

Table S1. Comparative analysis of morphological and morphometric parameters in *Luticola tenera* and morphologically similar species.

|                          | <i>L. terrestris</i>   | <i>L. asymmetrica</i>  | <i>L. rojkoviensis</i>  | <i>L. darvinii</i>  | <i>L.beyensii</i>  | <i>L. fuhrmannii</i>                                | <i>L. intermedia</i>             | <i>L. acidoclinata</i>           | <i>L. tenera</i><br><b>sp.nov.</b>                 |
|--------------------------|--|--|---|---|--|---|----------------------------------|----------------------------------|--|
| Length, µm               | 8.0–28.5   | 12.5–36.0  | 11.7–32.0   | 18.0–28.0   | 17.0–30.0  | 18.0–34.0   | 16.0–29.9                        | 10.0–30.0                        | 15.7–35.0  |
| Width, µm                | 4.4–6.1  | 6.0–8.0  | 6.0–9.0   | 6.0–8.0   | 6.5–9.5  | 7.5–8.5   | 5.8–8.5                          | 5.0–8.0                          | 6.6–11.0   |
| Shape                    | lanceolate to rhombic-lanceolate   | lanceolate, elliptic–lanceolate to rhombic lanceolate                        | rhombic–lanceolate to rhombic–elliptic  | elliptical-lanceolate to lanceolate                                 | rhombic-lanceolate   | lanceolate to rhombic-elliptic                      | lanceolate to rhombic-lanceolate | rhombic–lanceolate to lanceolate | rhombic–lanceolate to elliptic–lanceolate          |
| Apices                   | usually rounded, in larger valves, slightly subcapitate, slightly protracted | usually rounded, in larger valves, slightly subcapitate, slightly protracted | slightly protracted to broadly rounded  | with very weakly protracted, broadly rounded ends                   | larger individuals with subcapitate ends                     | rounded, not protracted                             | rounded                          | slightly protracted              | slightly protracted to broadly rounded             |
| Stria density (in 10 µm) | radiate throughout, 20–23  | radiate throughout, 17–20  | radiate throughout, 18–25   | radiate throughout, 20–22   | slightly radiate in the middle to radiate at the ends, 22–24 | radiate, 22–24                                      | radiate, 21–24                   | radiate, 21–24                   | radiate throughout, 17–23                          |
| Central area             | bow-tie-shaped, often asymmetrical, bordered by shortened striae             | bow-tie-shaped   | weakly asymmetrical, wedge-shaped   | nd  | with a large fascia, rarely reaching the valve margins       | rectangular to bow-tie-shaped                       | nd                               | wedge-shaped                     | weakly asymmetrical, rectangular                   |
| Axial area               | linear, slightly widening towards both the central area and the apices       | linear, slightly widening towards both the central area and the apices       | narrow, linear, slightly expanded near central area and very slightly lowered | narrow, expanded at valve centre to wide, nearly-rectangular fascia | linear, relatively broad                                     | narrow, linear, weakly expanded in the central area | narrow, linear                   | narrow, linear                   | linear, slightly widening towards both the central |

|                                      |  |   |   |   |   |   |   |  |  |
|--------------------------------------|--|---|---|---|---|---|---|--|--|
| Distal raphe ends                    | first curved to the same side as the proximal raphe fissures, then slightly bent to the isolated pore-bearing side | hooked towards opposite side, terminating shortly before valve edge                       | in the shape of a question mark up to a bayonet-shape in larger cells | long, question mark shaped, extending onto valve mantle         | curved twice, first in the same direction as the central endings (primary side) and then returning towards secondary side | hooked  | hooked and continuing onto the valve mantle | hooked   | in the shape of a question mark, extending onto valve mantle   |
| Proximal raphe ends                  | deflected away from the isolated pore-bearing side with small drop-like endings                                    | long, unilaterally deflected to the side opposite to stigma and expanded into small pores | slightly deflected to opposite side to stigma                         | double curved long fissures                                     | nd  | deflected, expanded                                   | deflected, expanded into a central pore     | hooked   | hook-shaped, deflected to side opposite to stigma              |
| Ghost areolae                        | often present  | present   | nd  | nd  | nd  | nd  | nd  | nd   | often present  |
| Number areolae bordered central area | nd   | 3–5   | 3–5   | 4–5   | 3–5   | 3–4   | nd  | 3–5  | 3–5  |
| Number striae composed areolae       | 2–4  | 2–5   | 2–7   | nd  | 2–4   | 3–5   | 4–5   | 3–4  | 3–6  |
| Habitat                              | terrestrial moss collected from rock   | terrestrial moss collected from rock  | rock environment is formed by the Mráznica Formation                  | floating moss   | dry soils and mosses  | nd  | nd  | nd   | terrestrial  |
| Locality                             | Prince Alfreds's Pass, Knysna, Western Cape, South Africa  | Prince Alfreds's Pass, Knysna, Western Cape, South Africa                                 | grassland of the hill in the village of Rojkov, Veľká Fatra, Slovakia | Ecuador. Galápagos islands: isabela (albamarle) island, diablás | Island of Saint-Paul, Amsterdam   | Amany Ost-Usambaragebirge Korogwrtal, Tanga, Tanzania | nd  | Lake Tanganyica, M Pulungu, Ile Niamcolo, stone. | Soil, State Nature Reserve «Bastak», Jewish Autonomous Region, |

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|--------|------------------------|------------------------|---------------------------|--------------------|----------------------------------|------------------------|------------------------|------------------------|------------|
|        |                        |                        |                           | wetlands           |                                  |                        |                        |                        | Russia     |
| Source | Rybak et. al.,<br>2021 | Rybak et. al.,<br>2021 | Hindáková &<br>Noga, 2021 | Bak et al,<br>2019 | Van de<br>Vijver et<br>al., 2002 | Levkov et al.,<br>2013 | Levkov et al.,<br>2013 | Levkov et al.,<br>2013 | this study |

Notes: nd – no data.