

Recollection and lectotypification of *Coix lacryma-jobi* var. *puellarum* (Poaceae) in India

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Abstract: *Coix lacryma-jobi* var. *puellarum* (Balansa) E.G.Camus & A.Camus is a less known taxon reported from China, India, Myanmar, Thailand and Vietnam. It was so far known in India from Arunachal Pradesh, Assam and Mizoram only from the literature without any specimens. During our studies we found one misidentified specimen of the taxon collected in Sikkim in 1905. Our specimens from the same state represents a recollection of the taxon, after a hiatus of 116 years. A detailed description, photographs and taxonomic note are given for its easy identification. A lectotype of *C. puellarum* Balansa is designated here and a taxonomic key to all varieties of *C. lacryma-jobi* L. has also been provided.

Keywords: *Coix*, Gramineae, New distribution, Taxonomy, Typification.

Introduction

The family Poaceae Barnhart is one of the largest monocot families and is represented by c. 11,300 taxa belonging to 752 genera (Mabberley, 2017). The family is well-known for its ecological and economical value. The tribe *Maydeae* Dumort. of this family is known for its economic importance as its members are used for food and fodder. *Coix* L., one of the important genera in the tribe, is valued for its fodder and the utricles are used for ornamentation of cloths and jewellery by tribal people. The genus is taxonomically very complicated due to a high range of variation and morphotypes in different habitats, thus many workers have proposed several species and varieties in the genus (Bor, 1960; Clayton & Renvoize, 1986; Simon, 1989; Watson & Dallwitz, 1992).

Presently, the genus is represented by three species and three varieties namely, *Coix aquatica* Roxb., *C. gasteenii* B.K.Simon, *C. lacryma-jobi* L., *C. lacryma-jobi* var. *ma-yuen* (Rom.Caill.) Stapf, *C. lacryma-jobi* var. *puellarum* (Balansa) E.G.Camus & A.Camus and *C. lacryma-jobi* var. *stenocarpa* Oliv. (POWO, 2022).

Coix puellarum Balansa was described by Balansa in 1890 from Tonkin, Vietnam. This species was later reported from adjacent countries like China, India, Myanmar and Thailand (Bor, 1960; Chen & Phillips, 2006; POWO, 2022). In India, the species was reported by Bor (1960), Shukla (1996) and Kellogg *et al.* (2020) from Arunachal Pradesh, Assam and Mizoram, but without any herbarium specimen. The species is now treated as a variety of *Coix lacryma-jobi* as *C. lacryma-jobi* var. *puellarum* (Balansa) E.G.Camus & A.Camus (Camus & Camus, 1922). It is a lesser-known taxon as only a few herbarium specimens are available and its detailed description was lacking. During the revisionary study of the tribe *Maydeae* in India, the authors collected a specimen of the genus from Sikkim. Consultation of relevant literature (Balansa, 1890; Camus & Camus, 1922, Bor, 1960; Clayton & Renvoize, 1986; Simon, 1989; Shukla, 1996; Chen & Phillips, 2006; Kellogg, 2015) and herbaria (A*, ASSAM, B*, BAMU, BM*, BO*, BR*, BSI, BSHC, C*, CAL, CALI, DBN*, E*, FI*, G*, GB*, GRO*, IH*, JCB*, K*, L*, LINN*, LIV*, LWG, MH, NBU, NEHU, NY*, OXF*, P*, PH*, PNH*, SK*, SUK, TBGT, U*, UC*, UPS*, W*; herbaria consulted online indicated by*) revealed that the specimen collected is *C. lacryma-jobi* var. *puellarum* and that there were no collections available of this taxon from India. However, during consultation of CAL, the first author found a specimen no. 1297 labelled as *C. lacryma-jobi*

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collected from Brip, Sikkim in 1905 by Riba that perfectly matched the description of *C. lacryma-jobi* var. *puellarum*. Thus, our specimen from Sikkim is a recollection of this taxon from India after 116 years. Hence, a detailed description, photographs, taxonomic note and taxonomic key for the correct identification of *C. lacryma-jobi* var. *puellarum* are provided. A lectotype of *Coix puellarum* is also designated in the present communication.

Taxonomic Treatment

Coix lacryma-jobi* L. var. *puellarum (Balansa) E.G. Camus & A. Camus, Fl. Indo Chine 7: 220. 1922. *Coix puellarum* Balansa, J. Bot. (Morot) 4(4): 77. 1890. *Lectotype* (designated here): VIETNAM, **Tonkin**, vallee de Lankok (Mount Bavi), January 1887, B. Balansa 1693 (L [L0329790 digital image!]); isolecto (P [P00740696], K [K000290013 digital images!])

Figs. 1 & 2

Tufted, rhizomatous perennials, rooting seldom at lower nodes. Culms up to 2 m high, terete to angled, upper branches compressed ventrally; nodes glabrous, blackish. Leaf sheath 3–12 cm long slightly compressed, glabrous. Ligule membranous, 1–1.5 mm long. Leaf blade 7–50 × 2–4 cm, linear-ovate to elliptic, mid-nerve prominent, glabrous to scabrid, margins scabrous, apex acuminate. Racemes 2–5 cm long (excluding peduncle), axillary, spiciform, exerted from flag leaf with stout peduncle; peduncles 3–7 cm long, glabrous, angled or compressed, tumid at apex; consisting of basal female spikelet through which extended rachis bears male spikelets above it. Male spikelets 2 or 3 in each node, elliptic, 7–10 × 2–3.5 mm, glabrous. Lower glume elliptic, 8–9.5 × 3–4 mm, membranous, glabrous, margins inflexed, 15–18-nerved, 2-keeled, keels winged, acute at apex. Upper glumes ovate, 8–9.5 × 2–3 mm, membranous, glabrous, margins inflexed, narrowly hyaline, 10–12-nerved, 1-keeled at back, acute at apex. Lower lemma narrowly ovate, 8–9 × 1.8–2.2 mm, membranous, glabrous, margins inflexed, 3-nerved, faintly 3-keeled, acute at apex. Lower palea narrowly elliptic, 7–8 × 1.8–2.2 mm, membranous, glabrous, margins inflexed, 2-nerved, faintly 2-keeled, acute to obtuse at apex. Lodicules 2, membranous, *c.* 0.5 mm long.

Stamens 3; anthers 5–6 mm long. Upper lemma narrowly elliptic, 6.5–7.5 × 1–1.6 mm, hyaline, membranous, glabrous, margins inflexed, 3 nerved, acute to obtuse at apex. Upper palea narrowly elliptic, 6–7 × 1.0–1.2 mm, hyaline, glabrous, margins inflexed, 3-nerved, acute to obtuse at apex. Lodicules 2, membranous, *c.* 0.5 mm long. Stamens 3; anthers 5–6 mm long. Female spikelets (utricle) globose to discoid, 5.5–7 × 7–8.5 mm, bony, whitish to bluish. Joints 5.5–6.5 mm long, glabrous, hollow. Lower glumes globose-ovoid, 6–7 × 7–8 mm, membranous, glabrous, *c.* 10-nerved, margins inflexed, acute at apex. Upper glumes ovate, 6–7 × 5–6 mm, membranous, glabrous, faintly 5-nerved, 1-keeled at back, margins inflexed, acute at apex. Lower lemma globosely ovate, 5.5–6.5 × 3.5–4.5 mm, membranous, glabrous, 3-nerved, margins inflexed, acute at apex. Lower palea absent. Upper lemma globosely ovate, 5–6 × 4–5 mm, papery, glabrous, 3-nerved, margins inflexed, acute at apex. Upper palea ovate, 4.5–5 × 2.5–3.5, hyaline, 2-nerved, acute to acuminate at apex. Ovary globose, 2–3 × 3–4 mm, glabrous. Stigma plumose, bifid, 1–1.5 cm long.

Flowering & fruiting: August to January.

Habitat: Grows along streams and slopes in moist places in hilly regions, locally common.

Distribution: China, India, Myanmar, Thailand and Vietnam.

Etymology: Specific epithet “*puellarum*” = *puella* = girl. Little girls in East Asia make necklaces from the utricles (Clifford & Bostock, 2007).

Specimens examined: INDIA, **Sikkim**, Brip, 1905, Riba 1297 (CAL); Indira bypass, Upper Sichey, N 27° 20' 4.84", E 88° 36' 46.21", 18.12.2021, N.A. Madhav 495 (BSI). MYANMAR, **Upper Burma**, Myanmar Hill, Maymoyo, November 1838, Badal Khan 271 (CAL, K). CHINA, **Hubei** (Hupeh), March 1889, Dr. Aug. Henry 71717 (CAL).

Notes: *Coix lacryma-jobi* var. *puellarum* can be easily identified from other varieties by its perennial habit and usually bluish-white, globose to discoid utricle (utricles wider without a beak).

Typification: Balansa described *Coix puellarum* in 1890 from French Indo-China in his catalogue of family Poaceae from the French Indo-Chinese

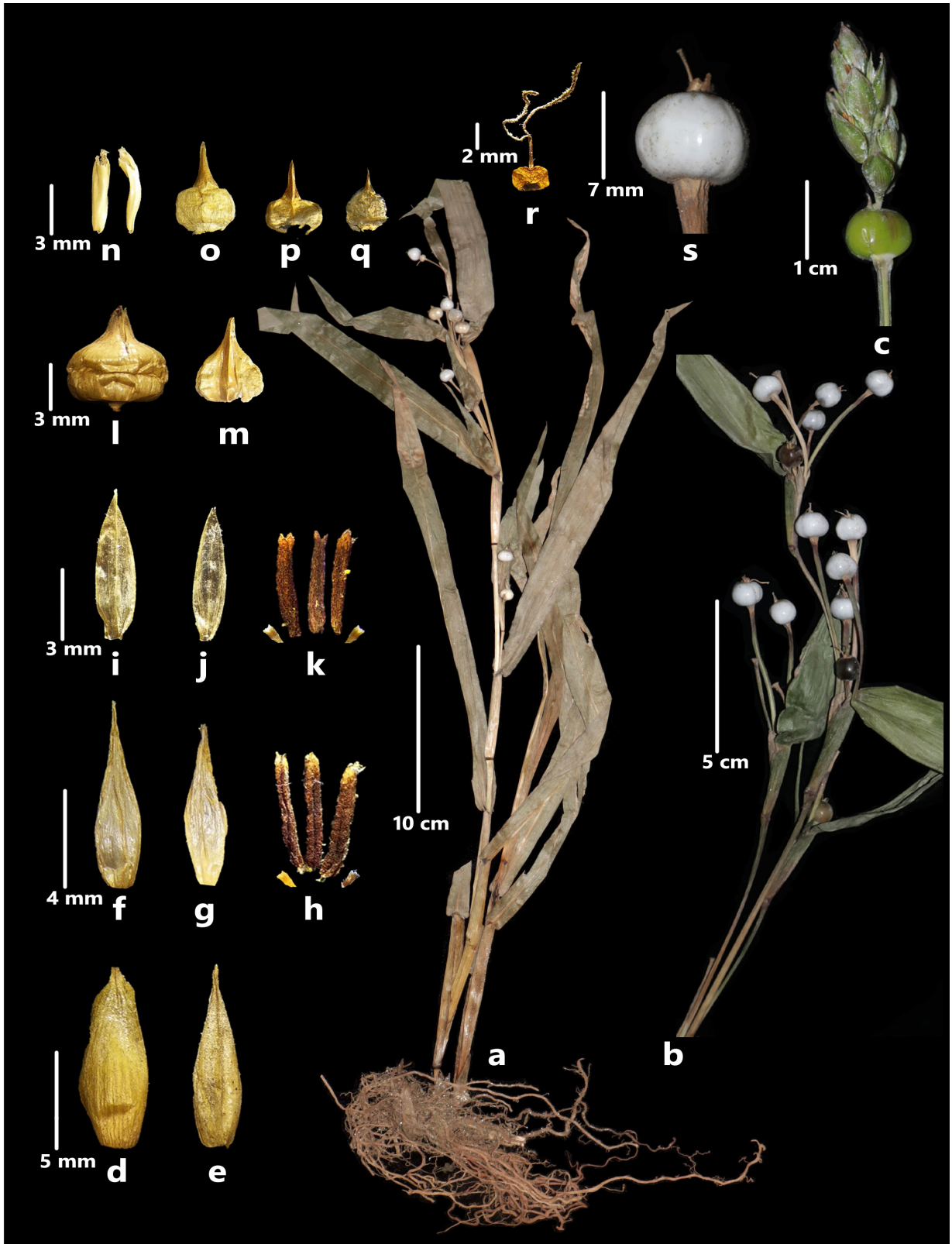


Fig. 1. *Coix lacryma-jobi* L. var. *puellarum* (Balansa) E.G. Camus & A. Camus: **a.** Habit; **b.** Twig with mature utricle; **c.** Inflorescence showing single basal female spikelet and upper male raceme; **d-k.** Male flower: **d.** Lower glume; **e.** Upper glume; **f.** Lower lemma; **g.** Lower palea; **h.** Stamens and lodicules; **i.** Upper lemma; **j.** Upper palea; **k.** Stamens and lodicules; **l-r.** Female spikelet: **l.** Lower glume; **m.** Upper glume; **n.** Joints; **o.** Lower lemma; **p.** Upper lemma; **q.** Upper palea; **r.** Pistil; **s.** Mature utricle (photos by N.A. Madhav & K.V.C. Gosavi).

region in which Tonkin in one province. Camus and Camus (1922) subsequently reduced this species as a variety of *C. lacryma-jobi*, as var. *puellarum*. Balansa (*l.c.*), however, did not indicate any specimen number or particular location in the protologue. While searching the original material of *Coix lacryma-jobi* var. *puellarum*, we located specimens collected by Balansa having three sheets of single gatherings as well as annotations with his handwriting and accession no. 1693 at P, K and L (P00740696, K000290013, L0329790 digital images!). All these specimens were from the Tonkin region where Balansa worked. When they were compared with the protologue, all perfectly match with the original description and have a collection date prior to the publication of the flora of French Indo-China. Therefore, in accordance with Article 9.3 of ICN (Turland *et al.*, 2018), one of the specimens with Balansa's annotation from Tonkin, *i.e.*, L0329790, is designated here as the lectotype as it has all the floral parts in comparison with the specimens

deposited at P and K. Also, the other specimens are duplicates of the designated lectotype and therefore the specimens from P and K are isolectotypes.

Key to infraspecific taxa of *Coix lacryma-jobi* L.

1. Plant perennials var. *puellarum*
1. Plant annuals 2
2. Utricles oblong-linear, much longer than broad var. *stenocarpa*
2. Utricles globose 3
3. Utricles soft-shelled, longitudinally striated var. *ma-yuen*
3. Utricles hard-shelled, not longitudinally striated var. *lacryma-jobi*

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Fig. 2. Lectotype of *Coix lacryma-jobi* var. *puellarum* (Balansa) E.G. Camus & A. Camus (L0329790). © Naturalis Biodiversity Center. Reproduced with permission.

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