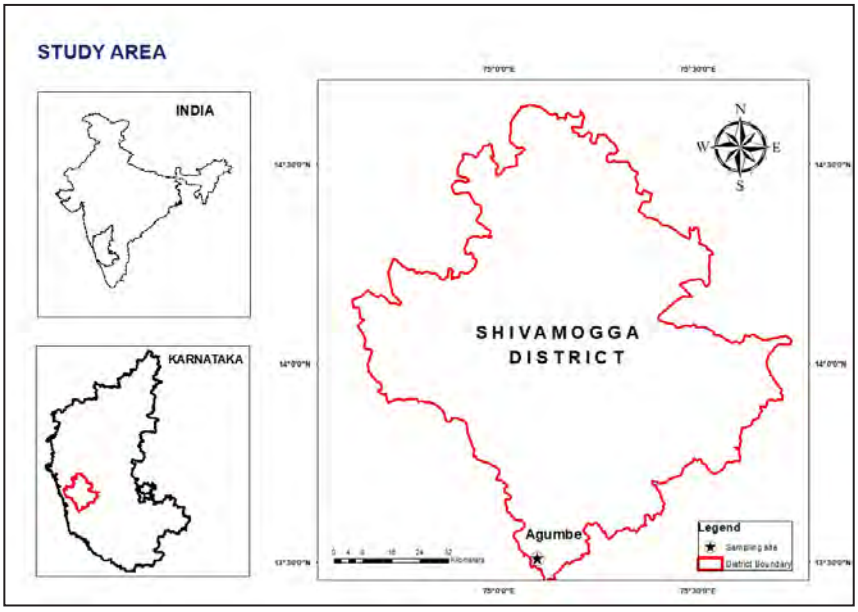
A taxonomic note on *Hubbardia heptaneuron* in Shivamogga District, Karnataka

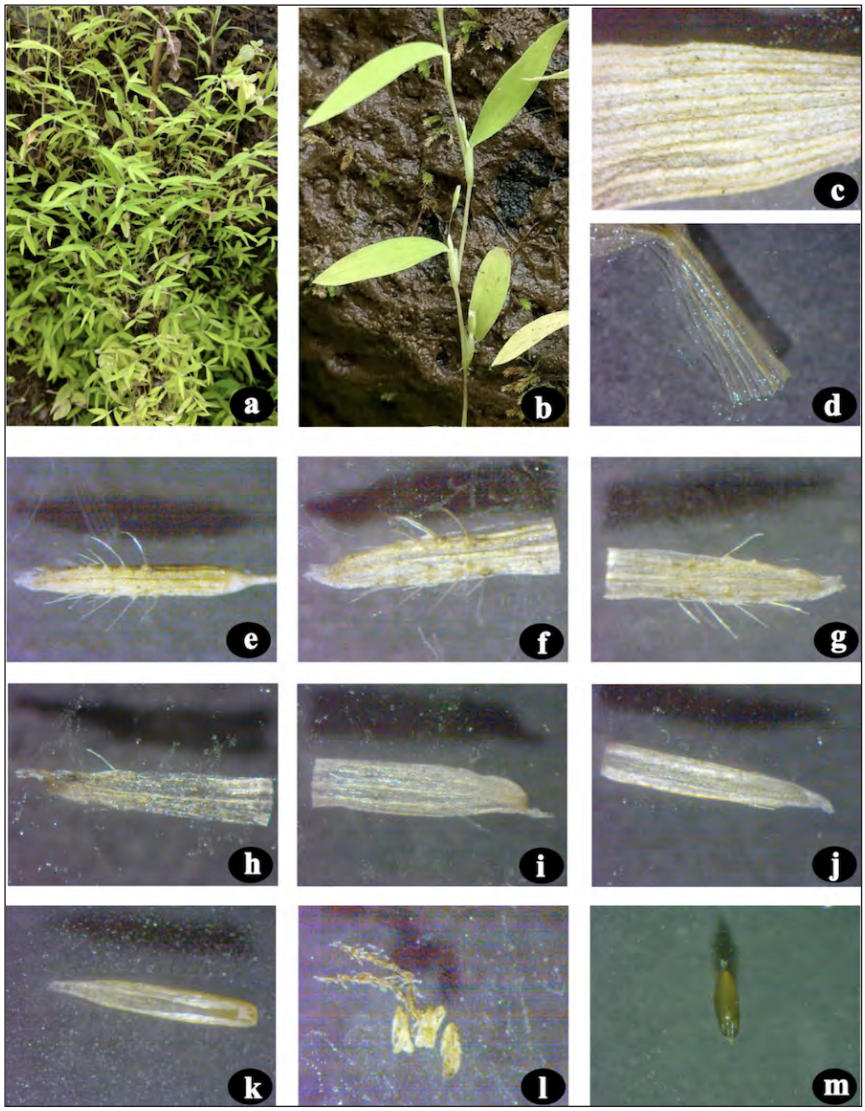
Hubbardia heptaneuron, an endangered grass belongs to the sub family of Pooideae (Hubbardiae tribe) (Hubbard 1960). *H. heptaneuron* was distinguished from other species by its partly trailing and then pendulous habit. It measures about 3–16 cm long, delicate, culms creeping below, rooting at lower nodes, awnless, consisting 3 stamens in flower. The other species is *H. diandra* that differs from *H. heptaneuron* by its striking tubercle-based trichomes on the glumes, the flower has 2 stamens (Chandore et al. 2012). *H. heptaneuron* was found in moist rocks in shady places (Potdar 2003). *H. heptaneuron* samples were collected by Leonard John Sedgwick (1883-1925) in 1919 from Gerusoppa falls of Karnataka. Later it was clearly described by Bor in the year 1951. This species was re-documented in Jog falls by Ramaswamy (2001); Yadav et al. (2009). The species were re-introduced in 16 different Ghats at 108 locations of Maharashtra. Inaddition to this, they were re-introduced near the sunset point of Agumbe, Karnataka (13.581^{0}N & 75.167^{0}E). *H. heptaneuron* was distributed in Gerusoppa falls, Sharavathi Wildlife Sanctuary, Shimogga District and Arsenagundi falls, Mookambika Wildlife Sanctuary, Udupi District (Singh et al. 2015). In Maharashtra, this species was located on Tillari Ghats of the Western Ghats, India. During our recent field survey, we collected *H. heptaneuron* from different locations of Agumbe region of the central Western Ghats of Karnataka, India.

Study Area

Agumbe is home for several endemic angiosperms (13.05^{0}N & 75.1^{0}E) located in the Shivamogga District in the Malnad region of Karnataka, west coast division of south India. Agumbe is declared as one of the UNESCO's World



Map of the Study area, Shivamogga District, Karnataka.



Hubbardia heptaneuron **Bor. (a). Habitat, (b). A plant body, (c). Leaf sheath, (d). Leaf blade, (e). A spikelet: 2 - 2.5 x 0.5 mm, (f). Lower glume-Abaxial view: 1.5-2.3 x 0.2-0.3 mm, (g). Lower glume - Adaxial view, (h). Upper glume - Abaxial view, (i). Upper glume - Adaxial view, (j). Lower lemma: 2-3 x 0.1-0.3 mm, (k). Upper lemma 1.5-2.0 x 0.1-0.3 mm, (l). Stamens (0.3 - 0.5 mm) and Stigma, (m). Caryopsis 1-1.4 x 0.2-0.4 mm.**

heritage site. Agumbe has a tropical monsoon climate with a warm, humid and dense forest. This region harbors a high level of biodiversity comprising several endangered species of grasses and angiosperms.

The periodic field survey was conducted here from 2016 to 2018. Global Positioning System (GPS) was used to document the latitude, longitude and altitude of the study plot. Collected sample was brought to the laboratory, processed and pressed under blotting paper until the specimens completely dried. Grass species were identified through morphological characters by using standard flora (Bor, 1960; Ramaswamy, 2001; Yadav et al. 2012). In order to detect the variation in the flowers, differences in ligule, glume, lemma, palea, awn, lodicules the samples were observed under Carl zeiss Stemi 2000C Stereo microscope and Carl zeiss primo star microscopes, photographs were taken by using Axio camERc 5s camera, images were processed in Axio Vision LE(AxioVs40V4.8.20) software. The Herbarium specimen was deposited in the Herbarium of the Department of Applied Botany, Kuvempu University.

Taxonomic description

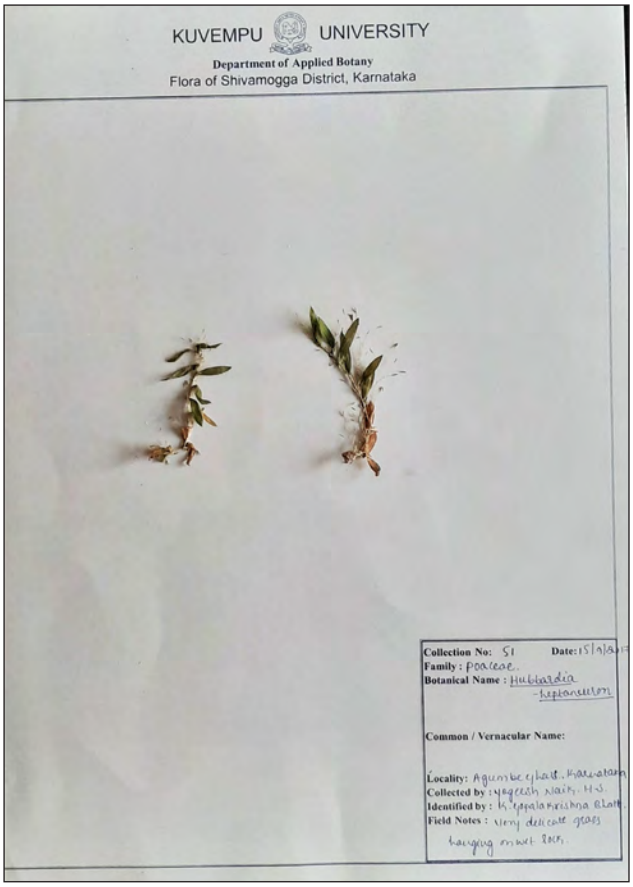
Hubbardia heptaneuron **Bor.**

Annual grass. (2.5–15 cm) Up to 16cm long, nodes glabrous. Leaf blade (0.5–3 x 0.3–0.8 cm) 0.5–3 x 15mm (1.5cm) long, 5–14 nerved, acute. Inflorescence an axillary panicles. Lower glume (2–2.5 x 0.2–0.3 mm)

1.5–2.3 x 0.2–0.3 mm, 7 nerved, apex acute. Upper glume 2.2 x 0.1–0.3 mm, (5 nerved) 7 nerved. Lower lemma (1.6–2.7 x 0.4–0.5 mm) 2–2.3 x 0.1–0.3 mm, 7–9 nerved, acute. Upper lemma (1.6–2.7 x 0.4–0.5 mm) 1.5–2.0 x 0.1–0.3 mm, 7–9 nerved, acute. Stamens 3, anther 0.3–0.5 mm, style 2, 0.3–0.6 mm, Lodicules 2. Caryopsis pointed, (0.8–1 x 0.2–0.3 mm) 1–1.4 x 0.2–0.4 mm.

Sample examined: 15.ix.2017, India, Karnataka, Shivamogga District, Agumbe, central Western Ghats, 14.933^{0}N & 76.517^{0}E, 620m, (3m error), coll. Yogeesh Naik H S. & Y.L. Krishnamurthy.

Habitat: Wet rock surface.



Herbarium sheet of *Hubbardia heptaneuron* Bor.

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