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Supplement of

The strategies of water–carbon regulation of plants in a subtropical primary forest on karst soils in China

Jing Wang et al.

Correspondence to: Xuefa Wen (wenxf@igsnr.ac.cn) and Xinyu Zhang (zhangxy@igsnr.ac.cn)

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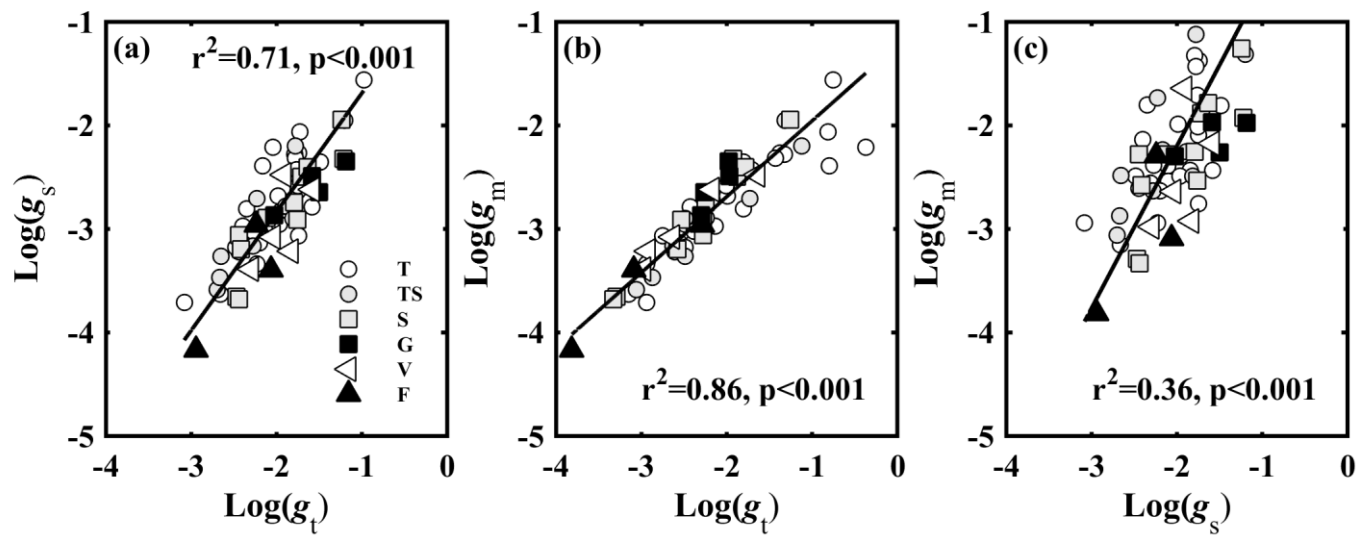


Figure S1 Relationship between (a) stomatal conductance to CO_2 (g_s , $\text{mol CO}_2 \text{ m}^{-2} \text{ s}^{-1}$) and total conductance to CO_2 (g_t , $\text{mol CO}_2 \text{ m}^{-2} \text{ s}^{-1}$); (b) mesophyll conductance to CO_2 (g_m , $\text{mol CO}_2 \text{ m}^{-2} \text{ s}^{-1}$) and g_t ; and (c) g_s and g_m . Lines refer to regression line for 63 species. T, TS, S, G, V, and F represent Tree, Tree/Shrub, Shrub, Grass, Vine, and Fern, respectively.

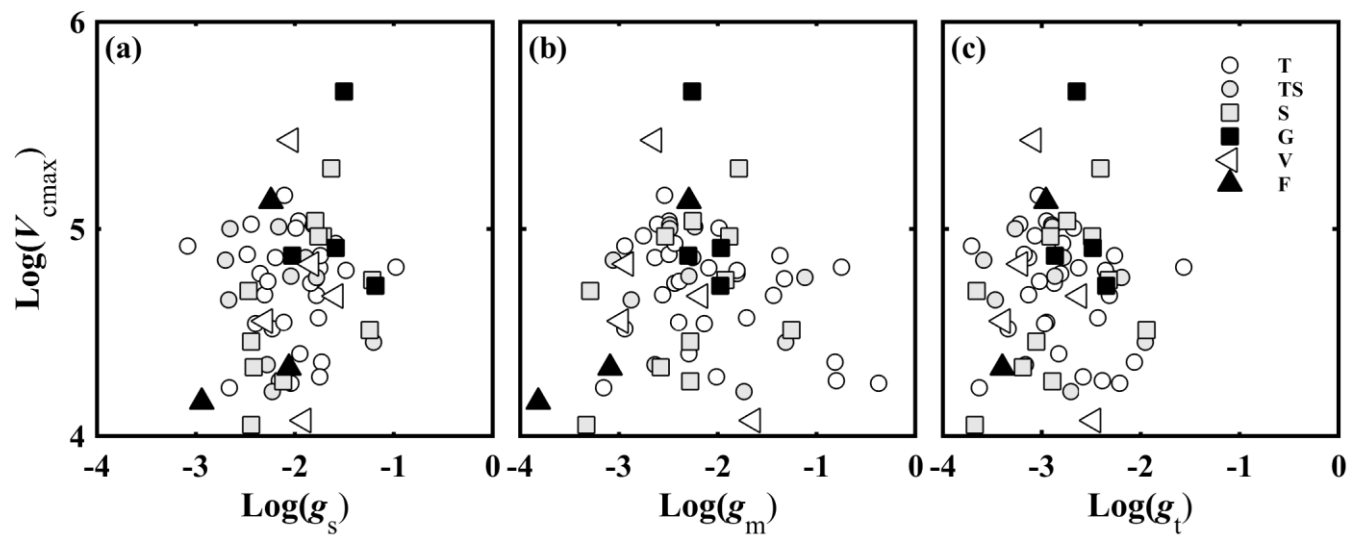


Figure S2 Relationship between (a) stomatal conductance to CO_2 (g_s , $\text{mol CO}_2 \text{ m}^{-2} \text{ s}^{-1}$) and the maximum carboxylase activity of Rubisco (V_{cmax} , $\mu\text{mol CO}_2 \text{ m}^{-2} \text{ s}^{-1}$); (b) mesophyll conductance to CO_2 (g_m , $\text{mol CO}_2 \text{ m}^{-2} \text{ s}^{-1}$) and V_{cmax} ; and (c) total conductance to CO_2 (g_t) and V_{cmax} . Lines refer to regression line for 63 species. T, TS, S, G, V, and F represent Tree, Tree/Shrub, Shrub, Grass, Vine, and Fern, respectively.

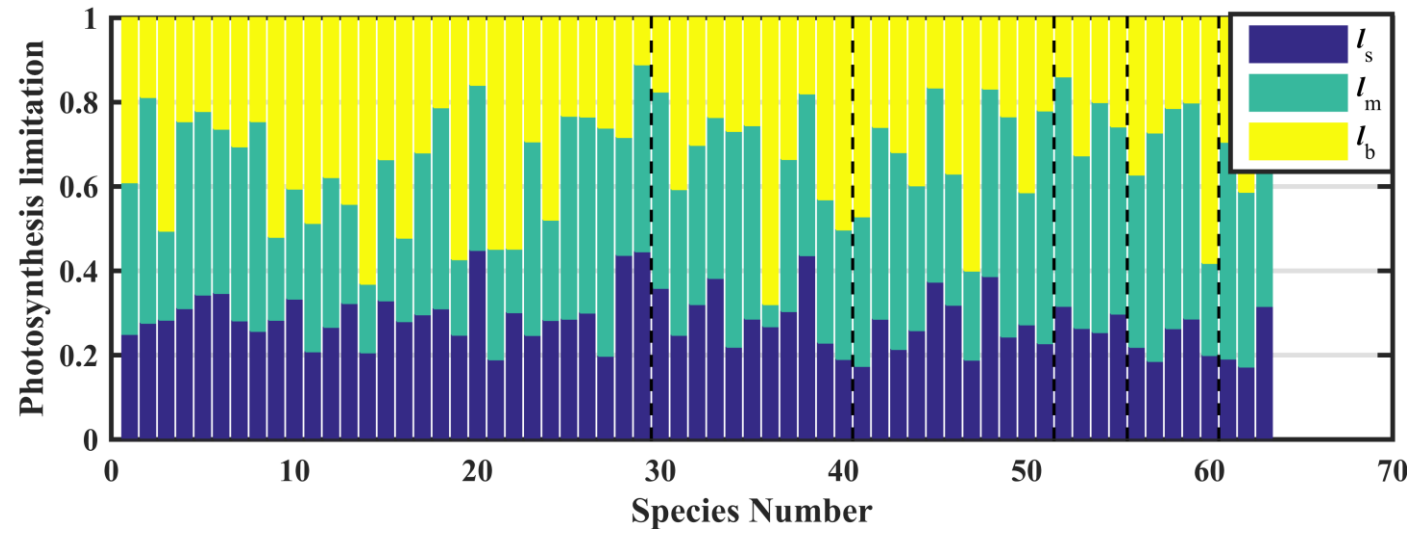


Figure S3 The limitation of (a) stomatal conductance to CO_2 (g_s) on photosynthesis rate (A) (l_s), (b) mesophyll conductance to CO_2 (g_m) on A (l_m) and (c) the maximum carboxylase activity of Rubisco (V_{cmax}) on A (l_b).

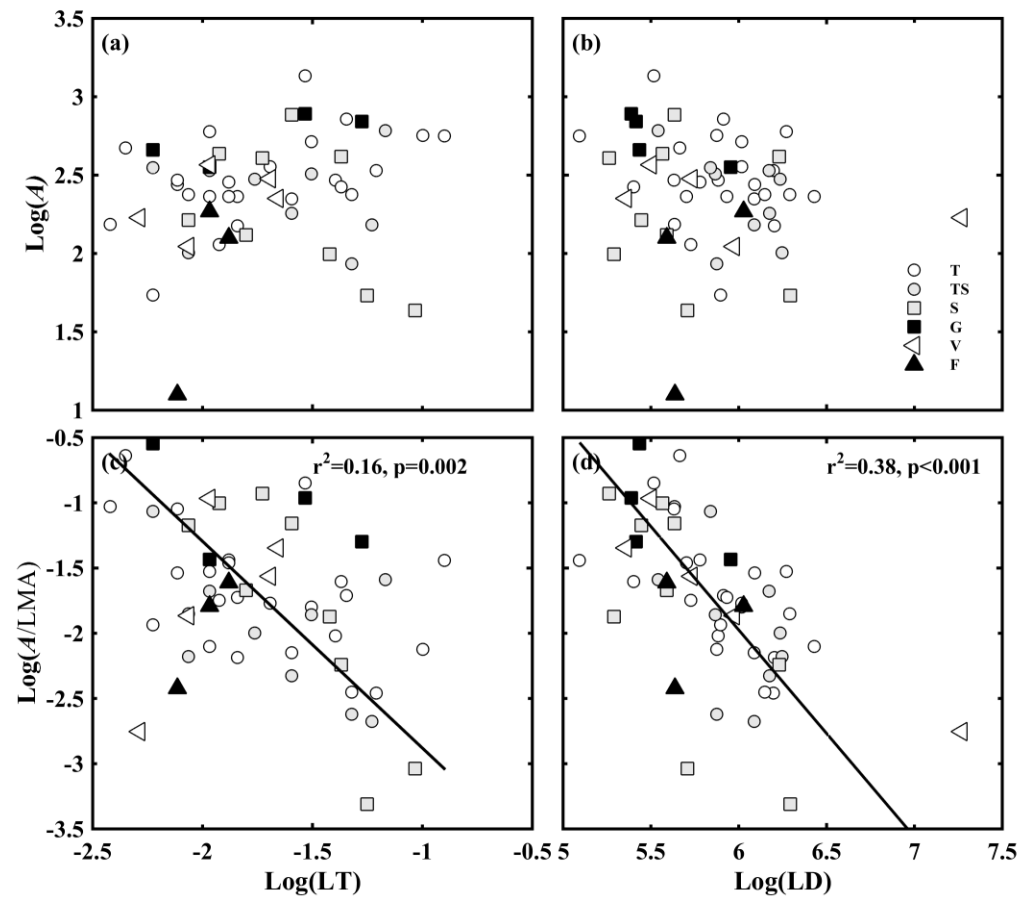


Figure S4 Relationship between (a) light-saturated net photosynthesis (A) and the leaf thickness (LT); (b) A and the leaf density (LD); (c) the ratio of A to leaf mass per area (LMA) (A/LMA); and (d) A/LMA and LD . Lines refer to regression line for 63 species. T, TS, S, G, V, and F represent Tree, Tree/Shrub, Shrub, Grass, Vine, and Fern, respectively.

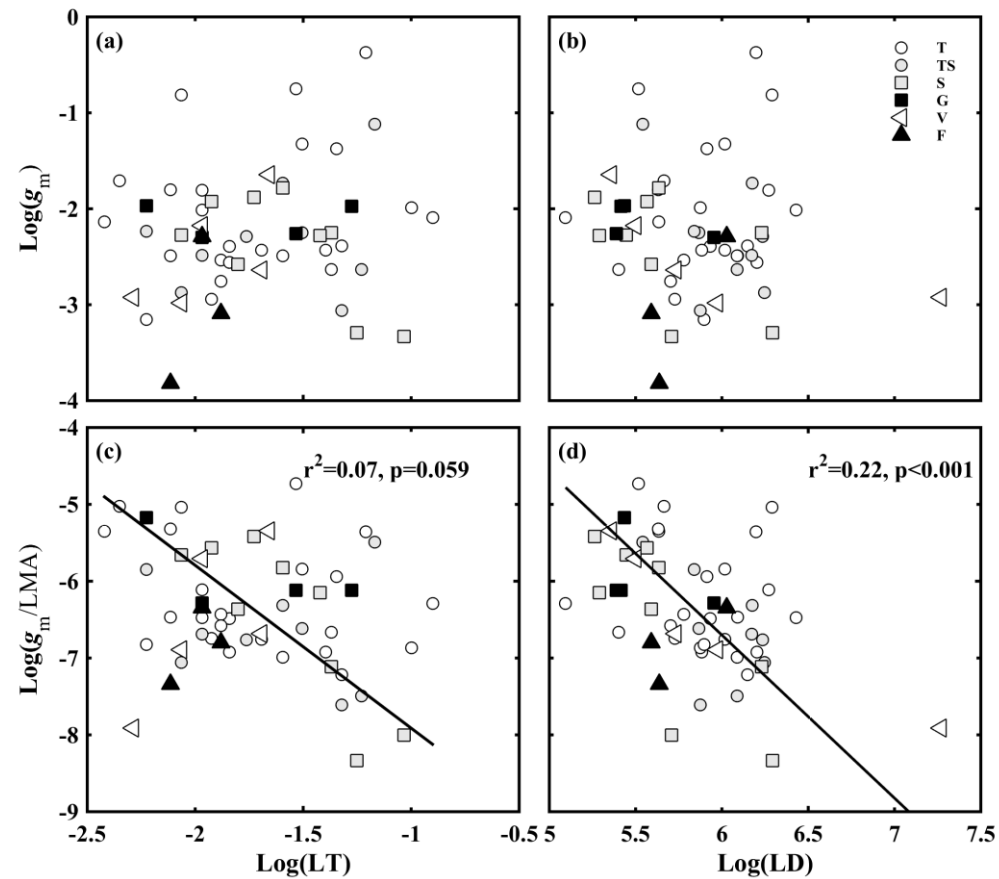


Figure S5 Relationship between (a) the mesophyll conductance to CO_2 (g_m) and the leaf thickness (LT); (b) g_m and the leaf density (LD); (c) the ratio of g_m to leaf mass per area (LMA) (g_m/LMA); and (d) g_m/LMA and LD. Lines refer to regression line for 63 species. T, TS, S, G, V, and F represent Tree, Tree/Shrub, Shrub, Grass, Vine, and Fern, respectively.

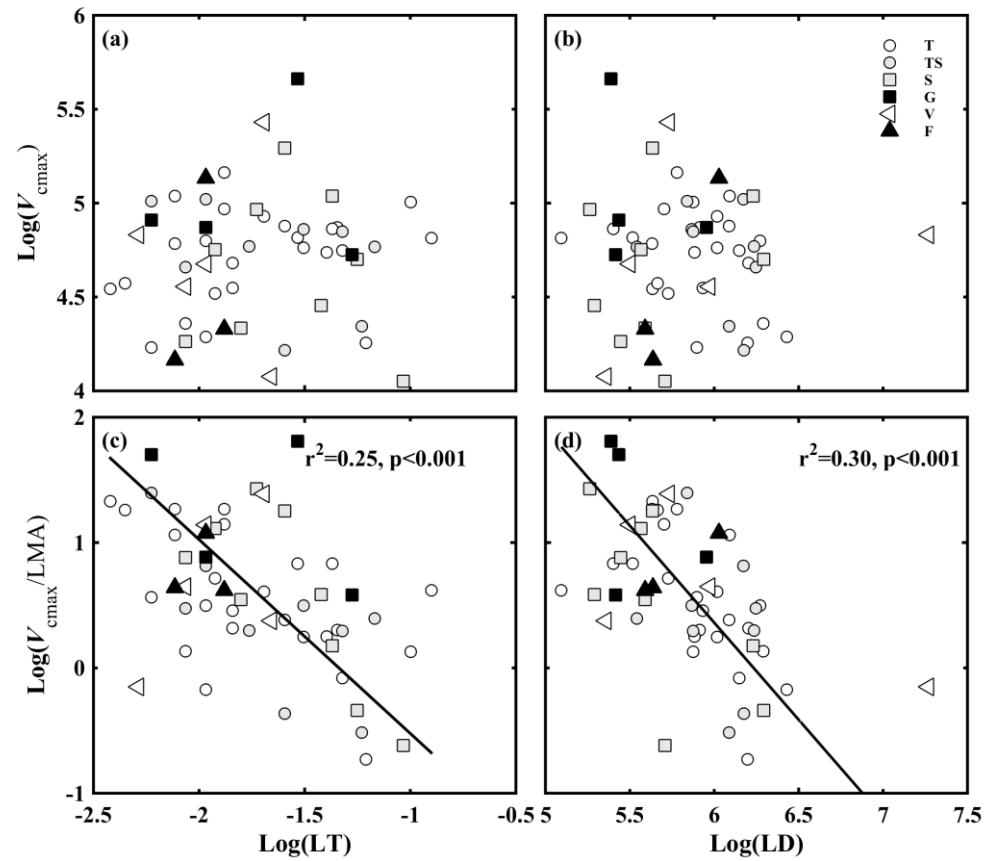


Figure S6 Relationship between (a) the maximum carboxylase activity of Rubisco (V_{cmax}) and the leaf thickness (LT); (b) V_{cmax} and the leaf density (LD); (c) the ratio of V_{cmax} to leaf mass per area (LMA) ($V_{\text{cmax}}/\text{LMA}$); and (d) $V_{\text{cmax}}/\text{LMA}$ and LD. Lines refer to regression line for 63 species. T, TS, S, G, V, and F represent Tree, Tree/Shrub, Shrub, Grass, Vine, and Fern, respectively.

2 Tables

Table S1 Details information about the 63 species in the subtropical primary forest in Southwest China.

Species	Plant family		Life form	
<i>Broussonetia papyifera</i> (Linn.) L'Hert. ex Vent.	Moraceae	Tree	Deciduous	Woody
<i>Machilus microcarpa</i> Hemsl.	Lauraceae	Tree	Evergreen	Woody
<i>Melia azedarach</i> L.	Meliaceae	Tree	Deciduous	Woody
<i>Populus × canadensis</i> Moench.	Salicaceae	Tree	Deciduous	Woody
<i>Camptotheca acuminata</i> Decne.	Nyssaceae	Tree	Deciduous	Woody
<i>Cinnamomum bodinieri</i> Levl.	Lauraceae	Tree	Evergreen	Woody
<i>Catalpa ovata</i> G. Don	Bignoniaceae	Tree	Deciduous	Woody
<i>Toona sinensis</i> (A. Juss.) Roem.	Meliaceae	Tree	Deciduous	Woody
<i>Sapium sebiferum</i> (Linn.) Roxb.	Euphorbiaceae	Tree	Deciduous	Woody
<i>Cladrastis platycarpa</i> (Maxim.) Makino	Leguminosae	Tree	Deciduous	Woody
<i>Ulmus pumila</i> L.	Ulmaceae	Tree	Deciduous	Woody
<i>Ilex macrocarpa</i> Oliv.	Aquifoliaceae	Tree	Deciduous	Woody
<i>Vitex canescens</i> Kurz	Verbenaceae	Tree	Deciduous	Woody
<i>Eriobotrya japonica</i> (Thunb.) Lindl.	Rosaceae	Tree	Evergreen	Woody
<i>Morus alba</i> L.	Moraceae	Tree	Deciduous	Woody
<i>Prunus salicina</i> Lindl.	Rosaceae	Tree	Deciduous	Woody
<i>Eucommia ulmoides</i> Oliver	Eucommiaceae	Tree	Deciduous	Woody
<i>Platycarya strobilacea</i> Sieb. et Zucc.	Juglandaceae	Tree	Deciduous	Woody
<i>Kalopanax septemlobus</i> (Thunb.) Koidz.	Araliaceae	Tree	Deciduous	Woody
<i>Zanthoxylum armatum</i> DC.	Rutaceae	Tree	Deciduous	Woody
<i>Pyrus calleryana</i>	Rosaceae	Tree	Deciduous	Woody
<i>Amygdalus persica</i> L. var.	Rosaceae	Tree	Deciduous	Woody

<i>Euonymus meackii</i> Rupr.	Celastraceae	Tree	Deciduous	Woody
<i>Zanthoxylum ovalifolium</i> Wight	Rutaceae	Tree	Deciduous	Woody
<i>Cerasus scopulorum</i> (Koehne) Yu et Li	Rosaceae	Tree	Deciduous	Woody
<i>Carpinus pubescens</i> Burk.	Betulaceae	Tree	Deciduous	Woody
<i>Lithocarpus confinis</i> Huang	Fagaceae	Tree	Evergreen	Woody
<i>Celtis sinensis</i> Pers.	Ulmaceae	Tree	Deciduous	Woody
<i>Diospyros kaki</i> Thunb. var. <i>silvestris</i> Makino	Ebenaceae	Tree	Deciduous	Woody
<i>Ligustrum lucidum</i> Ait.	Oleaceae	Tree/Shrub	Deciduous	Woody
<i>Rhamnus leptophylla</i> Schneid.	Rhamnaceae	Tree/Shrub	Deciduous	Woody
<i>Lindera communis</i> Hemsl.	Lauraceae	Tree/Shrub	Evergreen	Woody
<i>Itea yunnanensis</i> Franch	Saxifragaceae	Tree/Shrub	Evergreen	Woody
<i>Pittosporum brevicalyx</i> (Oliv.) Gagnep	Pittosporaceae	Tree/Shrub	Evergreen	Woody
<i>Litsea rubescens</i> Lec.	Lauraceae	Tree/Shrub	Deciduous	Woody
<i>Rhus chinensis</i> Mill.	Anacardiaceae	Tree/Shrub	Deciduous	Woody
<i>Alangium chinense</i> (Lour.) Harms	Alangiaceae	Tree/Shrub	Deciduous	Woody
<i>Evodia rutaecarpa</i> (Juss.) Benth.	Rutaceae	Tree/Shrub	Deciduous	Woody
<i>Machilus cavaleriei</i> Levl.	Lauraceae	Tree/Shrub	Evergreen	Woody
<i>Debregeasia longifolia</i> (Burm. f.) Wedd.	Urticaceae	Tree/Shrub	Deciduous	Woody
<i>Ziziphus jujuba</i> Mill. var. <i>spinosa</i> (Bunge) Hu ex H. F. Chow	Rhamnaceae	Shrub	Deciduous	Woody
<i>Rubus inopertus</i> (Diels) Focke	Rosaceae	Shrub	Deciduous	Woody
<i>Coriaria nepalensis</i> Wall.	Coriariaceae	Shrub	Deciduous	Woody
<i>Celastrus orbiculatus</i> Thunb.	Celastraceae	Shrub	Deciduous	Woody
<i>Wikstroemia scytophylla</i> Diels	Thymelaeaceae	Shrub	Deciduous	Woody
<i>Viburnum foetidum</i> Wall. var. <i>ceanothoides</i> (C. H. Wright) Hand.-Mazz.	Caprifoliaceae	Shrub	Deciduous	Woody
<i>Hedera nepalensis</i> K. Koch var. <i>sinensis</i> (Tobl.) Rehd.	Araliaceae	Shrub	Deciduous	Woody
<i>Rubus parvifolius</i> L.	Rosaceae	Shrub	Deciduous	Woody

<i>Rosa roxbunghii</i>	Rosaceae	Shrub	Deciduous	Woody
<i>Mallotus repandus</i> (Willd.) Muell. Arg.	Euphorbiaceae	Shrub	Deciduous	Woody
<i>Mahonia bealei</i> (Fort.) Carr.	Berberidaceae	Shrub	Evergreen	Woody
<i>Fallopia multiflora</i> (Thunb.) Harald.	Polygonaceae	Grass		Herb
<i>Conyza canadensis</i> (L.) Cronq.	Compositae	Grass		Herb
<i>Ipomoea batatas</i> (L.) Lam.	Convolvulaceae	Grass		Herb
<i>Senecio scandens</i> Buch.-Ham. ex D. Don	Compositae	Grass		Herb
<i>Vitis piasezkii</i> Maxim.	Vitaceae	Vien	Deciduous	Woody
<i>Clematis urophylla</i> Franch.	Ranunculaceae	Vien	Deciduous	Woody
<i>Bauhinia glauca</i> (Wall. ex Benth.) Benth.	Leguminosae	Vien	Evergreen	Woody
<i>Caesalpinia decapetala</i> (Roth) Alston	Leguminosae	Vien	Deciduous	Woody
<i>Paederia scandens</i> (Lour.) Merr.	Rubiaceae	Vien		Herb
<i>Cyclosorus parasiticus</i> (L.) Farwell.	Thelypteridaceae	Fern		
<i>Cyrtomium fortunei</i> J. Sm.	Dryopteridaceae	Fern		
<i>Pteris vittata</i> L.	Pteridaceae	Fern		
