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Second-step lectotypification and new combinations in *Noccaea* (Brassicaceae)

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Abstract

New combinations are made for *Microthlaspi mediterraneo-orientale* T. Ali & Thines, *M. sylvarum-cedri* T. Ali & Thines and *Thlaspi granatense* Boiss. & Reut. under the genus *Noccaea* Moench as *N. mediterraneo-orientalis* (T. Ali & Thines) R. Kr. Singh & Sanjeet Kumar, *N. sylvarum-cedri* (T. Ali & Thines) R. Kr. Singh & Sanjeet Kumar and *N. granatensis* (Boiss. & Reut.) R. Kr. Singh, Deroliya & Sanjeet Kumar respectively. Second-step lectotype is designated for the name *Thlaspi cochlearioides* Hook. f. & Thomson.

INTRODUCTION

The genus *Noccaea* Moench. (Brassicaceae) consists of about 133 species worldwide (POWO 2023). In India, the genus is represented by seven species, distributed in East to West Himalayas (POWO 2023). During the study of *Noccaea* in India and while consulting literature (Jafri 1973, Meyer 1973, Burdet et al. 1984; Al-Shehbaz 2002, 2014, Ali et al.

2016, Özüdoğru et al. 2019), the authors encountered that the names *Microthlaspi mediterraneo-orientale* T. Ali & Thines, *M. sylvarum-cedri* T. Ali & Thines and *Thlaspi granatense* Boiss. & Reut. should be transferred to the genus *Noccaea* and the name *Thlaspi cochlearioides* Hook. f. & Thomson needs second-step lectotypification.

Therefore, following recent circumscription of the genus *Noccaea* Moench (Özüdoğru et al. 2019), new combinations are proposed here for *Microthlaspi mediterraneo-orientale* T. Ali & Thines, *M. sylvarum-cedri* T. Ali & Thines and *Thlaspi granatense* Boiss. & Reut. under *Noccaea* as *N. mediterraneo-orientalis* (T. Ali & Thines) R. Kr. Singh & Sanjeet Kumar, *N. sylvarum-cedri* (T.Ali & Thines) R. Kr. Singh & Sanjeet Kumar and *N. granatensis* (Boiss. & Reut.) R. Kr. Singh, Deroliya & Sanjeet Kumar respectively. Second-step lectotype is designated here for the name *Thlaspi cochlearioides* Hook.f. & Thomson in accordance with the Article 9.17 of ICN (Turland et al. 2018).

NEW COMBINATIONS

Noccaea granatensis (Boiss. & Reut.) R. Kr. Singh, Deroliya & Sanjeet Kumar, *comb. nov.*

≡ *Thlaspi granatense* Boiss. & Reut., Diagn. Pl. Orient. ser. 2, 1: 40. 1854.

≡ *Ihsanalshehbazia granatensis* (Boiss. & Reut.) T.Ali & Thines, Taxon 65(1): 93. 2016.

≡ *Microthlaspi granatense* (Boiss. & Reut.) F.K.Mey. in Feddes Repert. 84: 453. 1973.

Lectotype (designated by Burdet 1984): Spain, Sierra de Baza, 21 May 1851, *E. Bourgeau 1025* (G00371933!, Figure 1); isolectotypes G00371932!, G00371965!, K000484286!, WAG0004275!.

Distribution: Algeria, Morocco, Sicilia and Spain.

Noccaea mediterraneo-orientalis (T.Ali & Thines) R.Kr.Singh & Sanjeet Kumar, *comb. nov.*

≡ *Microthlaspi mediterraneo-orientale* T.Ali & Thines, Taxon 65(1): 94. 2016.

Holotype: Greece, Rhodos, Archangelos, 36°11′ N, 28°06′ E, elevation 460 m, in cracks of limestone rocks, 20 Mar 2013, V. Kummer Mp-G-Rh-11-1 (FR-0117884).

Distribution: Greece and Israel.

Noccaea sylvarum-cedri (T.Ali & Thines) R.Kr.Singh & Sanjeet Kumar, *comb. nov.*

≡ *Microthlaspi sylvarum-cedri* T.Ali & Thines, Taxon 65(1): 94. 2016.

Holotype: Turkey, Taurus Mountains, open coniferous forest with cedars, 37°11′ N, 30°59′ E, elevation 330 m, brown soil from limestone, 26 Mar 2012, F. Runge & M. Thines Mpn_T12_3-1 (FR-0177886).

Distribution: Turkey, endemic.

SECOND-STEP LECTOTYPIFICATION

Noccaea cochlearioides (Hook. f. & Thomson) Al-Shehbaz, Adansonia sér. 3, 24(1): 91. 2002.

≡ *Thlaspi cochlearioides* Hook. f. & Thomson, J. Proc. Linn. Soc., Bot. 5: 177. 1861.

Lectotype (first-step designated by Jafri 1973): E. Himalaya, Sikkim, 4200-4800 m, J.D. Hooker (K, two sheets).

Figure 1: Lectotype of *Thlaspi granatense* Boiss. & Reut. (G00371933, © Conservatoire & Jardin botaniques de la Ville de Genève)

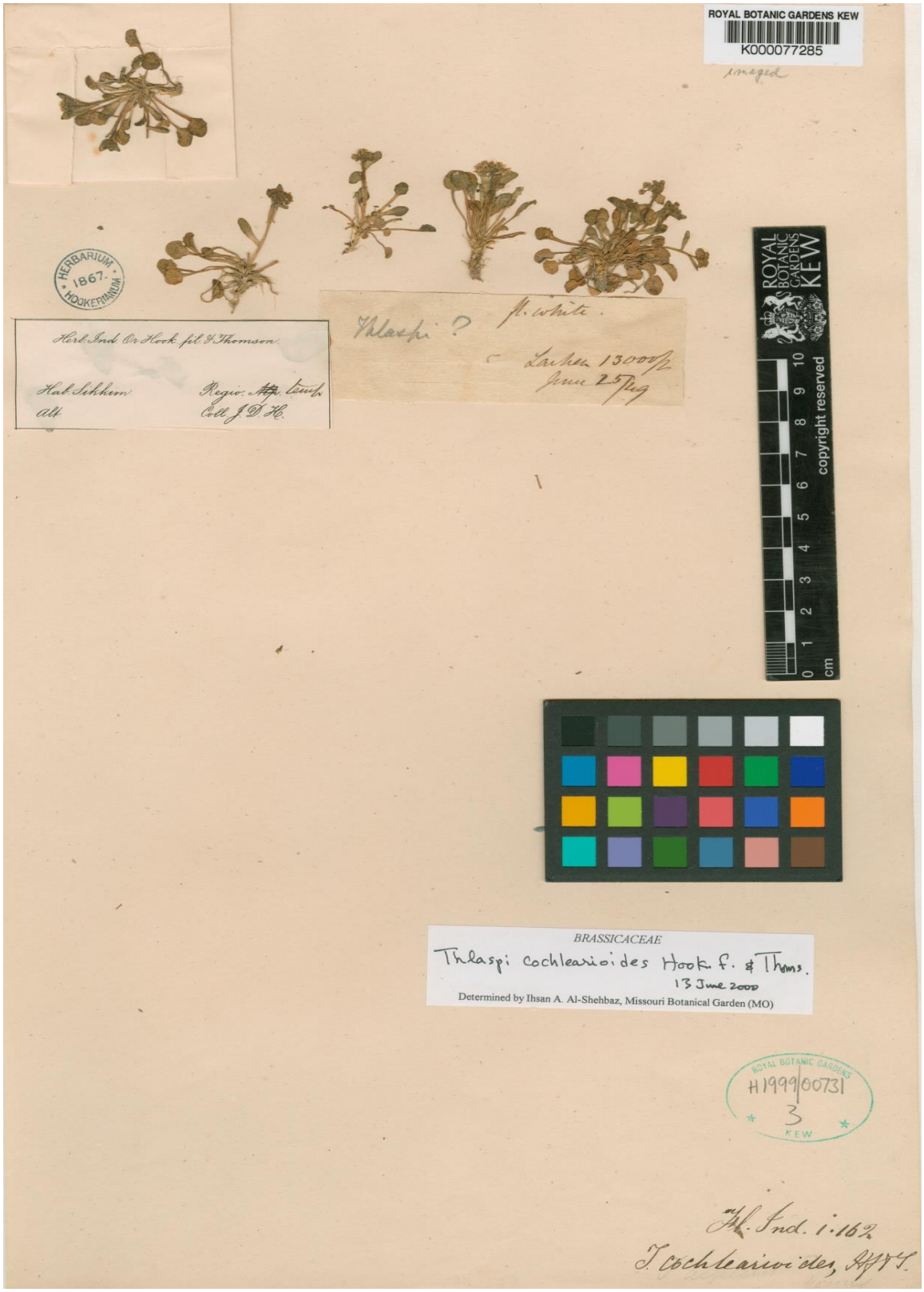

Figure 2: Lectotype of *Thlaspi cochlearioides* Hook.f. & Thomson (K000077285, © The Trustees of the Royal Botanic Gardens, Kew)

Lectotype (second-step designated here): India, Sikkim, Lachen, 25 June 1849, *J.D. Hooker s.n.* (K000077285!, Figure 2); isolectotype K000077284!.

Distribution: Bhutan, India (Himachal Pradesh, Jammu & Kashmir, Ladakh, Sikkim, Uttarakhand, and West Bengal) and Nepal.

Notes: Hooker & Thomson (1861) described *Thlaspi cochlearioides* based on the specimens collected by J.D. Hooker from Sikkim. Jafri (1973) referring to the type of *T. cochlearioides* wrote "Type: E. Himalaya, Sikkim, 4200-4800 m, J.D. Hooker (K)". There are two specimens of J.D. Hooker from Sikkim at K, which belongs to herbarium Hookerianum. According to Article 9.17 of ICN (Turland et al. 2018), Jafri's type citation must be accepted as the first-step lectotypification because it cannot be ascertained which of the specimens at K was selected by him as lectotype. The type citation of Jafri can be further narrowed to a single specimen by second-step lectotypification according to Article 9.17 of ICN. Of the two specimens collected by J.D. Hooker at K, the specimen K000077285 is the better preserved, has a well-developed leaf (basal and cauline) and inflorescence, and therefore is designated here as the second-step lectotype. The specimen K000077284 lacks flowers.

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