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Some notes on *Bornmuellera* in Greece, and an interspecific hybrid in the Alysseae (Cruciferae)

WERNER GREUTER

Résumé

Greuter, W. (1975). Quelques notes sur le genre *Bornmuellera* en Grèce, et un hybride interspécifique dans les Alysseae (Cruciferae). *Candollea* 30: 13-20. En anglais.

L'auteur traite des taxons grecs du genre *Bornmuellera*, de leur découverte, de leur aire de répartition et de leurs variations. Il donne une clef de détermination et cite les échantillons d'herbier. Le *B. baldaccii* subsp. *rechingeri*, ainsi que son hybride avec le *B. tymphaea* (*B. x petri*), sont décrits comme nouveaux.

Abstract

Greuter, W. (1975). Some notes on *Bornmuellera* in Greece, and an interspecific hybrid in the Alysseae (Cruciferae). *Candollea* 30: 13-20.

The author discusses the Greek taxa of *Bornmuellera*, their discovery, distribution and variation. A determination key and specimen citations are included. *B. baldaccii* subsp. *rechingeri*, as well as its hybrid with *B. tymphaea* (*B. x petri*), are described as new.

The status of the Crucifer genus *Bornmuellera* was longtimes controversial. Soon after its creation by Haussknecht (1897), its single original species – which had first been described in the genus *Vesicaria* – was transferred to *Ptilotrichum* by Halácsy (1900), followed by most subsequent writers. Schulz (1936), though adopting *Bornmuellera*, failed to delimit the genus naturally, leaving some obviously related species in *Ptilotrichum*.

This situation was corrected by Heywood (1964), in view of the “Flora europaea” treatment, as far as Europe is concerned; and, globally, by Dudley & Cullen (1965), who dismembered the “dustbin genus” *Ptilotrichum*. *Bornmuellera*, as defined by these authors, is a natural, quite homogeneous taxonomic unit comprising 6 (or possibly 5) species: *B. glabrescens* (Boiss. & Balansa) Cullen & Dudley, *B. cappadocica* (Willd.) Cullen & Dudley and *B. angustifolia* (Bornm.) Cullen & Dudley, in Anatolia (the latter two being probably conspecific, according to Cullen, 1965); *B. dieckii* Degen, *B. baldaccii* (Degen) Heywood and *B. tymphaea* (Hausskn.)

Hauskn., in the Balkans. The main generic characters are: suffrutescent perennials; hairs medifixed (rarely absent, or with 1-2 pairs of short lateral branches, but never regularly radiate-stellate); sepals not saccate; petals white, entire; filaments toothed at the base; silicula inflated, globose or somewhat flattened, with biovulate loculi.

Of the three Balkan species, *Bornmuellera dieckii*, only known from Mt. Ostrovica E of Prizren (SW Srbija), needs not concern us here. The other two, described from Greece, are characteristic "serpentine endemics", strictly limited to ophiolitic substratum. Like many of their kind, they are growing in restricted, disjunct areas, but are usually abundant wherever they occur.

Bornmuellera tymphaea was discovered in 1885 by Hausknecht and Heldreich on the Zygos pass and, to the east, in the uppermost part of the Pinios valley. According to my own observations and gatherings, it is a common plant not only in that area, but farther north in the mountains around Milea and W of Kranea (Grevenon), and apparently throughout the extensive ophiolitic areas of the Lingos range, reaching its western limit around Mt. Aftia where Rechinger collected it in 1956. To the south, according to Formánek (1896; determination confirmed by Vandas, 1909), it extends to Mt. Dhokimi. Outside this apparently continuous range, the species has been found on Mt. Vourinos (Goulimis, 1960), another floristically famous Greek serpentine area. A record by Zaganiaris (1939) from "Castoria" is very suspect; since this author is known to be unreliable, and since his herbarium seems to be lost or destroyed (Lavrentiades, pers. comm.), it is best dismissed altogether as erroneous.

The locus classicus of *Bornmuellera baldaccii* is Mt. Smolikas in Ipiros, where Baldacci collected it in 1896. It is common in the summital zone of that mountain, from 2000 m (or even 1300 m: see Quézel & Contandriopoulos, 1965) up to the top. According to the original description (Degen, 1896), it has "folia ... margine et subtus pilis bifurcatis sparsim obsita, superne glabra". Seven herbarium sheets from the ditio classica, three of them isotypes, are at my disposal. Some of the plants fit the original description in that the leaves are sparingly hairy beneath and glabrous above; however, a considerable percentage of the hairs are always (3-)4-fid, the lateral rays being shorter than the median ones. The other plants are more densely pubescent, with scattered indumentum even on the upper leaf surface, and predominantly 4-6-fid hairs. Both forms are growing together and obviously do not deserve taxonomic recognition.

The occurrence of 4-6-fid hairs conflicts with the generic description given by Heywood (1964a): "hairs medifixed, or rarely plant glabrous". The Turkish species, according to Cullen (1965), have "hairs all bifid, very rarely a few 4-fid hairs as well". The generic distinctness of *Bornmuellera*, in my opinion, is in no way affected by the frequent occurrence of 4-6-fid hairs in one of its representatives: these hairs are clearly related to the medifixed hair type, and quite distinct from the regularly radiate stellate hairs found in most other genera of the *Alysseae*.

In 1924, Markgraf discovered a slightly different plant on Mt. Mal i Shebenikut in E Central Albania and described it as *Ptilotrichum baldaccii* var. *markgrafii* O. E. Schulz ex Markgraf (1926). The same taxon was reported later (Markgraf, 1931) from two other Albanian serpentine mountains: Kunora and Gur i Topit. The three gatherings were made at altitudes between 1800 m and 2100 m; a fourth specimen, collected at 1600 m on Mt. Gur i Topit, is recorded without specification of the variety, but must obviously belong to the same taxon.

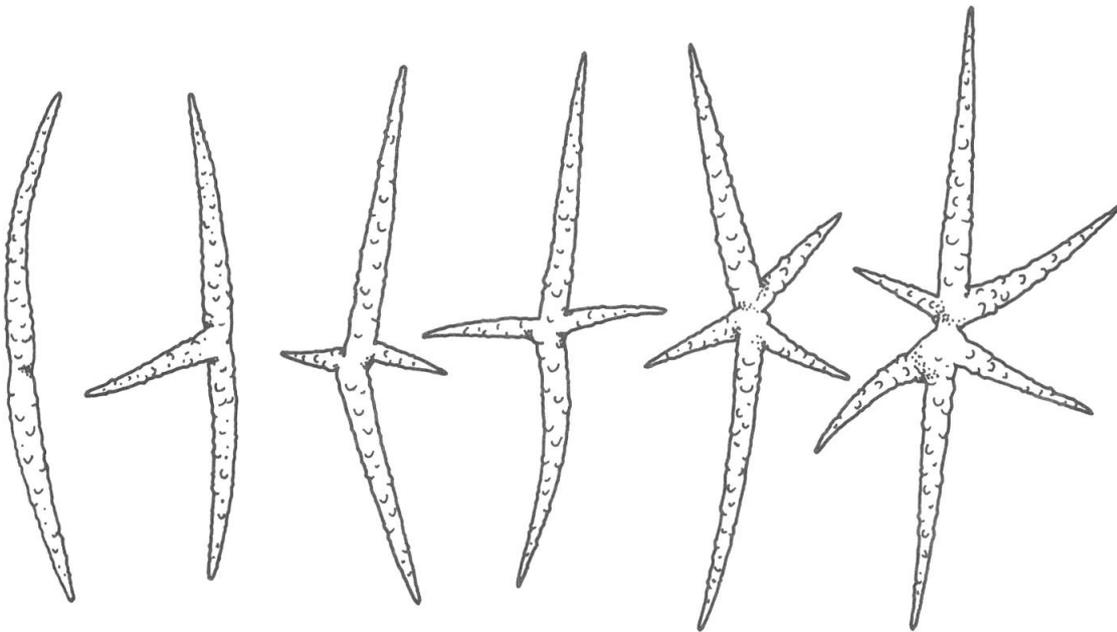


Fig. 1. — Hairs of *Bornmuellera baldaccii* subsp. *baldaccii*, showing progressive degree of ramification (drawn from an isotype specimen by Saskia Wikström).

“*Ptilotrichum baldaccii* var. *markgrafii*” is said to have medifixed hairs and to differ from the typical variety by its narrower leaves and bigger flowers. In all probability, it constitutes a distinct subspecies of *Bornmuellera baldaccii*; but since Markgraf’s material was destroyed at Berlin during the war, and no other Albanian gatherings are known to me, I refrain from proposing formally the necessary new combination. A record of “*Ptilotrichum baldaccii*” from Kristallopjiji, close to the Greek-Albanian border in the Florina district, needs confirmation since its author is again Zaganiaris (1939; see above). If it rests on a real base, it might well refer to “var. *markgrafii*”.

Apart from the ditio classica on Mt. Smolikas and Zaganiaris’s dubious record, there is a further Greek area of *Bornmuellera baldaccii* in the Lingos range. It seems not to have been discovered prior to 1956 (Rechinger in herb.) and has not been recorded in the literature as yet. Still, the species is quite abundant on those serpentine mountains, although it does not reach the easily accessible and floristically well known region of the Katara pass to the south.

The Lingos population of *Bornmuellera baldaccii* is remarkable in two respects. First, it constantly deviates from the typical Smolikas population by having only medifixed, unbranched hairs. Of several dozens of individuals examined, only two had a very small number of hairs with 1(-2) short lateral branches. The difference between the two populations is admittedly not very striking, but concerns a character of considerable taxonomic importance within the *Cruciferae*. Therefore, and in spite of good general agreement in other respects, I think it appropriate to treat the Lingos plants as a distinct subspecies, which I am naming *B. baldaccii* subsp. *rechingeri* in honour of its discoverer.

The second remarkable feature of the Lingos population is its coexistence, in the same area and often on the very same spot, with a second *Bornmuellera* species: *B. tymphaea*. This is exceptional within the genus, whose species are otherwise completely allopatric. *B. tymphaea* and *B. baldaccii* are ecologically similar, and their altitudinal ranges, in the Lingos area, overlap considerably: the former has been found at altitudes between 1100 m and 1900 m, the latter between 1450 and 2150 m.

Where the two species grow side by side, they hybridize easily. This is astonishing, since hybridization, within the whole tribe *Alyseae*, is virtually unknown. It has possibly been overlooked, because the species in, e.g., *Alyssum* are often so similar that a hybrid would be hard to distinguish from either of the parents. The recent demonstration of the allo-polyploid nature of *Alyssum siculum* Jordan by Persson (1971) proves that hybridization has indeed occurred in that genus too. In our example, the parent species differ widely in habit, and the hybrids can easily be individualized at a glance.

I discovered this hybrid in August 1974, in common with André Charpin, Manfred Dittrich and a gardener of the Geneva Jardin botanique. It is to the latter, Pierre von Auw, that we actually owe the discovery: when trying to collect seed from what he fancied to be a particularly big and rewarding individual of *Bornmuellera baldaccii*, he was disappointed and slightly puzzled to find it virtually sterile. In fact, the hybrid develops normal looking siliculae, but the seed development usually stops at an early stage, and we found only a few more or less ripe, yet undersized seeds. This hybrid, which we take pleasure to dedicate to our young friend and fellow-traveller, is described below in the context of a conspectus of Greek *Bornmuellera*.

Bornmuellerarum Graeciae clavis analytica et conspectus

- | | |
|--|-----------------------|
| 1a. Surculi hornotini saltem erecti (caudiculi vetustiores interdum decumbentes et radicantes); folia plana, membranacea vel leviter carnosae, spatulata vel lineari-spatulata, majora quidem 2.5 mm et ultra lata; caules floriferi ramosi, dissite foliati (foliis cito deciduis); racemi fructiferi modice vel valde elongati | 3 |
| 1b. Surculi jam hornotini decumbentes saepe radicantes; folia rigida, valde carnosae, in sicco supra leviter canaliculata, lineari-lanceolata, ad 2.5 mm lata, glaucovirentia, sparse pilosa vel apice excepto glabrescentia; caules floriferi scapiformes, simplices, aphylli; racemus fructifer densus; siliculae 4-6 mm longae, septo 3-4 mm lato | <i>B. baldaccii</i> 2 |
| 2a. Pili foliorum partim bicuspides medifixi, partim ramis lateralibus brevioribus (1-)2-4 praediti, i.e. inaequaliter (3-)4-6-radiati; indumentum foliorum nunc densiusculum, etiam paginam superiorem tegens, nunc perparcum tantum in paginâ inferiore, praesertim apicem versus, obvium
<i>B. baldaccii</i> subsp. <i>baldaccii</i> | |
| 2b. Pili foliorum omnes bicuspides medifixi (perraro unus alterve ramulis lateralibus 1-2 auctus); indumentum foliorum parcum, tantum in paginâ inferiore, praesertim apicem versus, obvium
<i>B. baldaccii</i> subsp. <i>rechingeri</i> | |

- 3a. Folia flavovirentia, saepe leviter carnosâ, lineari-spatulata, majora 2.5-3(-4) mm lata, in paginâ superiore glabra, in inferiore saltem apicem versus pilis bicuspidibus medifixis parce obsita; caules floriferi jam prope basin ramos 1-3 elongatos edentes; racemi fructiferi densiusculi; siliculâe 4-5 mm longae, septo 3-4 mm lato; semina plurima (an omnia?) abortiva — planta *B. glabrescenti* anatolicae simillima sed omnibus partibus minor *B. x petri*
- 3b. Folia utrinque pube bicuspidi densâ sericeo-cana, membranacea, spatulata, majora (3.5-)4-10 mm lata; caules floriferi praesertim in parte superiore ramos (3-)4-7 breves edentes; racemi fructiferi elongati laxiusculi; siliculâe 5-7 mm longae, septo 3.5-4 mm lato *B. tymphaea*

Bornmuellera tymphaea (Hauskn.) Hauskn. in Mitth. Thüring. Bot. Vereins 11: 72. 1897 \equiv *Vesicaria tymphaea* Hauskn. in Mitt. Geogr. Ges. (Thüringen) Jena 5, Bot.: 70. 1886 \equiv *Alyssum tymphaeum* (Hauskn.) Heldr. & Hauskn. ex Formánek in Deutsche Bot. Monatsschr. 9: 65. 1891 \equiv *Ptilotrichum tymphaeum* (Hauskn.) Halácsy, Consp. Fl. Graec. 1: 87. 1900.

Specimina visa: distr. Grevena, in latere boreo-occidentali montis Aftia (recte: Flenga?), in valle Arkoudholakka (Valea Kaldha), alt. 1700(-2100?) m, 30.-31.7.1956, *Rechinger 18506* (G); distr. Grevena, in jugo inter montes Livadhi (Milea, Salatoura) et Pirostia, alt. 1620 m, 16.8.1974, *Charpin 11198, Dittrich, Greuter 12370 & von Auw* (G); distr. Grevena, in latere boreo-orientali montis Livadhi (Milea, Salatoura), alt. 1800 m, 14.8.1974, *Charpin 11009, Dittrich, Greuter 12170 & von Auw* (G, Gr¹); distr. Grevena, in latere boreo-orientali montis Simandro, loco Baltsa vocato, alt. 1450-1500 m, 9.7.1971, *Greuter 9308* (ATH, G, Gr); distr. Metsovo, circa collem Loupanio ad austro-occidentem pagi Milea, alt. 1400 m, 5.8.1973, *Greuter obs.*, et 15.8.1974, *von Auw* (semina); distr. Metsovo, prope pagum Milea, alt. 1100 m, 20.6.1973, *Greuter 11319* (ATH, Gr); distr. Metsovo, in monte Zigos supra Metsovo, alt. 1350-1500 m, 19.-20.7.1885, *Heldreich* (G, isosyntypus); distr. Metsovo/Kalambaka, in jugo Katara, alt. 1700 m, 25.5.1962, *Greuter pat.* (Gr); distr. Kalambaka, supra Malakasi in monte Tragopetra, 17.6.1896, *Sintenis 569* (G); ibidem, loco Kambos Dhespoti, alt. 1300-1500 m, 22.5.1957, *Pinatzi 13496* (G), 29.7.1956, *Rechinger 18407* (G), et 26.6.1963, *Greuter 6133* (Gr, Z, etc.); distr. Kalambaka?, supra "Said Pascha", 24.6.1896, *Sintenis 569b* (G); distr. Kozani, in declivibus orientalibus montis Vourinos, alt. 1200-1400 m, 5.-7.7.1956, *Rechinger 17533* (G).

Bornmuellera x petri Greuter, Charpin & Dittrich, hybr. nova (*B. tymphaea* x *B. baldaccii* subsp. *rechingeri*).

Typus: *Charpin 11008, Dittrich, Greuter 12169 & von Auw* (holotypus: G).
Descriptio in clavi.

¹Gr = herbarium Greuter proprium.

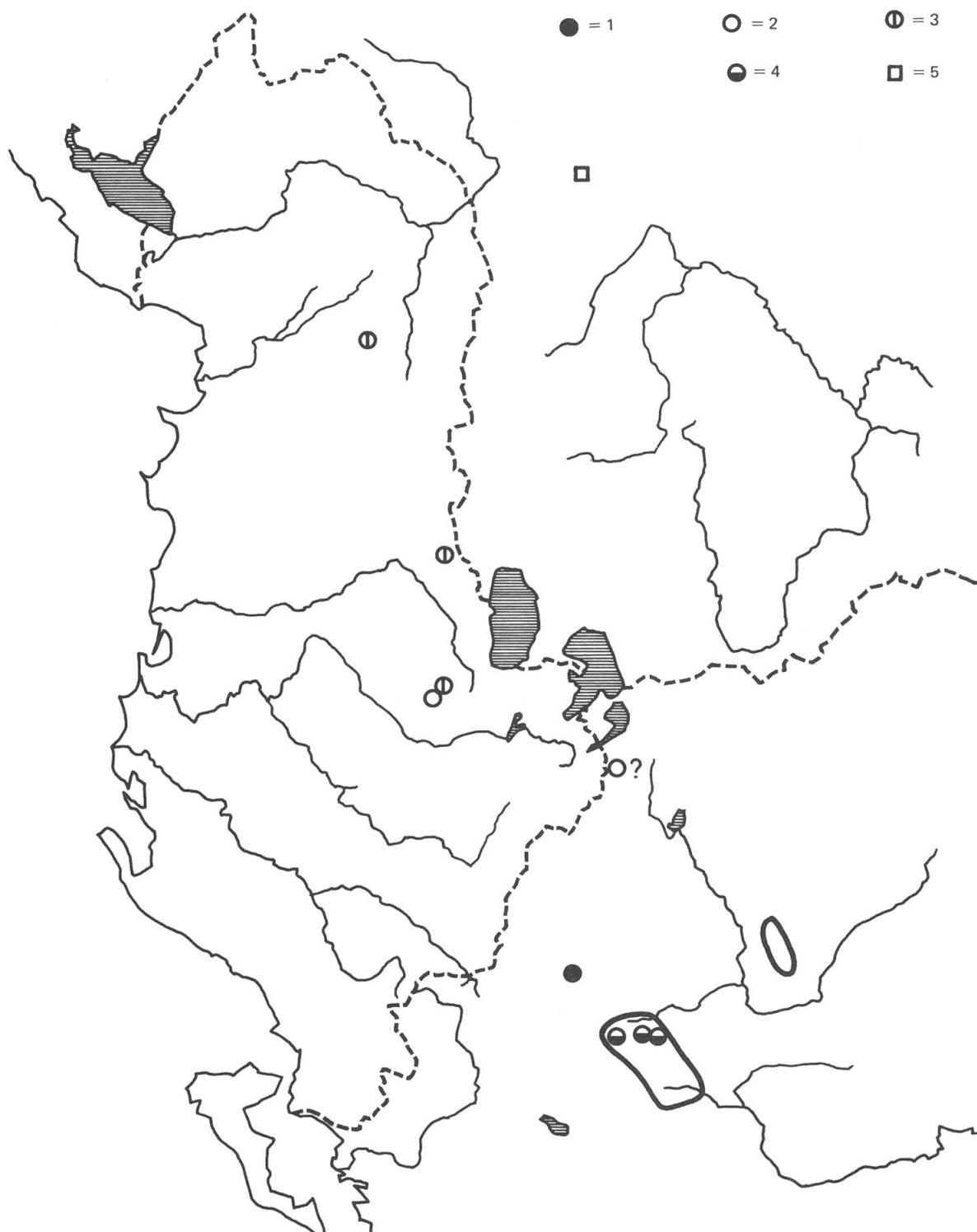


Fig. 2. — Distribution map of *Bornmuellera* in Europe. 1, *B. baldaccii* subsp. *baldaccii*; 2, *B. baldaccii* (unspecified literature records); 3, "*Ptilotrichum baldaccii* var. *markgrafii*" (literature records); 4, *B. baldaccii* subsp. *rechingeri*; 5, *B. dieckii* (literature records); the heavy outline marks the area of *B. tymphaea*.

Specimina visa: distr. Grevena, in jugo inter montes Livadhi (Milea, Salatoura) et Pirostia, alt. 1620 m, inter parentes, 16.8.1974, *Charpin 11199, Dittrich, Greuter 12371 & von Auw* (G, Gr); distr. Grevena, in latere boreo-orientali montis Livadhi (Milea, Salatoura), alt. 1800 m, inter parentes, 14.8.1974, *Charpin 11008, Dittrich, Greuter 12169 & von Auw* (G, Gr).

Bornmuellera baldaccii (Degen) Heywood in Feddes Repert. Spec. Nov. Regni Veg. 69: 61. 1964 \equiv *Ptilotrichum baldaccii* Degen in Österr. Bot. Z. 46: 413. 1896.

A, subsp. baldaccii

Specimina visa: distr. Konitsa, in alpinis montis Smolikas, 17.-18.7.1896, *Baldacci 211* (G, G-BU, isotypi); ibidem, alt. 2200 m, 5.8.1935, *Regel* (G); ibidem, alt. 2400 m, 6.8.1935, *Regel* (G); ibidem, alt. 2000-2200 m, 9.7.1958, *Rechinger 20986* (G).

B, subsp. rechingeri Greuter, subsp. nova

Typus: *Charpin 11061, Dittrich, Greuter 12222 & von Auw* (holotypus: G). Descriptio in clavi.

Specimina visa: distr. Grevena, in latere boreo-occidentali montis Aftia (recte: Flenga?), in valle Arkoudholakka (Valea Kaldha), alt. 1700 m, 30.-31.7.1956, *Rechinger 18425* (G); ibidem, alt. 2100 m, 30.-31.7.1956, *Rechinger 18507* (G); distr. Grevena, in jugo inter montes Livadhi (Milea, Salatoura) et Pirostia, alt. 1620 m, 16.8.1974, *Charpin 11200, Dittrich, Greuter 12372 & von Auw* (G, Gr); distr. Grevena, in latere boreo-orientali montis Livadhi (Milea, Salatoura), alt. 1700-2150 m, *Charpin 11061, Dittrich, Greuter 12222 & von Auw* (G, Gr, W, etc.); distr. Grevena, in latere boreo-orientali montis Simandro, loco Baltsa vocato, alt. 1450-1500 m, 9.7.1971, *Greuter 9299* (ATH, Gr).

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