

Communication

Lectotypification of two names in *Tetrataenium* (Apiaceae)

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Abstract

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During the taxonomic revision of the family Apiaceae, two species of the genus *Tetrataenium* (DC.) Manden. were found to require typification. Lectotypes were designated for two names currently applied to species in the genus *Tetrataenium* (DC.) Manden., *Tetrataenium ceylanicum* (Gardner ex C.B. Clarke) Manden. and *Tetrataenium hookerianum* (Wight & Arn.) Manden. Both species occur in India, and *Tetrataenium ceylanicum* has also been recorded in Sri Lanka. The results of this lectotypification maintain the previously established concept of both species.

Keywords: *Heracleum*, India, lectotype, *Pastinaca*, Western Ghats.

INTRODUCTION

The genus *Tetrataenium* (DC.) Manden. (Apiaceae) is represented by 22 currently accepted species naturally occurring from Turkey to Central Asia and south-eastern Asia (Plunkett et al., 2018). In India, this genus is represented by 14 species, eight of which are endemic (Mukherjee & Constance, 1993; POWO, 2024; Rekha & Manudev, 2024). Mandenova (1959) established the genus *Tetrataenium* (DC.) Manden., with *Tetrataenium rigens* (Wall. ex DC.) Manden. as a lectotype species. This genus is characterised by symmetric flowers (occasionally with enlarged outer petals), yellow petals (sometimes white), and its carpological features such as long, thin secretory ducts, large-keeled dorsal mericarp ribs with very wide marginal wings, 1–3 vallecular vittae, dorsal

and commissural vittae of equal to subequal length, and 2–6 commissural vittae.

During a taxonomic revision of the family Apiaceae in the flora of the Western Ghats of India, we encountered two names of *Tetrataenium* (*Tetrataenium ceylanicum* (Gardner ex C.B. Clarke) Manden. and *Tetrataenium hookerianum* (Wight & Arn.) Manden.), basionyms of which need to be typified. Typification is important to clarify the nomenclature and correctly identify each taxon. This study aimed to contribute to the stability of the nomenclature of the genus *Tetrataenium* (Apiaceae) by selecting lectotypes through consultation with original materials cited by the author or authors of taxa, following strictly to the provisions of the *International Code of Nomenclature for algae, fungi, and plants* (Turland et al., 2018).

MATERIALS AND METHODS

The current study involved a thorough examination of the available relevant literature, including protologues of each species, and a careful analysis of the herbarium specimens and (or) their digital images and associated data. The specimens deposited at various Indian herbaria (CAL, MH and BSI) as well as virtual databases of international herbaria (B, BM, BR, C, CGE, E, G, GH, H, K, LE, M, NY, OXF, P, US and W) were consulted to locate the original materials. Acronyms of herbaria follow the *Index Herbariorum* (Thiers, 2024). The specimens that best match the relevant protologues were designated as lectotypes, following provisions of Articles 9.3, 9.6 and 9.9 of the *International Code of Nomenclature for algae, fungi, and plants* (Turland et al., 2018).

RESULTS AND DISCUSSION

Tetrataenium ceylanicum (Gardner ex C.B. Clarke) Manden., in *Zametki Sist. Geogr. Rast.*, 41: 46. 1986. – *Heracleum ceylanicum* Gardner ex C.B. Clarke in Hook.f., *Fl. Brit. India*, 2: 716. 1879.

Type: *Sine loc.*, 1847, Gardner 321 (lectotype K000075521, **designated here** based on the digital image: <https://plants.jstor.org/stable/10.5555/al.ap.specimen.k000075521> (Fig. 1); isolectotype: K000075522, <https://plants.jstor.org/stable/10.5555/al.ap.specimen.k000075522>). Residual syntypes: Ceylon, 1854, *M. Thwaites* C.P. 145 (P00476390, P02502450, K002743597, digital images); Ceylon, *s.d.*, Thwaites *s.n.* (K002743601, digital image); Ceylon, *s.d.*, Walker *s.n.* (K002743593, K002743594, K002743595, K002743600, digital images).

Clarke (1879) described *Heracleum ceylanicum* based on the collections of Walker, Gardner, Wight, and Thwaites and referred to the manuscript of Gardner, attributing the name to Gardner. In the protologue, he did not cite a type, nor did he mention the name of the herbarium where the specimen was deposited, but cited “*Ceylon; Walker, Gardner, Wight, Thwaites (No.145 partly)*”, thus indicating the relevant gatherings of these collectors as syntypes. Under the synonymy, he also cited *Heracleum sprengelianum*, the name misapplied by Thwaites (1859: 131, not Wight & Walker-Arnott, 1834: 372). Clarke also noted that the fruit of *Heracleum ceylanicum* was obovate and

totally unlike that of *Heracleum sprengelianum*. Later, Mandenova (1986) transferred this name to *Tetrataenium* as *Tetrataenium ceylanicum* (Gardner ex C.B. Clarke) Manden. We traced fifteen relevant herbarium specimens, of which nine sheets were deposited at K (K000075522, K000075521, K002743592, K002743593, K002743594, K002743595, K002743597, K002743600, K002743601); four sheets at P (P00463888, P00466400, P00476390, P02502450); one sheet at MPU (MPU1121506), and one sheet at BR (BR0000035241454). Of these, the specimens K000075522 and K000075521 were collected by Gardner; K002743593, K002743594, and K002743595 were collected by Walker, whereas K002743597, K002743601, P00476390, P02502450, P00463888, P00466400, MPU1121506, and BR0000035241454 were collected by Thwaites. The sheet K002743592 was collected by Wight without indicating the locality. All these sheets (except K002743592) are considered part of the original material of the name *Heracleum ceylanicum*, thus forming syntypes (Art. 9.6; Turland et al., 2018).

The sheets K002743593, K002743594, K002743595, and K002743600 were annotated as “Ceylon, Coll. Walker” by Walker. The sheets P02502450, P00466400, MPU1121506, BR0000035241454, K002743597, and K002743601 bear a common field ticket by Thwaites cited as “*Heracleum sprengelianum* W & A., Ceylon, Thwaites” with the collection number “CP 145”, except for the sheet K002743601. The specimens K002743601, P00476390, and K002743597 bear the common annotation “*Heracleum ceylanicum* Gardner” by C.B. Clarke. The sheet P00476390 was collected by Thwaites from Ceylon [now Sri Lanka] and possessed the label “Herb. Mus. Paris, Ceylan, M. Thwaites, 1854, No. 145” with an annotation “*Heracleum sprengelianum* W. & A., Thwaites Enumer. 131, *Pastinaca sprengeliana*” by Thwaites. In addition, there was another printed label by J.P. Reduron cited as “Prélèvement fragment de feuille pour Mr Guyot (Dijon; stomates) et fragment d’inflorescence pour Mme Cerceau (Paris; pollen) le 22/01/1974” (indicating that the leaf and flower samples were taken for stomatal and pollen studies). The specimen also had an additional annotation on the left bottom of the sheet by Thwaites: “CP 145 *Pastinaca sprengeliana*”. The sheets K000075521



Fig. 1. Lectotype of *Tetrataenium ceylanicum* (Gardner ex C.B. Clarke) Manden. <http://specimens.kew.org/herbarium/K00075521> © The Board of Trustees of the Royal Botanical Gardens Kew (reproduced with permission).

and K000075522 bore a label by Gardner that indicated that the specimen was collected by Gardner from Ceylon with the collection number “321” and an additional annotation “*Heracleum ceylanicum* Gardner” by C.B. Clarke in pencil. Hence, the sheet K000075521, which perfectly matched the protologue and was studied by the author of the name, is selected here as the lectotype (Art. 9.3; Turland et al., 2018).

Tetrataenium hookerianum (Wight & Arn.) Manden. in Trudy Tbilissk. Bot. Inst., 20: 18. 1959. – *Heracleum hookerianum* Wight & Arn. in Prodr. Fl. Ind. Orient., 1: 373. 1834. – *Pastinaca hookeriana* (Wight & Arn.) Wight, Icon. Pl. Ind. Orient., 3: t. 1010. 1845.

Type: India, Peninsula India Orientalis, *s.d.*, R. Wight 1207 (lectotype: E00174687, **designated here** based on the digital image: <https://plants.jstor.org/stable/10.5555/al.ap.specimen.e00174687> (Fig. 2).

Wight & Walker-Arnott (1834) published the name *Heracleum hookerianum* Wight & Arn., and cited “*Wight! Cat. n. 1207 Mountains in the South of the Peninsula*” in the protologue, indicating the description was based on a specimen or specimens (one gathering) of Wight (Cat. No. 1207) collected from Southern Peninsular India. However, they did not name any location or herbarium where the original specimens were deposited. The name was subsequently transferred to the genus *Pastinaca* (as *Pastinaca hookeriana* (Wight & Arn.) Wight) by Wight (1845) and to *Tetrataenium* (as *Tetrataenium hookerianum* (Wight & Arn.) Manden.) by Mandenova (1959).

Two sheets of this species collected by Wight (Cat. No. 1207) were traced at K (K000075496) and E (E00174687). The specimen at Kew (K000075496) bore the original Wight herbarium label (*Herb. Wight Propr.*) and had two plants mounted on it. In addition, the sheet K000075496 also had an annotation ‘*Pastinaca hookeriana*’ in the handwriting of Wight and an additional label “? Wt. Cat. 1207?” in pencil written in unknown handwriting. The sheet at E (E00174687) bore a label by Wight annotated as “*Heracleum hookerianum* Wight & Arn.” with the catalogue number “1207”. Both the sheets (K000075496 and E00174687) were deemed

to be part of the original material, hence representing syntypes (Art. 9.6 of the ICN: Turland et al., 2018), among which the sheet E00174687 with the catalogue number “1207”, matched perfectly with the protologue and is designated here as the lectotype (Art. 9.3 of the ICN: Turland et al., 2018).

A specimen at the Harvard University Herbaria (GH00076577) was labelled by Constance as an isotype of *Tetrataenium hookerianum*, with the catalogue number “1184”; its duplicates are also available at K, NY, and L. However, Wight referred to the catalogue number “1207” in the protologue of *Tetrataenium hookerianum*. Hence, these sheets are not part of the original material and are not eligible to be considered for lectotype designation.

The present paper is a part of the taxonomic revision of Apiaceae in the Western Ghats of India, aiming to stabilise the nomenclature of the family. Lectotypes were designated for *Tetrataenium ceylanicum* and *Tetrataenium hookerianum*, both occurring in India. The specimens from Kew Herbarium and Edinburgh Herbarium matched perfectly with the protologue and were designated as the lectotype, respectively. The study involved a meticulous examination of literature, herbarium specimens, and digital databases to designate appropriate lectotypes. All decisions were made following Articles 9.3, 9.6, and 9.9 of the *International Code of Nomenclature for algae, fungi, and plants* (Turland et al., 2018). The results of this lectotypification maintain the previously established concept of both species.

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Fig. 2. Lectotype of *Tetrataenium hookerianum* (Wight & Arn.) Manden. <https://data.rbge.org.uk/herb/E00174687> © Royal Botanic Garden Edinburgh (reproduced with permission).

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Author contributions. CR collected and analysed the data and wrote the manuscript, KMM provided critical feedback and helped shape the research, as well as analysed and validated the manuscript. Both authors agreed to the final version of the manuscript.

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