence of appendages on the embryo is a unique character of *A. appendiculatus* and *A. nateshii*. The number and shape of appendages on the embryo is variable in all three populations of *A. nateshii*. Leaf shape and length of the collected species is similar to *A. appendiculatus*. Appendages being a unique and important character, this species is identified as *A. nateshii*. The population from Goa is similar to Surla/Chorla population of *A. nateshii* in embryo appendages but leaf morphology is similar to that of *A. appendiculatus*. Extensive field surveys are required to locate more populations to understand the range of variations in morphology and habitat preferences of this species.

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**Table 1.** Morphological variations in *A. nateshii* from three different populations - Rajapur (Ratnagiri District of Maharashtra), Surla/Chorla (Belgaum District of Karnataka) and Dhargal (North Goa District of Goa).

Character	Rajapur population	Surla / Chorla population	Dhargal population
Tuber	Ovate-elongate, narrow below	Globose ovoid	Globular
Leaves	Submerged totally	Submerged totally	Floating on water surface
Petiole	9–16cm	9–0.5cm	45–65cm
Lamina	Ovate lanceolate, 17.5–30x5.5–6.8 cm	Ovate lanceolate, 17.5–30x4–6.8 cm	Elliptic lanceolate, 30–40x3.5–4.5 cm
Peduncle	140–200 cm	40–80 cm	55–85 cm
Embryo	Globular, fully covered with 15–20 spirally arranged ovate-lanceolate appendages	Globular, upper half part covered with 10–12 spirally arranged ovate, green appendages	Globular, slightly pointed at base, upper 3/4 <sup>th</sup> part covered with 12–15 spirally arranged elliptic-lanceolate appendages
Habitat	Freshwater seasonal pond on lateritic plateau	Freshwater seasonal pond on lateritic plateau	Freshwater seasonal pond in cultivated area

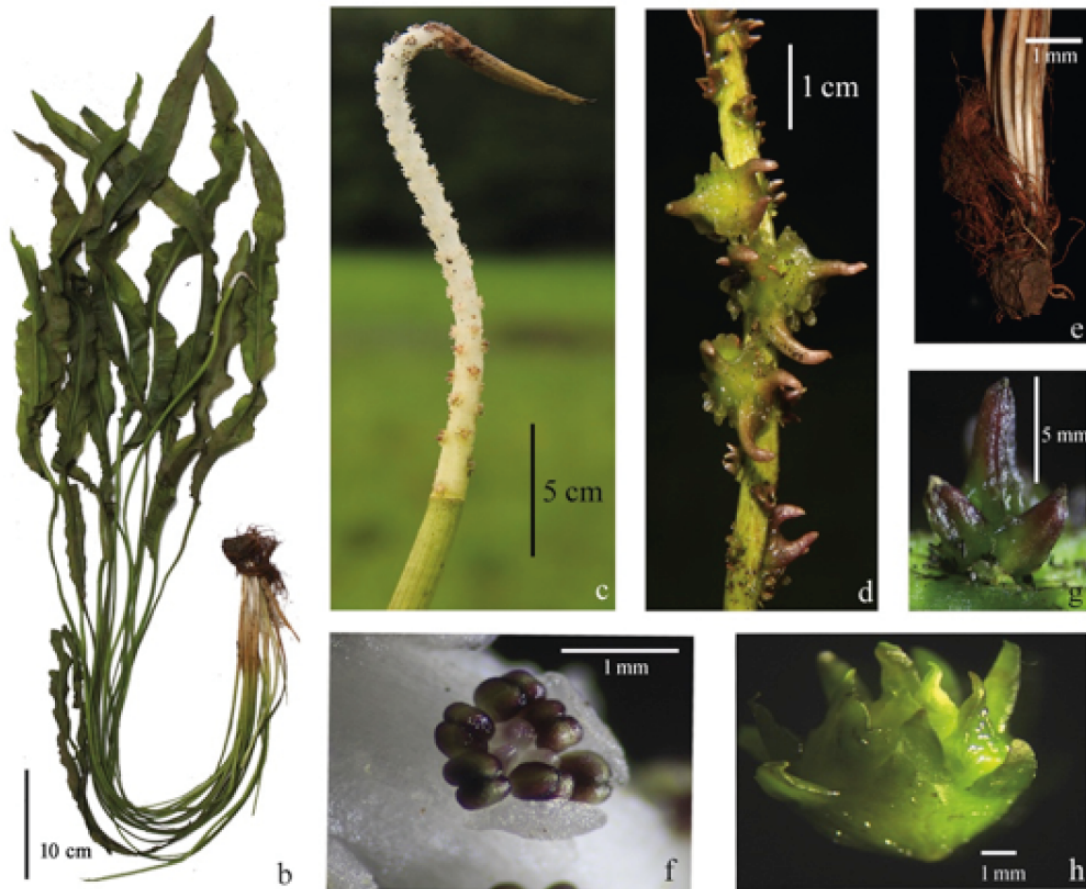


Image 1. *Aponogeton nateshii*: a - habitat (inset - closer view); b - habit; c - inflorescence with spathe; d - inflorescence with fruits; e - tuber; f - flower; g - fruits; h - embryo with appendages



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