

Alpine Botany

Diversification and distribution patterns of *Luzula* sect. *Luzula* (Juncaceae) in the Eastern Alps – a cytogenetic approach combined with extensive herbarium revisions

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Online Resource 2. Updated identification key for Eastern Alpine species of *Luzula* sect. *Luzula*. The key is based on the results of herbarium revision and previously published data (mostly following Bačič et al. 2007b and Kirschner 1993, 1994, 2002). Most important characters are underlined.

1 Seeds (without caruncles, dorsal view) almost globular; the (dry) caruncle about half as long as the rest of the seed (Fig. S1 B, C). Anthers 2–7× as long as their filaments..... **2**

1* Seeds ovoid, oblong-ovoid or ellipsoidal; the caruncle about 1/6 to 1/3 as long as the rest of the seed (Fig. S1 A, D–H). Anthers 1–3× as long as filaments.....**3**

2 Plants with underground stolons. Cauline leaves with almost smooth or sparsely papillose-serrate margin (2–5 papillae per mm; 45× magnification!). Stomatal length (26) 29–38 (40) µm..... ***L. campestris***

2* Plants without stolons. Cauline leaves with densely papillose-serrate margin (10–25 papillae per mm). Stomatal length (38) 39–48 (54) µm. ***L. divulgata***

3 Seeds 0.7–0.8 mm long (Fig. S1 G); peduncles densely papillose at least in the upper half (150× magnification!); inflorescence never congested, tepals pale greenish to straw brown, never dark to blackish brown ***L. pallescens***

3* Seeds 0.9 mm–1.2 mm long (Fig. S1 A, D–F, H); peduncles smooth or almost smooth; inflorescence congested or not, tepals pale brown or dark to blackish brown.**4**

4 Lowland plants: (0)100–600(1000) m. Inflorescence never congested: all of the peduncles long, rarely at most one cluster subsessile. Tepals dark or pale brown**5**

4* Alpine plants: (500)1400–2200(2700) m. Inflorescence completely or partly congested (1–3 (5) clusters subsessile). Tepals dark to blackish brown**6**

5 Style 0.6–1.1 (1.2) mm, stigma 1.8–3.0 (3.3) mm, stigmas often subpersistent in unripe capsules; anther/filament length ratio 1.6–3.5. Stomatal length (24) 30–37 (38) µm..... ***L. divulgatiformis***

5* Style (0.3) 0.4–0.9 mm, stigma (1.1) 1.4–2.5 mm; stigmas not persistent; anther/filament length ratio 1.0–2.7 (3.0). Stomatal length (37) 39–48 (54) µm.....***L. multiflora***

6 Outer tepals 2–2.5 (2.7) mm long. Filaments 0.4–0.5 mm long, styles 0.1–0.3 mm long, stigmas 0.8–1.4 mm long (measured fresh or refreshed in boiled water). Seeds 0.5–0.6 mm wide; caruncles ca. 0.1 mm long, about 1/6 as long as the rest of the seed (Fig. S1 H) ***L. sudetica***

6* Outer tepals (2.3) 2.5–3.5 (4) mm long. Filaments 0.5–0.7 (0.8) mm long, styles (0.3) 0.4–0.9 (1.1) mm long, stigmas (1.0) 1.4–2.5 (3.2) mm long. Seeds 0.7–0.9 (1.0) mm wide; caruncles 0.2–0.5 (0.7) mm long, about 1/4–1/3 as long as the rest of the seed (Fig. S1 A, E, F) **7**

7 Inflorescence congested, flower clusters subsessile or at most one cluster pedunculate; most basal leaves conspicuously wide (width about 5 mm or more at the widest part of the leaf; inspect several plants), upper cauline leaves 3–4 mm wide; stigma 1.4–1.8 mm long, capsule segments 2.5–2.8 mm long. Stomatal length (38) 39–48 (54) μm ***L. alpina***

7+ Inflorescence usually partly congested (subsessile clusters (1) 2–3, inspect several flowering stems); basal leaf width (1.4) 2.7–4.7 (6.3) mm, most basal leaves not conspicuously wide, upper cauline leaves (0.9) 1.2–2.8 (3.9) mm wide; stigma (1.0) 1.5–2.2 (2.7) mm long; capsule segments (1.8) 1.9–2.4 (2.6) mm long. Stomatal length (24) 30–36 (38) μm ***L. exspectata***

7* Inflorescence partly congested (subsessile clusters 0–2) or not congested, basal leaves not conspicuously wide (width (1.2) 2–4 mm), upper cauline leaves 1–3 (4) mm wide; stigma (1.1) 1.4–2.5 (3.2) mm; capsule segments (1.9) 2.0–2.7 (3.1) mm long. Stomatal length (38) 39–48 (54) μm ***L. multiflora***



Fig. S1 Seeds of *Luzula alpina* (A), *L. campestris* (B), *L. divulgata* (C), *L. divulgatifformis* (D), *L. exspectata* (E), *L. multiflora* (F), *L. pallescens* (G) and *L. sudetica* (H).