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Elevational distribution

Species growing at altitudes of between 2300 and 5700 m, are considered as high alpine taxa. Based on their elevations *G. abyssinica*, *G. bicolor*, *G. fuscolutea*, *G. handelii*, *G. macrotheca*, *G. nepalensis*, and *G. percarinata* can be considered as such.

The largest elevational range is found in *G. donniana* that grows from sea level to 5230 m. *Grimmia alpestris*, *G. anodon*, *G. consobrina*, *G. elatior*, *G. elongata*, *G. ovalis*, *G. sessitana*, *G. tergestina*, and *G. unicolor*, are found growing from the foothills to the high alpine zone, thus they inhabit a range of about 4500 m.

Grimmia sessitana, by its broad distribution across both hemispheres, its presence in Antarctica, and its vertical distribution range of 350 to 4750 m, may be regarded as the most widely distributed *Grimmia* species.

Grimmia asperitricha, *G. decipiens*, *G. dissimulata*, *G. humilis*, *G. kidderi*, *G. lisae*, *G. meridionalis*, *G. nutans*, *G. orbicularis*, *G. pilifera*, *G. plagiopodia*, *G. pulvinata*, and *G. trichophylla* probably do not extend above 2000 m.

Reflections on taxonomic arrangements

The diagnostic characters elaborated for each taxon treated in this study, namely the cell morphology in the leaf base, costal architecture and sporophyte morphology, unite fifty-one accepted species in *Grimmia*. The genus is defined by the primary diagnostic characters of haplolepidous peristomes [Apolepideen] with sixteen teeth separated down to the insertion and costae with ventral guide cells, as previously defined by LIMPRICHT (1889: 694, 722).

The taxa form groups within *Grimmia* although these groups depend on the choice of the defining characters used. They do not have the status of a rank, reflecting instead natural groupings of the species based on morphological and anatomical characters.

Grimmia includes the taxa with:

- **smooth capsules on elongate straight setae** – *G. alpestris*, *G. anomala*, *G. asperitricha*, *G. atrata*, *G. bicolor*, *G. caespiticia*, *G. donniana*, *G. elongata*, *G. hartmanii*, *G. incurva*, *G. khasiana*, *G. laevigata*, *G. longirostris*, *G. montana*, *G. nivalis*, *G. ovalis*, *G. tortuosa* and *G. unicolor*;
- **smooth capsules on elongate inclined setae** – *G. elongata*, *G. macrotheca*, *G. mammosa*, *G. percarinata* and *G. sessitana*;
- **smooth capsules on short straight setae** – *G. kidderi*, *G. tergestina* and *G. pilifera*;
- **smooth capsules on short inclined seta** – *G. crinita*;
- **smooth capsules on short setae in S-form** – *G. anodon*, *G. plagiopodia* and *G. tergestina*.