**Supporting Information**

**Paper title:** Changes in vegetation attributes along an elevation gradient towards timberline in Khangchendzonga National Park, Sikkim

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Table S1. Status of tree species along the subalpine conifer forest in Khangchendzonga National Park.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SN | Species | Family | Average density (ind ha-1) | | |
| Tree | Sapling | Seedling |
|  | *Abies densa* Griff. | Pinaceae | 167 | 41 | 572 |
|  | *Acer caudatum* Wall. | Sapindaceae | 81 | 44 | 272 |
|  | *Betula alnoides* Buch.-Ham. ex D.Don | Betulaceae | 33 | 20 | 5 |
|  | *Betula utilis* D.Don | Betulaceae | 5 | 1 | 17 |
|  | *Litsea sericea* (Wall. ex Nees) Hook. f. | Lauraceae | 13 | 16 | - |
|  | *Lyonia villosa* (Wall. ex C.B. Clarke) Hand.-Mazz. | Ericaceae | 2 | 12 | 34 |
|  | *Magnolia campbelli* Hook.f. & Thomson | Magnoliaceae | 3 | 1 | - |
|  | *Prunus bracteopadus* Koehne | Rosaceae | 4 | 11 | 55 |
|  | *Prunus rufa* Wall. ex Hook.f. | Rosaceae | 39 | 19 | 56 |
|  | *Rhododendron arboreum* Sm. | Ericaceae | 35 | 128 | 39 |
|  | *Rhododendron barbatum* Wall.ex G. | Ericaceae | 121 | 206 | 245 |
|  | *Rhododendron decipiens* Lacaita | Ericaceae | 12 | 12 | 24 |
|  | *Rhododendron falconeri* Hook.f. | Ericaceae | 86 | 132 | 128 |
|  | *Rhododendron fulgens* Hook.f. | Ericaceae | 3 | 1 | - |
|  | *Rhododendron hodgsonii* Hook.f. | Ericaceae | 440 | 500 | 572 |
|  | *Rhododendron lanatum* Hook.f. | Ericaceae | 92 | 78 | 61 |
|  | *Rhododendron thomsonii* Hook.f. | Ericaceae | 33 | 49 | 155 |
|  | *Rhododendron wightii* Hook.f. | Ericaceae | 28 | 41 | 98 |
|  | *Sorbus microphylla* (Wall. ex Hook.f.) Wenz. | Rosaceae | 130 | 82 | 180 |
|  | *Symplocos dryophila* C.B. Clarke | Symplocaceae | 18 | 25 | 19 |
|  | *Tsuga dumosa* (D.Don) Eichler | Pinaceae | 14 | 10 | 39 |
|  | *Viburnum nervosum* D. Don | Adoxaceae | 111 | 164 | 495 |
|  | *Vitex quinata* (Lour.) F.N. Williams | Lamiaceae | 34 | 8 | - |
| Total | | 10 | 1504 | 1601 | 3036 |

(-): not encountered in the quadrates

**Table S2.** Status of shrub species along the subalpine conifer forest in Khangchendzonga National Park.

|  |  |  |  |
| --- | --- | --- | --- |
| **SN** | **Species** | **Family** | **Density (ind ha-1)** |
|  | *Agapetes serpens* (Wight) Sleumer | Ericaceae | 145 |
|  | *Berberis wallichiana* DC. | Berberidaceae | 352 |
|  | *Clematis montana* Buch.-Ham. ex DC. | Ranunculaceae | 27 |
|  | *Cotoneaster microphyllus* Wall. ex Lindl. | Rosaceae | 887 |
|  | *Daphne papyracea* Wall. ex G. Don | Thymelaeaceae | 347 |
|  | *Eurya* sp. | Pentaphylacaceae | 347 |
|  | *Gaultheria pyroloides* Hook.f. & Thomson ex Miq. | Ericaceae | 15 |
|  | *Gaultheria trichophylla* Royle | Ericaceae | 109 |
|  | *Juniperus recurva* Buch.-Ham. ex D.Don | Cupressaceae | 34 |
|  | *Mahonia napaulensis* DC. | Berberidaceae | 5 |
|  | *Rhododendron anthopogon* D. Don | Ericaceae | 61 |
|  | *Rhododendron camelliiflorum* Hook. f. | Ericaceae | 5 |
|  | *Rhododendron campanulatum* D. Don | Ericaceae | 22 |
|  | *Rhododendron campylocarpum* Hook. f. | Ericaceae | 12 |
|  | *Rhododendron pendulum* Hook. f. | Ericaceae | 29 |
|  | *Ribes glaciale* Wall. | Grossulariaceae | 718 |
|  | *Rosa sericea* Wall. ex Lindl. | Rosaceae | 931 |
|  | *Rubia* sp. | Rubiaceae | 63 |
|  | *Rubus* sp. | Rosaceae | 1452 |
|  | *Vaccinium nummularia*Hook. f. & Thomson ex C.B. Clarke | Ericaceae | 27 |
|  | *Viburnum cotinifolium*D. Don | Adoxaceae | 5 |
|  | *Zanthoxylum nepalense* Babu | Rutaceae | 15 |
| Total | | 11 | 5605 |

**Table S3.** Status of herb species along the subalpine conifer forest in Khangchendzonga National Park.

|  |  |  |  |
| --- | --- | --- | --- |
| SN | Species | Family | Density (ind ha-1) |
|  | *Ainsliaea latifolia* (D. Don) Sch. Bip. | Compositae | 409 |
|  | *Anaphalis adnata* Wall. ex DC. | Compositae | 1515 |
|  | *Anaphalis busua* (Buch.-Ham.) DC. | Compositae | 2455 |
|  | *Anaphalis triplinervis* (Sims) Sims ex C.B.Clarke | Compositae | 1636 |
|  | *Androsace hookeriana* Klatt | Primulaceae | 1545 |
|  | *Arabis* sp. | Brassicaceae | 15 |
|  | *Arisaema griffithii* Schott | Araceae | 258 |
|  | *Bergenia stracheyi* (Hook.f. & Thomson) Engl. | Saxifragaceae | 91 |
|  | *Bistorta vacciniifolia* (Wall. ex Meisn.) Greene | Polygonaceae | 258 |
|  | *Capsella bursa-pastoris* (L.) Medik. | Brassicaceae | 1152 |
|  | *Carax* sp. | Cyperaceae | 106 |
|  | *Clematis* sp. | Ranunculaceae | 318 |
|  | *Clintonia udensis* Trautv. & C.A.Mey. | Liliaceae | 455 |
|  | *Corydalis casimiriana* Duthie & Prain ex Prain | Papaveraceae | 136 |
|  | *Cynoglossum wallichii var. glochidiatum*(Wall. ex Benth.) Kazmii | Boraginaceae | 45 |
|  | *Elatostema obtusum* Wedd. | Urticaceae | 8455 |
|  | *Fragaria daltoniana* J.Gay | Rosaceae | 17818 |
|  | *Gentiana phyllocalyx* C.B. Clarke | Gentianaceae | 1167 |
|  | *Geranium* sp. | Geraniaceae | 394 |
|  | *Geranium wallichianum* D.Don ex Sweet | Geraniaceae | 152 |
|  | *Hemiphragma heterophyllum* Wall. | Plantaginaceae | 9303 |
|  | *Heracleum nepalense* D. Don | Apiaceae | 1439 |
|  | *Hidra* sp. | Araliaceae | 15 |
|  | *Holboellia latifolia* Wall. | Berberidaceae | 15 |
|  | *Hypericum hookerianum* Wight &Arn. | Hypericaceae | 652 |
|  | *Impatiens sulcata* Wall. | Balsaminaceae | 273 |
|  | *Ipomea* sp. | Convolvulaceae | 106 |
|  | *Kobresia curticeps* (C.B. Clarke) Kük. | Cyperaceae | 3848 |
|  | *Maianthemum oleraceum* (Baker) LaFrankie | Asparagaceae | 2955 |
|  | *Neopicrorhiza scrophulariiflora* (Pennell) D.Y.Hong | Plantaginaceae | 152 |
|  | *Nepeta* sp. | Lamiaceae | 1364 |
|  | *Panax pseudoginseng* Wall. | Araliacea | 61 |
|  | *Paris polyphylla* Sm. | Melanthiaceae | 848 |
|  | *Pedicularis* sp. | Orobanchaceae | 121 |
|  | *Picris* sp. | Compositae | 985 |
|  | *Plantago* sp. | Plantaginaceae | 15 |
|  | *Poa* sp. | Poaceae | 5288 |
|  | *Polygonum emodi* Meisn. | Polygonaceae | 1076 |
|  | *Polygonum molle* D. Don | Polygonaceae | 167 |
|  | *Polygonum runcinatum* Buch.-Ham. ex D. Don | Polygonaceae | 14697 |
|  | *Potentilla* sp. | Rosaceae | 15 |
|  | *Potentilla* sp. | Rosaceae | 61 |
|  | *Potentilla microphylla* D.Don | Rosaceae | 3848 |
|  | *Primula atrodentata* W.W. Sm. | Primulaceae | 485 |
|  | *Primula calderiana* Balf. f. & R.E. Cooper | Primulaceae | 455 |
|  | *Primula denticulate* Sm. | Primulaceae | 91 |
|  | *Primula glomerata*Pax | Primulaceae | 985 |
|  | *Senesio* sp. | Compositae | 848 |
|  | *Stellaria* sp. | Caryophyllaceae | 833 |
|  | *Taraxacum campylodes* G.E.Haglund | Compositae | 152 |
|  | *Thalictrum virgatum* Hook. f. & Thomson | Ranunculaceae | 288 |
|  | *Thamno calamus* sp. | Poaceae | 2561 |
|  | *Thamnocalamus spathiflorus* (Trin.) Munro | Poaceae | 1288 |
|  | *Valeriana* sp. | Caprifoliaceae | 106 |
|  | *Viola biflora* | Violaceae | 2970 |
|  | *Xanthium strumarium* L. | Polygonaceae | 15 |
|  | Unknown 1 | Rosaceae | 5955 |
|  | Unknown 2 | - | 91 |
|  | Unknown 3 | - | 1742 |
|  | Unknown 4 | - | 1303 |
|  | Unknown 5 | - | 45 |
|  | Unknown 6 | - | 303 |
|  | Unknown 7 | - | 167 |
|  | Unknown 8 | - | 61 |
| Total | | 29 | 1,06,424 |