



## Supplement

The following supplementary materials are available for this article: Tang, C.Q., Wen, J.-R., Han, P.-B., Yao, S.-Q., Du, M.-R., Li, S., Zeng, J.-L., Shi, Y.-C., Peng, M.-C., Wang, C.-Y., Matsui, T., Li, Y.-P., Li, J., Sun, G.-H. Tao, G.-L., 2023 Forest and population characteristics of vulnerable relict *Pseudotsuga sinensis* in southwestern China. *Taiwania* 68(4): 439-450. doi: [10.6165/tai.2023.68.439](https://doi.org/10.6165/tai.2023.68.439)

**Table S1.** Environmental characteristics of plots in southwestern China. LS: Low slope; MS: Middle slope ; US : Upper slope; VA: Valley

| Plot                 | Cidy/Prefecture | County/City | North latitude | East longitude | Elevation (m) | Terrain | Incliation (°) | Aspect (°) |
|----------------------|-----------------|-------------|----------------|----------------|---------------|---------|----------------|------------|
| <b>Forest Type 1</b> |                 |             |                |                |               |         |                |            |
| Plot 7               | Kunming         | Anning      | 24.83          | 102.35         | 1918          | MS      | 45             | SW200      |
| Plot 64              | Bijie           | Hezhang     | 27.24          | 104.35         | 1925          | MS      | 40             | SE154      |
| Plot 8               | Kunming         | Luquan      | 25.71          | 102.40         | 2110          | MS      | 45             | NW345      |
| Plot 10              | Kunming         | Luquan      | 25.71          | 102.40         | 2118          | MS      | 45             | NW323      |
| Plot 24              | Liangshan       | Puge        | 27.58          | 102.42         | 2277          | MS      | 50             | NE14       |
| Plot 25              | Liangshan       | Puge        | 27.58          | 102.42         | 2265          | MS      | 50             | NE20       |
| Plot 26              | Liangshan       | Puge        | 27.58          | 102.42         | 2260          | MS      | 50             | NE35       |
| Plot 27              | Bijie           | Weining     | 26.77          | 103.97         | 2186          | MS      | 55             | SW202      |
| Plot 29              | Bijie           | Weining     | 26.55          | 103.89         | 2184          | MS      | 50             | S160       |
| Plot 34              | Bijie           | Weining     | 26.63          | 104.07         | 2195          | MS      | 25             | W272       |
| Plot 35              | Bijie           | Weining     | 26.61          | 104.03         | 2302          | US      | 40             | NW295      |
| Plot 37              | Bijie           | Weining     | 26.77          | 103.97         | 2197          | MS      | 55             | SW218      |
| Plot 38              | Bijie           | Weining     | 26.55          | 103.89         | 2129          | US      | 40             | NW324      |
| Plot 40              | Bijie           | Weining     | 26.70          | 104.17         | 2126          | MS      | 30             | E95        |
| Plot 42              | Bijie           | Weining     | 26.60          | 103.97         | 2160          | MS      | 15             | SW228      |
| Plot 43              | Bijie           | Weining     | 26.55          | 103.89         | 2189          | MS      | 40             | SE113      |
| Plot 44              | Bijie           | Weining     | 26.63          | 104.07         | 2285          | MS      | 30             | E92        |
| Plot 45              | Bijie           | Weining     | 26.70          | 104.17         | 2142          | MS      | 15             | W279       |
| Plot 50              | Bijie           | Weining     | 26.63          | 104.07         | 2206          | MS      | 40             | SE165      |
| Plot 47              | Bijie           | Weining     | 26.63          | 104.07         | 2131          | MS      | 35             | W213       |
| Plot 48              | Bijie           | Weining     | 26.63          | 104.07         | 2128          | MS      | 35             | SW218      |
| Plot 54              | Bijie           | Weining     | 26.62          | 104.08         | 2172          | US      | 20             | SW253      |
| Plot 55              | Bijie           | Weining     | 26.61          | 104.04         | 2257          | US      | 30             | NW213      |
| Plot 58              | Bijie           | Weining     | 26.61          | 104.03         | 2260          | US      | 45             | SW234      |
| Plot 60              | Bijie           | Weining     | 26.61          | 104.07         | 2095          | MS      | 30             | SW187      |
| Plot 61              | Bijie           | Weining     | 26.61          | 104.03         | 2260          | MS      | 45             | SW221      |
| Plot 62              | Bijie           | Weining     | 26.61          | 104.07         | 2142          | MS      | 35             | W235       |
| Plot 16              | Bijie           | Xuanwei     | 26.55          | 104.15         | 2043          | US      | 40             | SE143      |
| Plot 17              | Bijie           | Xuanwei     | 26.55          | 104.15         | 2033          | US      | 40             | SE148      |
| Plot 18              | Bijie           | Xuanwei     | 26.55          | 104.15         | 2017          | US      | 30             | W266       |
| Plot 19              | Bijie           | Xuanwei     | 26.55          | 104.15         | 2026          | US      | 30             | W254       |
| Plot 20              | Bijie           | Xuanwei     | 26.55          | 104.17         | 2048          | US      | 40             | NE116      |
| Plot 31              | Bijie           | Xundian     | 25.82          | 103.41         | 2006          | MS      | 45             | SW205      |
| Plot 32              | Bijie           | Xundian     | 25.82          | 103.41         | 2015          | MS      | 45             | SW211      |
| Plot 15              | Bijie           | Zhanyi      | 25.86          | 103.64         | 2001          | MS      | 15             | 17         |
| Plot 13              | Bijie           | Zhanyi      | 25.86          | 103.64         | 1987          | MS      | 22             | 45         |
| <b>Forest Type 2</b> |                 |             |                |                |               |         |                |            |
| Plot 65              | Bijie           | Hezhang     | 27.25          | 104.35         | 1912          | MS      | 15             | NW318      |
| Plot 21              | Liangshan       | Huidong     | 26.81          | 102.89         | 2061          | MS      | 50             | SE107      |
| Plot 23              | Liangshan       | Huidong     | 26.81          | 102.89         | 2053          | MS      | 50             | SE121      |
| Plot 11              | Qujing          | Huize       | 26.27          | 103.64         | 2029          | MS      | 28             | 340        |
| Plot 12              | Qujing          | Huize       | 26.27          | 103.64         | 2045          | MS      | 25             | 54         |
| Plot 28              | Bijie           | Weining     | 26.59          | 103.97         | 2180          | MS      | 15             | NW323      |
| Plot 33              | Bijie           | Weining     | 26.63          | 104.07         | 2206          | MS      | 30             | E89        |
| Plot 36              | Bijie           | Weining     | 26.61          | 104.07         | 2160          | MS      | 20             | SW208      |
| Plot 39              | Bijie           | Weining     | 26.63          | 104.07         | 2267          | US      | 30             | N341       |
| Plot 41              | Bijie           | Weining     | 26.58          | 103.97         | 2175          | MS      | 15             | SW240      |



|                      |         |       |        |      |    |    |       |
|----------------------|---------|-------|--------|------|----|----|-------|
| Plot 46 Bijie        | Weining | 26.63 | 104.07 | 2231 | MS | 45 | SE106 |
| Plot 49 Bijie        | Weining | 26.63 | 104.07 | 2145 | MS | 35 | SE121 |
| Plot 51 Bijie        | Weining | 26.62 | 104.08 | 2115 | MS | 30 | SW265 |
| Plot 52 Bijie        | Weining | 26.61 | 104.08 | 2103 | US | 30 | SW243 |
| Plot 56 Bijie        | Weining | 26.61 | 104.04 | 2248 | US | 30 | NW228 |
| Plot 57 Bijie        | Weining | 26.61 | 104.03 | 2270 | US | 45 | SW236 |
| Plot 59 Bijie        | Weining | 26.61 | 104.03 | 2265 | US | 45 | SW238 |
| Plot 63 Bijie        | Weining | 26.61 | 104.07 | 2136 | MS | 35 | W228  |
| Plot 30 Kunming      | Xundian | 25.82 | 103.41 | 1920 | MS | 30 | SW223 |
| Plot 14 Qujing       | Zhanyi  | 25.86 | 103.64 | 2082 | MS | 25 | 70    |
| <b>Forest Type 3</b> |         |       |        |      |    |    |       |
| Plot 4 Kunming       | Anning  | 24.83 | 102.36 | 1918 | MS | 50 | SW220 |
| Plot 5 Kunming       | Anning  | 24.83 | 102.35 | 1911 | MS | 55 | SW218 |
| Plot 6 Kunming       | Anning  | 24.83 | 102.35 | 1922 | MS | 40 | SW217 |
| Plot 9 Kunming       | Luquan  | 25.71 | 102.40 | 2112 | MS | 45 | NW323 |
| Plot 53 Bijie        | Weining | 26.62 | 104.08 | 2180 | US | 20 | SW268 |
| Plot 22 Liangshan    | Huidong | 26.81 | 102.89 | 2085 | MS | 50 | SE112 |
| <b>Forest Type 4</b> |         |       |        |      |    |    |       |
| Plot 69 Qiangdongnan | Shibing | 27.27 | 108.13 | 814  | MS | 40 | SE158 |
| Plot 68 Zunyi        | Meitan  | 27.49 | 107.35 | 1031 | US | 60 | SE147 |
| Plot 66 Zunyi        | Meitan  | 27.50 | 107.48 | 941  | US | 10 | S193  |
| Plot 67 Zunyi        | Meitan  | 27.50 | 107.48 | 1020 | US | 40 | SW191 |
| <b>Forest Type 5</b> |         |       |        |      |    |    |       |
| Plot 1 Yuxi          | Yimen   | 24.90 | 102.24 | 1775 | LS | 5  | NE20  |
| Plot 2 Yuxi          | Yimen   | 24.89 | 102.24 | 1759 | MS | 45 | SW216 |
| Plot 3 Yuxi          | Yimen   | 24.89 | 102.24 | 1763 | MS | 50 | SW202 |

**Table S2.** The areal types of families and genera of seed plants in the forests.

| Areal types*                                                                    | Number of families | Proportion | Number of genera | Proportion |
|---------------------------------------------------------------------------------|--------------------|------------|------------------|------------|
| Worldwide spread                                                                | 26                 | Excluded   | 30               | Excluded   |
| Pantropics                                                                      | 26                 | 40.63      | 30               | 16.3       |
| Tropical & Subtropical E. Asia & (S.) Tropical America disjunctive distribution | 7                  | 10.94      | 2                | 1.09       |
| Old World Tropics                                                               | 1                  | 1.56       | 7                | 3.8        |
| Tropical Asia to Tropical Australasia Oceania                                   | 7                  | 10.94      | 4                | 2.17       |
| Trop. Asia to Trop. Africa                                                      |                    |            | 14               | 7.61       |
| Trop. Asia                                                                      | 1                  | 1.56       | 22               | 11.96      |
| N. Template                                                                     | 19                 | 29.69      | 48               | 26.09      |
| E. Asia & N. America disjunctive distribution                                   | 3                  | 4.69       | 21               | 11.41      |
| Old World Temp. = Temp. Eurasia                                                 |                    |            | 12               | 6.52       |
| Medit., W. to C. Asia                                                           |                    |            | 1                | 0.54       |
| E. Asia                                                                         |                    |            | 19               | 10.33      |
| Endemic to China                                                                |                    |            | 4                | 2.17       |
| <b>Total</b>                                                                    | <b>90</b>          | <b>100</b> | <b>214</b>       | <b>100</b> |

\* According to Wu (1991, 2003).

Wu, Z.-Y. 1991 The areal- types of Chinese genera of seed plants. Acta Botanica Yunnanica (**S4**): 1-139.Wu, Z.-Y. 2003 The areal- types of the world families of seed plants. Revised version. Acta Botanica Yunnanica **5**: 535-538.

**Table S3.** Species composition of the arborous layer (height  $\geq 5$  m) in each forest type. RIV = relative importance value.

| Forest type                                           | Type 1  | Type 2  | Type 3  | Type 4  | Type 5  |
|-------------------------------------------------------|---------|---------|---------|---------|---------|
| Number of species                                     | 21      | 24      | 13      | 29      | 4       |
| species                                               | RIV (%) | RIV (%) | RIV (%) | RIV (%) | RIV (%) |
| <i>Pseudotsuga sinensis</i>                           | 92.52   | 67.98   | 70.31   | 51.80   | 46.69   |
| <i>Pinus yunnanensis</i>                              | 2.63    | 19.00   | 1.64    |         |         |
| <i>Pinus armandii</i>                                 | 0.81    | 0.19    | 0.55    |         | 1.30    |
| <i>Schima argentea</i>                                | 0.76    | 5.17    |         |         |         |
| <i>Quercus spinosa</i>                                | 0.53    | 0.05    |         |         |         |
| <i>Ternstroemia gymnanthera</i>                       | 0.47    |         |         |         |         |
| <i>Alnus nepalensis</i>                               | 0.36    | 0.28    |         |         |         |
| <i>Vaccinium mandarinorum</i>                         | 0.31    | 0.33    |         |         |         |
| <i>Juglans regia</i>                                  | 0.29    |         | 0.88    |         |         |
| <i>Rhododendron mollicomum</i>                        | 0.29    |         |         |         |         |
| <i>Keteleeria evelyniana</i>                          | 0.25    | 0.40    | 2.12    |         |         |
| <i>Lithocarpus dealbatus</i>                          | 0.19    | 0.21    |         |         |         |
| <i>Cerasus clarifolia</i>                             | 0.14    |         |         |         |         |
| <i>Platycarya strobilacea</i>                         | 0.14    |         |         | 13.27   |         |
| <i>Populus yunnanensis</i>                            | 0.13    |         |         |         |         |
| <i>Acer davidii</i>                                   | 0.04    | 0.51    |         |         |         |
| <i>Lithocarpus craibianus</i>                         | 0.04    |         |         |         |         |
| <i>Quercus aliena</i>                                 | 0.03    | 0.33    |         | 1.15    |         |
| <i>Coriaria nepalensis</i>                            | 0.03    |         |         |         |         |
| <i>Cyclobalanopsis glaucooides</i>                    | 0.02    | 1.29    | 14.53   |         |         |
| <i>Diospyros kaki</i> var. <i>silvestris</i>          | 0.02    |         |         |         |         |
| <i>Quercus variabilis</i>                             |         | 1.03    |         |         |         |
| <i>Quercus acutissima</i>                             |         | 0.60    |         |         |         |
| <i>Quercus fabri</i>                                  |         | 0.52    |         |         |         |
| <i>Quercus rehderiana</i>                             |         | 0.52    |         |         |         |
| <i>Toxicodendron succedaneum</i>                      |         | 0.41    |         |         |         |
| <i>Cornus macrophylla</i>                             |         | 0.41    |         |         |         |
| <i>Juglans cathayensis</i>                            |         | 0.35    |         |         |         |
| <i>Dendrobenthamia japonica</i> var. <i>chinensis</i> |         | 0.18    |         |         |         |
| <i>Hydrangea macrophylla</i>                          |         | 0.10    |         |         |         |
| <i>Cunninghamia lanceolata</i>                        |         | 0.06    |         | 1.54    |         |
| <i>Schoepfia jasminodora</i>                          |         | 0.05    | 5.87    |         |         |
| <i>Rhamnus virgata</i>                                |         | 0.05    |         |         |         |
| <i>Lithocarpus hancei</i>                             |         |         | 1.42    |         |         |
| <i>Lonicera japonica</i>                              |         |         | 1.27    |         |         |
| <i>Cyclobalanopsis glauca</i>                         |         |         | 0.44    | 4.13    |         |
| <i>Rhododendron hancockii</i>                         |         |         | 0.43    |         |         |
| <i>Photinia glomerata</i>                             |         |         | 0.31    |         |         |
| <i>Quercus franchetii</i>                             |         |         | 0.24    |         |         |
| <i>Cyclobalanopsis myrsinifolia</i>                   |         |         |         | 7.23    | 0.53    |
| <i>Liquidambar formosana</i>                          |         |         |         | 3.42    |         |
| <i>Lindera communis</i>                               |         |         |         | 2.13    |         |
| <i>Cupressus funebris</i>                             |         |         |         | 2.08    |         |
| <i>Machilus nanmu</i>                                 |         |         |         | 1.81    |         |
| <i>Pinus massoniana</i>                               |         |         |         | 1.43    |         |
| <i>Lithocarpus corneus</i>                            |         |         |         | 1.37    |         |
| <i>Lindera thomsonii</i>                              |         |         |         | 1.29    |         |
| <i>Celtis tetrandra</i>                               |         |         |         | 1.13    |         |
| <i>Anneslea fragrans</i>                              |         |         |         | 0.79    |         |
| <i>Eurya muricata</i>                                 |         |         |         | 0.74    |         |
| <i>Schefflera delavayi</i>                            |         |         |         | 0.69    |         |
| <i>Castanopsis fargesii</i>                           |         |         |         | 0.67    |         |
| <i>Eriobotrya japonica</i>                            |         |         |         | 0.53    |         |
| <i>Cyclobalanopsis gracilis</i>                       |         |         |         | 0.45    |         |
| <i>Mallotus tenuifolius</i>                           |         |         |         | 0.42    |         |
| <i>Zanthoxylum scandens</i>                           |         |         |         | 0.34    |         |
| <i>Ilex ficoidea</i>                                  |         |         |         | 0.33    |         |
| <i>Albizia kalkora</i>                                |         |         |         | 0.30    |         |
| <i>Trachycarpus fortunei</i>                          |         |         |         | 0.23    |         |
| <i>Sorbus caloneura</i>                               |         |         |         | 0.20    |         |
| <i>Cinnamomum bejolghota</i>                          |         |         |         | 0.19    |         |
| <i>Kalopanax septemlobus</i>                          |         |         |         | 0.17    |         |
| <i>Fagus longipetiolata</i>                           |         |         |         | 0.17    |         |
| <i>Calocedrus macrolepis</i>                          |         |         |         |         | 51.48   |

**Table S4.** Species composition of the shrub layer (1.3 m ≤ height < 5 m) in each forest community type. RIV = relative importance value.

| Forest type                                        | Type 1  | Type 2  | Type 3  | Type 4  | Type 5  |
|----------------------------------------------------|---------|---------|---------|---------|---------|
| Number of species                                  | 97      | 70      | 27      | 46      | 18      |
| species                                            | RIV (%) | RIV (%) | RIV (%) | RIV (%) | RIV (%) |
| <i>Pseudotsuga sinensis</i>                        | 21.51   | 11.90   | 1.07    | 3.25    |         |
| <i>Rhododendron spinuliferum</i>                   | 16.89   | 26.43   | 18.91   |         |         |
| <i>Corylus yunnanensis</i>                         | 11.80   | 6.38    | 0.05    |         |         |
| <i>Rhododendron mollicomum</i>                     | 6.65    | 3.68    |         |         |         |
| <i>Myrsine africana</i>                            | 4.16    | 2.59    | 2.59    | 0.29    | 2.29    |
| <i>Rhododendron simsii</i>                         | 3.31    | 0.04    | 0.04    |         |         |
| <i>Vaccinium sprengelii</i>                        | 3.23    | 0.09    |         |         |         |
| <i>Berberis pruinosa</i>                           | 2.76    |         | 0.25    |         |         |
| <i>Viburnum foetidum</i> var. <i>ceanothoides</i>  | 2.60    | 1.19    | 1.04    |         |         |
| <i>Lithocarpus dealbatus</i>                       | 2.33    | 3.94    |         |         |         |
| <i>Hypericum monogynum</i>                         | 1.64    | 1.05    |         |         |         |
| <i>Myrica nana</i>                                 | 1.61    | 3.60    |         |         |         |
| <i>Rhododendron racemosum</i>                      | 1.49    |         |         |         |         |
| <i>Cotoneaster franchetii</i>                      | 1.37    | 0.69    |         |         |         |
| <i>Lyonia ovalifolia</i>                           | 1.14    | 1.36    |         |         |         |
| <i>Quercus aliena</i>                              | 0.96    | 0.09    |         |         |         |
| <i>Illicium simonsii</i>                           | 0.96    | 0.62    |         |         |         |
| <i>Quercus spinosa</i>                             | 0.87    | 3.89    | 0.21    |         |         |
| <i>Cyclobalanopsis glaucooides</i>                 | 0.83    | 2.51    | 25.37   |         |         |
| <i>Lithocarpus craibianus</i>                      | 0.75    |         |         |         |         |
| <i>Dumasia truncata</i>                            | 0.71    |         |         |         |         |
| <i>Eurya tetragonoclada</i>                        | 0.68    |         |         |         |         |
| <i>Rosa omeiensis</i> f. <i>pteracantha</i>        | 0.64    | 0.18    |         |         |         |
| <i>Dichotomanthes tristanii</i> carpa              | 0.60    |         |         |         | 1.22    |
| <i>Platycarya strobilacea</i>                      | 0.59    | 0.33    |         | 21.31   |         |
| <i>Ternstroemia gymnanthera</i>                    | 0.58    |         | 5.43    |         |         |
| <i>Elaeagnus multiflora</i>                        | 0.57    |         |         |         |         |
| <i>Cotoneaster dielsianus</i>                      | 0.51    |         |         |         |         |
| <i>Viburnum cylindricum</i>                        | 0.50    | 0.42    | 0.20    |         |         |
| <i>Camellia saluenensis</i>                        | 0.49    |         |         |         |         |
| <i>Hibiscus syriacus</i>                           | 0.49    |         |         |         |         |
| <i>Rhododendron decorum</i>                        | 0.46    |         |         |         |         |
| <i>Myrsine semiserrata</i>                         | 0.46    | 0.02    |         |         |         |
| <i>Juglans regia</i>                               | 0.37    |         |         |         |         |
| <i>Eurya nitida</i>                                | 0.37    | 0.80    |         | 2.26    |         |
| <i>Rosa omeiensis</i>                              | 0.35    | 0.18    |         |         |         |
| <i>Schima argentea</i>                             | 0.34    | 13.20   |         |         |         |
| <i>Pyrus pashia</i>                                | 0.33    |         | 0.54    |         |         |
| <i>Melissa axillaris</i>                           | 0.27    |         |         |         |         |
| <i>Viburnum foetidum</i> var. <i>rectangulatum</i> | 0.23    |         |         |         |         |
| <i>Viburnum macrocephalum</i> f. <i>keteleeri</i>  | 0.20    |         |         |         |         |
| <i>Cornus quinquenervis</i>                        | 0.17    |         |         |         |         |
| <i>Toxicodendron succedaneum</i>                   | 0.16    | 0.12    |         | 0.25    | 0.07    |
| <i>Alnus nepalensis</i>                            | 0.16    | 0.98    |         |         |         |
| <i>Styrax japonicus</i>                            | 0.15    |         |         |         |         |
| <i>Camellia reticulata</i>                         | 0.14    |         |         |         |         |
| <i>Rosa laevigata</i>                              | 0.13    |         |         |         |         |
| <i>Eurya rubiginosa</i> var. <i>attenuata</i>      | 0.13    | 0.02    |         |         |         |
| <i>Cornus oblonga</i>                              | 0.13    |         |         |         |         |
| <i>Quercus acutissima</i>                          | 0.12    | 0.02    |         |         |         |
| <i>Quercus aliena</i> var. <i>acutiserrata</i>     | 0.12    | 0.18    |         |         |         |
| <i>Rubus alceifolius</i>                           | 0.10    |         |         |         |         |
| <i>Vaccinium mandarinorum</i>                      | 0.10    | 0.15    |         |         |         |
| <i>Ligustrum quihoui</i>                           | 0.10    |         |         |         |         |
| <i>Prunus clarifolia</i>                           | 0.10    |         |         |         |         |
| <i>Coriaria nepalensis</i>                         | 0.09    | 0.11    |         |         |         |
| <i>Cipadessa baccifera</i>                         | 0.09    |         |         |         |         |
| <i>Corylus heterophylla</i>                        | 0.08    |         |         |         |         |



|                                                       |      |      |       |      |
|-------------------------------------------------------|------|------|-------|------|
| <i>Lonicera japonica</i>                              | 0.08 |      | 1.47  |      |
| <i>Elsholtzia ciliata</i>                             | 0.08 |      |       |      |
| <i>Quercus variabilis</i>                             | 0.07 | 0.75 |       |      |
| <i>Mahonia duclouxiana</i>                            | 0.07 |      |       | 0.54 |
| <i>Prinsepia utilis</i>                               | 0.07 |      |       |      |
| <i>Cotoneaster buxifolius</i>                         | 0.06 | 0.43 |       |      |
| <i>Cerasus pseudocerasus</i>                          | 0.05 |      |       |      |
| <i>Mahonia fortunei</i>                               | 0.05 |      |       |      |
| <i>Zanthoxylum scandens</i>                           | 0.05 |      | 1.99  |      |
| <i>Pyrus calleryana</i>                               | 0.04 |      |       |      |
| <i>Rhus chinensis</i>                                 | 0.04 |      |       |      |
| <i>Quercus franchetii</i>                             | 0.04 |      | 1.05  |      |
| <i>Rhamnus davurica</i>                               | 0.04 |      |       | 0.38 |
| <i>Myrica rubra</i>                                   | 0.04 |      |       |      |
| <i>Lyonia ovalifolia</i> var. <i>lanceolata</i>       | 0.03 | 0.14 |       |      |
| <i>Keteleeria evelyniana</i>                          | 0.03 | 0.24 | 0.58  |      |
| <i>Acer davidii</i>                                   | 0.03 |      |       |      |
| <i>Rosa × alba</i>                                    | 0.03 |      |       |      |
| <i>Spiraea japonica</i>                               | 0.03 | 0.88 |       |      |
| <i>Lyonia macrocalyx</i>                              | 0.03 | 1.57 | 0.04  |      |
| <i>Rhododendron megalanthum</i>                       | 0.03 |      |       |      |
| <i>Stranvaesia amphidoxa</i>                          | 0.03 |      |       |      |
| <i>Rhamnus leptophylla</i>                            | 0.03 |      |       | 1.29 |
| <i>Photinia serratifolia</i>                          | 0.02 |      |       |      |
| <i>Hydrangea macrophylla</i>                          | 0.02 |      |       |      |
| <i>Neolitsea aurata</i>                               | 0.02 |      |       |      |
| <i>Juniperus rigida</i>                               | 0.02 |      |       |      |
| <i>Populus yunnanensis</i>                            | 0.02 |      |       |      |
| <i>Pyrus xerophila</i>                                | 0.02 |      |       |      |
| <i>Rubus idaeus</i>                                   | 0.02 |      |       |      |
| <i>Pinus yunnanensis</i>                              | 0.02 | 0.49 |       |      |
| <i>Vaccinium bracteatum</i>                           | 0.02 |      |       |      |
| <i>Photinia prunifolia</i>                            | 0.01 |      |       |      |
| <i>Zanthoxylum simulans</i>                           | 0.01 |      |       |      |
| <i>Rosa henryi</i>                                    | 0.01 |      |       |      |
| <i>Rhododendron delavayi</i>                          | 0.01 | 0.58 |       |      |
| <i>Eurya semiserrulata</i>                            | 0.01 |      |       |      |
| <i>Albizia julibrissin</i>                            | 0.01 |      |       |      |
| <i>Rhododendron argyrophyllum</i>                     | 0.01 |      |       |      |
| <i>Brandisia hancei</i>                               |      | 2.42 |       |      |
| <i>Pyracantha fortuneana</i>                          |      | 1.64 |       |      |
| <i>Campylotropis macrocarpa</i>                       |      | 0.93 |       |      |
| <i>Lithocarpus dealbatus</i>                          |      | 0.44 |       |      |
| <i>Schoepfia jasmindodora</i>                         |      | 0.42 | 29.36 |      |
| <i>Cornus macrophylla</i>                             |      | 0.37 | 0.04  |      |
| <i>Dendrobenthamia japonica</i> var. <i>chinensis</i> |      | 0.31 |       |      |
| <i>Viburnum foetidum</i>                              |      | 0.26 |       |      |
| <i>Rhododendron</i>                                   |      | 0.15 |       |      |
| <i>Metapanax delavayi</i>                             |      | 0.14 |       |      |
| <i>Aralia chinensis</i>                               |      | 0.11 |       |      |
| <i>Elaeagnus conferta</i>                             |      | 0.10 |       |      |
| <i>Cunninghamia lanceolata</i>                        |      | 0.09 | 0.33  | 1.69 |
| <i>Rubus corchorifolius</i>                           |      | 0.09 |       |      |
| <i>Cinnamomum glanduliferum</i>                       |      | 0.08 |       |      |
| <i>Buddleja officinalis</i>                           |      | 0.08 |       |      |
| <i>Litsea pungens</i>                                 |      | 0.07 |       |      |
| <i>Leptodermis potaninii</i>                          |      | 0.07 |       |      |
| <i>Quercus semicarpifolia</i>                         |      | 0.06 |       |      |
| <i>Debregeasia orientalis</i>                         |      | 0.06 |       |      |
| <i>Cerasus tomentosa</i>                              |      | 0.05 |       |      |
| <i>Quercus rehderiana</i>                             |      | 0.04 |       |      |



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|                                                |      |      |       |
|------------------------------------------------|------|------|-------|
| <i>Rhododendron rigidum</i>                    | 0.04 |      |       |
| <i>Cotoneaster hissaricus</i>                  | 0.04 |      |       |
| <i>Schisandra sphenanthera</i>                 | 0.02 |      |       |
| <i>Rhamnus virgata</i>                         | 0.02 | 0.44 |       |
| <i>Rhododendron mucronatum</i>                 | 0.02 |      |       |
| <i>Pygeum topengii</i>                         | 0.02 |      |       |
| <i>Incarvillea arguta</i>                      | 0.02 |      |       |
| <i>Elaeagnus umbellata</i>                     | 0.02 |      |       |
| <i>Eurya japonica</i>                          | 0.02 |      |       |
| <i>Lithocarpus hancei</i>                      |      | 6.01 |       |
| <i>Michelia yunnanensis</i>                    |      | 2.48 |       |
| <i>Rhododendron rivulare</i>                   | 1.01 |      | 0.43  |
| <i>Rhododendron hancockii</i>                  | 0.65 |      | 4.53  |
| <i>Smilax discotis</i>                         | 0.45 |      | 1.14  |
| <i>Ribes janczewskii</i>                       | 0.41 |      |       |
| <i>Myrica esculenta</i>                        | 0.25 |      | 3.46  |
| <i>Photinia glomerata</i>                      | 0.17 |      |       |
| <i>Machilus nanmu</i>                          |      | 9.62 |       |
| <i>Metapanax davidii</i>                       |      | 7.61 |       |
| <i>Lindera glauca</i>                          |      | 6.70 |       |
| <i>Lindera thomsonii</i>                       |      | 6.67 |       |
| <i>Trachycarpus fortunei</i>                   |      | 6.29 |       |
| <i>Cyclobalanopsis glauca</i>                  |      | 5.20 |       |
| <i>Schefflera delavayi</i>                     |      | 5.18 |       |
| <i>Lindera communis</i>                        |      | 3.50 |       |
| <i>Cyclobalanopsis myrsinifolia</i>            |      | 3.28 | 43.96 |
| <i>Eurya muricata</i>                          |      | 2.74 |       |
| <i>Liquidambar formosana</i>                   |      | 1.80 |       |
| <i>Carpinus turczaninowii</i>                  |      | 1.60 |       |
| <i>Castanopsis fargesii</i>                    |      | 1.52 |       |
| <i>Engelhardia roxburghiana</i>                |      | 0.99 |       |
| <i>Cyclobalanopsis gracilis</i>                |      | 0.81 |       |
| <i>Ilex ficoidea</i>                           |      | 0.79 |       |
| <i>Celtis tetrandra</i>                        |      | 0.63 |       |
| <i>Taxus wallichiana</i> var. <i>chinensis</i> |      | 0.62 |       |
| <i>Zanthoxylum dimorphophyllum</i>             |      | 0.59 |       |
| <i>Schefflera heptaphylla</i>                  |      | 0.44 |       |
| <i>Fagus longipetiolata</i>                    |      | 0.39 |       |
| <i>Schefflera heptaphylla</i>                  |      | 0.22 |       |
| <i>Anneslea fragrans</i>                       |      | 0.14 |       |
| <i>Camellia pitardii</i>                       |      | 0.10 |       |
| <i>Eurya loquaiana</i>                         |      | 0.10 |       |
| <i>Lithocarpus corneus</i>                     |      | 0.08 |       |
| <i>Dalbergia hupeana</i>                       |      | 0.08 |       |
| <i>Sorbus caloneura</i>                        |      | 0.08 |       |
| <i>Cinnamomum bejolghota</i>                   |      | 0.07 |       |
| <i>Photinia parvifolia</i>                     |      | 0.07 |       |
| <i>Rosa sertata</i>                            |      | 0.07 |       |
| <i>Viburnum setigerum</i>                      |      | 0.07 |       |
| <i>Holboellia grandiflora</i>                  |      | 0.07 |       |
| <i>Holboellia coriacea</i>                     |      | 0.07 |       |
| <i>Hedera nepalensis</i> var. <i>sinensis</i>  |      | 0.07 |       |
| <i>Callerya nitida</i>                         |      | 0.07 |       |
| <i>Embelia laeta</i>                           |      | 0.07 |       |
| <i>Rubus lambertianus</i>                      |      | 0.07 |       |
| <i>Calocedrus macrolepis</i>                   |      |      | 16.01 |
| <i>Spatholobus suberectus</i>                  |      |      | 11.01 |
| <i>Castanopsis carlesii</i>                    |      |      | 7.19  |
| <i>Rubus irenaeus</i>                          |      |      | 6.26  |
| <i>Lithocarpus dealbatus</i>                   |      |      | 0.08  |
| <i>Helicia formosana</i>                       |      |      | 0.07  |
| <i>Laurocerasus spinulosa</i>                  |      |      | 0.07  |

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**Table S5.** Species composition of the understory (height < 1.3 m) in each forest community type. RIV = relative importance value.

| Forest type                                              | Type 1  | Type 2  | Type 3  | Type 4  | Type 5  |
|----------------------------------------------------------|---------|---------|---------|---------|---------|
| Number of species                                        | 204     | 115     | 55      | 55      | 15      |
| species                                                  | RIV (%) | RIV (%) | RIV (%) | RIV (%) | RIV (%) |
| <i>Pteris cretica</i>                                    | 6.75    | 2.87    | 3.38    | 0.07    |         |
| <i>Pseudotsuga sinensis</i>                              | 5.09    | 4.72    | 3.70    | 1.26    |         |
| <i>Ainsliaea latifolia</i>                               | 3.87    | 9.11    | 2.97    | 0.14    |         |
| <i>Oplismenus undulatifolius</i>                         | 3.18    | 7.49    |         |         |         |
| <i>Phryma leptostachya</i> subsp. <i>asiatica</i>        | 3.00    | 3.23    |         |         |         |
| <i>Hylodesmum podocarpum</i>                             | 2.75    | 0.43    |         |         |         |
| <i>Elsholtzia ciliata</i>                                | 2.70    | 3.45    | 0.23    |         |         |
| <i>Fragaria vesca</i>                                    | 2.61    | 5.33    |         |         |         |
| <i>Cyperus rotundus</i>                                  | 2.59    | 1.73    |         | 40.82   |         |
| <i>Athyrium dissitifolium</i>                            | 2.41    | 3.32    | 2.07    |         |         |
| <i>Hypericum monogynum</i>                               | 2.37    | 1.16    | 0.42    |         |         |
| <i>Dryopteris fuscipes</i>                               | 2.12    | 0.83    | 3.25    |         | 8.33    |
| <i>Artemisia lavandulifolia</i>                          | 1.98    | 0.47    |         |         |         |
| <i>Carex cruciata</i>                                    | 1.84    | 2.61    |         |         |         |
| <i>Arisaema erubescens</i>                               | 1.82    | 0.25    | 0.34    |         |         |
| <i>Anaphalis sinica</i>                                  | 1.72    | 0.16    |         |         |         |
| <i>Oplismenus compositus</i>                             | 1.67    | 3.10    |         |         |         |
| <i>Athyrium filix-femina</i>                             | 1.48    | 2.22    | 3.52    |         |         |
| <i>Indigofera tinctoria</i>                              | 1.42    | 0.02    |         |         |         |
| <i>Myrsine africana</i>                                  | 1.41    | 2.27    | 6.24    | 0.07    | 5.36    |
| <i>Rubus fockeanus</i>                                   | 1.17    | 0.31    |         |         |         |
| <i>Dumasia truncata</i>                                  | 1.16    |         |         |         |         |
| <i>Parthenocissus semicordata</i>                        | 1.14    | 0.95    |         |         |         |
| Unknown                                                  | 1.14    |         |         | 4.39    |         |
| <i>Fordiophyton faberi</i>                               | 1.11    | 0.13    |         |         |         |
| <i>Corylus yunnanensis</i>                               | 1.06    | 0.78    |         |         |         |
| <i>Anemone vitifolia</i>                                 | 1.04    | 0.02    |         |         |         |
| <i>Goniophlebium amoenum</i>                             | 1.03    | 1.17    |         |         |         |
| <i>Begonia grandis</i>                                   | 1.00    | 1.02    |         |         |         |
| <i>Oxalis corniculata</i>                                | 0.99    | 0.33    |         |         |         |
| <i>Viburnum foetidum</i> var. <i>ceanothoides</i>        | 0.97    | 0.71    | 1.20    |         |         |
| <i>Rhododendron mollicomum</i>                           | 0.95    | 0.11    |         |         |         |
| <i>Plantago asiatica</i>                                 | 0.93    | 1.05    |         |         |         |
| <i>Diplazium donianum</i>                                | 0.90    |         |         |         |         |
| <i>Gonostegia hirta</i>                                  | 0.87    | 0.47    |         |         |         |
| <i>Anemone rivularis</i>                                 | 0.86    | 0.61    |         |         |         |
| <i>Arisaema franchetianum</i>                            | 0.86    | 0.14    |         |         |         |
| <i>Hydrocotyle sibthorpioides</i> var. <i>batrachium</i> | 0.84    | 0.45    |         |         |         |
| <i>Dryopteris marginata</i>                              | 0.76    | 1.40    |         |         |         |
| <i>Myrica nana</i>                                       | 0.65    | 5.93    |         |         |         |
| <i>Muhlenbergia huegelii</i>                             | 0.63    | 1.45    | 2.44    |         |         |
| <i>Smilax hypoglauca</i>                                 | 0.62    |         | 0.90    |         |         |
| <i>Viola yunnanfuensis</i>                               | 0.61    | 0.35    |         |         |         |
| <i>Artemisia princeps</i>                                | 0.61    |         |         |         |         |
| <i>Geranium nepalense</i>                                | 0.55    |         |         |         |         |
| <i>Ophiopogon bodinieri</i>                              | 0.55    | 0.91    | 5.67    |         |         |
| <i>Thalictrum aquilegifolium</i> var. <i>sibiricum</i>   | 0.54    | 0.02    |         |         |         |
| <i>Agrimonia pilosa</i>                                  | 0.52    | 0.30    | 0.52    |         |         |
| <i>Eupatorium japonicum</i>                              | 0.51    |         |         |         |         |
| <i>Urtica mairei</i>                                     | 0.47    |         | 4.14    |         |         |
| <i>Polygonum senticosum</i>                              | 0.47    |         |         |         |         |
| <i>Juglans regia</i>                                     | 0.46    |         |         |         |         |
| <i>Dioscorea bulbifera</i>                               | 0.45    | 0.06    |         |         |         |
| <i>Bidens pilosa</i>                                     | 0.44    |         | 0.16    |         |         |



|                                               |      |      |      |       |
|-----------------------------------------------|------|------|------|-------|
| <i>Rhododendron spinuliferum</i>              | 0.43 | 0.83 | 6.39 |       |
| <i>Rosa omeiensis</i> f. <i>pteracantha</i>   | 0.41 | 0.04 |      |       |
| <i>Commelina benghalensis</i>                 | 0.41 |      | 1.55 |       |
| <i>Viola sphaerocarpa</i>                     | 0.41 | 3.85 |      |       |
| <i>Viola inconspicua</i>                      | 0.38 | 0.35 |      |       |
| <i>Isodon adenanthus</i>                      | 0.36 | 0.44 |      |       |
| <i>Achyranthes aspera</i>                     | 0.36 |      |      |       |
| <i>Cotoneaster franchetii</i>                 | 0.33 |      |      |       |
| <i>Adiantum flabellulatum</i>                 | 0.32 | 0.97 |      |       |
| <i>Cystopteris fragilis</i>                   | 0.32 |      |      |       |
| <i>Ampelopsis glandulosa</i>                  | 0.31 | 0.13 |      |       |
| <i>Pteris actiniopteroides</i>                | 0.31 |      |      |       |
| <i>Myrsine semiserrata</i>                    | 0.30 | 0.02 |      |       |
| <i>Ligusticum jeholense</i>                   | 0.30 |      |      |       |
| <i>Araiostegia perdurans</i>                  | 0.30 |      |      |       |
| <i>Vaccinium sprengelii</i>                   | 0.30 |      |      |       |
| <i>Rhabdothamnopsis sinensis</i>              | 0.29 |      |      |       |
| <i>Eragrostis ferruginea</i>                  | 0.29 | 0.02 |      |       |
| <i>Potentilla kleiniana</i>                   | 0.29 |      |      |       |
| <i>Phegopteris decursive-pinnata</i>          | 0.27 | 1.39 |      |       |
| <i>Rhododendron racemosum</i>                 | 0.27 |      |      |       |
| <i>Liparis campylostalix</i>                  | 0.27 |      | 0.19 |       |
| <i>Desmodium heterocarpon</i>                 | 0.26 | 0.18 | 3.44 |       |
| <i>Pteridium revolutum</i>                    | 0.25 | 0.47 |      |       |
| <i>Eurya tetragonoclada</i>                   | 0.25 |      |      |       |
| <i>Ageratina adenophora</i>                   | 0.25 |      | 2.71 | 19.08 |
| <i>Rubus idaeus</i>                           | 0.24 |      |      |       |
| <i>Codonopsis convolvulacea</i>               | 0.23 |      |      |       |
| <i>Rubus niveus</i>                           | 0.23 |      |      |       |
| <i>Valeriana jatamansi</i>                    | 0.23 |      |      |       |
| <i>Achyranthes bidentata</i>                  | 0.22 |      | 0.96 |       |
| <i>Duchesnea indica</i>                       | 0.22 |      |      |       |
| <i>Fagopyrum gracilipes</i>                   | 0.22 | 0.04 |      |       |
| <i>Rubia schumanniana</i>                     | 0.22 | 0.40 | 2.35 |       |
| <i>Woodwardia japonica</i>                    | 0.22 |      |      | 1.64  |
| <i>Cyclobalanopsis glaucoides</i>             | 0.21 | 0.52 | 4.92 |       |
| <i>Isodon amethystoides</i>                   | 0.21 |      |      |       |
| <i>Viola striatella</i>                       | 0.21 | 1.97 |      |       |
| <i>Onychium japonicum</i>                     | 0.21 |      |      |       |
| <i>Galium hoffmeisteri</i>                    | 0.20 |      |      |       |
| <i>Smilax discotis</i>                        | 0.20 | 0.16 | 1.33 | 3.82  |
| <i>Saxifraga filicaulis</i>                   | 0.19 |      |      |       |
| <i>Pteris plumbea</i>                         | 0.19 | 0.18 | 0.37 |       |
| <i>Rubia cordifolia</i>                       | 0.19 |      |      |       |
| <i>Clematis lasiantha</i>                     | 0.19 |      |      |       |
| <i>Saussurea nivea</i>                        | 0.18 |      |      |       |
| <i>Hibiscus syriacus</i>                      | 0.18 |      |      |       |
| <i>Ainsliaea yunnanensis</i>                  | 0.18 | 0.12 |      |       |
| <i>Sanicula chinensis</i>                     | 0.17 |      |      |       |
| <i>Ainsliaea henryi</i>                       | 0.17 |      |      |       |
| <i>Onychium japonicum</i> var. <i>lucidum</i> | 0.17 |      |      |       |
| <i>Asarum caudigerum</i>                      | 0.16 |      |      |       |
| <i>Erigeron acris</i>                         | 0.16 |      |      |       |
| <i>Corylus heterophylla</i>                   | 0.16 |      |      |       |
| <i>Platycarya strobilacea</i>                 | 0.16 | 0.13 |      | 1.36  |
| <i>Clinopodium megalanthum</i>                | 0.16 | 0.31 |      |       |
| <i>Rosa henryi</i>                            | 0.16 |      |      |       |
| <i>Parochetus communis</i>                    | 0.16 | 0.65 |      |       |
| <i>Rosa</i> × <i>alba</i>                     | 0.16 | 0.13 |      |       |





|                                     |      |      |      |      |
|-------------------------------------|------|------|------|------|
| <i>Goodyera repens</i>              | 0.15 | 0.81 |      |      |
| <i>Hypericum acmosepalum</i>        | 0.15 |      | 0.19 |      |
| <i>Pinus yunnanensis</i>            | 0.15 | 0.37 | 0.19 |      |
| <i>Scutellaria discolor</i>         | 0.14 |      |      |      |
| <i>Lepisorus thunbergianus</i>      | 0.14 |      |      |      |
| <i>Melissa axillaris</i>            | 0.14 |      |      |      |
| <i>Sambucus adnata</i>              | 0.14 |      | 2.58 |      |
| <i>Dryopteris wallichiana</i>       | 0.13 |      |      |      |
| <i>Quercus aliena</i>               | 0.13 |      |      | 0.07 |
| <i>Rubus columellaris</i>           | 0.13 | 0.47 |      |      |
| <i>Chenopodium hybridum</i>         | 0.13 |      |      |      |
| <i>Berberis pruinosa</i>            | 0.13 |      |      |      |
| <i>Mahonia duclouxiana</i>          | 0.12 | 0.11 |      | 0.49 |
| <i>Picris hieracioides</i>          | 0.12 |      |      |      |
| <i>Polygonum nepalense</i>          | 0.12 |      |      |      |
| <i>Sanguisorba officinalis</i>      | 0.12 |      |      |      |
| <i>Premna microphylla</i>           | 0.12 |      |      |      |
| <i>Myriactis nepalensis</i>         | 0.11 | 0.02 | 0.19 |      |
| <i>Abelia chinensis</i>             | 0.11 |      |      |      |
| <i>Pilea sinofasciata</i>           | 0.11 |      | 2.04 |      |
| <i>Scutellaria baicalensis</i>      | 0.11 |      |      |      |
| <i>Rubus assamensis</i>             | 0.10 |      |      |      |
| <i>Rubus innominatus</i>            | 0.10 |      |      |      |
| <i>Pachysandra axillaris</i>        | 0.10 |      |      |      |
| <i>Alnus nepalensis</i>             | 0.09 | 0.08 |      |      |
| <i>Dioscorea zingiberensis</i>      | 0.09 |      |      |      |
| <i>Acmella paniculata</i>           | 0.09 |      |      |      |
| <i>Potentilla freyniana</i>         | 0.09 |      |      |      |
| <i>Leontopodium leontopodioides</i> | 0.08 |      |      |      |
| <i>Setaria plicata</i>              | 0.08 |      | 0.55 |      |
| <i>Mahonia fortunei</i>             | 0.08 |      |      |      |
| <i>Lithocarpus craibianus</i>       | 0.07 |      |      |      |
| <i>Polygonum capitatum</i>          | 0.07 |      |      |      |
| <i>Carex baccans</i>                | 0.07 |      |      |      |
| <i>Rubus coreanus</i>               | 0.07 |      |      |      |
| <i>Parasenecio forrestii</i>        | 0.07 |      |      |      |
| <i>Erigeron sumatrensis</i>         | 0.07 |      |      |      |
| <i>Tectaria phaeocaulis</i>         | 0.07 |      |      |      |
| <i>Michelia yunnanensis</i>         | 0.07 |      | 2.36 |      |
| <i>Arisaema prazeri</i>             | 0.07 | 0.53 |      |      |
| <i>Vaccinium bracteatum</i>         | 0.06 |      |      |      |
| <i>Ranunculus japonicus</i>         | 0.06 |      |      |      |
| <i>Dichrocephala benthamii</i>      | 0.06 |      |      |      |
| <i>Arthraxon hispidus</i>           | 0.06 | 2.35 |      | 0.14 |
| <i>Temstroemia gymnanthera</i>      | 0.06 |      | 1.15 |      |
| <i>Toxicodendron succedaneum</i>    | 0.06 |      |      |      |
| <i>Rhus chinensis</i>               | 0.05 |      |      |      |
| <i>Spiraea salicifolia</i>          | 0.05 |      |      |      |
| <i>Eschenbachia japonica</i>        | 0.05 |      |      |      |
| <i>Cyanotis vaga</i>                | 0.05 |      |      |      |
| <i>Lithocarpus dealbatus</i>        | 0.05 |      |      |      |
| <i>Rubus oblongus</i>               | 0.05 |      |      |      |
| <i>Galinsoga parviflora</i>         | 0.05 |      |      |      |
| <i>Thalictrum delavayi</i>          | 0.05 | 0.28 | 0.16 |      |
| <i>Tussilago farfara</i>            | 0.05 |      |      |      |
| <i>Osbeckia chinensis</i>           | 0.04 |      |      |      |
| <i>Lysimachia christinae</i>        | 0.03 |      |      |      |
| <i>Ribes janczewskii</i>            | 0.03 |      | 0.59 |      |
| <i>Prunella vulgaris</i>            | 0.03 |      |      |      |



|                                                       |      |      |      |      |
|-------------------------------------------------------|------|------|------|------|
| <i>Trifolium repens</i>                               | 0.03 |      |      |      |
| <i>Potentilla lineata</i>                             | 0.03 | 0.20 |      |      |
| <i>Artemisia palustris</i>                            | 0.03 |      |      |      |
| <i>Keteleeria evelyniana</i>                          | 0.03 |      | 0.42 |      |
| <i>Hemiphragma heterophyllum</i>                      | 0.03 | 0.12 |      |      |
| <i>Aster tataricus</i>                                | 0.03 |      |      |      |
| <i>Fallopia multiflora</i>                            | 0.03 |      |      |      |
| <i>Cyathula officinalis</i>                           | 0.02 |      | 2.46 |      |
| <i>Actinostemma tenerum</i>                           | 0.02 |      |      |      |
| <i>Acer henryi</i>                                    | 0.02 |      |      |      |
| <i>Rhododendron decorum</i>                           | 0.02 |      |      |      |
| <i>Lonicera japonica</i>                              | 0.02 |      | 0.73 |      |
| <i>Rhododendron simsii</i>                            | 0.02 |      |      |      |
| <i>Cornus oblonga</i>                                 | 0.02 |      |      |      |
| <i>Cyanotis arachnoidea</i>                           | 0.02 | 0.02 |      |      |
| <i>Ficus tikoua</i>                                   | 0.02 |      |      |      |
| <i>Saruma henryi</i>                                  | 0.02 |      |      |      |
| <i>Polystichum tsus-simense</i>                       | 0.02 |      |      |      |
| <i>Myosoton aquaticum</i>                             | 0.01 |      |      |      |
| <i>Leibnitzia anandria</i>                            | 0.01 | 0.98 | 0.41 |      |
| <i>Cheilanthes chusana</i>                            | 0.01 |      |      |      |
| <i>Athyrium biserrulatum</i>                          | 0.01 |      | 6.72 |      |
| <i>Amphicarpaea edgeworthii</i>                       | 0.01 |      |      |      |
| <i>Phlomis umbrosa</i>                                | 0.01 |      |      |      |
| <i>Goodyera schlechtendaliana</i>                     | 0.01 | 0.02 |      |      |
| <i>Camellia saluenensis</i>                           | 0.01 |      |      |      |
| <i>Gentiana rigescens</i>                             | 0.01 | 0.03 |      |      |
| <i>Pinus armandii</i>                                 | 0.01 |      |      |      |
| <i>Sarcococca ruscifolia</i>                          | 0.01 |      |      | 0.07 |
| <i>Viburnum macrocephalum</i> f. <i>keteleeri</i>     | 0.01 |      |      |      |
| <i>Lobelia nummularia</i>                             | 0.01 |      |      |      |
| <i>Salvia przewalskii</i>                             | 0.01 |      |      |      |
| <i>Viola arcuata</i>                                  |      | 2.67 |      |      |
| <i>Merremia hungaiensis</i>                           |      | 0.48 |      |      |
| <i>Deparia unifurcata</i>                             |      | 0.47 |      |      |
| <i>Rubus corchorifolius</i>                           |      | 0.44 |      |      |
| <i>Cunninghamia lanceolata</i>                        |      | 0.34 | 0.28 | 0.31 |
| <i>Selliguea crenatopinnata</i>                       |      | 0.30 |      |      |
| <i>Schima argentea</i>                                |      | 0.27 |      |      |
| <i>Coriaria nepalensis</i>                            |      | 0.24 |      |      |
| <i>Hedychium spicatum</i>                             |      | 0.22 |      |      |
| <i>Anaphalis nepalensis</i>                           |      | 0.20 |      |      |
| <i>Fragria nilgerrensis</i>                           |      | 0.18 |      |      |
| <i>Eurya rubiginosa</i> var. <i>attenuata</i>         |      | 0.15 |      |      |
| <i>Adiantum edgeworthii</i>                           |      | 0.13 |      |      |
| <i>Rhododendron</i>                                   |      | 0.13 |      |      |
| <i>Asparagus setaceus</i>                             |      | 0.12 |      |      |
| <i>Pyracantha fortuneana</i>                          |      | 0.06 |      |      |
| <i>Nothopanax delavayi</i>                            |      | 0.06 |      |      |
| <i>Pimpinella candolleana</i>                         |      | 0.06 |      |      |
| <i>Viola collina</i>                                  |      | 0.04 |      |      |
| <i>Lyonia ovalifolia</i>                              |      | 0.03 |      |      |
| <i>Smilax china</i>                                   |      | 0.03 |      | 0.14 |
| <i>Macrothelypteris oligophlebia</i>                  |      | 0.03 |      |      |
| <i>Rosa omeiensis</i>                                 |      | 0.03 |      |      |
| <i>Mimosa pudica</i>                                  |      | 0.03 |      |      |
| <i>Dendrobenthamia japonica</i> var. <i>chinensis</i> |      | 0.03 |      |      |
| <i>Pogostemon auricularius</i>                        |      | 0.02 |      |      |
| <i>Craspedolobium schochii</i>                        |      | 0.02 |      |      |



|                                                 |      |      |       |
|-------------------------------------------------|------|------|-------|
| <i>Viburnum cylindricum</i>                     | 0.02 |      |       |
| <i>Litsea pungens</i>                           | 0.02 |      |       |
| <i>Fagopyrum tataricum</i>                      | 0.02 |      |       |
| <i>Berberis amurensis</i>                       | 0.02 |      |       |
| <i>Carya cathayensis</i>                        | 0.02 |      |       |
| <i>Ophiopogon intermedius</i>                   |      | 4.11 | 20.44 |
| <i>Lithocarpus hancei</i>                       |      | 2.16 |       |
| <i>Schoepfia jasminodora</i>                    |      | 2.15 |       |
| <i>Amorphophallus yunnanensis</i>               |      | 1.01 |       |
| <i>Myrica esculenta</i>                         |      | 0.89 | 1.36  |
| <i>Pilea plataniflora</i>                       |      | 0.89 | 0.07  |
| <i>Polygonum chinense</i> var. <i>paradoxum</i> |      | 0.74 |       |
| <i>Tetragymma yunnanense</i>                    |      | 0.52 |       |
| <i>Trachycarpus fortunei</i>                    |      | 0.49 | 0.43  |
| <i>Rhododendron rivulare</i>                    |      | 0.28 | 2.24  |
| <i>Solanum virginianum</i>                      |      | 0.22 |       |
| <i>Rubus ellipticus</i>                         |      | 0.19 |       |
| <i>Pyrrosia lingua</i>                          |      |      | 13.61 |
| <i>Trachelospermum brevistylum</i>              |      |      | 6.71  |
| <i>Euonymus fortunei</i>                        |      |      | 6.40  |
| <i>Lysionotus pauciflorus</i>                   |      |      | 3.71  |
| <i>Hedera nepalensis</i> var. <i>sinensis</i>   |      |      | 2.41  |
| <i>Eurya nitida</i>                             |      |      | 2.30  |
| <i>Iris confusa</i>                             |      |      | 2.27  |
| <i>Hypodematium crenatum</i>                    |      |      | 2.21  |
| <i>Zanthoxylum scandens</i>                     |      |      | 1.26  |
| <i>Schefflera delavayi</i>                      |      |      | 0.98  |
| <i>Rosa sertata</i>                             |      |      | 0.97  |
| <i>Liriope graminifolia</i>                     |      |      | 0.95  |
| <i>Lindera thomsonii</i>                        |      |      | 0.86  |
| <i>Reineckea carnea</i>                         |      |      | 0.61  |
| <i>Pilea notata</i>                             |      |      | 0.61  |
| <i>Ardisia japonica</i>                         |      |      | 0.44  |
| <i>Metapanax davidii</i>                        |      |      | 0.36  |
| <i>Bauhinia glauca</i>                          |      |      | 0.32  |
| <i>Rhamnus virgata</i>                          |      |      | 0.25  |
| <i>Dryopteris varia</i>                         |      |      | 0.21  |
| <i>Carex capilliformis</i>                      |      |      | 0.14  |
| <i>Lithocarpus corneus</i>                      |      |      | 0.14  |
| <i>Celtis sinensis</i>                          |      |      | 0.08  |
| <i>Lindera communis</i>                         |      |      | 0.07  |
| <i>Zelkova serrata</i>                          |      |      | 0.07  |
| <i>Sageretia thea</i>                           |      |      | 0.07  |
| <i>Rhododendron ovatum</i>                      |      |      | 0.07  |
| <i>Serissa japonica</i>                         |      |      | 0.07  |
| <i>Viburnum setigerum</i>                       |      |      | 0.07  |
| <i>Lophatherum gracile</i>                      |      |      | 0.07  |
| <i>Eurya muricata</i>                           |      |      | 0.07  |
| <i>Schefflera heptaphylla</i>                   |      |      | 0.07  |
| <i>Miscanthus sinensis</i>                      |      |      | 0.07  |
| <i>Holboellia grandiflora</i>                   |      |      | 0.07  |
| <i>Smilax lanceifolia</i>                       |      |      | 0.07  |
| <i>Malus spectabilis</i>                        |      |      | 0.07  |
| <i>Castanopsis fargesii</i>                     |      |      | 0.07  |
| <i>Odontosoria chusana</i>                      |      |      | 0.07  |
| <i>Lindera glauca</i>                           |      |      | 0.07  |
| <i>Dalbergia hancei</i>                         |      |      | 0.07  |
| <i>Spatholobus suberectus</i>                   |      |      | 16.18 |
| <i>Calocedrus macrolepis</i>                    |      |      | 13.70 |
| <i>Cyclobalanopsis myrsinifolia</i>             |      |      | 6.43  |
| <i>Rhamnus davurica</i>                         |      |      | 1.55  |
| <i>Castanopsis carlesii</i>                     |      |      | 0.61  |
| <i>Lithocarpus dealbatus</i>                    |      |      | 0.21  |
| <i>Solanum violaceum</i>                        |      |      | 0.21  |

**Table S6.** Mean tree ring widths (for trees with a height  $\geq 1.3$  m) and mean basal area increments at breast height (1.3 m tall) derived from 45 tree core samples of *Pseudotsuga sinensis* at various ages. BAI = Basal areal increment.

| The sequence/order of given ages (Year) | Ring width (mm/year)<br>Mean | Standard deviation<br>SD | BAI (mm <sup>2</sup> /year)<br>Mean | Standard deviation<br>SD | Number of sampled rings<br>N |
|-----------------------------------------|------------------------------|--------------------------|-------------------------------------|--------------------------|------------------------------|
| 8th                                     | 5.86                         | 4.16                     | 160.90                              | 284.29                   | 45                           |
| 9th                                     | 5.35                         | 3.55                     | 347.22                              | 352.96                   | 45                           |
| 10th                                    | 4.38                         | 2.44                     | 446.66                              | 421.28                   | 45                           |
| 11th                                    | 4.04                         | 2.06                     | 517.37                              | 437.13                   | 45                           |
| 12th                                    | 3.85                         | 1.67                     | 587.26                              | 441.93                   | 45                           |
| 13th                                    | 3.92                         | 1.77                     | 708.07                              | 551.90                   | 45                           |
| 14th                                    | 3.65                         | 1.43                     | 735.04                              | 532.63                   | 45                           |
| 15th                                    | 3.85                         | 1.69                     | 860.06                              | 595.77                   | 45                           |
| 16th                                    | 3.82                         | 1.46                     | 936.61                              | 616.00                   | 45                           |
| 17th                                    | 3.85                         | 1.78                     | 1048.75                             | 742.62                   | 45                           |
| 18th                                    | 3.59                         | 1.72                     | 1073.94                             | 837.67                   | 45                           |
| 19th                                    | 3.50                         | 1.43                     | 1095.91                             | 699.30                   | 45                           |
| 20th                                    | 3.45                         | 1.54                     | 1154.09                             | 783.88                   | 45                           |
| 21st                                    | 3.28                         | 1.57                     | 1177.25                             | 901.70                   | 45                           |
| 22nd                                    | 3.19                         | 1.41                     | 1223.16                             | 906.78                   | 45                           |
| 23rd                                    | 3.23                         | 1.84                     | 1303.84                             | 975.04                   | 45                           |
| 24th                                    | 3.39                         | 1.76                     | 1460.56                             | 1074.10                  | 45                           |
| 25th                                    | 3.42                         | 1.36                     | 1523.35                             | 898.67                   | 44                           |
| 26th                                    | 3.28                         | 1.73                     | 1542.95                             | 1192.46                  | 44                           |
| 27th                                    | 3.28                         | 1.89                     | 1572.58                             | 1118.74                  | 44                           |
| 28th                                    | 3.05                         | 1.58                     | 1527.97                             | 1068.54                  | 43                           |
| 29th                                    | 2.79                         | 1.34                     | 1501.01                             | 1089.24                  | 43                           |
| 30th                                    | 2.76                         | 1.27                     | 1516.06                             | 1026.77                  | 42                           |
| 31st                                    | 2.90                         | 1.28                     | 1601.09                             | 954.78                   | 42                           |
| 32nd                                    | 3.12                         | 1.41                     | 1804.32                             | 1172.31                  | 41                           |
| 33rd                                    | 3.02                         | 1.55                     | 1829.07                             | 1275.41                  | 40                           |
| 34th                                    | 2.66                         | 1.49                     | 1657.39                             | 1193.43                  | 40                           |
| 35th                                    | 2.60                         | 1.61                     | 1689.08                             | 1300.72                  | 40                           |
| 36th                                    | 2.55                         | 1.68                     | 1760.05                             | 1536.08                  | 38                           |
| 37th                                    | 2.60                         | 1.60                     | 1823.41                             | 1567.42                  | 37                           |
| 38th                                    | 2.71                         | 1.56                     | 1941.21                             | 1643.58                  | 36                           |
| 39th                                    | 2.72                         | 1.84                     | 2015.33                             | 1702.49                  | 36                           |
| 40th                                    | 2.48                         | 1.74                     | 1967.51                             | 1976.79                  | 36                           |
| 41st                                    | 2.17                         | 1.31                     | 1665.64                             | 1483.36                  | 36                           |
| 42nd                                    | 2.27                         | 1.49                     | 1765.96                             | 1616.85                  | 35                           |
| 43rd                                    | 2.22                         | 1.50                     | 1756.16                             | 1612.98                  | 34                           |
| 44th                                    | 2.22                         | 1.78                     | 1769.99                             | 2015.11                  | 31                           |
| 45th                                    | 2.45                         | 2.25                     | 2115.72                             | 2672.90                  | 29                           |
| 46th                                    | 2.42                         | 1.61                     | 2058.73                             | 1963.19                  | 29                           |
| 47th                                    | 2.16                         | 1.49                     | 1849.10                             | 1714.66                  | 28                           |
| 48th                                    | 2.08                         | 1.32                     | 1815.21                             | 1559.50                  | 27                           |
| 49th                                    | 2.16                         | 1.31                     | 1844.79                             | 1345.75                  | 26                           |
| 50th                                    | 2.24                         | 1.53                     | 1884.57                             | 1509.66                  | 25                           |
| 51st                                    | 2.26                         | 1.71                     | 1938.21                             | 1642.77                  | 25                           |
| 52nd                                    | 1.97                         | 1.13                     | 1643.14                             | 1031.60                  | 25                           |
| 53rd                                    | 1.81                         | 1.09                     | 1542.71                             | 977.05                   | 25                           |
| 54th                                    | 1.60                         | 0.96                     | 1373.20                             | 882.68                   | 24                           |
| 55th                                    | 1.71                         | 1.25                     | 1513.22                             | 1286.53                  | 23                           |
| 56th                                    | 1.70                         | 1.16                     | 1497.78                             | 1161.16                  | 23                           |
| 57th                                    | 1.70                         | 1.25                     | 1567.72                             | 1348.33                  | 22                           |
| 58th                                    | 1.78                         | 1.26                     | 1642.23                             | 1327.74                  | 22                           |
| 59th                                    | 1.60                         | 1.05                     | 1478.63                             | 1120.53                  | 21                           |
| 60th                                    | 1.64                         | 0.91                     | 1497.81                             | 987.73                   | 21                           |



|       |      |      |         |         |    |
|-------|------|------|---------|---------|----|
| 61st  | 1.92 | 1.88 | 1883.89 | 2218.72 | 20 |
| 62nd  | 1.75 | 1.57 | 1710.74 | 1876.73 | 20 |
| 63rd  | 1.82 | 1.22 | 1766.29 | 1500.53 | 18 |
| 64th  | 2.08 | 1.31 | 2061.99 | 1677.11 | 17 |
| 65th  | 1.80 | 1.12 | 1756.98 | 1383.57 | 17 |
| 66th  | 1.60 | 0.94 | 1571.19 | 1146.59 | 17 |
| 67th  | 1.73 | 1.05 | 1708.05 | 1263.03 | 17 |
| 68th  | 1.64 | 0.84 | 1598.15 | 1004.60 | 17 |
| 69th  | 1.97 | 2.18 | 2055.20 | 2731.71 | 16 |
| 70th  | 1.67 | 1.01 | 1641.08 | 1287.58 | 14 |
| 71st  | 1.75 | 1.28 | 1727.69 | 1608.42 | 14 |
| 72nd  | 1.71 | 1.26 | 1756.67 | 1666.15 | 14 |
| 73rd  | 1.56 | 1.07 | 1586.96 | 1397.01 | 14 |
| 74th  | 1.38 | 0.90 | 1404.64 | 1150.99 | 14 |
| 75th  | 1.31 | 1.03 | 1397.85 | 1410.07 | 14 |
| 76th  | 1.19 | 1.07 | 1262.23 | 1280.19 | 14 |
| 77th  | 1.41 | 1.14 | 1485.22 | 1462.01 | 14 |
| 78th  | 1.50 | 1.48 | 1568.04 | 1630.38 | 14 |
| 79th  | 1.38 | 1.10 | 1473.25 | 1349.88 | 13 |
| 80th  | 0.96 | 0.83 | 1098.66 | 1263.65 | 13 |
| 81st  | 1.44 | 2.07 | 1744.12 | 3230.18 | 12 |
| 82nd  | 1.55 | 1.68 | 1874.54 | 2705.48 | 12 |
| 83rd  | 1.86 | 1.68 | 2275.58 | 2682.67 | 10 |
| 84th  | 1.68 | 1.26 | 2034.62 | 2151.68 | 10 |
| 85th  | 1.61 | 1.81 | 2145.71 | 3082.18 | 9  |
| 86th  | 1.39 | 1.26 | 1806.50 | 2263.92 | 9  |
| 87th  | 1.55 | 1.12 | 1976.07 | 1928.10 | 7  |
| 88th  | 0.98 | 0.98 | 1277.30 | 1468.81 | 6  |
| 89th  | 0.56 | 0.30 | 705.28  | 526.21  | 6  |
| 90th  | 1.01 | 0.26 | 1211.07 | 358.50  | 5  |
| 91st  | 1.32 | 0.36 | 1696.32 | 935.64  | 5  |
| 92nd  | 1.04 | 0.50 | 1217.19 | 457.05  | 5  |
| 93rd  | 1.08 | 0.42 | 1288.23 | 331.26  | 4  |
| 94th  | 0.82 | 0.24 | 1155.15 | 466.17  | 3  |
| 95th  | 0.52 | N/A  | 750.91  | N/A     | 1  |
| 96th  | 0.61 | N/A  | 883.04  | N/A     | 1  |
| 97th  | 0.90 | N/A  | 1307.12 | N/A     | 1  |
| 98th  | 0.46 | N/A  | 670.05  | N/A     | 1  |
| 99th  | 0.37 | N/A  | 539.92  | N/A     | 1  |
| 100th | 0.33 | N/A  | 482.27  | N/A     | 1  |
| 101st | 0.74 | N/A  | 1083.95 | N/A     | 1  |

"N/A" stands for "Not Available".

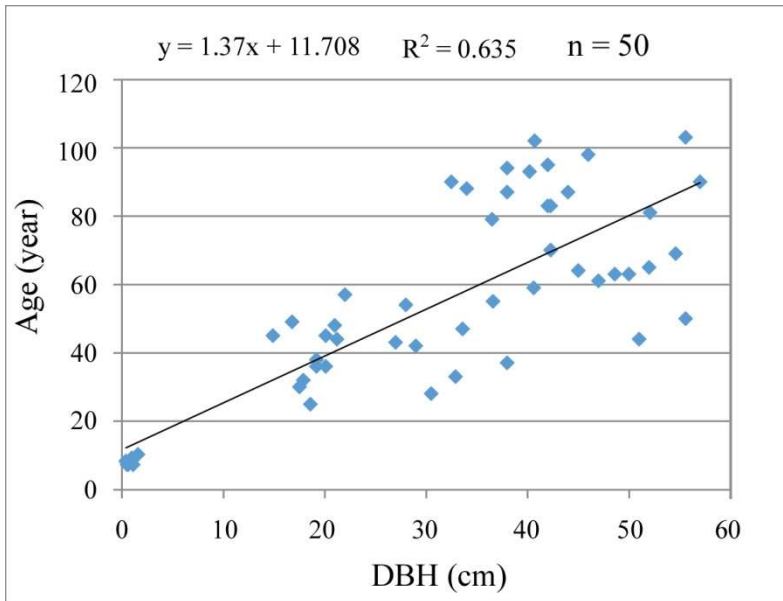
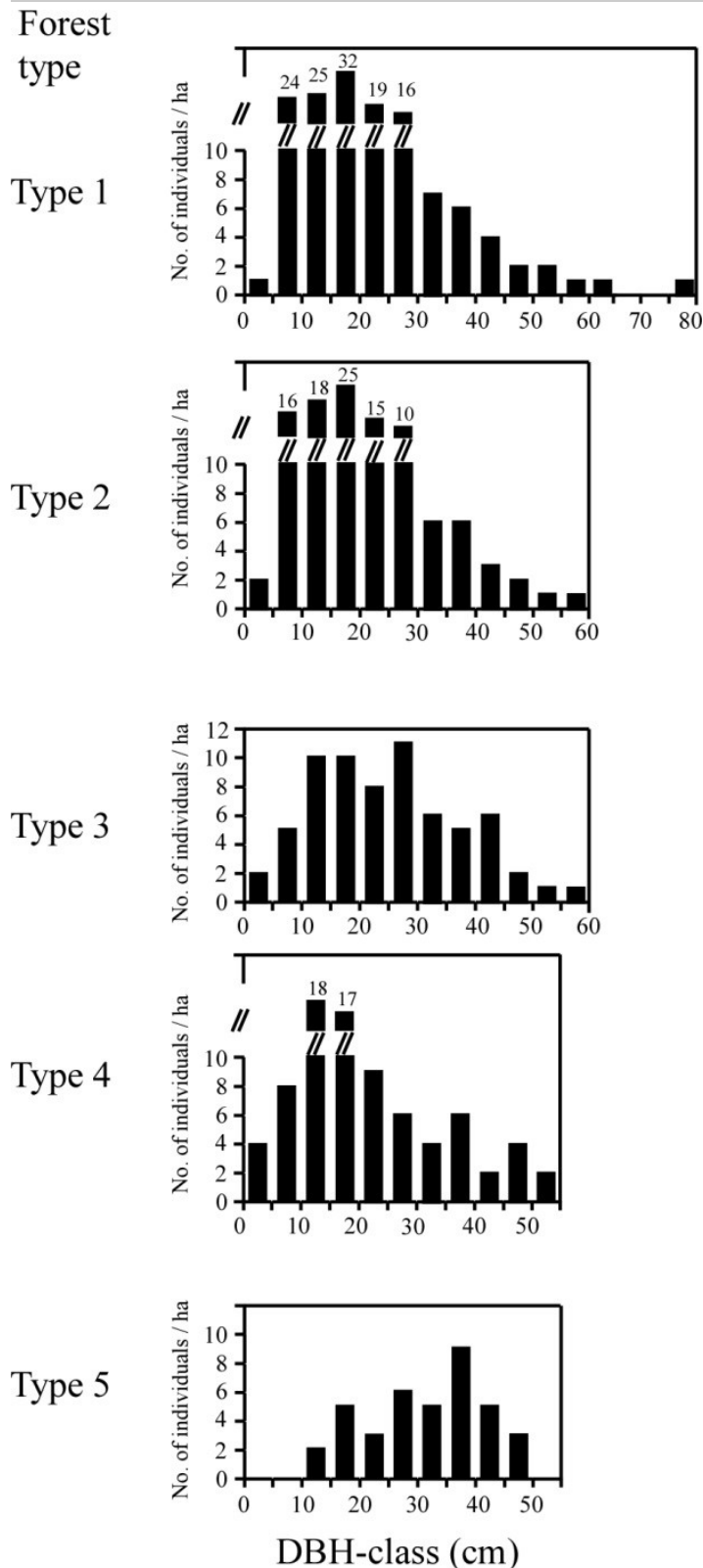


Fig. S1. The relationship of DBH and age of *Pseudotsuga sinensis*.



**Fig. S2.** The frequency distribution in DBH-classes of individuals of *Pseudotsuga sinensis* of each forest type. Type 1: *Pseudotsuga sinensis* evergreen coniferous forest; Type 2: *Pseudotsuga sinensis* - *Pinus yunnanensis* evergreen coniferous forest; Type 3: *Pseudotsuga sinensis* - *Cyclobalanopsis glaucooides* evergreen coniferous and broad-leaved mixed forest; Type 4: *Pseudotsuga sinensis* - *Platycarya strobilacea* evergreen coniferous and deciduous broad-leaved mixed forest; Type 5: *Pseudotsuga sinensis* - *Calocedrus macrolepis* evergreen coniferous forest.

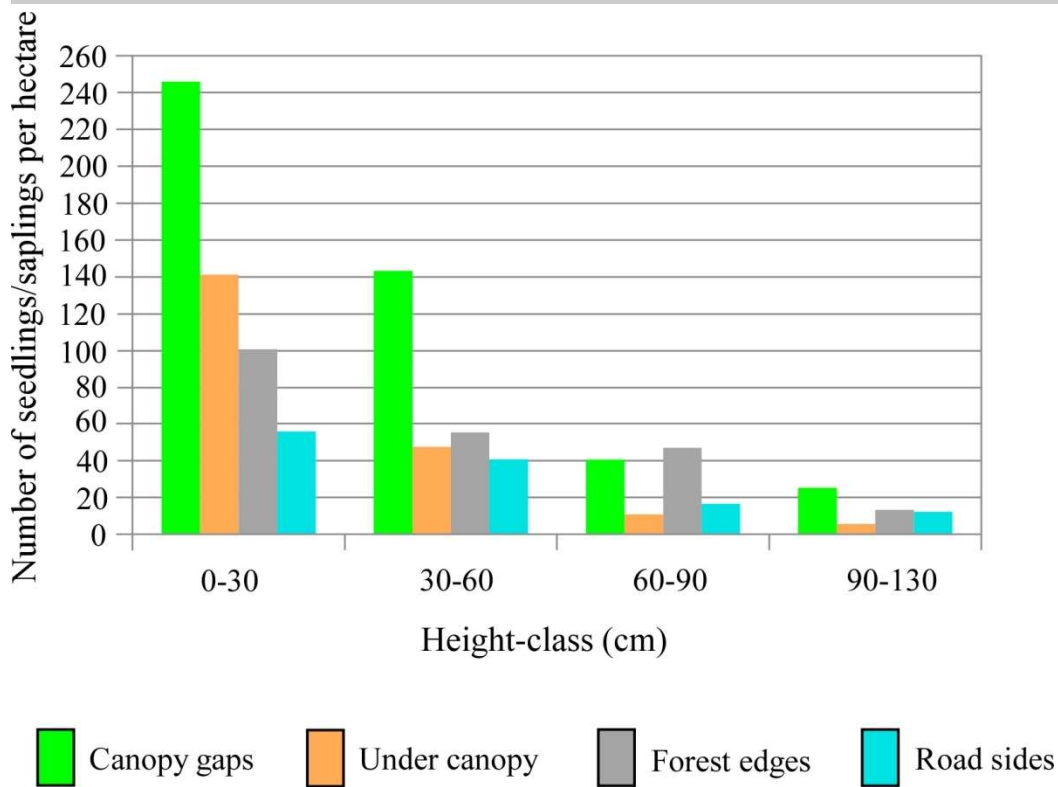


Fig. S3. The density of *Pseudotsuga sinensis* seedlings/saplings (height < 1.3 m) in each height-class in various micro-habitats.