Ecography

ECOG-02033
Kubota, Y., Kusumoto, B., Shiono, T. and Tanaka, T. 2016. Phylogenetic properties of Tertiary relict flora in the east Asian continental islands: imprint of climatic niche conservatism and in situ diversification. – Ecography doi: 10.1111/ecog.02033

Supplementary material

Appendix 1 Source references of physiological cold tolerance of species.

Noshiro, M. and Sakai, A. 1974. Frost hardiness of grasses. - Jap. J. Ecol. 24: 175–179.

Sakai, A. 1972. Freezing resistance of evergreen and broad-leaf trees indigenous to Japan. - J. Jpn. Forest Soc. 54: 333–339.

Sakai, A. 1974. Freezing resistance of evergreen and deciduous broad-leaf trees growing on Yakushima Island [Japan]. - Jap. J. Ecol. 24: 35–42.

Sakai, A. 1978. Frost hardiness of flowering and ornamental trees. - J. Japan. Soc. Hort. Sci. 47: 248–260.

Sakai, A. 1978. Frost hardness of evergreen and deciduous broad-leaved trees native to Japan. - Low. Temp. Sci. Ser. B. Biol. Sci. 35: 15–43.

Sakai, A. et al. 1968. Wintering of Plants in High Mountains and Polar Regions I: Freezing Resistance of Alpine Plants in Hokkaido. - Low. Temp. Sci. Ser. B. Biol. Sci. 26: 45–50.

Sakai, A. and Yoshie, F. 1984. Freezing tolerance of ornamental bulbs and corms. - J. Japan. Soc. Hort. Sci. 52: 445–449.

Sato, T. 1983. Freezing resistance of warm temperate ferns as related to their alternation of generations. - Jap. J. Ecol. 33: 27–35.

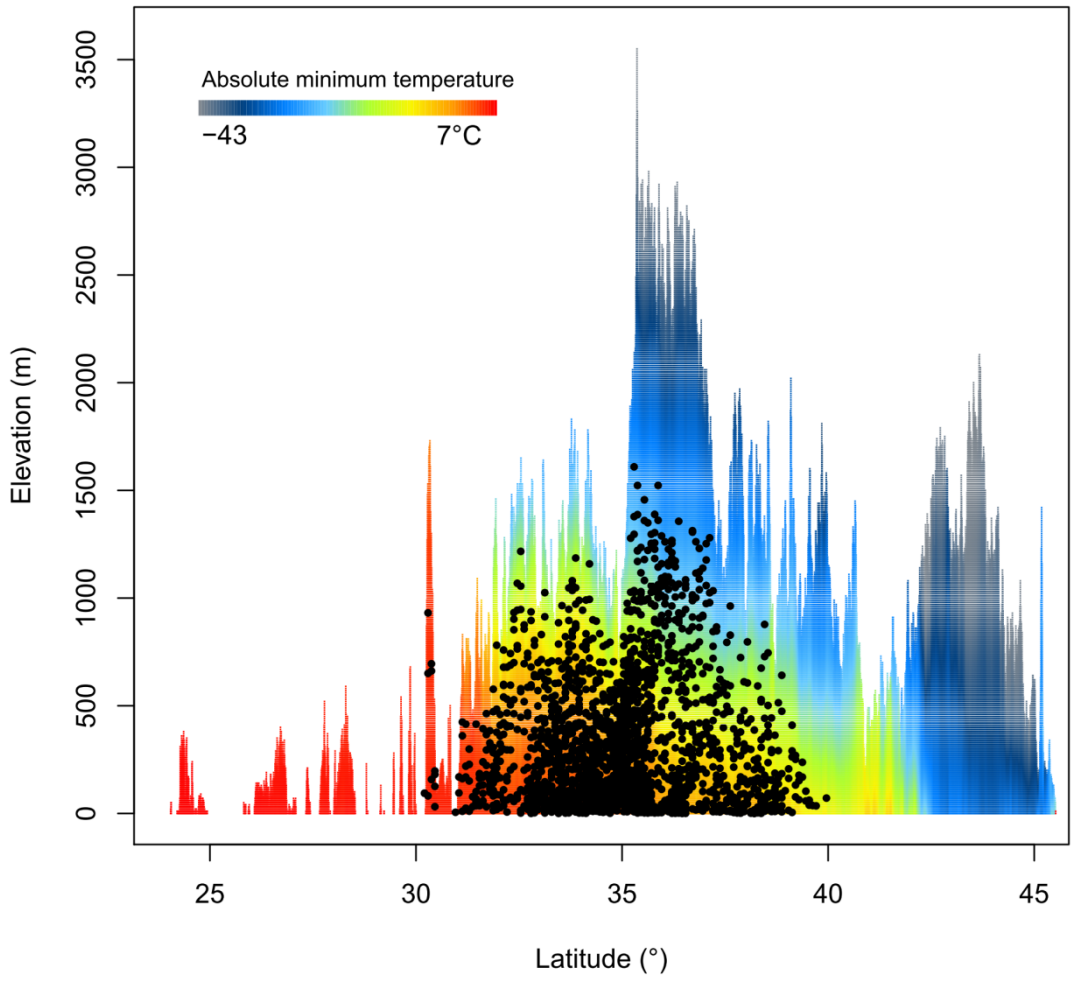
Sato, T. and Sakai, A. 1981. Freezing resistance of sporophytes of pteridophyta in hokkaido japan with special reference to their habitats. - Jap. J. Ecol. 31: 191–199.

Yoshie, F. and Sakai, A. 1981. Freezing resistance of plants in relation to their life form and habitat [Ecological adaptation of plants to cold climates, Hokkaido]. - Jap. J. Ecol. 31: 395–404.

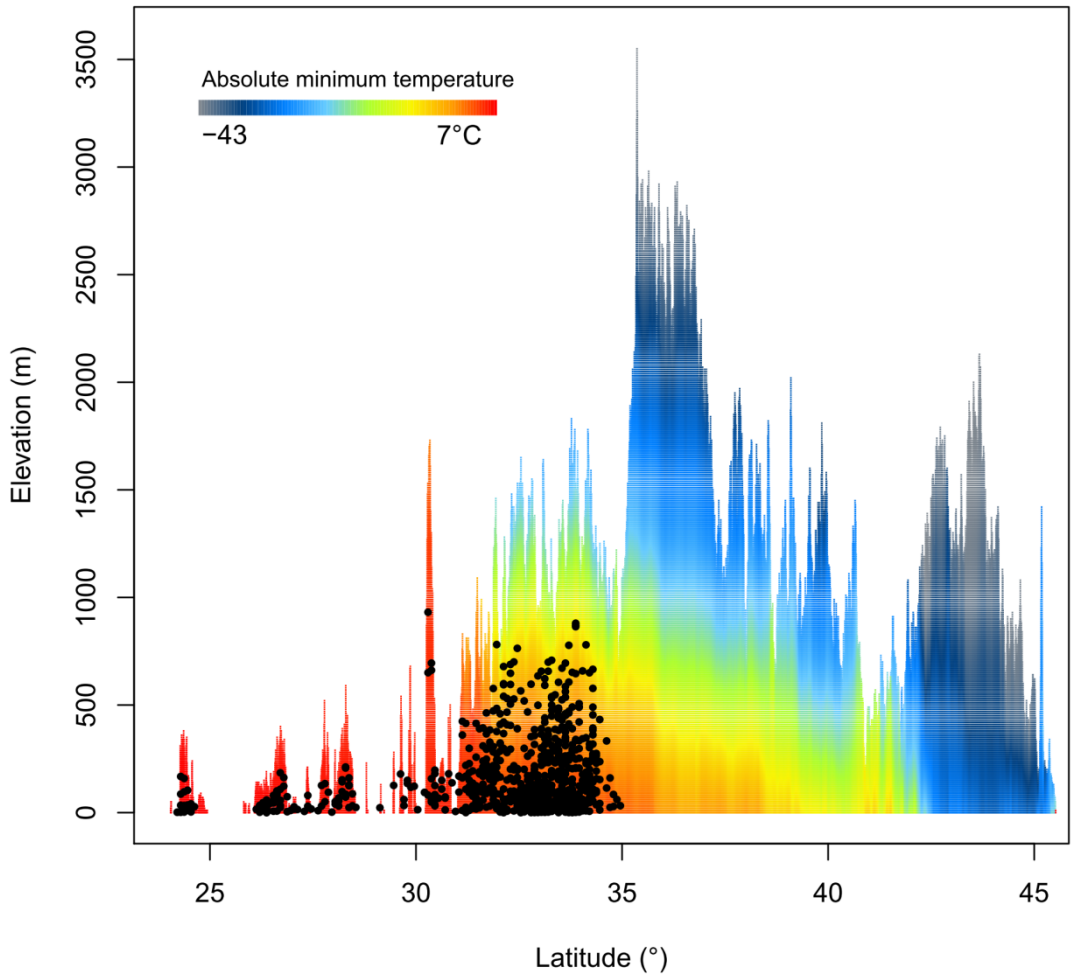
Appendix 2 Species' distributional range along two gradients of elevation and latitude in the East Asian continental islands. The patterns of eight species are represented.

A) Absolute minimum temperature

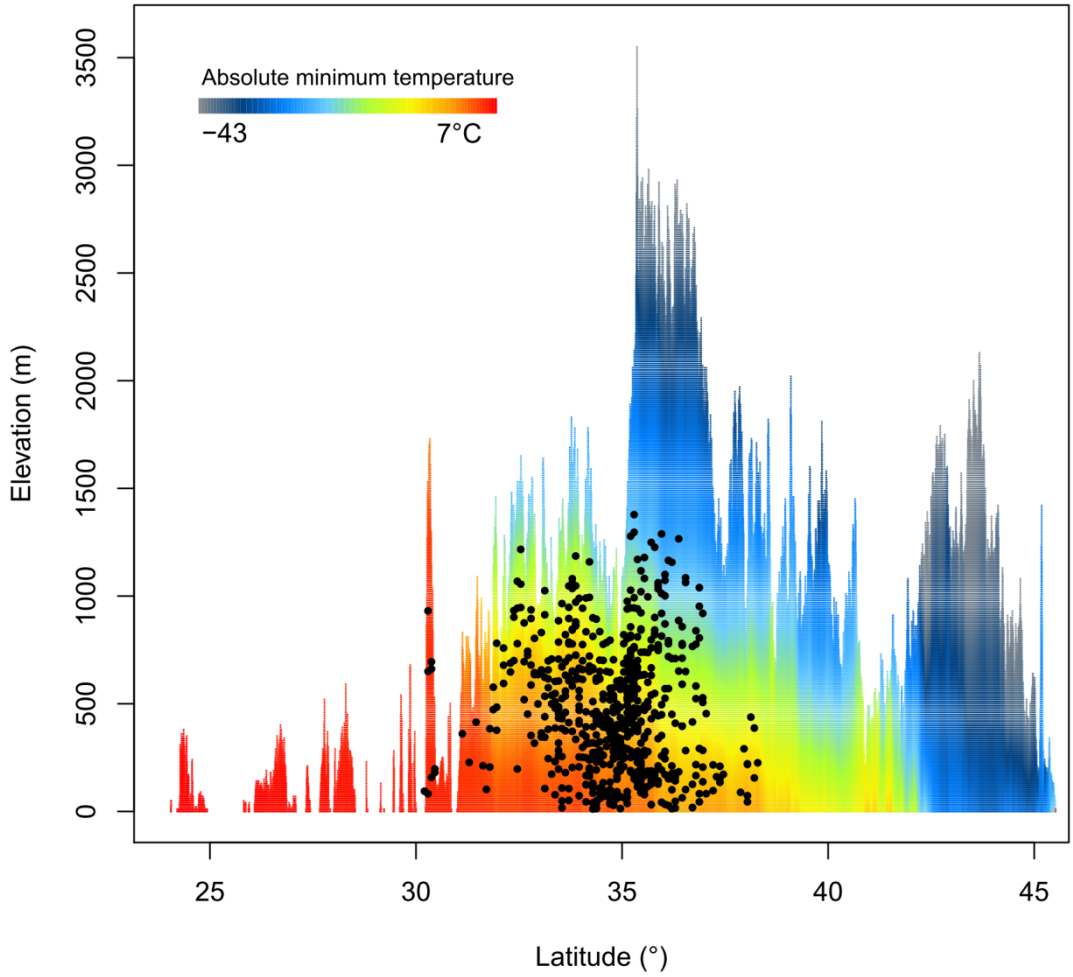
a) *Torreya nucifera* (Gymnosperm)



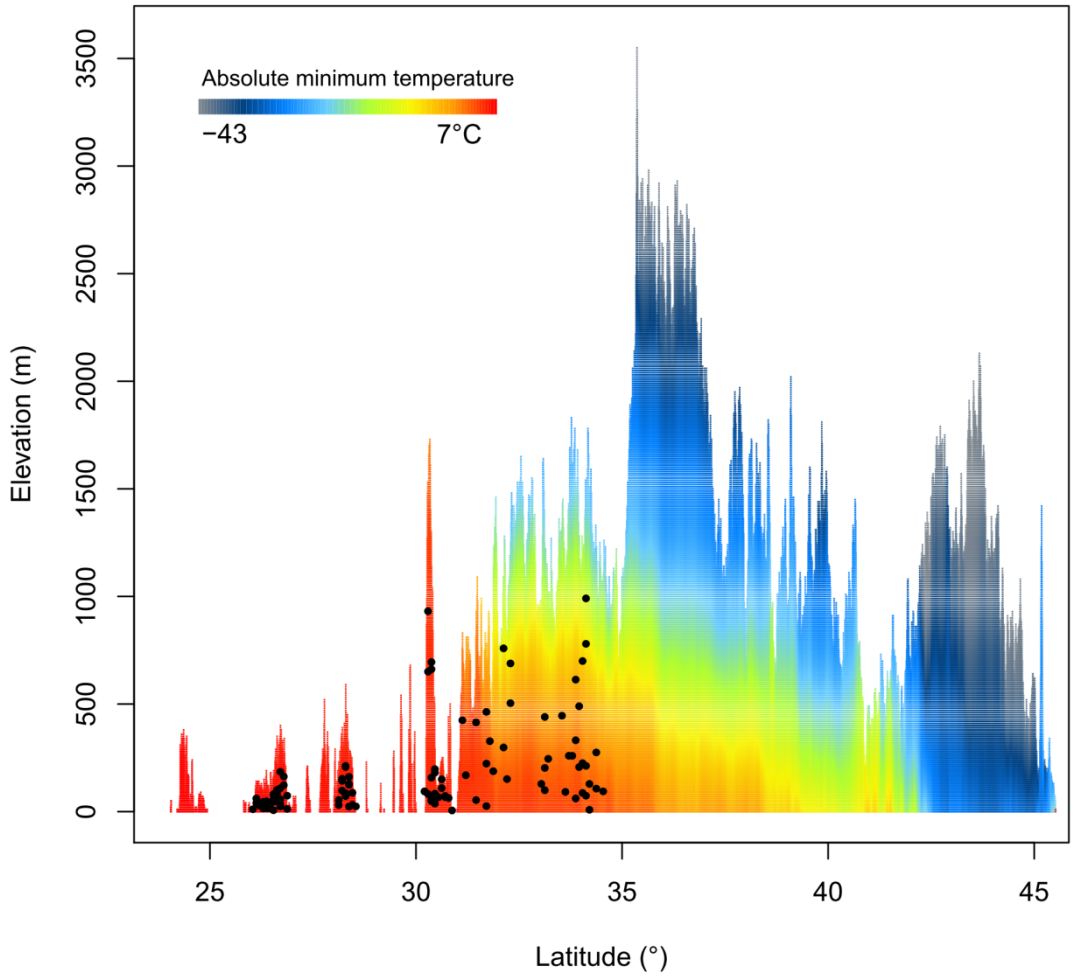
b) *Elaeocarpus japonicus* (Evergreen angiosperm tree)



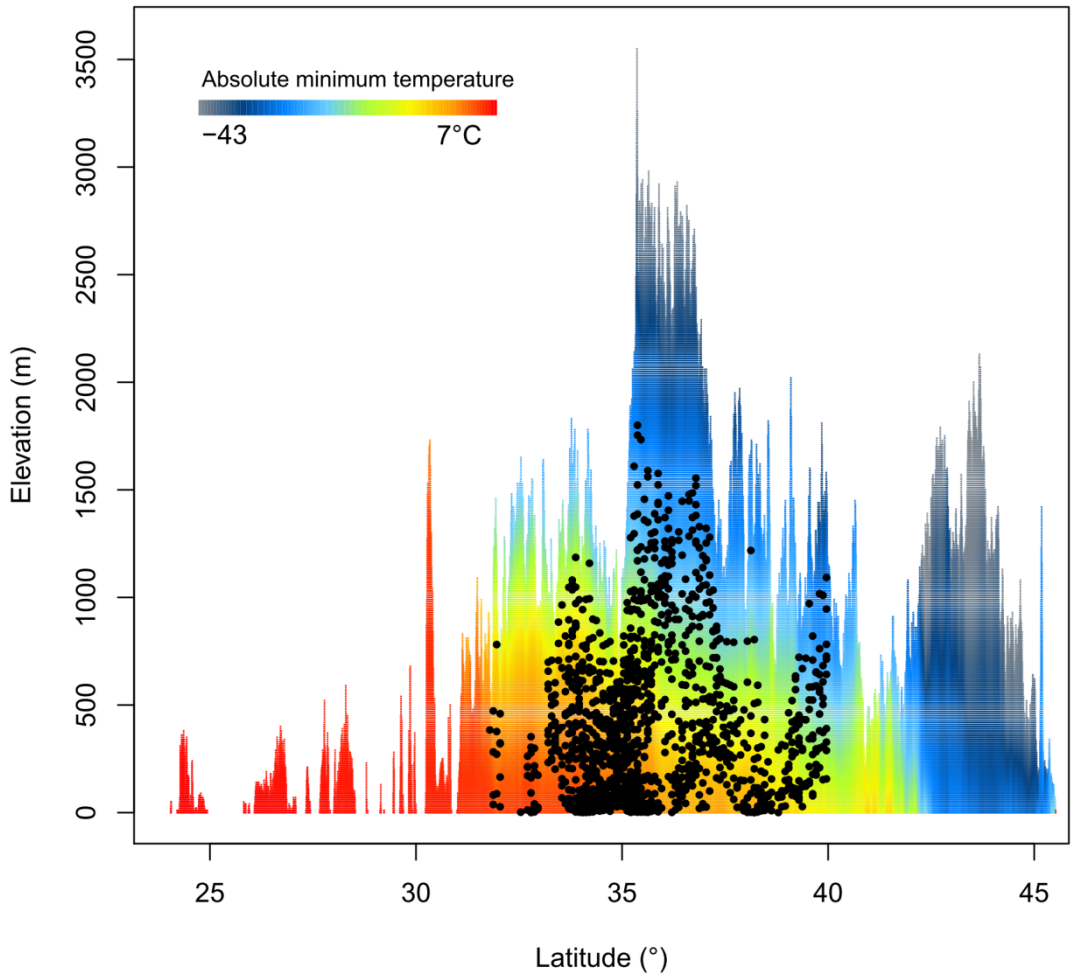
c) *Symplocos coreana* (Deciduous angiosperm tree)



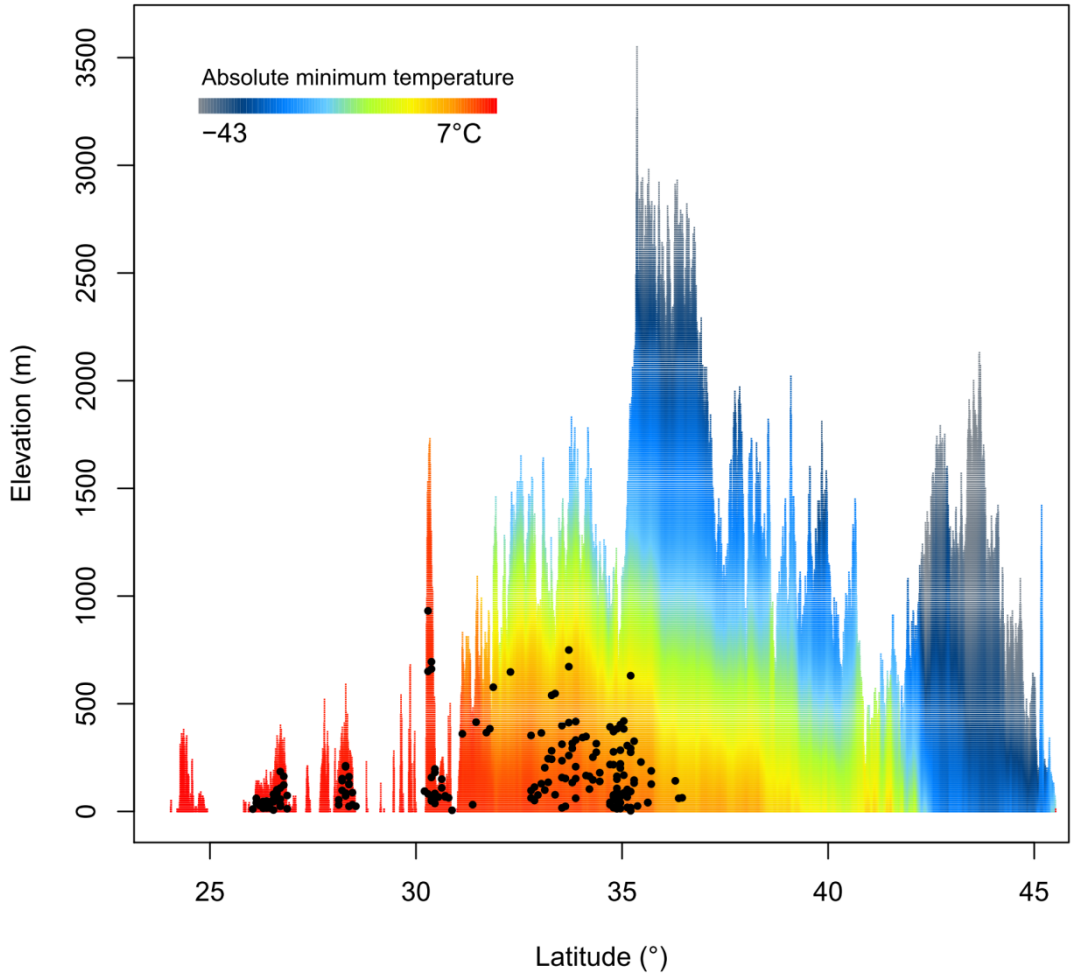
d) *Eria japonica* (Evergreen angiosperm herb)



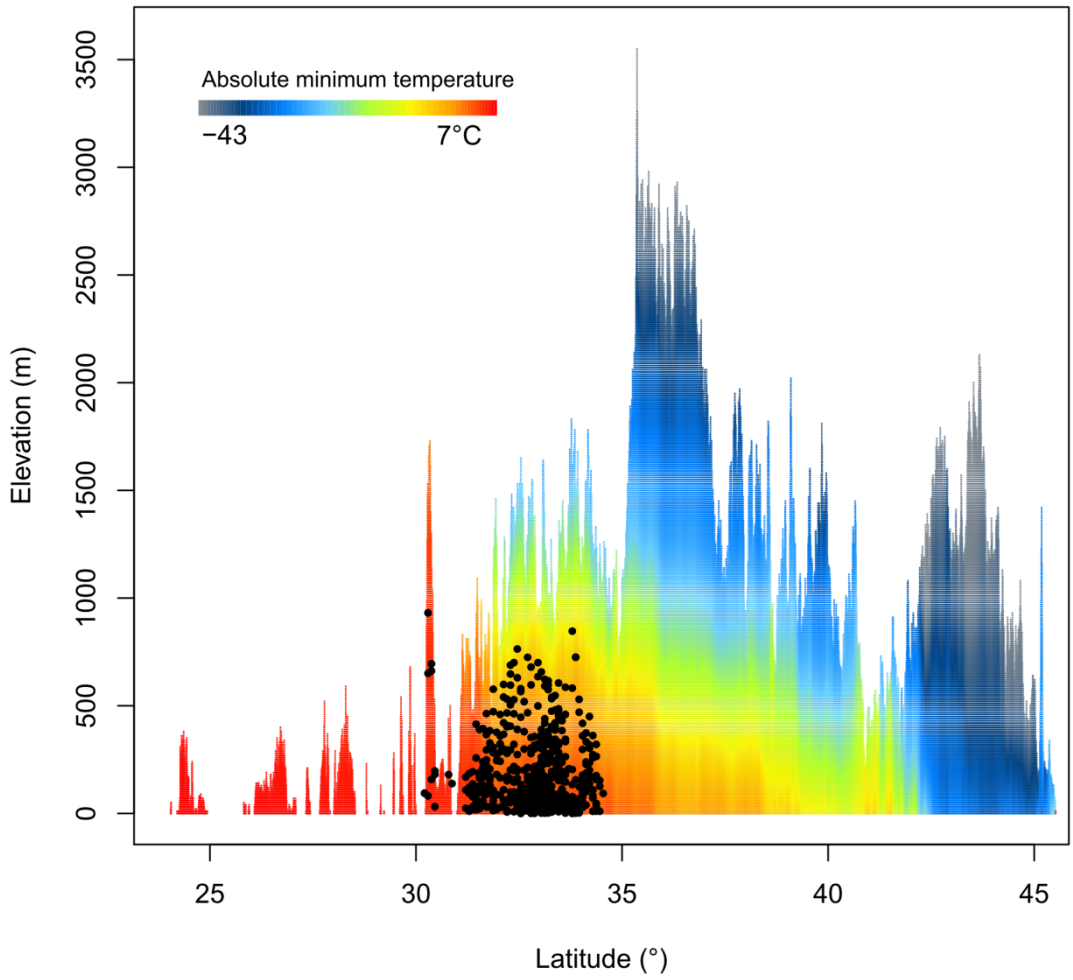
e) *Syneilesis palmate* (Deciduous angiosperm herb)



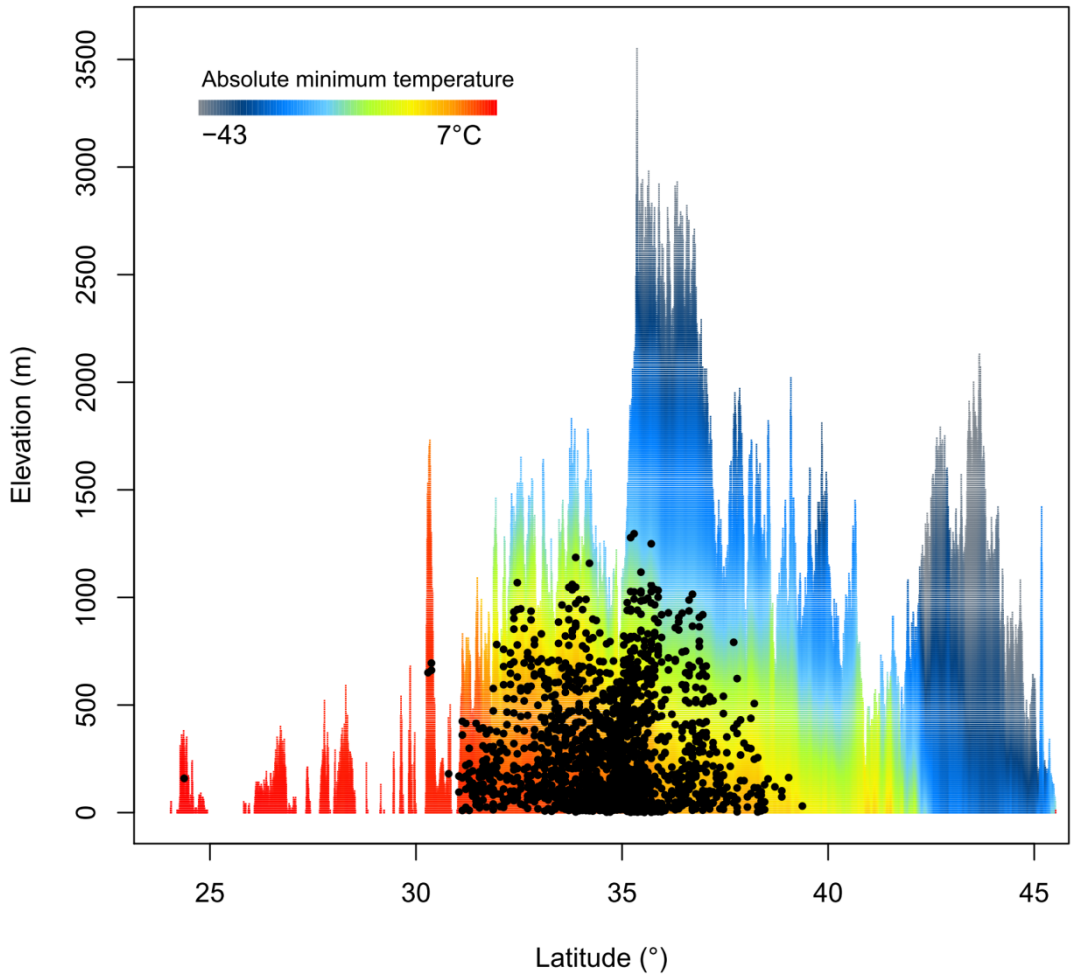
f) *Burmannia championii* (Saprotrophic nutrition)



g) *Woodwardia japonica* (Evergreen fern)

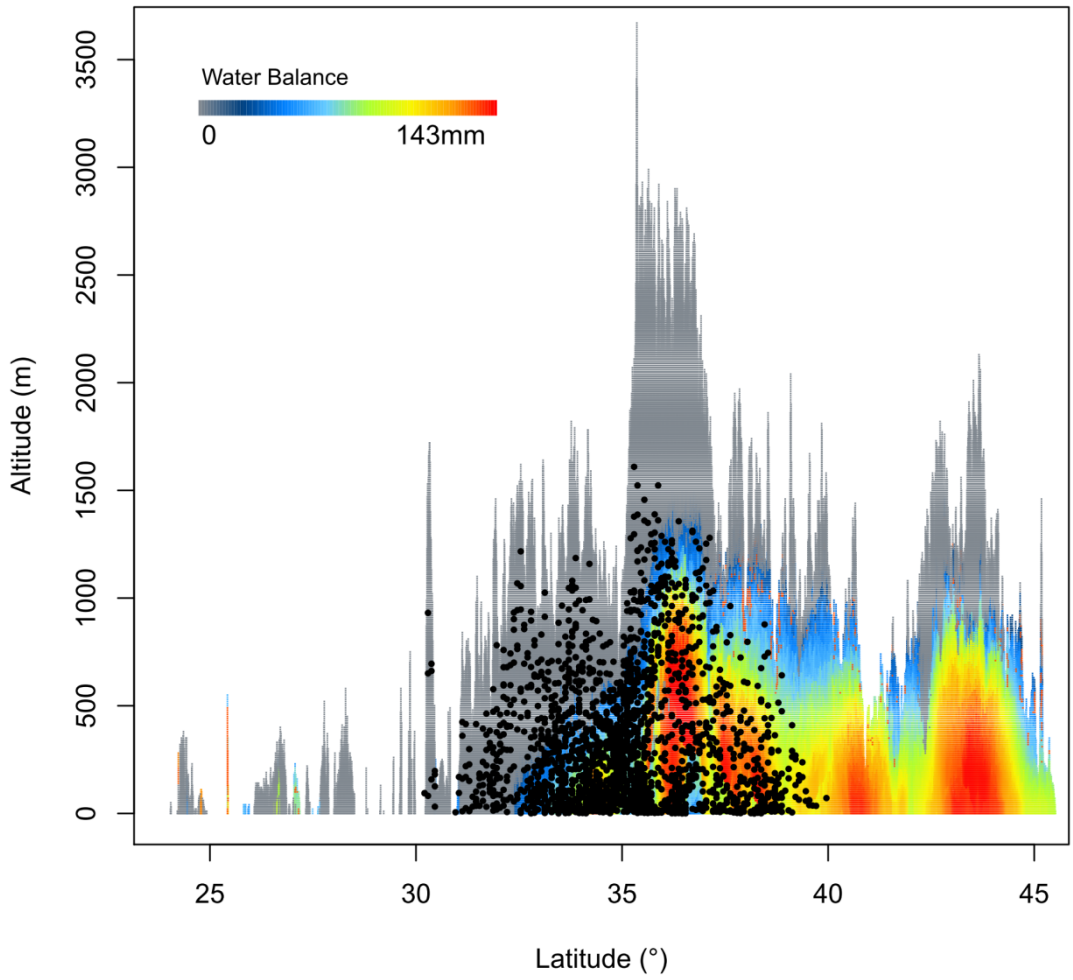


h) *Thelypteris decursivepinnata* (Deciduous fern)

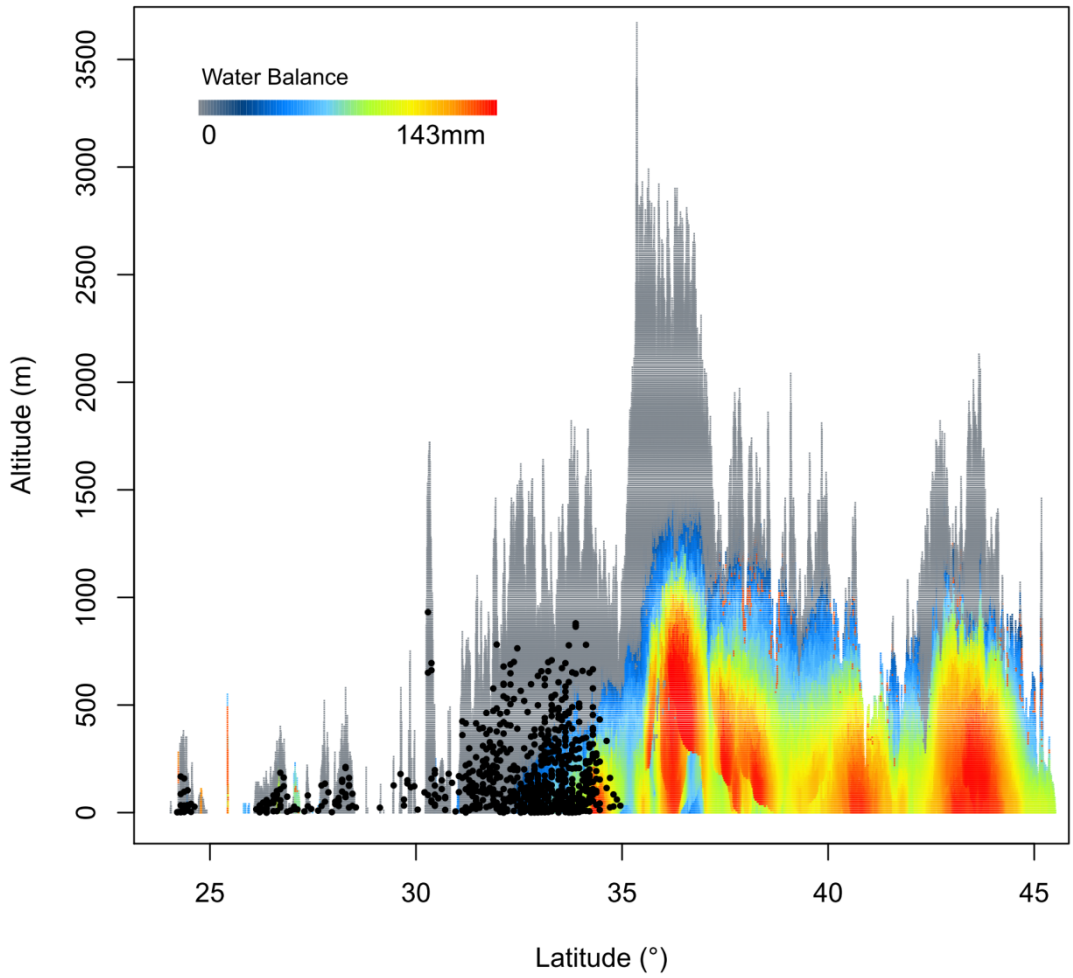


B) Water balance

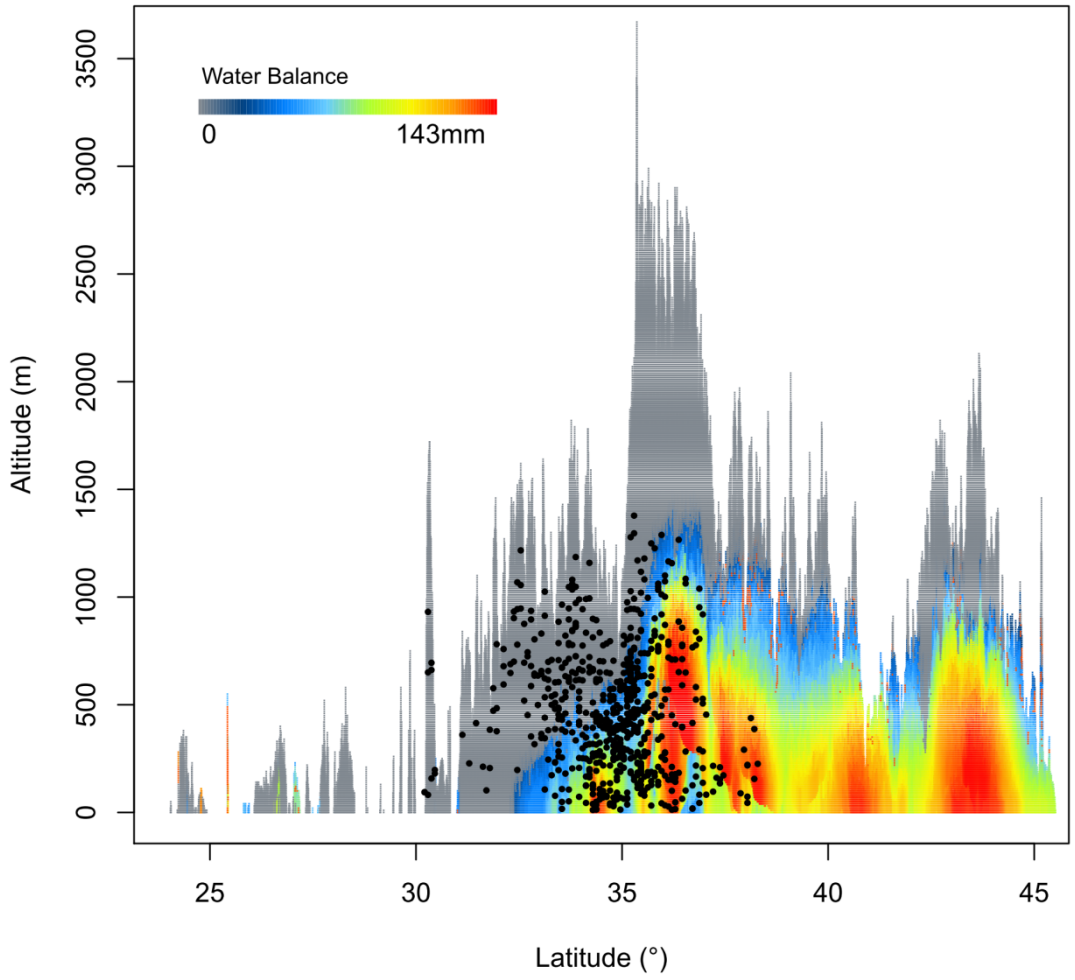
a) *Torreya nucifera* (Gymnosperm)



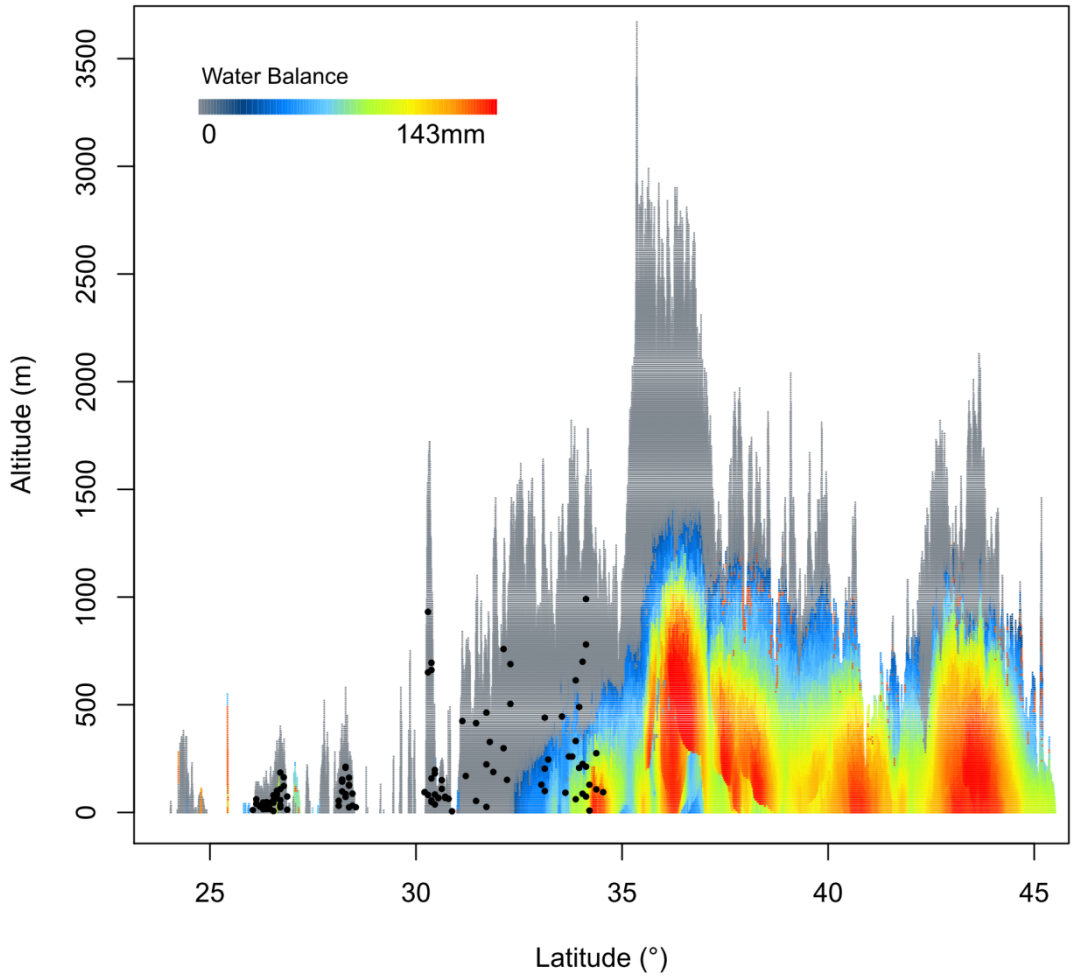
b) *Elaeocarpus japonicus* (Evergreen angiosperm tree)



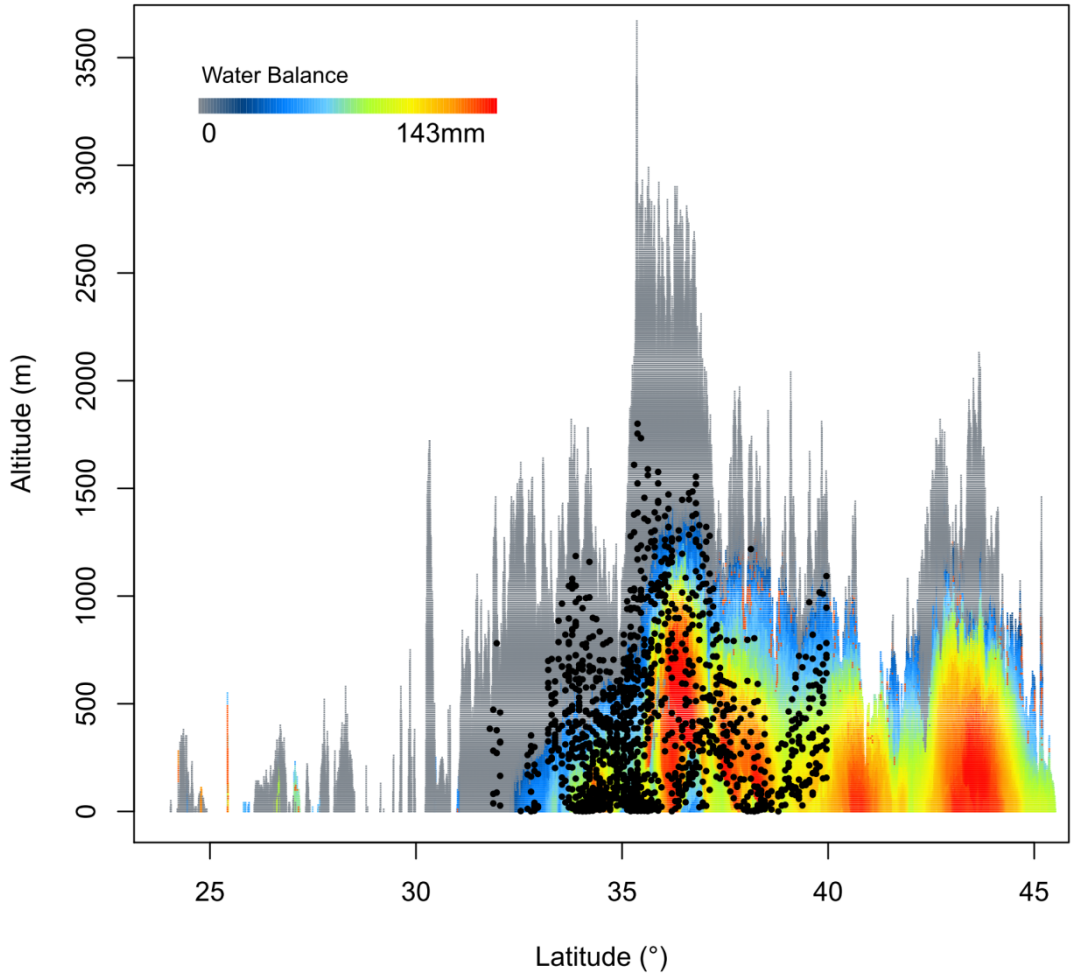
c) *Symplocos coreana* (Deciduous angiosperm tree)



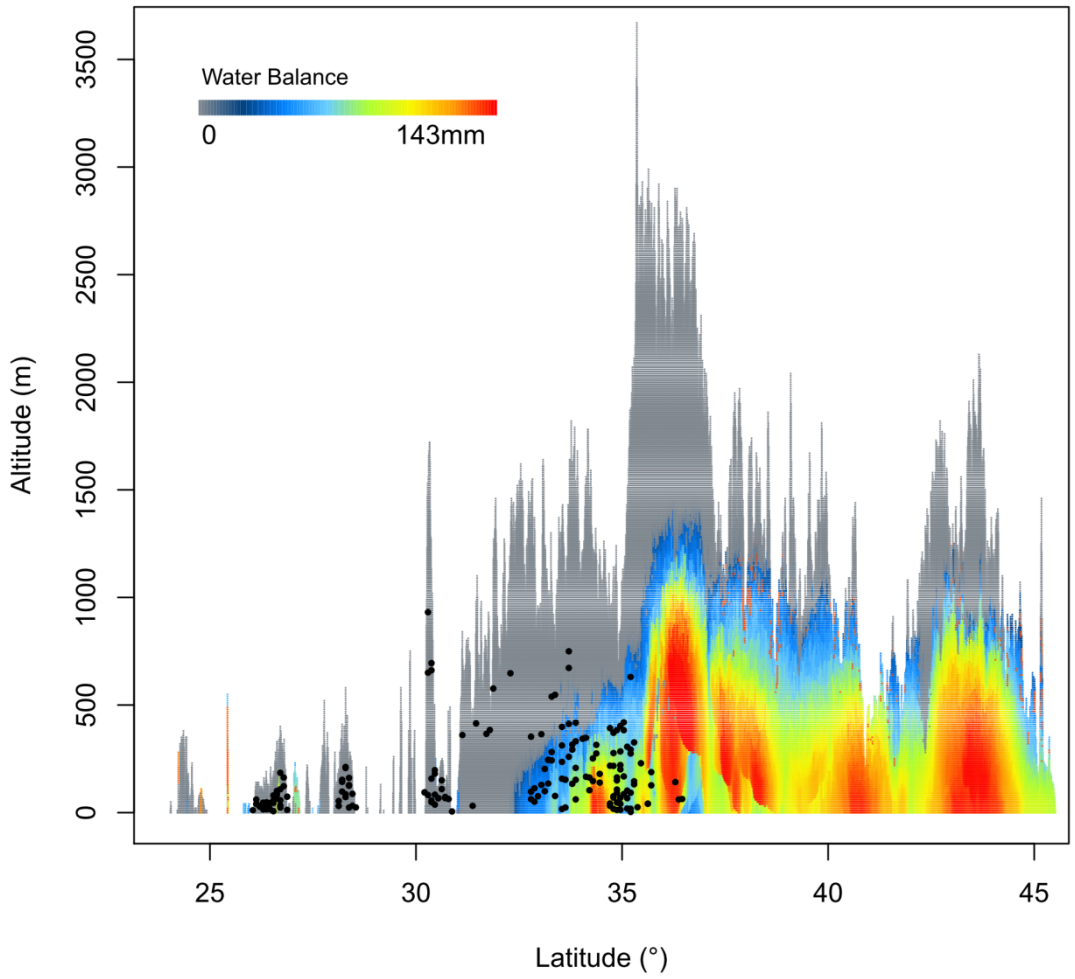
d) *Eria japonica* (Evergreen angiosperm herb)



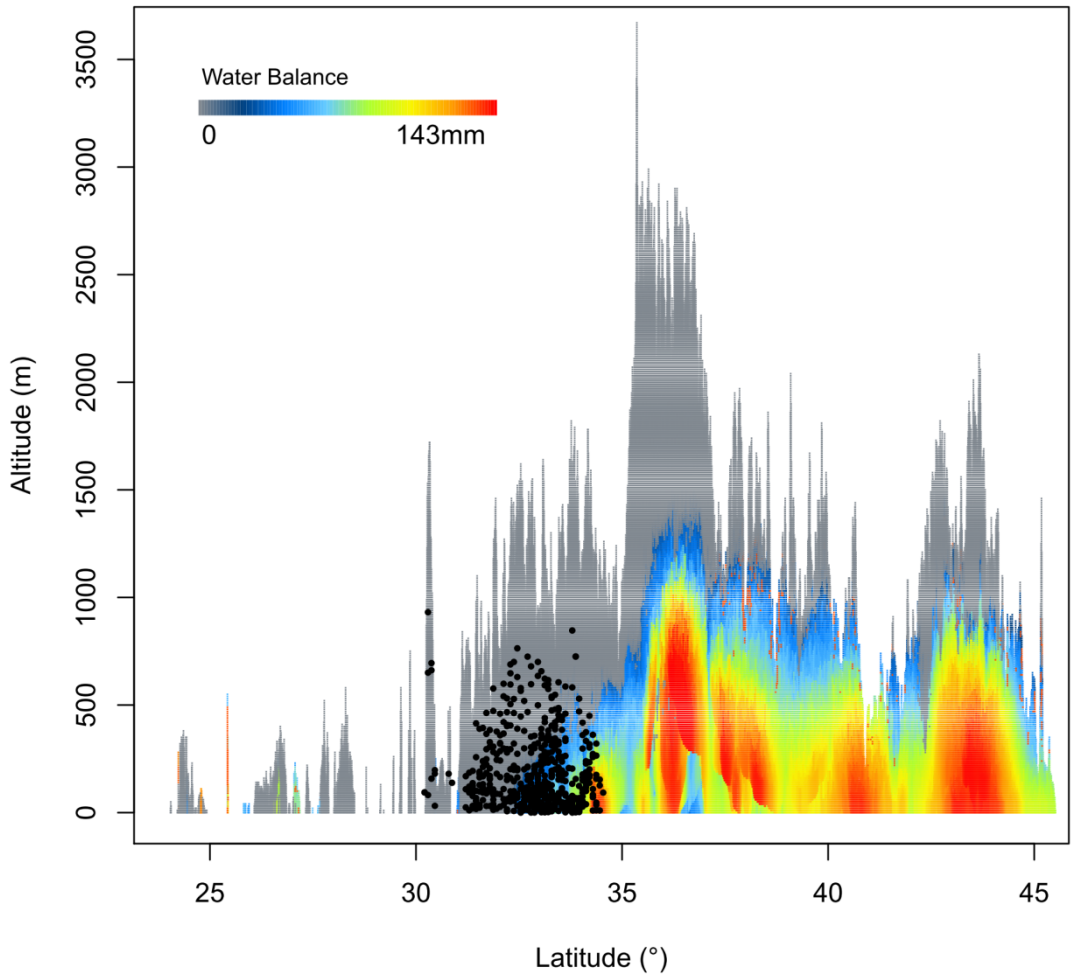
e) *Syneilesis palmate* (Deciduous angiosperm herb)



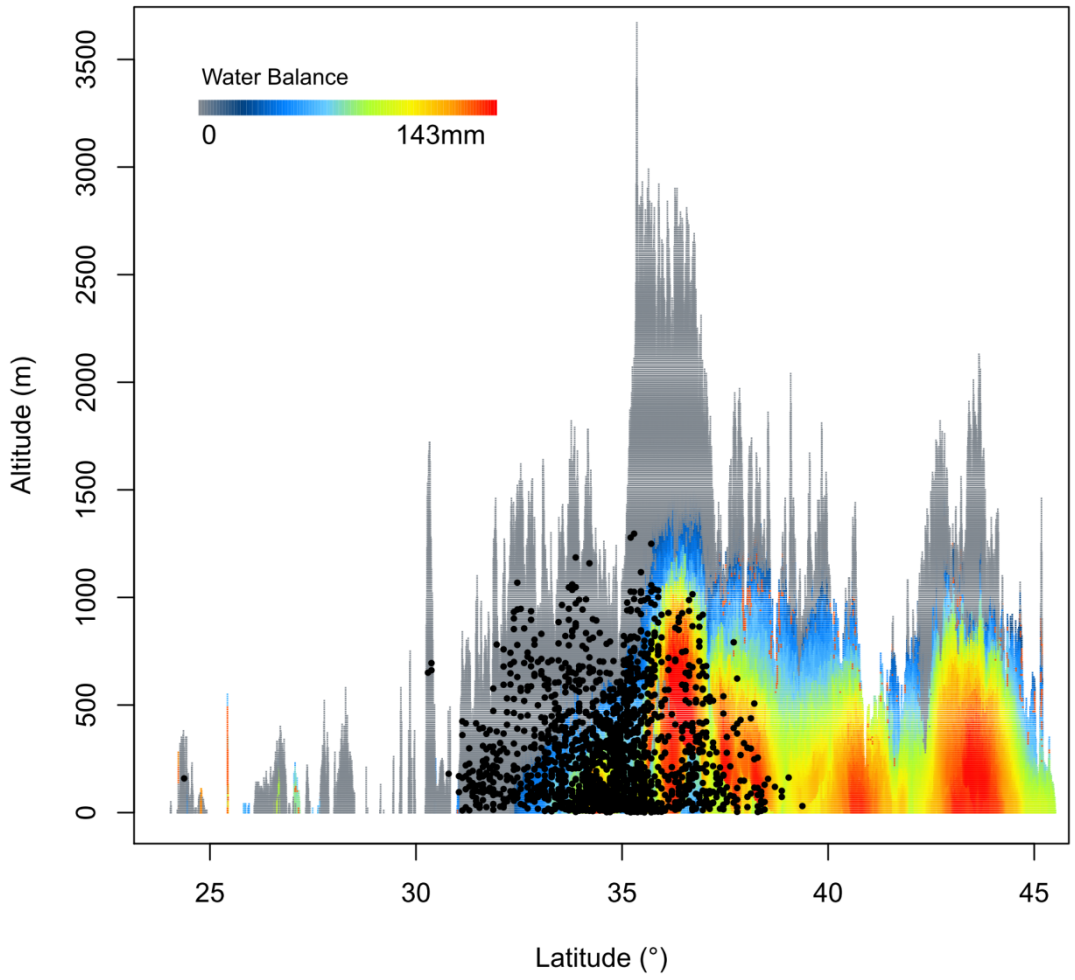
f) *Burmannia championii* (Saprotrophic nutrition)



g) *Woodwardia japonica* (Evergreen fern)

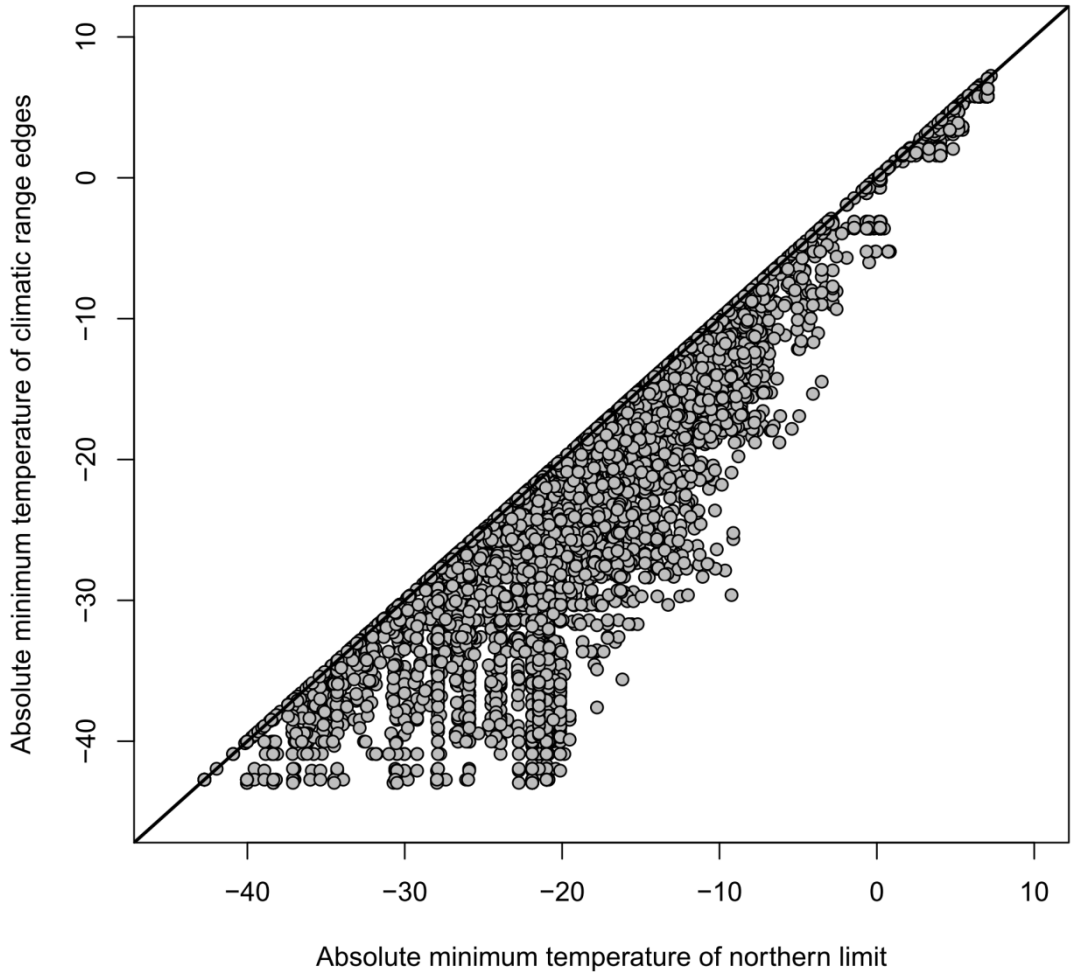


h) *Thelypteris decursivepinnata* (Deciduous fern)

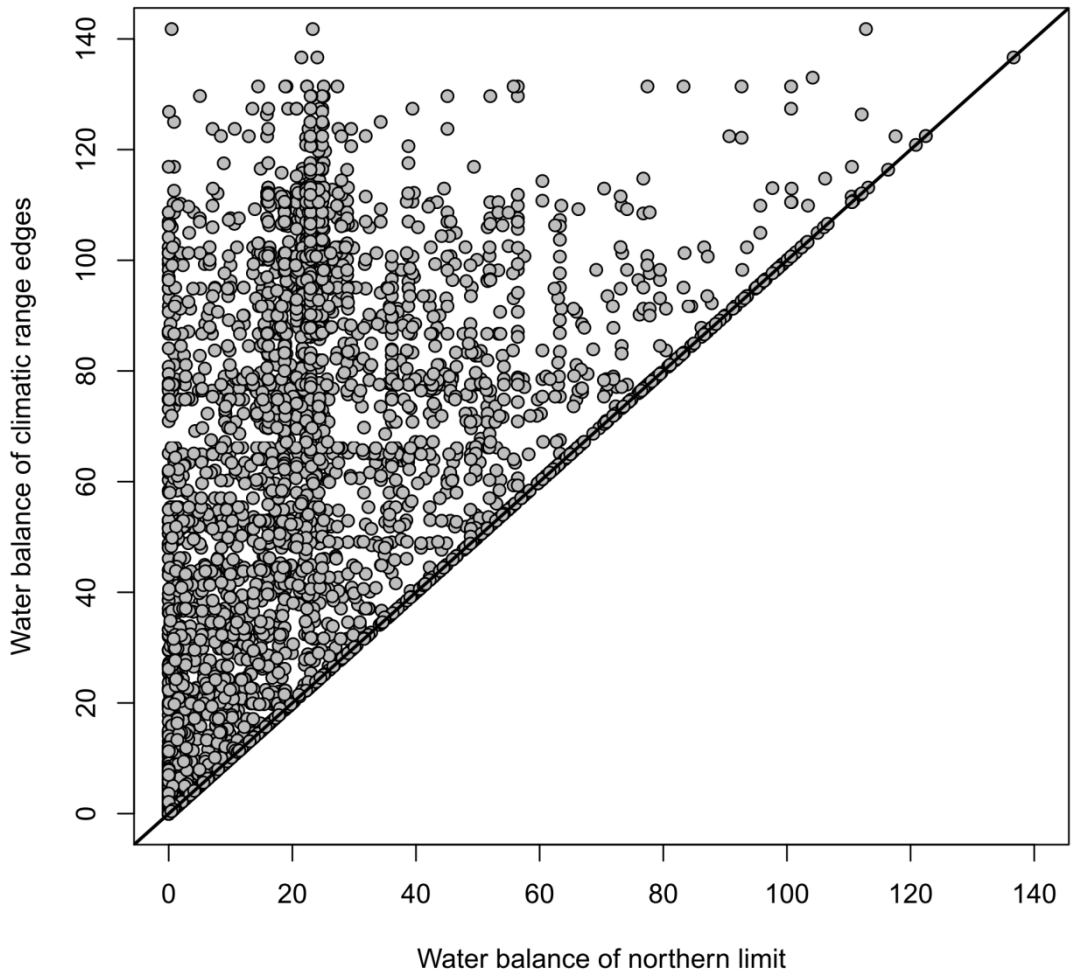


Appendix 3 Relationships between climatic conditions at northern limits and climatic range edges including the information of climatic boundaries associated with elevational range edges. Lines indicate 1 to 1 slope of the relationship.

a) Absolute minimum temperature



b) Water balance



Appendix 4 Source literature of phylogenetic studies of herb and tree species.

Alverson, W. S. et al. 1999. Phylogeny of the core Malvales: evidence from *ndh*F sequence data. - Am. J. Bot. 86: 1474–1486.

Amundsen, K. L. 2009. Origin and evolution of cultivated *Agrostis* spp. - Doctoral dissertation, George Mason University.

Anderberg, A. A. et al. 2007. Phylogeny and floral evolution of the *Lysimachieae* (*Ericales*, *Myrsinaceae*): evidence from *ndh*F sequence data. - Willdenowia 37: 407–421.

Aoki, K. et al. 2006. Chloroplast DNA phylogeography of *Photinia glabra* (Rosaceae) in Japan. - *Am. J. Bot.* 93: 1852–1858.

Azuma, H. et al. 2010. Molecular phylogenies of figs and fig-pollinating wasps in the Ryukyu and Bonin (Ogasawara) islands, Japan. - Genes Genet. Syst. 85: 177–192.

Azuma, H. et al. 1999. Molecular phylogeny of *Magnolia* (Magnoliaceae) inferred from cpDNA sequences and evolutionary divergence of the floral scents. - J plant res. 112: 291–306.

Bateman, R. M. et al. 2009. Molecular phylogenetics and morphological reappraisal of the *Platanthera* clade (Orchidaceae: Orchidinae) prompts expansion of the generic limits of *Galearis* and *Platanthera*. - Ann. Bot. 104: 431–445.

Blöch, C. et al. 2010. Molecular phylogeny of the edelweiss (*Leontopodium*, Asteraceae–Gnaphalieae). - Edinb. J. Bot. 67: 235–264.

Burke, J. M. et al. 2010. Placing the woody tropical genera of Polygonaceae: a hypothesis of character evolution and phylogeny. - Am. J. Bot. 97: 1377–1390.

Burns, J. H. et al. 2011. Phylogenetic studies in the Commelinaceae subfamily Commelinoideae inferred from nuclear ribosomal and chloroplast DNA sequences. - Syst. Bot. 36: 268–276.

Carlsen, T. et al. 2009. Biogeography and Phylogeny of *Cardamine* (Brassicaceae). - Ann. Mo. Bot. Gard. 96: 215–236.

Carrillo-Reyes, P. et al. 2009. Molecular phylogeny of the *Acre* clade (Crassulaceae): Dealing with the lack of definitions for *Echeveria* and *Sedum*. - Mol. Phylogenet. Evol. 53: 267–276.

Chassot, P. and Von Hagen, K. B. 2008. Pollen morphology of the Swertiinae (Gentianaceae): phylogenetic implications. - Bot. J. Linn. Soc. 157: 323–341.

Chassot, P. et al. 2001. High paraphyly of *Swertia* L.(Gentianaceae) in the *Gentianella*-lineage as revealed by nuclear and chloroplast DNA sequence variation. - Plant Syst. Evol. 229: 1–21.

Chayamarit, K. 1997. Molecular phylogenetic analysis of Anacardiaceae in Thailand. - Thai Forest Bull., Bot. 25: 1–13.

Chen, C. L. et al. 2010. Phylogenetic analysis in the genera *Phaius* and *Cephalantheropsis* using *rpl*32-*trn*L Marker. - I International Orchid Symposium 878: 107–113.

Chen, X. et al. 2003. Systematic studies of *Festuca* (Poaceae) occurring in China compared with taxa in North America. - Can. J. Bot. 81: 1008–1028.

Choi, B. H. et al. 2006. Phylogenetic significance of stylar features in genus *Vicia* (Leguminosae): an analysis with molecular phylogeny. - J plant res. 119: 513–523.

Choudhary, R. K. et al. 2012. Phylogeny and systematics of Indian *Polygonum sensu lato* in the subfamily Polygonoideae based on ITS sequences of nuclear ribosomal DNA. - Genet Mol Res. 11: 4370–4382.

Clark, J. Y. 2009. Neural networks and cluster analysis for unsupervised classification of cultivated species of *Tilia* (Malvaceae). - Bot. J. Linn. Soc. 159: 300–314.

Creech, J. L. 1978. Rhododendron komiyamae and its alliance with Rhododendron kaempferi. - Quart. Bull. Amer. Rhododendron Soc. 32: 92–93.

Davitashvili, N. and Karrer, G. 2010. Taxonomic importance of seed morphology in *Gentiana* (Gentianaceae). - Bot. J. Linn. Soc. 162: 101–115.

de Boer, H. J. et al. 2012. Evolution and loss of long-fringed petals: a case study using a dated phylogeny of the snake gourds, *Trichosanthes* (Cucurbitaceae). - BMC Evol. Biol. 12: 108.

de Juana, J. I. 2009. Taxonomía actualizada del género Ligustrum L. - Bouteloua 6: 16–71.

Deng, T. et al. 2013. *Oxalis wulingensis* (Oxalidaceae), an unusual new species from central China. - Syst. Bot. 38: 154–161.

Dobeš, C. and Paule, J. 2010. A comprehensive chloroplast DNA-based phylogeny of the genus *Potentilla* (Rosaceae): Implications for its geographic origin, phylogeography and generic circumscription. - Mol. Phylogenet. Evol. 56: 156–175.

Eddie, W. M. M. et al. 2003. Phylogeny of Campanulaceae s. str. inferred from ITS sequences of nuclear ribosomal DNA. - Ann. Mo. Bot. Gard. 90: 554–575.

Ekenäs, C. et al. 2012. *Arnica* (Asteraceae) phylogeny revisited using *RPB2*: Complex

patterns and multiple *d*-paralogues. - Mol. Phylogenet. Evol. 64: 261–270.

Farag, M. A. et al. 2013. Phytochemical, phylogenetic, and anti-inflammatory evaluation of 43 *Urtica* accessions (stinging nettle) based on UPLC–Q-TOF-MS metabolomic profiles. - Phytochemistry 96: 170–183.

Favre, A. et al. 2010. Phylogeny of subtribe Gentianinae (Gentianaceae): biogeographic inferences despite limitations in temporal calibration points. - Taxon 59: 1701–1711.

Fischer, E. et al. 2013. The phylogeny of *Linderniaceae*–The new genus *Linderniella*, and new combinations within *Bonnaya*, *Craterostigma*, *Lindernia*, *Micranthemum*, *Torenia* and *Vandellia*. - Willdenowia 43: 209–238.

Friesen, N. et al. 2006. Phylogeny and new intrageneric classification of Allium (Alliaceae) based on nuclear ribosomal DNA ITS sequences. - Aliso 22: 372–395.

Fritsch, P. W. et al. 2011. Phylogenetic analysis of the wintergreen group (Ericaceae) based on six genic regions. - Syst. Bot. 36: 990–1003.

Fuentes-Bazan, S. et al. 2012. Towards a species level tree of the globally diverse genus *Chenopodium* (Chenopodiaceae). - Mol. Phylogenet. Evol. 62: 359–374.

Fukuda, T. et al. 2009. Morphology of Alisma plantago-aquatica var. orientale of the original plants of Alisma plantago-aquatica and its allied species. - Proceedings of the 129th Annual Meeting of the Pharmaceutical Society of Japan 129: 157 (in Japanese).

Fukuhara, T. 1991. Corydalis kushiroensis, a new species of Corydalis (Papaveraceae; Fumarioideae) from Hokkaido. - Acta phytotaxonomica et geobotanica 42: 107–112 (in Japanese).

Funamoto, T. and Kondo, K. 2012. Karyomorphological studies in some species of *Parnassia* L. (Saxifragaceae sl) in East Asia and intraspecific polyploidy of *P. palustris* L.. - J. Bot. Article ID 874256.

Galasso, G. et al. 2009. Molecular phylogeny of *Polygonum* L. s.l. (Polygonoideae, Polygonaceae), focusing on European taxa: preliminary results and systematic considerations based on *rbc*L plastidial sequence data. - Atti Soc. ital. sci. nat., Mus. civ. stor. nat. Milano 150: 113–148.

Goetsch, L. et al. 2005. The molecular systematics of *Rhododendron* (Ericaceae): a phylogeny based upon *RPB2* gene sequences. - Syst. Bot. 30: 616–626.

Han, J. E. et al. 2010. Phylogenetic analysis of eastern Asian and eastern North American disjunct *Lespedeza* (Fabaceae) inferred from nuclear ribosomal ITS and plastid region sequences. - Bot. J. Linn. Soc. 164: 221–235.

Hara, H. and Yamanaka, T. 1984. A new species of Rhododendron (sect. Azaleastrum) from Shikoku, Japan. - J. Jpn. Bot. 59: 289–292.

Hayasaka, E. et al. 2008. The southernmost locality of Schoenoplectus orthorhizomatus (Kats. Arai and Miyam.) Hayasaka and H. Ohashi (Cyperaceae) and its distinguishing characters from S. hondoensis (Ohwi) Sojak. - J. Jpn. Bot. 83: 310–313 (in Japanese).

Hirai, M. et al. 2010. Genetic diversity and phylogenetic relationships of the endangered species *Vaccinium sieboldii* and *Vaccinium ciliatum* (Ericaceae). - Plant Syst. Evol. 287: 75–84.

Hirai, S. 1995. Tree species of Lindera triloba and the world of the genus lindera. - Wood Industry 50: 618–621 (in Japanese).

Hodkinson, T. R. et al. 2002. Phylogenetics of *Miscanthus, Saccharum* and related genera (Saccharinae, Andropogoneae, Poaceae) based on DNA sequences from ITS nuclear ribosomal DNA and plastid *trnL* intron and *trnL-F* intergenic spacers. - J plant res. 115: 381–392.

Hong, S. W. P. and Jury, S.L. 2011. Phylogeny and divergence times inferred from *rps16* sequence data analyses for *Tricyrtis* (Liliaceae), an endemic genus of north-east Asia. - AoB plants plr025.

Hoot, S. B. et al. 1994. Phylogenetic relationships in *Anemone* (Ranunculaceae) based on morphology and chloroplast DNA. - Syst. Bot. 19: 169–200.

Hotta, M. 1986. Hemerocallis aurantiaca group in Northern Kyushu, Japan. - Acta phytotaxonomica et geobotanica 37: 17–22 (in Japanese).

Hsiao, C. et al. 1994. Phylogenetic relationships of 10 grass species: an assessment of phylogenetic utility of the internal transcribed spacer region in nuclear ribosomal DNA in monocots. - Genome 37: 112–120.

Hu, S. et al. 2012. ITS sequence-based identification and utilization evaluation of “Nanjiang”(*Lonicera similis* Hemsl.), a local cultivar in Sichuan, China. - Genet.Resour. Crop Ev. 59: 547–555.

Huang, W. Z. et al. 2005. Identification of Stellaria media by PCR. - *J. Chin. Pharm. Sci* 14: 144.

Huh, M. K. 2012. Phylogenetic relationships in the genus *Spiraea* (Rosaceae) Inferred from the Chloroplast DNA region, *trnL-trnF*. - Am J Plant Sci. 3: 559–566.

Iida, S. et al. 2004. Molecular phylogeny of Japanese *Potamogeton* species in light of noncoding chloroplast sequences. - Aquat. Bot. 80: 115–127.

Ikeda, H. and Setoguchi, H. 2013. A multilocus sequencing approach reveals the cryptic phylogeographical history of *Phyllodoce nipponica* Makino (Ericaceae). -

Biol. J. Linn. Soc. 110: 214–226.

Ikeda, K. et al. 2013. Molecular cytogenetic analysis of the critically endangered *Trigonotis radicans* var. *radicans* and var. *sericea* and allied species in Japan. - Cytologia 78: 297–303.

Imai, K. and Inoue, K. 1999. Rediscovery of Neottia japonica (M. Furuse) K. Inoue. -Acta phytotaxonomica et geobotanica 49: 197–199 (in Japanese).

Ishida, M. et al. 2009. Occurrence of theobromine synthase genes in purine alkaloid-free species of *Camellia* plants. - Planta 229: 559–568.

Ishii, T. et al. 2004. A note on the genetic diversity of the vulnerable aquatic macrophyte *Sparganium erectum* and its congeners (Sparganiaceae) in rural wetland in Japan. - Weed Biol. Manag. 4: 230–234.

Ishikawa, N. et al. 2009. Molecular evidence of reticulate evolution in the subgenus *Plantago* (Plantaginaceae). - Am. J. Bot. 96: 1627–1635.

Ito, M. 1999. Phylogeny and chemotaxonomy of the genus *perilla* in Japan. - Doctoral dissertation, Kyoto University (in Japanese).

Ito, M. and Takamatsu, S. 2010. Molecular phylogeny and evolution of subsection *Magnicellulatae* (Erysiphaceae: *Podosphaera*) with special reference to host plants. - Mycoscience 51: 34–43.

Ito, M. et al. 1997. Allozyme diversity of *Pittosporum* (Pittosporaceae) on the Bonin (Ogasawara) Islands. - J plant res. 110: 455–462.

Ito, M. et al. 1998. Phylogenetic relationships of Japanese *Aster* (Asteraceae, Astereae) sensu lato based on chloroplast-DNA restriction site mutations. - J plant res. 111: 217–223.

Ito, Y. and Tanaka, N. 2011. Hybridisation in a tropical seagrass genus, *Halodule* (Cymodoceaceae), inferred from plastid and nuclear DNA phylogenies. - Telopea 13: 219–231.

Jacobs, B. et al. 2010. Phylogeny of the Linnaea clade: Are *Abelia* and *Zabelia* closely related? - Mol. Phylogenet. Evol. 57, 741–752.

Janssens, S. B. et al. 2012. A total evidence approach using palynological characters to infer the complex evolutionary history of the Asian *Impatiens* (Balsaminaceae). - Taxon 61: 355–367.

Jarret, R. L. et al. 1998. Genetic diversity among *Paspalum* spp. as determined by RFLPs. - Euphytica 104: 119–125.

Jensen, S. R. et al. 2005. *Veronica*: Iridoids and cornoside as chemosystematic markers. - Biochem. Syst. Ecol. 33: 1031–1047.

Jordon-Thaden, I. et al. 2010. Molecular phylogeny and systematics of the genus *Draba*

(Brassicaceae) and identification of its most closely related genera. - Mol. Phylogenet. Evol. 55: 524–540.

Jung, J. and Choi, H. K. 2013. Recognition of two major clades and early diverged groups within the subfamily Cyperoideae (Cyperaceae) including Korean sedges. - J plant res. 126: 335–349.

Jung, J. and Choi, H. K. 2011. Taxonomic study of Korean *Scirpus* L. sl (Cyperaceae) II: pattern of phenotypic evolution inferred from molecular phylogeny. - J Plant Biol. 54: 409–424.

Jung, Y. H. et al. 2004. Phylogenetic analysis of plastid *trnL-trnF* sequences from *Arisaema* species (Araceae) in Korea. - Euphytica 138: 81–88.

Kadota, Y. 2001. Two new species of Lonicera (Caprifoliaceae) from Yamagata Prefecture, northern Japan. - Bull. Nat. Sci. Mus. Tokyo, Ser. B (Bot.) 27: 149–158.

Kadota, Y. 2004. Coptis sect. Metacoptis Subsect. Japanocoptis (Ranunculaceae), with description of a new species and a new variety from Japan. - J. Jpn. Bot. 79: 311–321 (in Japanese).

Kadota, Y. 2007. Arabidopsis umezawana (Brassicaceae), a new species from Mt. Rishirizan, Rishiri Island, Hokkaido, Northern Japan. - J. Jpn. Bot. 82: 232–237 (in Japanese).

Kadono, Y. and Noguchi, T. 1991. Potamogeton nomotoensis, a new species from the Nomoto River, Tochigi Prefecture, Japan. - Acta phytotaxonomica et geobotanica 42: 173–176 (in Japanese).

Kadota, Y. 2008. Solidago horieana (Asteraceae), a new species from Hokkaido, northern Japan. - J. Jpn. Bot. 83: 233–238 (in Japanese).

Kadota, Y. and Saito, M. 2010. Two new species of Croomia (Stemonaceae) from Miyazaki Prefecture, Kyushu, southern Japan. - J. Jpn. Bot. 85, 277–288 (in Japanese).

Kakiuchi, N. et al. 2014. Phylogenetic examination of crude drugs derived from Yunnanese *Swertia* plants. - J Nat Med. 68: 206–210.

Kang, D. L. et al. 2008. Phylogenetic study on sect. Duretia (Boehmeria, Urticaceae) based on nrDNA ITS sequences. - J. Wuhan Bot. Res. 26: 450–453.

Kaur, N. et al. 2012. Genome size and chromosome number in the New Zealand species of *Schoenus* (Cyperaceae). - Bot. J. Linn. Soc. 169: 555–564.

Kawabe, A. et al. 1997. Phylogenetic relationship among the section *Stenophora* in the genus *Dioscorea* based on the analysis of nucleotide sequence variation in the phosphoglucose isomerase (*Pgi*) locus. - Genes Genet. Syst. 72: 253–262.

Kellogg, E. A. et al. 2009. A phylogeny of *Setaria* (Poaceae, Panicoideae, Paniceae) and related genera based on the chloroplast gene *ndhF*. - Int. J. Plant Sci. 170: 117–131.

Kim, C. and Choi, H. K. 2011. Molecular systematics and character evolution of *Typha* (Typhaceae) inferred from nuclear and plastid DNA sequence data. - Taxon 60: 1417–1428.

Kim, D. K. et al. 2012. The phylogenetic relationships of Asparagales in Korea based on five plastid DNA regions. - J Plant Biol. 55: 325–341.

Kim, H. M. et al. 2014. DNA barcoding of Orchidaceae in Korea. - Mol. Ecol. Resour. 14: 499–507.

Kim, J. O. et al. 2014. Taxonomic status and phylogeny of *Veratrum* section *Veratrum* (Melanthiaceae) in Korea and Japan based on chloroplast and nuclear sequence data. - Plant Syst. Evol. 300: 75–89.

Kim, S. J. and Park, S. J. 2011. Molecular phylogenetic studies of Korean Calystegia R. Br. based on ITS and psbA-trnH sequences. - Korean J Plant Taxon. 41: 338–344.

Kim, S. T. and Donoghue, M. J. 2008. Molecular phylogeny of *Persicaria* (Persicarieae, Polygonaceae). - Syst. Bot. 33: 77–86.

Kim, Y. D. and Kim, S. H. 1999. Phylogeny of *Weigela* and *Diervilla* (Caprifoliaceae) based on nuclear rDNA ITS sequences: biogeographic and taxonomic implications. - J plant res. 112: 331–341.

Kobayashi, M. et al. 2009. Origin and differentiation of the genus Eurya in the Ryukyu Archipelago. - Meeting to report results of University of Ryukyus, the 21st Century COE Program Comprehensive analyses on biodiversity in coral reef and island ecosystems in Asian and Pacific regions (in Japanese).

Koch, M. et al. 2001. Molecular systematics of the Brassicaceae: evidence from coding plastidic matK and nuclear Chs sequences. - Am. J. Bot. 88: 534–544.

Kokubugata, G. et al. 2010. Evidence of three parallel evolutions of leaf dwarfism and phytogeography in *Lysimachia* sect. *Nummularia* in Japan and Taiwan. - Mol. Phylogenet. Evol. 54: 657–663.

Kondo, K. 2007. Molecular phylogeny of *Ochrosia sensu lato* (Apocynaceae) based on ITS sequences data: An evidence for the inclusion of *Neisosperma*. - Chromosome Botany 2: 127–132.

Koyama, A. et al. 2004. Exploration and collection of Mulberry (Morus spp.) in Okushiri Island. - Annual report on exploration and introduction of plant genetic resources 20: 45–51 (in Japanese).

Koyama, H. 1987. Taxonomic notes on Lindera umbellata and its allied in Japan. - Acta phytotaxonomica et geobotanica 38: 161–175 (in Japanese).

Koyama, H. 1974. Blumea conspicua, as a species endemic to the Ryukyu Islands. - *Dept. Bot., Nat. Sci. Mus., Tokyo* 7: 109–113 (in Japanese).

Koyama, H. and Nagamasu, H. 1988. A new species of Pertya (Compositae) from Yakushima island, Kyushu. - Acta phytotaxonomica et geobotanica 39: 67–70 (in Japanese).

Kron, K. 1997. Phylogenetic relationships of Rhododendroideae (Ericaceae). - Am. J. Bot. 84: 973–980.

Kubota, S. et al. 2012. Molecular phylogeny of the genus *Asparagus* (Asparagaceae) explains interspecific crossability between the garden asparagus (*A. officinalis*) and other *Asparagus* species. - Theor. Appl. Genet. 124: 345–354.

Kurashige, Y. et al. 2001. Sectional relationships in the genus *Rhododendron* (Ericaceae): evidence from *mat*K and *trn*K intron sequences. - Plant Syst. Evol. 228: 1–14.

Kurosawa, T. 2001. Taxonomy and distribution of Japanese *Phyllanthus* (Euphorbiaceae). - Acta phytotaxonomica et geobotanica 52: 11–33.

Lambertini, C. et al. 2006. A phylogeographic study of the cosmopolitan genus *Phragmites* (Poaceae) based on AFLPs. - Plant Syst. Evol. 258: 161–182.

Lee, J. H. et al. 2009. Molecular authentication of 21 Korean *Artemisia* species (Compositae) by polymerase chain reaction-restriction fragment length polymorphism based on *trn*L-F region of chloroplast DNA. - Biol. Pharm. Bull. 32: 1912–1916.

Les, D. H. et al. 2002. Phylogeny and systematics of Lemnaceae, the duckweed family. - Syst. Bot. 27: 221–240.

Les, D. H. et al. 2010. Hybridization in hydrophiles: natural interspecific hybrids in *Najas* (Hydrocharitaceae). - Syst. Bot. 35: 736–744.

Li, J. H. et al. 2011. Molecular phylogeny of *Cypripedium* (Orchidaceae: Cypripedioideae) inferred from multiple nuclear and chloroplast regions. - Mol. Phylogenet. Evol. 61: 308–320.

Li, L. and Yan, H. 2013. A remarkable new species of *Liparis* (Orchidaceae) from China and its phylogenetic implications. - PloS ONE 8: e78112.

Liao, C. et al. 2013. New insights into the phylogeny of *Angelica* and its allies (Apiaceae) with emphasis on East Asian species, inferred from nrDNA, cpDNA, and morphological evidence. - Syst. Bot. 38: 266–281.

Lihová, J. et al. 2006. Worldwide phylogeny and biogeography of *Cardamine flexuosa*

(Brassicaceae) and its relatives. - Am. J. Bot. 93: 1206–1221.

Liu, J. Q. et al. 2006. Radiation and diversification within the *Ligularia* - *Cremanthodium* - *Parasenecio* complex (Asteraceae) triggered by uplift of the Qinghai-Tibetan Plateau. - Mol. Phylogenet. Evol. 38: 31–49.

Liu, X. L. et al. 2013. Polyphyly of the *Padus* group of *Prunus* (Rosaceae) and the evolution of biogeographic disjunctions between eastern Asia and eastern North America. - J plant res. 126: 351–361.

Liu, Z. W. et al. 2010. A molecular phylogeny and a new classification of *Pyrola* (Pyroleae, Ericaceae). - Taxon 59: 1690–1700.

Lledó, M. D. et al. 2005. Molecular phylogenetics of *Limonium* and related genera (Plumbaginaceae): biogeographical and systematic implications. - Am. J. Bot. 92: 1189–1198.

Maki, M. et al. 2010. Molecular phylogeny of *Isodon* (Lamiaceae) in Japan using chloroplast DNA sequences: recent rapid radiations or ancient introgressive hybridization? - Plant Species Biol. 25: 240–248.

Manen, J. F. et al. 2010. The history of extant *Ilex* species (Aquifoliaceae): Evidence of hybridization within a Miocene radiation. - Mol. Phylogenet. Evol. 57: 961–977.

Mennan, H. and Kaya-Altop, E. 2012. Molecular techniques for discrimination of late watergrass (*Echinochloa oryzicola*) and early watergrass (*Echinochloa oryzoides*) species in Turkish rice production. - Weed Sci. 60: 525–530.

Mercer, E. D. 2011. A worldwide phylogenetic analysis of *Scutellaria* (Lamiaceae). -Doctoral dissertation, Valdosta State University.

Miller, R. E. et al. 1999. Phylogenetic systematics of *Ipomoea* (Convolvulaceae) based on ITS and waxy sequences. - Syst. Bot. 24: 209–227.

Mino, Y. et al. 2003. Large differences in amino acid sequences among ferredoxins from several species of genus *Solanum*. - Phytochemistry 62: 657–662.

Mishiba, K. I. et al. 2009. Genetic relationships in the genus *Gentiana* based on chloroplast DNA sequence data and nuclear DNA content. - Breeding Sci. 59: 119–127.

Mochida, M. 2011. Taxonomic status and problems of the gunus *Gagea* (Liliaceae) in Japan. - Nature and history around the Sea of Okhotsk 1: 19–23 (in Japanese).

Morden, C. W. et al. 2003. Phylogeny and biogeography of Pacific *Rubus* subgenus *Idaeobatus* (Rosaceae) species: Investigating the origin of the endemic Hawaiian raspberry *R. macraei*. - Pac. sci. 57: 181–197.

Morita, T. 1997. Molecular phylogeny of the polyploidy speciation of the genus

Taraxacam in the East Asia. - Report of Grants-in-Aid for Scientific Research, Research Project (in Japanese).

Motomura, H. et al. 2010. Mycoheterotrophy evolved from mixotrophic ancestors: evidence in Cymbidium (Orchidaceae). - Ann. Bot. 106: 573–581.

Mu, X. Y. et al. 2012. Phylogeny of *Celastrus* L. (Celastraceae) inferred from two nuclear and three plastid markers. - J plant res. 125: 619–630.

Munoz-Centeno, L. M. et al. 2006. Systematic significance of seed morphology in *Veronica* (Plantaginaceae): a phylogenetic perspective. - *Ann. Bot.* 98: 335–350.

Murai, S. 1963. Phytotaxonomical and geobotanical studies on gen. *Alnus* in Japan (III). Taxonomy of whole world species and distribution of each sect. - Bulletin of FFPRI 171: 1–107.

Murata, G. 1989. *Daphne koreana*, *Daphne jezoensis*, and *Daphne pseudomezereum*. - Acta phytotaxonomica et geobotanica 40: 6 (in Japanese).

Nagamasu, H. 1986. A new species of *Zanthoxylum* L. (Rutaceae) from Yakushima Island, Japan. - Acta phytotaxonomica et geobotanica 37: 137–143 (in Japanese).

Nakai, H. 2000. Taxonomic study of the angiosperm in Hokkaido. - Doctoral dissertation, Tohoku University (in Japanese).

Nakamura, K. et al. 2014. Phylogeny and biogeography of the Viola *iwagawae-tashiroi* species complex (Violaceae, section *Plagiostigma*) endemic to the Ryukyu Archipelago, Japan. - Plant Syst. Evol. 301: 337–351.

Nakamura, T. and Ueda, K. 1991. Phytogeography of Tokai Hilly Land Element: II. Taxonomic study of *Drosera tokaiensis* (Komiya and C. Shibata) T. Nakamura and Ueda (Droseraceae). - Acta phytotaxonomica et geobotanica 42: 125–137 (in Japanese).

Nakayama, H. et al. 2014. Molecular phylogeny determined using chloroplast DNA inferred a new phylogenetic relationship of *Rorippa aquatica* (Eaton) EJ Palmer and Steyermark (Brassicaceae)—Lake cress. - Am J Plant Sci. 5: 48–54.

Nature Conservation Division 2006. Threatened wildlife in Okinawa, 2nd edn (fungi and plants): red data Okinawa. - Okinawa Prefecture, Naha (in Japanese).

Navarro, E. et al. 2003. Molecular phylogeny of *Alnus* (Betulaceae), inferred from nuclear ribosomal DNA ITS sequences. - Plant Soil 254: 207–217.

Nepal, M. P. and Ferguson, C. J. 2012. Phylogenetics of *Morus* (Moraceae) inferred from ITS and *trn*L-*trn*F sequence data. - Syst. Bot. 37: 442–450.

Nie, Z. L. et al. 2013. Molecular phylogeny of *Anaphalis* (Asteraceae, Gnaphalieae) with biogeographic implications in the Northern Hemisphere. - J plant res. 126: 17–32.

Niitsu, T. et al. 2004. 55 Phylogenic analysis by gene markers of Siam aginashi (*Sagittaria* sp.) in the highlands of northern Thailand. - J. Weed Sci. Tech. 43: 124–125 (in Japanese).

Niu, L. and Ohba, H. 2003. Taxonomic studies in *Deutzia* Thunb. (Saxifragaceae s. l.) in Japan (3) Chromosome numbers of *Deutzia bungoensis* Hatus. and *D. ogatae* Koidz.. - J. Jpn. Bot. 78: 257–261 (in Japanese).

Nürk, N. M. et al. 2013. Molecular phylogenetics and morphological evolution of St. John's wort (*Hypericum*; Hypericaceae). - Mol. Phylogenet. Evol. 66: 1–16.

Oh, S. H. et al. 2010. Phylogenetic relationship of *Physocarpus insularis* (Rosaceae) endemic on Ulleung Island: implications for conservation biology. - J Plant Biol. 53: 94–105.

Ohba, H. 2003. On the scientific names of the species of *Hedyotis* section *Leptopetalum* (Rubiaceae). - J. Jpn. Bot. 78: 221–224 (in Japanese).

Ohta, S. et al. 2007. Phylogenetic relationships among Japanese flowering cherries (*Prunus* subgenus *Cerasus*) based on nucleotide sequences of chloroplast DNA. - Plant Syst. Evol. 263: 209–225.

Ohwi, J. 1936. Flora of East Asia 13. - Acta phytotaxonomica et geobotanica 5: 51–57 (in Japanese).

Okaura, T. et al. 2007. Phylogeographic structure and late Quaternary population history of the Japanese oak *Quercus mongolica* var. *crispula* and related species revealed by chloroplast DNA variation. - Genes Genet. Syst. 82: 465–477.

Osaloo, S. K. et al. 1999. Molecular systematics of Trilliaceae I. Phylogenetic analyses of *Trillium* using *mat*K gene sequences. - J plant res. 112: 35–49.

Pak, J. H., and Kawano, S. 1990. Biosystematic Studies on the Genus *Ixeris* (Compositae-Lactuceae) : I. Fruit Wall Anatomy and Its Taxonomic Implications. - Acta phytotaxonomica et geobotanica 41: 43–60.

Pearse, I. S. et al. 2013. Headspace volatiles from 52 oak species advertise induction, species identity, and evolution, but not defense. - J. Chem. Ecol. 39: 90–100.

Penjor, T. et al. 2013. Phylogenetic relationships of *Citrus* and its relatives based on *mat*K gene sequences. - PloS ONE 8: e62574.

Peterson, P. M. et al. 2010. A phylogeny and classification of the Muhlenbergiinae (Poaceae: Chloridoideae: Cynodonteae) based on plastid and nuclear DNA

sequences. - Am. J. Bot. 97: 1532–1554.

Philbrick, C. T. and Les, D. H. 2000. Phylogenetic studies in *Callitriche*: implications for interpretation of ecological, karyological and pollination system evolution. - Aquat. Bot. 68: 123–141.

Pimentel, M. et al. 2013. Hybridization and long-distance colonization at different time scales: towards resolution of long-term controversies in the sweet vernal grasses (*Anthoxanthum*). - Ann. Bot. mct170.

Põlme, S. et al. 2013. Biogeography of ectomycorrhizal fungi associated with alders (*Alnus* spp.) in relation to biotic and abiotic variables at the global scale. - New Phytol. 198: 1239–1249.

Qi, Z. et al. 2013. Phylogenetics, character evolution, and distribution patterns of the greenbriers, Smilacaceae (Liliales), a near-cosmopolitan family of monocots. - Bot. J. Linn. Soc. 173: 535–548.

Rahman, M. O. 2007. DNA fingerprinting in *Utricularia* L. section *Utricularia* as revealed by PCR based assay. - Int. J Bot. 3: 56–63.

Rahman, M. O. 2010. Use of Random PCR (RAPD) technology to analyze systematic relationships in terrestrial bladderworts (*Utricularia* L.). - Bangladesh j. bot. 39: 97–102.

Reid, C. S. et al. 2014. Phylogenetic insights into New World *Cyperus* (Cyperaceae) using nuclear ITS sequences. - Brittonia 66: 292–305.

Renner, S. S. and Zhang, L. B. 2004. Biogeography of the Pistia clade (Araceae): based on chloroplast and mitochondrial DNA sequences and Bayesian divergence time inference. - Syst. Biol. 53: 422–432.

Renner, S. S. et al. 2001. Historical biogeography of Melastomataceae: the roles of Tertiary migration and long-distance dispersal. - Am. J. Bot. 88: 1290–1300.

Riggins, C. W. and Seigler, D. S. 2012. The genus *Artemisia* (Asteraceae: Anthemideae) at a continental crossroads: Molecular insights into migrations, disjunctions, and reticulations among Old and New World species from a Beringian perspective. - Mol. Phylogenet. Evol. 64: 471–490.

Riina, R. et al. 2013. A worldwide molecular phylogeny and classification of the leafy spurges, *Euphorbia* subgenus *Esula* (Euphorbiaceae). - Taxon 62: 316–342.

Roalson, E. H. et al. 2010. Phylogenetic relationships in *Eleocharis* (Cyperaceae): C4 photosynthesis origins and patterns of diversification in the spikerushes. - Syst. Bot. 35: 257–271.

Robinson, J. P. et al. 2001. Taxonomy of the genus *Malus* Mill.(Rosaceae) with emphasis on the cultivated apple, Malus domestica Borkh. - Plant Syst. Evol.

226: 35–58.

Robson, N. K. 2006. Studies in the genus *Hypericum* L.(Clusiaceae). 1 Section 9. *Hypericum sensu lato* (part 3): subsection 1. *Hypericum* series 2. *Senanensia*, subsection 2. *Erecta* and section 9b. *Graveolentia*. *Syst.* - Biodivers. 4: 19–98.

Rodionov, A. V. et al. 2013. Variability of the ITS1-5.8 S rDNA-ITS2 sequence during the divergence of sweet-grass species (*Glyceria* R. Br.). - Russ. J. Genet. 3: 83–90.

Russell, A. et al. 2013. Chromosome counts and genome size of *Leontopodium* species (Asteraceae: Gnaphalieae) from south-western China. - *Bot. J. Linn. Soc.* 171: 627–636.

Sakoda, M. et al. 1998. Actual condition of an endangered species, Syneilesis tagawae Kitam.. - Acta phytotaxonomica et geobotanica 48: 206–209 (in Japanese).

Samain, M. S. et al. 2010. Unraveling extensive paraphyly in the genus *Hydrangea* sl with implications for the systematics of tribe Hydrangeeae. - Syst. Bot. 35: 593–600.

Sasaki, Y. et al. 2007. Genetic profiling of *Sasa* species by analysis of chloroplast intron between *rbc*L and ORF106 and partial ORF106 regions. - Biol Pharm Bull. 30: 1511–1515.

Satake H et al. eds. 1989. *Wild flowers of Japan, Woody Plants I*. – Heibonsha. (in Japanese).

Satake H et al. eds. 1989. *Wild flowers of Japan, Woody Plants II*. – Heibonsha. (in Japanese).

Sauve, R. J. et al. 2005. Randomly amplified polymorphic DNA analysis in the genus *Hosta*. - HortScience 40: 1243–1245.

Scheunert, A. and Heubl, G. 2011. Phylogenetic relationships among New World *Scrophularia* L. (Scrophulariaceae): new insights inferred from DNA sequence data. - Plant Syst. Evol. 291: 69–89.

Schmerler, S. B. et al. 2012. Evolution of leaf form correlates with tropical–temperate transitions in *Viburnum* (Adoxaceae). - Proc. R. Soc. B 279: 3905–3913.

Shefferson, R. P. et al. 2010. Evolution of host breadth in broad interactions: mycorrhizal specificity in East Asian and North American rattlesnake plantains (*Goodyera* spp.) and their fungal hosts. - Mol. Ecol. 19: 3008–3017.

Shekhovtsov, S. V. et al. 2012. Phylogeny of Siberian species of *Carex* sect. *Vesicariae* based on nuclear and plastid markers. - Nord. J. Bot. 30: 343–351.

Shinwari, Z. K. et al. 1994. Molecular systematics of Liliaceae—Asparagoideae—Polygonatae. I. RFLP analysis of *cp*DNA in

several Asiatic *Disporum* species. - Plant Species Biol. 9: 11–18.

Simmons, M. P. et al. 2012. Phylogeny of Celastraceae tribe Euonymeae inferred from morphological characters and nuclear and plastid genes. - Mol. Phylogenet. Evol. 62: 9–20.

Smith, S. A. 2009. Taking into account phylogenetic and divergence-time uncertainty in a parametric biogeographical analysis of the Northern Hemisphere plant clade Caprifolieae. - J. Biogeogr. 36: 2324–2337.

Soza, V. L. and Olmstead, R. G. 2010. Molecular systematics of tribe Rubieae (Rubiaceae): Evolution of major clades, development of leaf-like whorls, and biogeography. - Taxon 59: 755–771.

Soza, V. L. et al. 2012. Phylogenetic insights into the correlates of dioecy in meadow-rues (*Thalictrum*, Ranunculaceae). - Mol. Phylogenet. Evol. 63: 180–192.

Steane, D. A. et al. 2004. Phylogenetic relationships between *Clerodendrum* (Lamiaceae) and other Ajugoid genera inferred from nuclear and chloroplast DNA sequence data. - *Mol. Phylogenet. Evol.* 32: 39–45.

Suda, Y. 1964. Cytotaxonomical studies on the subfamily Salicoideae of the Salicaceae. - Doctoral dissertation, Tohoku University.

Suetsugu, K. et al. 2014. Evidence for specificity to Glomus group Ab in two Asian mycoheterotrophic *Burmannia* species. - Plant Species Biol. 29: 57–64.

Suh, Y., Heo, K. and Park, C. W. 2000. Phylogenetic relationships of maples (*Acer* L.; Aceraceae) implied by nuclear ribosomal ITS sequences. - J plant res. 113: 193–202.

Sulman, J. D. et al. 2013. Systematics, biogeography, and character evolution of *Sparganium* (Typhaceae): Diversification of a widespread, aquatic lineage. - Am. J. Bot. 100: 2023–2039.

Susanti, R. and Miyamoto, J. 2009. A new species of *Pandanus* (Pandanaceae) from the Daito Islands of Japan. - Acta phytotaxonomica et geobotanica 60: 71–78.

Takahashi, H. 1997. Classification and distribution of *Smilacina* species (Liliaceae) in Japan. - Bull. Nat. Sci. Mus. Tokyo, Ser. B (Bot.) 23: 103–113 (in Japanese).

Takamatsu, S. et al. 2009. Four powdery mildew species with catenate conidia infect *Galium*: molecular and morphological evidence. - Mycol. Res. 113: 117–129.

Takano, A. and Kadono, Y. 2005. Allozyme variations and classification of *Trapa* (Trapaceae) in Japan. - Aquat. Bot. 83: 108–118.

Takano, A. and Okada, H. 2011. Phylogenetic relationships among subgenera, species, and varieties of Japanese *Salvia* L. (Lamiaceae). - J plant res. 124: 245–252.

Tamura, M. N. 2008. Biosystematic studies on the genus *Polygonatum* (Asparagaceae) V. Taxonomic revision of species in Japan. - Acta phytotaxonomica et geobotanica 59: 15–29.

Tamura, M. N. et al. 1997. Biosystematic studies on the genus *Polygonatum* (Convallariaceae) IV. Molecular phylogenetic analysis based on restriction site mapping of the chloroplast gene *trn*K. - Feddes Repert. 108: 159–168.

Tanaka, N. 2001. Taxonomic notes on *Ophiopogon* (Convallariaceae) of East Asia (2). - J. Jpn. Bot. 76: 151–165 (in Japanese).

Tashiro, M. and Hatta, H. 1986. Two new species of the genus *Menziesia* from Japan. - Bot. Mag. Tokyo 99: 29–36.

Tateoka, T. 1987. Cytotaxonomical and cytogeographical studies of the Agrostis flaccida - tateyamensis - mertensii complex in Japan. - Report of Grants-in-Aid for Scientific Research, Research Project (in Japanese).

Teerawatananon, A. et al. 2011. Phylogenetics of *Panicoideae* (Poaceae) based on chloroplast and nuclear DNA sequences. - Telopea. 13: 115–142.

Tokunaga, T. et al. 2011. Molecular phylogeny of the genus Iris including I. sanguinea var. tobataensis. - Proceedings of the annual meeting of the Botanical Society of Japan 75 (in Japanese).

Tomkins, J. P. et al. 2001. Evaluation of genetic variation in the daylily (*Hemerocallis* spp.) using AFLP markers. - Theor. Appl. Genet. 102: 489–496.

Töpel, M. et al. 2011. Molecular data and ploidal levels indicate several putative allopolyploidization events in the genus Potentilla (Rosaceae). - PLoS currents 3: RRN1237.

Toyoda, T. 2003. *Flora of Bonin Islands, 2nd edn*. Abocsha, Kamakura (in Japanese).

Toyokuni, H. (1990) The genus *Oxytropis* in Japan. - Hoppousansou 9: 9–12 (in Japanese).

Tröndle, D. et al. 2010. Molecular phylogeny of the genus *Vitis* (Vitaceae) based on plastid markers. - Am. J. Bot. 97: 1168–1178.

Tsuneki, S. et al. 2008. Morphological variation of the genus *Machilus* of the Ogasawara Islands. - The Annual Report of Ogasawara Studies 31: 77–89 (in Japanese).

Tsuruta, S. I. et al. 2005. Development and characterization of simple sequence repeat markers in *Zoysia* japonica Steud. - Grassl. Sci. 51: 249–257.

Tsutsumi, C. 2011. The phylogenetic positions of four endangered *Vaccinium* species in Japan. - Bull. Nat. Sci. Mus. Tokyo, Ser. B (Bot.) 37: 79–86.

Tsutsumi, C. and Hirayama, Y. 2012. The phylogeny of Japanese *Enkianthus* species

(Ericaceae). - Bull. Nat. Sci. Mus. Tokyo, Ser. B (Bot.) 38: 11–17.

Uchimura, M. et al. 2007. A taxonomic study of the seagrass genus *Halophila* (Hydrocharitaceae) from Japan: description of a new species *Halophila japonica* sp. nov. and characterization of *H. ovalis* using morphological and molecular data. - Bull. Nat. Sci. Mus. Tokyo, Ser. B (Bot.) 32: 129–150.

Uemachi, A. and Shimomura, T. 2013. Molecular phylogeny of *Trachelospermum* (Apocynaceae) in Japan based on cpDNA and nrDNA nucleotide sequences. - Acta phytotaxonomica et geobotanica 64: 1–13.

Valiejo-Roman, C. M. et al. 2006. An attempt to clarify taxonomic relationships in "Verwandtschaftskreis der Gattung *Ligusticum*" (Umbelliferae-Apioideae) by molecular analysis. - Plant Syst. Evol. 257: 25–43.

Wakabayashi, M. and Takahashi, H. 1999. A new species of *Chrysosplenium* (Saxifragaceae) from Central Honshu, Japan. - Acta phytotaxonomica et geobotanica 50: 1–2 (in Japanese).

Wallander, E. 2008. Systematics of *Fraxinus* (Oleaceae) and evolution of dioecy. - Plant Syst. Evol. 273: 25–49.

Watanabe, K. et al. 1990. Numerical analyses of karyotypic diversity in the genus *Eupatorium* (*Compositae*, *Eupatorieae*). - Plant Syst. Evol. 170: 215–228.

Watanabe, K. et al. 1998. Cytology and systematics in Japanese *Arisaema* (Araceae). - J plant res. 111: 509–521.

Waterway, M. J. et al. 2009. Phylogeny, species richness, and ecological specialization in Cyperaceae tribe Cariceae. - Bot. Rev. 75: 138–159.

Wei, H. et al. 2006. Utilization of intron-flanking EST-specific markers in the phylogenetic analysis and parentage identification of *Rhododendron* species and hybrids. - J. Am. Soc. Hortic. Sci. 131: 814–819.

Wen, J. et al. 1998. Phylogeny and biogeography of *Aralia* sect. *Aralia* (Araliaceae). - Am. J. Bot. 85: 866–875.

Whang, S. S. et al. 2002. A morphometric analysis of infraspecific taxa within the *Ixeris chinensis* complex (Asteraceae, Lactuceae). - *Bot. Bull. Acad. Sin.* 43: 131–138.

Wiegrefe, S. J. et al. 1994. Phylogeny of elms (*Ulmus*, Ulmaceae): molecular evidence for a sectional classification. - Syst. Bot. 19: 590–612.

Wikström, N. et al. 2013. Phylogeny of *Hedyotis* L. (Rubiaceae: Spermacoceae): Redefining a complex Asian-Pacific assemblage. - Taxon 62: 357–374.

Wu, M. J. et al. 2009. Phylogenetic biogeography of *Euphrasia* section *Malesianae* (*Orobanchaceae*) in Taiwan and Malesia. - Blumea 54: 242–247.

Wu, S. H. et al. 2006. Contrasting phylogeographical patterns of two closely related species, *Machilus thunbergii* and *Machilus kusanoi* (Lauraceae), in Taiwan. - J. Biogeogr. 33: 936–947.

Wu, S. et al. 2000. Phylogenetic analysis of Japanese *Rosa* species using *mat*K sequences. - Breeding Sci. 50: 275–281.

Wu, Z. Y. et al. 2013. Molecular phylogeny of the nettle family (Urticaceae) inferred from multiple loci of three genomes and extensive generic sampling. - Mol. Phylogenet. Evol. 69: 814–827.

Xiao, L. Q. and Zhu, H. 2007. Paraphyly and phylogenetic relationship in *Lasianthus* (Rubiaceae) inferred from chloroplast *rps*16 data. - Bot. Stud. 48: 227–232.

Xie, L. et al. 2009. Molecular phylogeny, divergence time estimates, and historical biogeography of *Circaea* (Onagraceae) in the Northern Hemisphere. - Mol. Phylogenet. Evol. 53: 995–1009.

Xu, D. H. and Ban, T. 2004. Phylogenetic and evolutionary relationships between *Elymus humidus* and other *Elymus* species based on sequencing of non-coding regions of cpDNA and AFLP of nuclear DNA. - Theor. Appl. Genet. 108: 1443–1448.

Yabuta, Y. 2011. Phylogenetic placements and morphological differentiation of three species of the genus Geum in Japan. - Proceedings of the 58 st Annual Meeting of Ecological Society of Japan (in Japanese).

Yagame, T. et al. 2008. A new species of *Neottia* (Orchidaceae) from the Tanzawa Mountains, Japan. - Acta phytotaxonomica et geobotanica 59: 219–222.

Yahara, T. 1986. Distribution of sexual and agamospermous populations of *Boehmeria sylvestrii* and its three relatives (Urticaceae). - Mem. Natn. Sci. Mus. Tokyo 19: 121–132.

Yamanaka, M. et al. 2008. Distinct geographical structure across species units evidenced by chloroplast DNA haplotypes and nuclear ribosomal ITS genotypes of *Corylopsis* (Hamamelidaceae) in the Japanese islands. - Bot. J. Linn. Soc. 157: 501–518.

Yamashita, J. and Tamura, M. N. 2008. A new species of *Dioscorea* (Dioscoreaceae) from Japan. - Acta phytotaxonomica et geobotanica 59: 51–53.

Yamazaki, T. 2000. A New Species of *Acer* from the Ryukyus. - J. Jpn. Bot. 70: 282–284 (in Japanese).

Yamazaki, T. 1995. Relationship among *Eurya boninensis*, *E. japonica* var. *japonica*, and *E. nitida*. - J. Jpn. Bot. 70: 268–272 (in Japanese).

Yang, J. Y. and Pak, J. H. 2006. Phylogeny of Korean *Rubus* (Rosaceae) based on ITS

(nrDNA) and trnL/F intergenic region (cpDNA). - J Plant Biol. 49: 44–54.

Yang, M. Q. et al. 2013. Molecular phylogenetics and character evolution of Cannabaceae. - Taxon 62: 473–485.

Yano, O. and Hoshino T. 2006. Phylogenetic relationships and chromosomal evolution of Japanese *Fimbristylis* (Cyperaceae) using nrDNA ITS and ETS 1f sequence data. - Acta phytotaxonomica et geobotanica 57: 205–217.

Yano, O. and Hoshino, T. 2007. Karyomorphological studies of four species of Japanese *Scleria* (Cyperaceae). - Cytologia 72: 275–278.

Yano, O. et al. 2004. Molecular phylogeny of Japanese *Eleocharis* (Cyperaceae) based on ITS sequence data, and chromosomal evolution. - J plant res. 117: 409–419.

Yasuda, I. et al. 1982. Distribution of unsaturated aliphatic acid amides in Japanese *Zanthoxylum species*. - Phytochemistry 31: 1295–1298.

Yokota, M. 2004. Phylogeographic analysis on the endemic vascular plants of the Ryukyus. - Report of Grants-in-Aid for Scientific Research, Research Project (in Japanese).

Yoo, K. and Park, S. 2012. A phylogenetic study of Korean *Carpesium* L. based on nrDNA ITS sequences. - Korean J Plant Resour. 25: 96–104.

Yukawa, T. 1999. *Cremastra aphylla* (Orchidaceae), a new mycoparasitic species from Japan. - Ann.Tsukuba bot.Gard. 18: 59–63 (in Japanese).

Yukawa, T. et al. 1996. Chloroplast DNA phylogeny of subtribe Dendrobiinae (Orchidaceae): Insights from a combined analysis based on *rbc*L sequences and restriction site variation. - J plant res. 109: 169–176.

Záveská Drábková, L. and Vlček, Č. 2010. Molecular phylogeny of the genus *Luzula* DC. (Juncaceae, Monocotyledones) based on plastome and nuclear ribosomal regions: A case of incongruence, incomplete lineage sorting and hybridisation. - Mol. Phylogenet. Evol. 57: 536–551.

Zeng, C. X. et al. 2010. Large multi-locus plastid phylogeny of the tribe Arundinarieae (Poaceae: Bambusoideae) reveals ten major lineages and low rate of molecular divergence. - Mol. Phylogenet. Evol. 56: 821–839.

Zhai, J. W. et al. 2014. A new phylogenetic analysis sheds new light on the relationships in the *Calanthe* alliance (Orchidaceae) in China. - Mol. Phylogenet. Evol. 77: 216–222.

Zhang, J. W. et al. 2011. Molecular phylogeny and biogeography of three closely related genera, *Soroseris*, *Stebbinsia*, and *Syncalathium* (Asteraceae, Cichorieae), endemic to the Tibetan Plateau, SW China. - Taxon 60: 15–26.

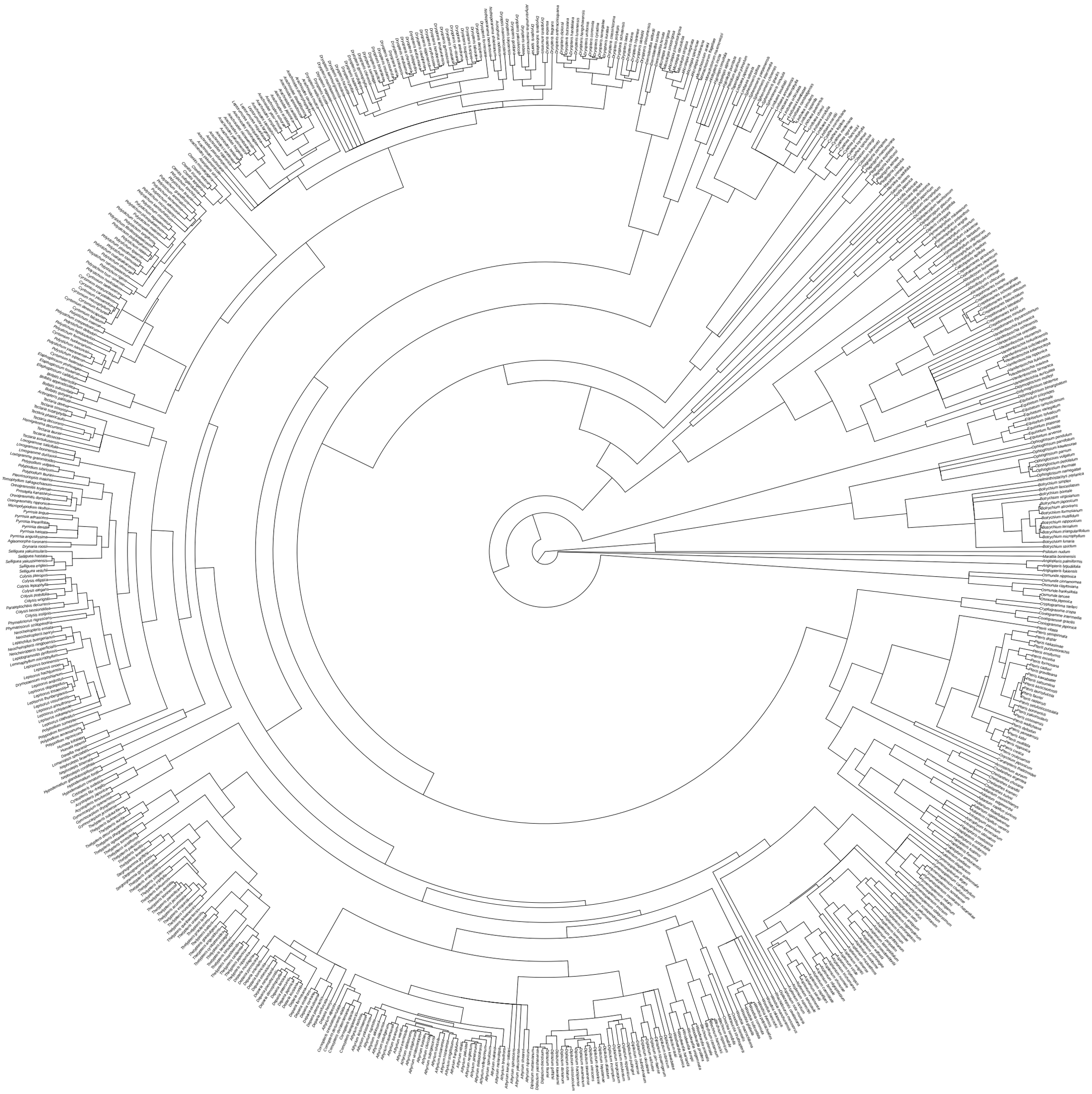
Zhao, H. B. et al. 2010. Molecular phylogeny of *Chrysanthemum*, *Ajania* and its allies (Anthemideae, Asteraceae) as inferred from nuclear ribosomal ITS and chloroplast *trn*L-F IGS sequences. - Plant Syst. Evol. 284: 153–169.

Zhu, S. et al. 2011. Genetic and chemical diversity of *Eleutherococcus senticosus* and molecular identification of Siberian ginseng by PCR-RFLP analysis based on chloroplast *trn* K intron sequence. - Food Chem. 129: 1844–1850.

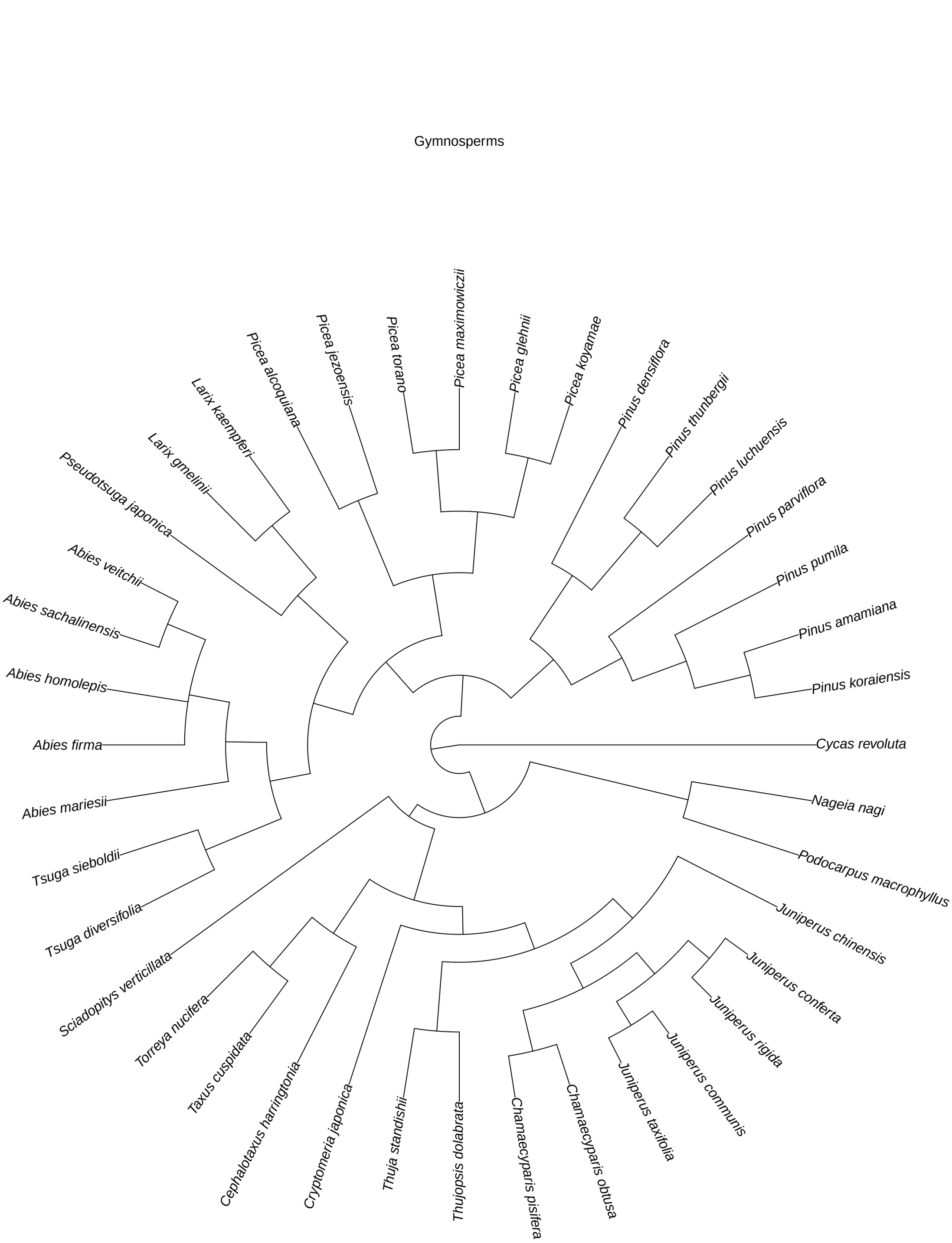
Zhu, W. D. et al. 2013. Molecular phylogeny and biogeography of *Astilbe* (Saxifragaceae) in Asia and eastern North America. - Bot. J. Linn. Soc. 171: 377–394.

Appendix 5 Phylogenetic trees of ferns, gymnosperms, angiosperm trees and angiosperm herbs in the East Asian continental islands.

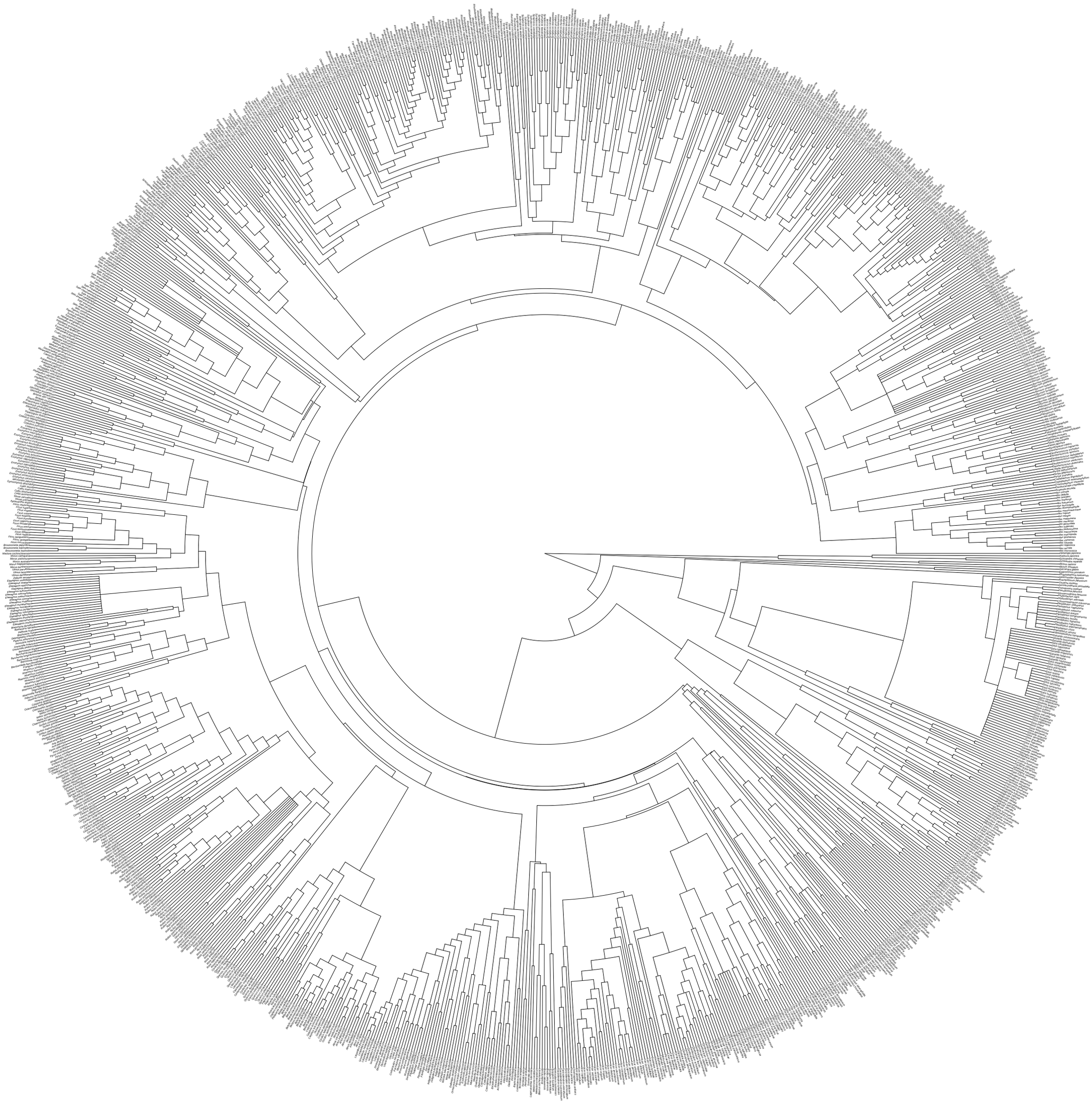
Ferns



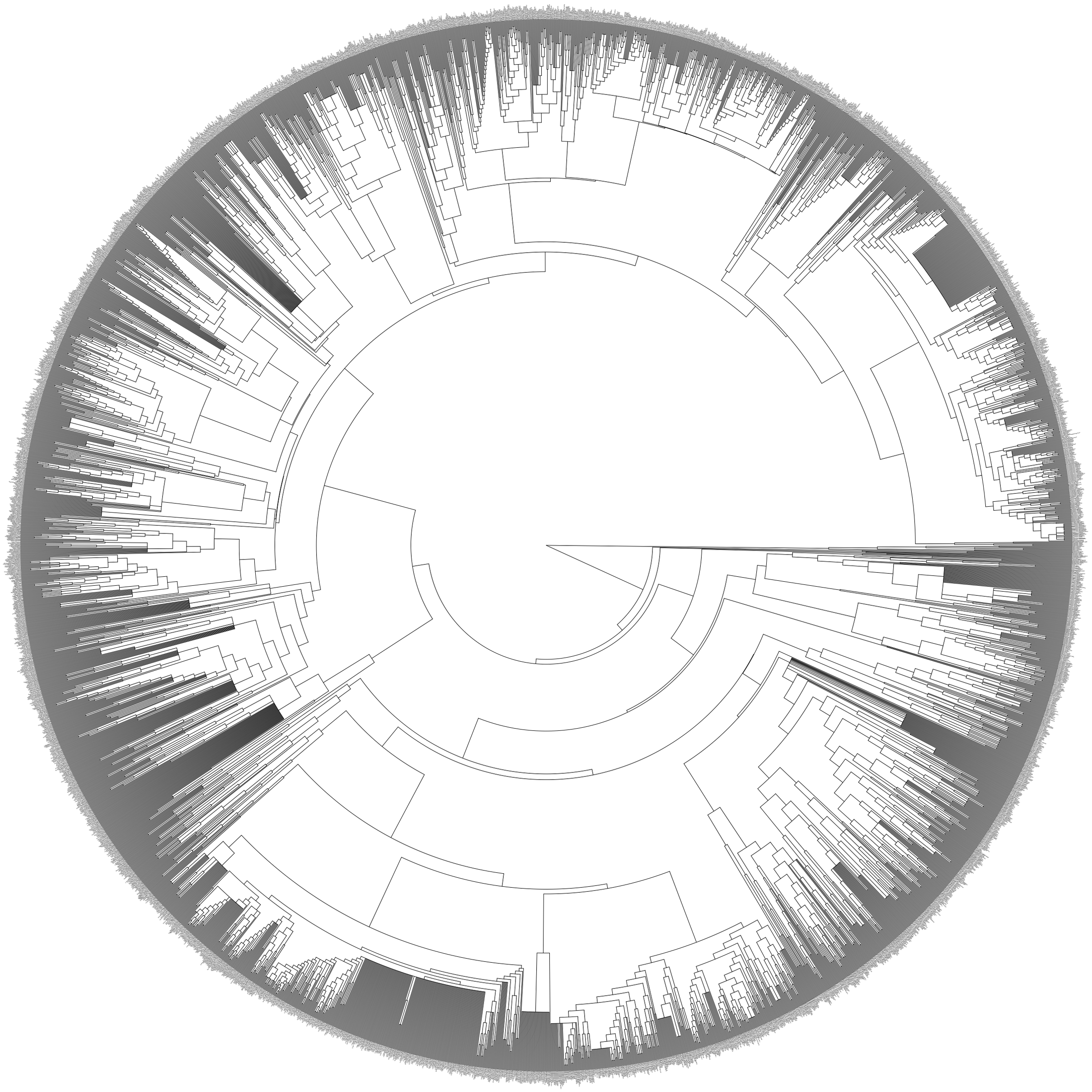
Gymnosperms



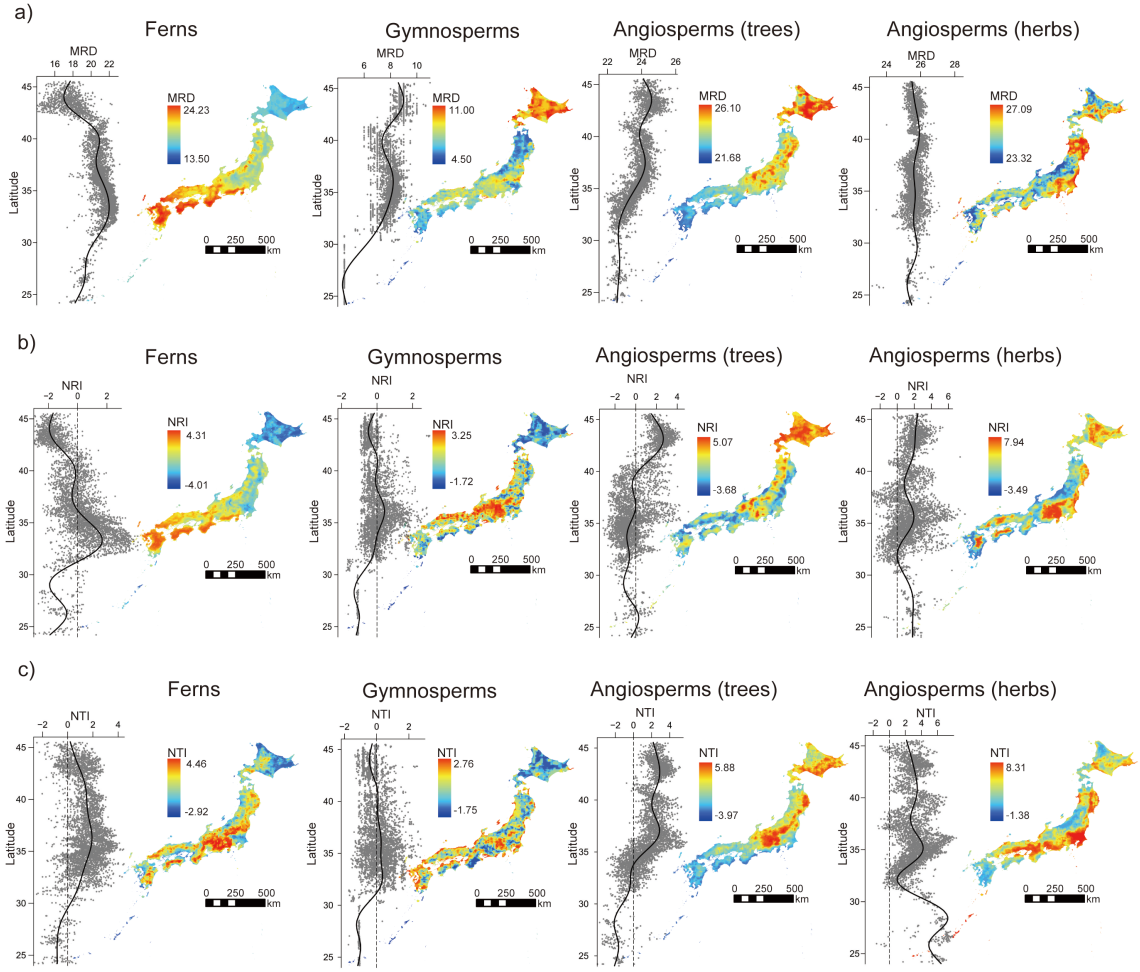
Angiosperms (trees)



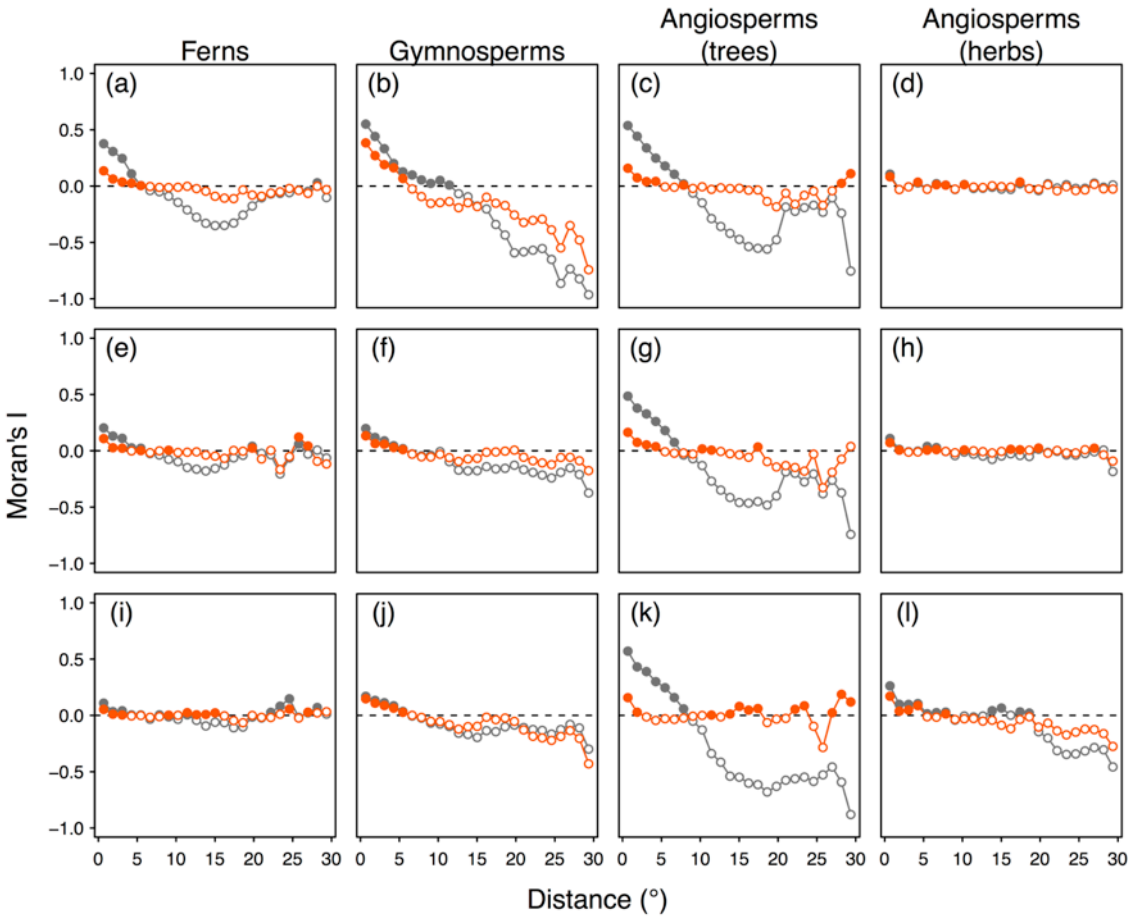
Angiosperms (herbs)



Appendix 6 Phylogenetic structure based on potential species distributions by Maxent. (a) mean root distance, MRD; (b) net relatedness index, NRI; (c) nearest taxon index, NTI. Scatter diagrams of phylogenetic structure measures along a latitudinal gradient were calculated at the 10 × 10 km grid scale.



Appendix 7 Spatial correlograms for the response variable (gray) and the residual (red) of the regression models that explain geographical patterns of phylogenetic structure indices: mean root distance (a–d), net relatedness index (e–h), and nearest taxon index (i–l), for each functional group. The model residuals were derived from the best-fit model of each response variable, in which explanatory variables were step-wisely selected using Akaike's Information criterion. The spatial autocorrelation was evaluated using Moran's I index. Filled symbols indicate statistically significant autocorrelation ($P < 0.05$).



Appendix 8 Standardised regression coefficients and coefficients of partial determination (r^2) of the models that explain geographical patterns of phylogenetic structures based on potential species distributions by Maxent. Mean root distance (MRD), net relatedness index (NRI), and nearest taxon index (NTI) for each plant groups were set as the response variables. The eight environmental factors were set as the explanatory variables. Absolute minimum temperature (*AMT*) and water balance (*WB*) represent current climate. Quaternary changes in temperature (*Q.tc*) and precipitation (*Q.pc*) represent historical climatic stability. Presence or absence of pyroclastic flows (*Pyro*) and lowland alluvial plains (*Allu*) represents geological stability. Elevation (*Elev*) and distance from the continent (*Dist*) represent isolation. Regressions were calculated using ordinary least squares analysis. Filled circles indicate the significance of explanatory variables ($P < 0.05$). Vertical lines represent 95% confidence intervals of parameters.