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**SUPPORTING INFORMATION**

**High species turnover and low intraspecific trait variation in plant species assemblages on an oceanic island**

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**Appendix S1.** List of endemic and non-endemic species

**Table S1.1** List of endemic and non-endemic species sampled in all plots (n = 44) at the coastal succulent scrub of La Palma, Canary Islands. For each species the number of plots it occured in and the number of measured individuals is given.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Family** | **Species** | **Floristic status** | **No.**  **plots** | **No. individuals** |
| Agavaceae | *Agave americana* | non-endemic | 1 | 40 |
| Apiaceae | *Astydamia latifolia* | non-endemic | 4 | 7 |
| Asclepiadaceae | *Periploca laevigata* | non-endemic | 21 | 34 |
| Asteraceae | *Argyranthemum frutescens frutescens* | endemic | 1 | 5 |
| Asteraceae | *Artemisia thuscula* | endemic | 9 | 2 |
| Asteraceae | *Kleinia neriifolia* | endemic | 33 | 5 |
| Asteraceae | *Pericallis papyraceae* | endemic | 1 | 5 |
| Asteraceae | *Phagnalon saxatile* | non-endemic | 3 | 34 |
| Asteraceae | *Phagnalon umbelliforme* | endemic | 7 | 5 |
| Asteraceae | *Pulicaria viscosa* | non-endemic | 1 | 8 |
| Asteraceae | *Reichardia ligulata* | endemic | 2 | 53 |
| Asteraceae | *Schizogyne sericea* | non-endemic | 20 | 7 |
| Asteraceae | *Tolpis santosii* | endemic | 1 | 96 |
| Boraginaceae | *Ceballosia fruticosa fruticosa* | endemic | 3 | 20 |
| Boraginaceae | *Echium brevirame* | endemic | 24 | 22 |
| Brassicaceae | *Lobularia canariensis intermedia* | endemic | 2 | 105 |
| Brassicaceae | *Lobularia maritima* | non-endemic | 1 | 1 |
| Cactaceae | *Opuntia dillenii* | non-endemic | 11 | 21 |
| Cactaceae | *Opuntia maxima* | non-endemic | 9 | 12 |
| Convollariaceae | *Asparagus umbellatus* | endemic | 1 | 5 |
| Crassulaceae | *Aeonium arboreum holochrysum* | endemic | 10 | 8 |
| Crassulaceae | *Aeonium canariense christii* | endemic | 3 | 147 |
| Crassulaceae | *Aeonium davidbramwellii* | endemic | 8 | 90 |
| Crassulaceae | *Aeonium goochiae* | endemic | 1 | 10 |
| Crassulaceae | *Aeonium hierrense* | endemic | 1 | 16 |
| Euphorbiaceae | *Euphorbia balsamifera* | non-endemic | 4 | 8 |
| Euphorbiaceae | *Euphorbia canariensis* | endemic | 6 | 5 |
| Euphorbiaceae | *Euphorbia lamarckii broussonetii* | endemic | 25 | 43 |
| Fabaceae | *Bituminaria bituminosa* | non-endemic | 11 | 37 |
| Fabaceae | *Retama rhodorhizoides* | endemic | 13 | 25 |
| Frankeniaceae | *Frankenia capitata* | endemic | 5 | 1 |
| Globulariaceae | *Globularia salicina* | non-endemic | 4 | 87 |
| Hypericaceae | *Hypericum canariense* | non-endemic | 1 | 15 |
| Lamiaceae | *Lavandula canariensis* | endemic | 24 | 27 |
| Lamiaceae | *Micromeria herpyllomorpha herpyllomorpha* | endemic | 11 | 4 |
| Oleaceae | *Jasminum odoratissimum* | non-endemic | 2 | 6 |
| Plumbaginaceae | *Limonium imbricatum* | endemic | 2 | 32 |
| Plumbaginaceae | *Limonium pectinatum* | endemic | 4 | 10 |
| Polygonaceae | *Rumex lunaria* | endemic | 12 | 66 |
| Rhamnaceae | *Rhamnus crenulata* | endemic | 4 | 24 |
| Rubiaceae | *Rubia fruticosa fruticosa* | non-endemic | 18 | 3 |
| Rutaceae | *Ruta pinnata* | endemic | 1 | 70 |
| Zygophyllaceae | *Fagonia cretica* | non-endemic | 1 | 2 |

**Appendix S2.** Variation in traits of entire, endemic and non-endemic plant assemblages

**Table S2.1** Pearson’s correlation coefficient between precipitation, heat load index, soil nitrogen, soil phosphorus and soil pH across plant assemblages (n = 44) along the coastal succulent scrub of La Palma, Canary Islands.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Precipitation** | **Heat load index** | **Soil nitrogen** | **Soil phosphorus** | **Soil pH** |
| **Heat load index** | -0.607 | - | - | - | - |
| **Soil nitrogen** | 0.225 | -0.399 | - | - | - |
| **Soil phosphorus** | -0.184 | 0.174 | 0.209 | - | - |
| **Soil pH** | -0.590 | 0.344 | -0.424 | 0.210 | - |
| **Species richness** | 0.454 | -0.676 | 0.242 | -0.141 | -0.400 |

**Table S2.2** Relative contribution of total variation in community-weighted mean trait values due to species turnover, intraspecific variation, and their covariation across a) endemic and b) non-endemic plant assemblages on La Palma, Canary Islands.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1. **Endemic** | | |  | 1. **Non-endemic** | | |
|  | Plant height | Leaf area | Leaf thickness |  | Plant height | Leaf area | Leaf thickness |
| **Intraspecific variation** | 0.31 | 0.18 | 0.28 |  | 0.41 | 0.07 | 0.06 |
| **Species turnover** | 0.46 | 0.98 | 0.81 |  | 0.33 | 0.81 | 0.89 |
| **Covariation** | 0.23 | -0.17 | -0.09 |  | 0.27 | 0.12 | 0.05 |

**Table S2.3** Small sample-size corrected Akaike Criterion (AICc) and explained variation (adjusted R²) of multiple regression models analysing the effect of precipitation, heat load index, soil nitrogen, soil phosphorus and soil pH on specific and fixed averages in **a)** plant height, **b)** leaf area and **c)** leaf thickness of entire, endemic and non-endemic plant assemblages along the coastal succulent scrub of La Palma, Canary Islands.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1. **Plant height** | | | | | |  | 1. **Leaf area** | | | | | |
| **Models** | **Entire** | | **Endemic** | | **Non-endemic** | |  | **Entire** | | **Endemic** | | **Non-endemic** | |
|  | AICc | R² | AICc | R² | AICc | R² |  | AICc | R² | AICc | R² | AICc | R² |
| **Specific average** | 15.7 | 0.27 | 47.6 | 0.24 | 10.7 | 0.17 |  | 76.9 | 0.51 | 64.6 | 0.48 | 112.9 | 0.62 |
| **Fixed average** | -31.0 | 0.18 | 9.0 | 0.14 | -33.0 | 0.14 |  | 73.0 | 0.41 | 69.1 | 0.23 | 113.6 | 0.58 |
|  | 1. **Leaf thickness** | | | | | |  | | | | | | |
| **Models** | **Entire** | | **Endemic** | | **Non-endemic** | |
|  | AICc | R² | AICc | R² | AICc | R² |
| **Specific average** | 59.3 | 0.44 | 63.8 | 0.20 | 92.9 | 0.35 |
| **Fixed average** | 49.4 | 0.49 | 64.6 | 0.19 | 88.6 | 0.36 |

Chart, scatter chart

Description automatically generated

**Figure S2.1** Multiple regression models of precipitation, heat load index, soil nitrogen, soil phosphorus and soil pH on specific averages and fixed averages of **a)** plant height, **b)** leaf area and **c)** leaf thickness in endemic plant assemblages (n = 44) at the coastal succulent scrub of La Palma, Canary Islands. Dark circles denote the specific averages (species turnover and intraspecific variation); light triangles denote fixed averages only. Standardized estimates are provided for each predictor. Error bars represent confidence intervals of the coefficient estimates. Asterisks denote statistical significance (\*\*\* p < 0.001; \*\* p < 0.01; \* p < 0.05).

Chart, box and whisker chart

Description automatically generated

**Figure S2.2** Multiple regression models of precipitation, heat load index, soil nitrogen, soil phosphorus and soil pH on specific averages and fixed averages of **a)** plant height, **b)** leaf area and **c)** leaf thickness in non-endemic plant assemblages (n = 44) at the coastal succulent scrub of La Palma, Canary Islands. Dark circles denote the specific averages (species turnover and intraspecific variation); light triangles denote fixed averages only. Standardized estimates are provided for each predictor. Error bars represent confidence intervals of the coefficient estimates. Asterisks denote statistical significance (\*\*\* p < 0.001; \*\* p < 0.01; \* p < 0.05).