Table S1. Species distribution range dataset used for the analyses. Area codes: Holarctic North America (A), Holarctic Eurasia (B), East Asia (C), Neotropical America (D), Paleotropical Africa and adjacent areas (E), Paleotropical Asia (F), extratropical South America (G), and Australasia (H).

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Species | A | B | C | D | E | F | G | H |
| *Hypotrachyna* aff. *immaculata* | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| *Hypotrachyna* aff. *intercalanda* | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| *Hypotrachyna* aff. *oostingii* | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| *Hypotrachyna afrorevoluta* | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| *Hypotrachyna andensis* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Hypotrachyna aspera* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Hypotrachyna bogotensis* | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| *Hypotrachyna bogotensis* 2 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| *Hypotrachyna booralensis* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| *Hypotrachyna brasiliana* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Hypotrachyna britannica* | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Hypotrachyna caraccensis* 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Hypotrachyna caraccensis* 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Hypotrachyna chlorina* 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| *Hypotrachyna chlorina* 2 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| *Hypotrachyna cirrhata* | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |
| *Hypotrachyna cryptochlora* | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |
| *Hypotrachyna dactylifera* | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| *Hypotrachyna degelii* | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| *Hypotrachyna degelii* 3 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| *Hypotrachyna densirhizinata* | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 |
| *Hypotrachyna dentella* | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| *Hypotrachyna dubitans* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Hypotrachyna ecuadoriensis* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Hypotrachyna enderythraea* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Hypotrachyna endochlora* | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Hypotrachyna endochlora* 3 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 |
| *Hypotrachyna endochlora* 4 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 |
| *Hypotrachyna fissicarpa* | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| *Hypotrachyna halei* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Hypotrachyna himalayana*  | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| *Hypotrachyna horrescens* | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| *Hypotrachyna imbricatula* 2  | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |
| *Hypotrachyna imbricatula* 3 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |
| *Hypotrachyna imbricatula* 4 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |
| *Hypotrachyna immaculata* | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| *Hypotrachyna intercalanda* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Hypotrachyna kaernefeltii* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Hypotrachyna laevigata* 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| *Hypotrachyna laevigata* 2  | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| *Hypotrachyna lipidifera* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Hypotrachyna livida* | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Hypotrachyna livida* 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Hypotrachyna longiloba* 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| *Hypotrachyna longiloba* 2  | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| *Hypotrachyna microblasta* | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 |
| *Hypotrachyna minarum* | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| *Hypotrachyna neodamaziana* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| *Hypotrachyna neodissecta* | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |
| *Hypotrachyna nepalensis* | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| *Hypotrachyna osseoalba* | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| *Hypotrachyna partita* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Hypotrachyna physcioides* 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| *Hypotrachyna physcioides* 2  | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| *Hypotrachyna pluriformis* | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Hypotrachyna polydactyla* | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| *Hypotrachyna prolongata* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Hypotrachyna pseudosinuosa* | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |
| *Hypotrachyna pulvinata* | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Hypotrachyna reducens* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Hypotrachyna revoluta* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| *Hypotrachyna rhizodendroidea* | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| *Hypotrachyna rockii* 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 |
| *Hypotrachyna rockii* 2  | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 |
| *Hypotrachyna showmanii* | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Hypotrachyna sinuosa* 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Hypotrachyna sinuosa* 2  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| *Hypotrachyna steyermarkii* 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Hypotrachyna steyermarkii* 2  | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Hypotrachyna subfatiscens* 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
| *Hypotrachyna subfatiscens* 2  | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| *Hypotrachyna taylorensis* | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Hypotrachyna vexans* | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 |
| *Myelochroa aurulenta* | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| *Myelochroa subaurulenta* | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| *Parmeliopsis ambigua* | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| *Parmeliopsis hyperopta* | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |