

Supplementary Files

Figure S1. Spatial variation of micro topographic predictor at the neighborhood scale: elevation (a), aspect (b), slope (c), Terrain Position Index (d), Terrain Ruggedness Index (e), and flow direction (f). The maps were generated using an Epanechnikov kernel with a bandwidth of 5, and the intensity values range from blue (low) to purple (high).

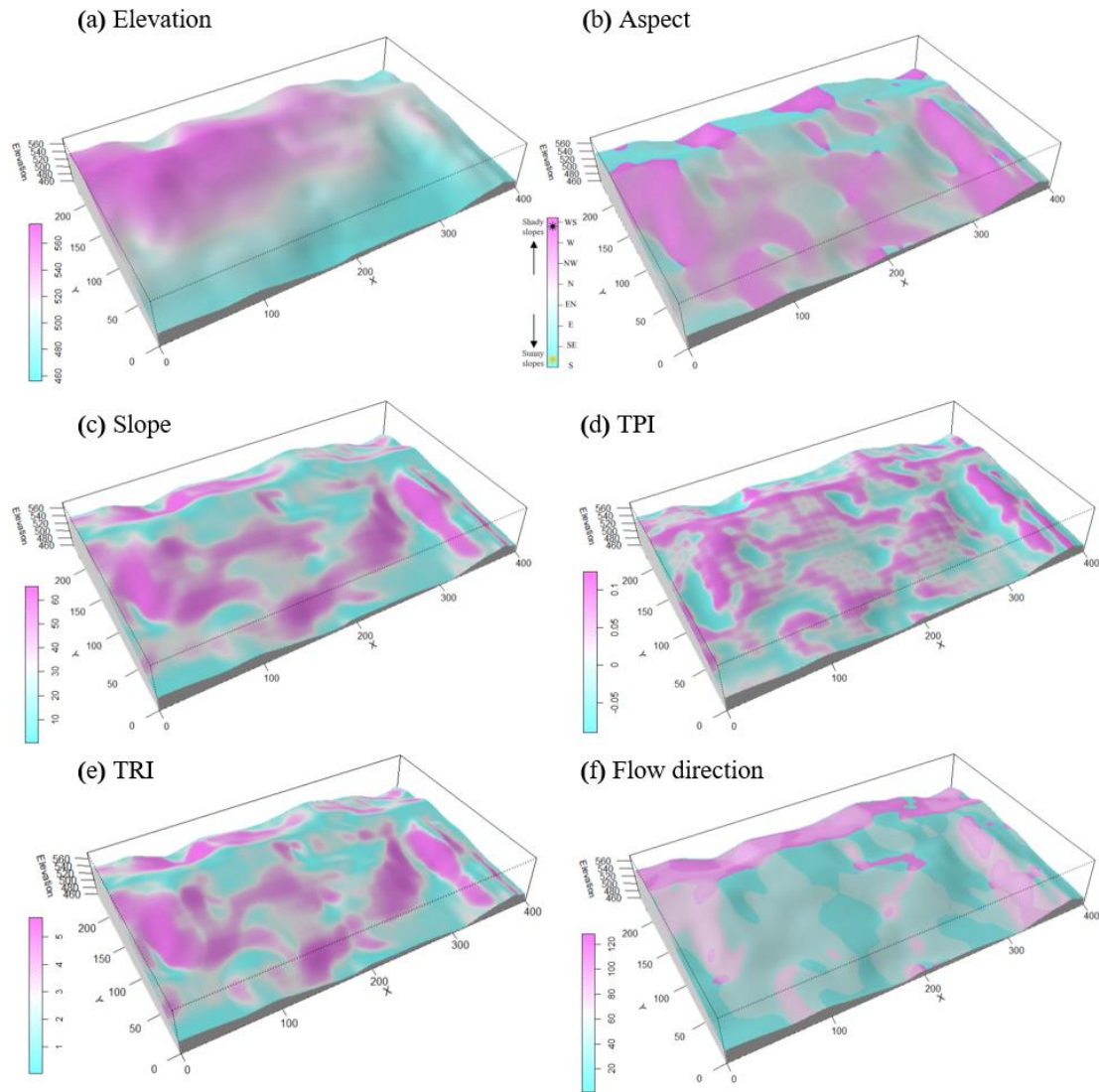


Figure S2. Spatial variation of neighborhood effect predictor at the neighborhood scale: DBH size asymmetry (a), neighborhood species richness (b), and CNDD(c). The maps were generated using an Epanechnikov kernel with a bandwidth of 5, and the intensity values range from blue (low) to purple (high).

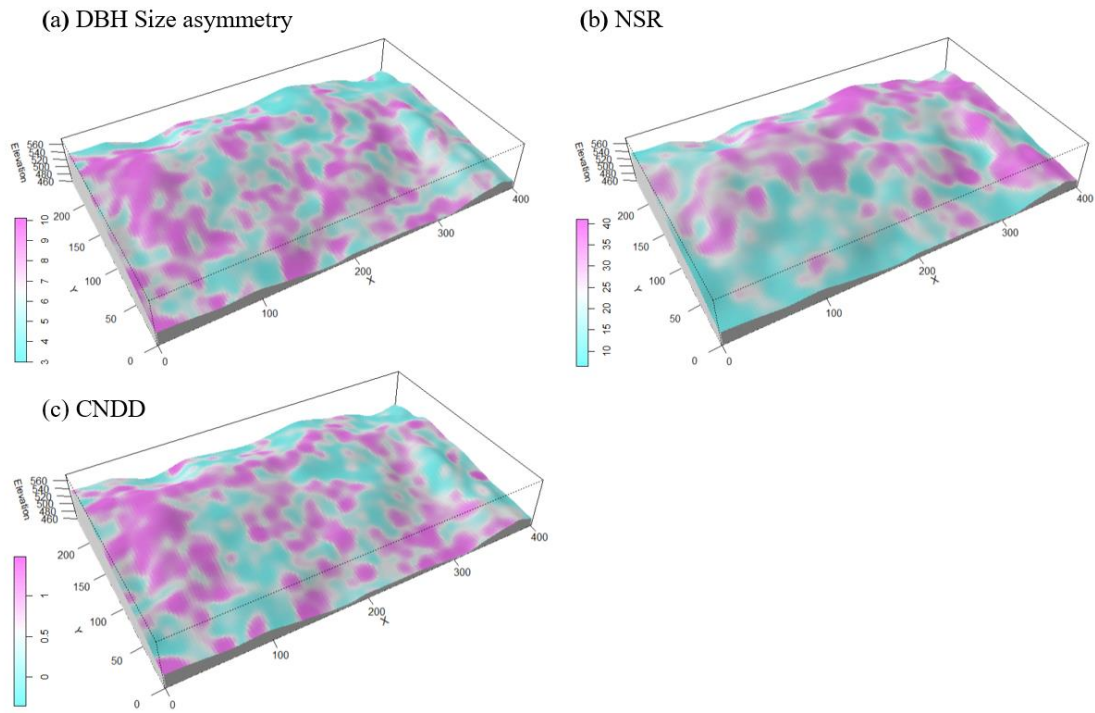
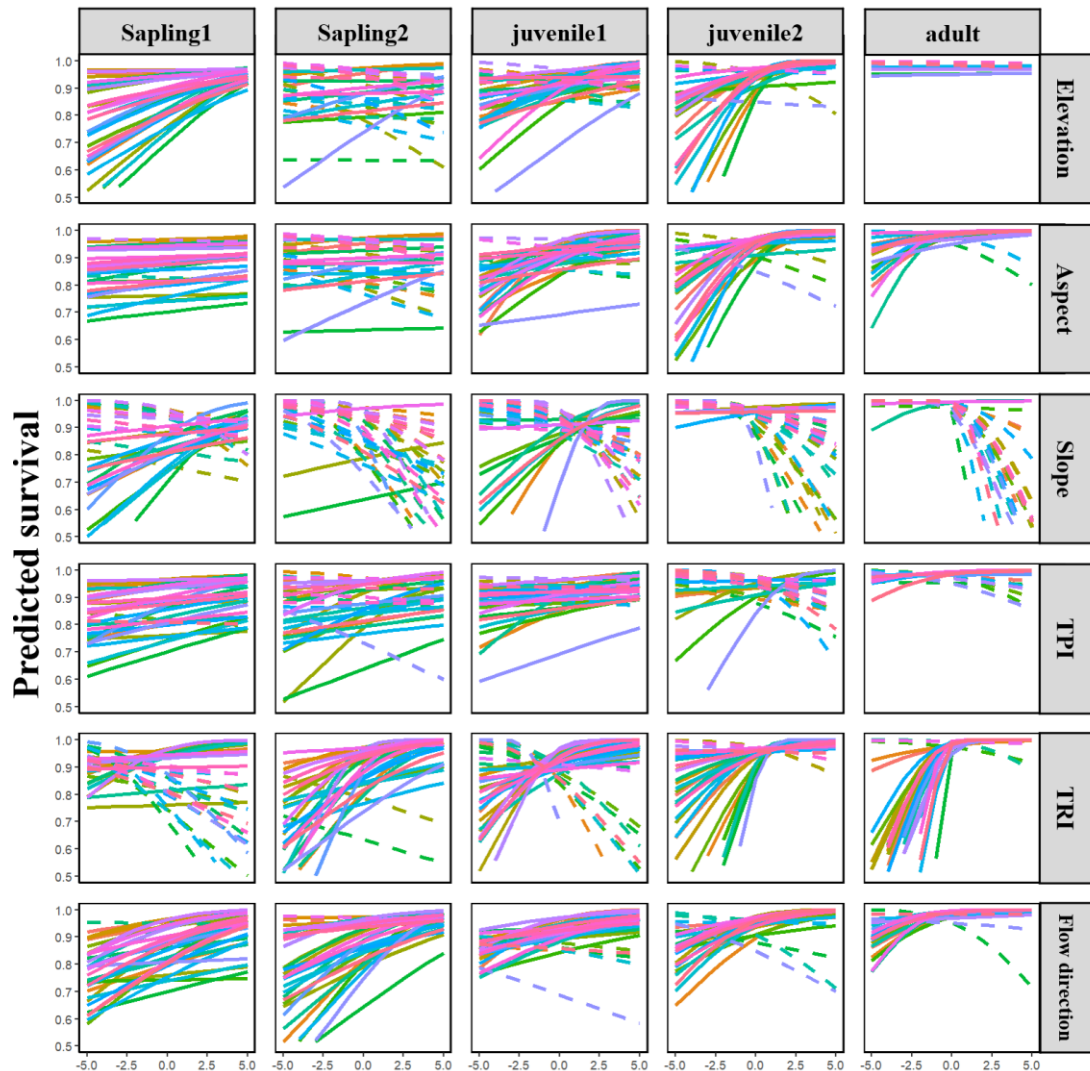


Figure S3. Relationship Between micro topographic (Elevation, Aspect, Slope, TPI, TRI, and Flow direction) and individual survival across life stage at scale of 5 m. It displays inter-census predicted survival probability for each of the 32 co-dominant tree species is represented by lines of different colors, with solid lines indicating a positive relationship and dashed lines indicating a negative one. The predicted individual survival were obtained by back-transforming from the general linear mixed models, with all diversity effects quantified by Z-score transformation.



Effects for each species across life-stage at scale of 5 m

Species			
Adinandra millettii	Quercus myrsinifolia	Ilex pubescens	Rhododendron ovatum
Liquidambar gracilipes	Dendropanax dentigerus	Itea oblonga	Rhododendron rivulare
Camellia cuspidata	Diospyros tsangii	Lithocarpus harlandii	Schima superba
Castanopsis carlesii	Elaeocarpus chinensis	Machilus grijsii	Symplocos congesta
Castanopsis eyrei	Elaeocarpus japonicus	Magnolia fujianensis	Syzygium buxifolium
Castanopsis fargesii	Engelhardia fenzlii	Magnolia maudiae	Ternstroemia gymnanthera
Castanopsis fordii	Eurya hebeclados	Neolitsea aurata var. chekiangensis	
Cinnamomum chekiangense	Eurya muricata	Ormosia henryi	
	Ilex elmerrilliana	Rhododendron henryi	

Figure S4. Relationship Between micro topographic (Elevation, Aspect, Slope, TPI, TRI, and Flow direction) and individual survival across life stage at scale of 10 m. It displays inter-census predicted survival probability for each of the 32 co-dominant tree species is represented by lines of different colors, with solid lines indicating a positive relationship and dashed lines indicating a negative one. The predicted individual survival were obtained by back-transforming from the general linear mixed models, with all diversity effects quantified by Z-score transformation.

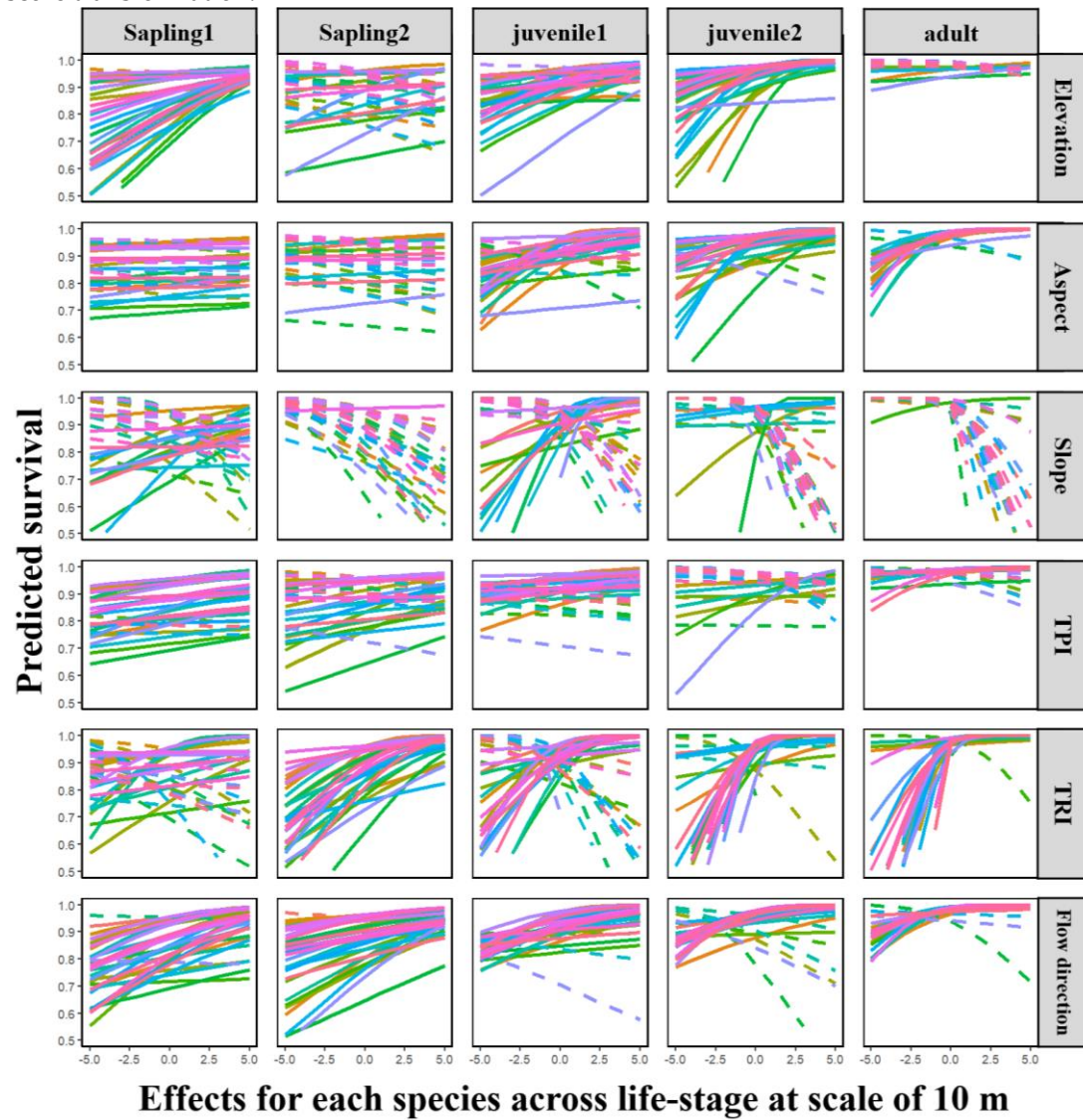
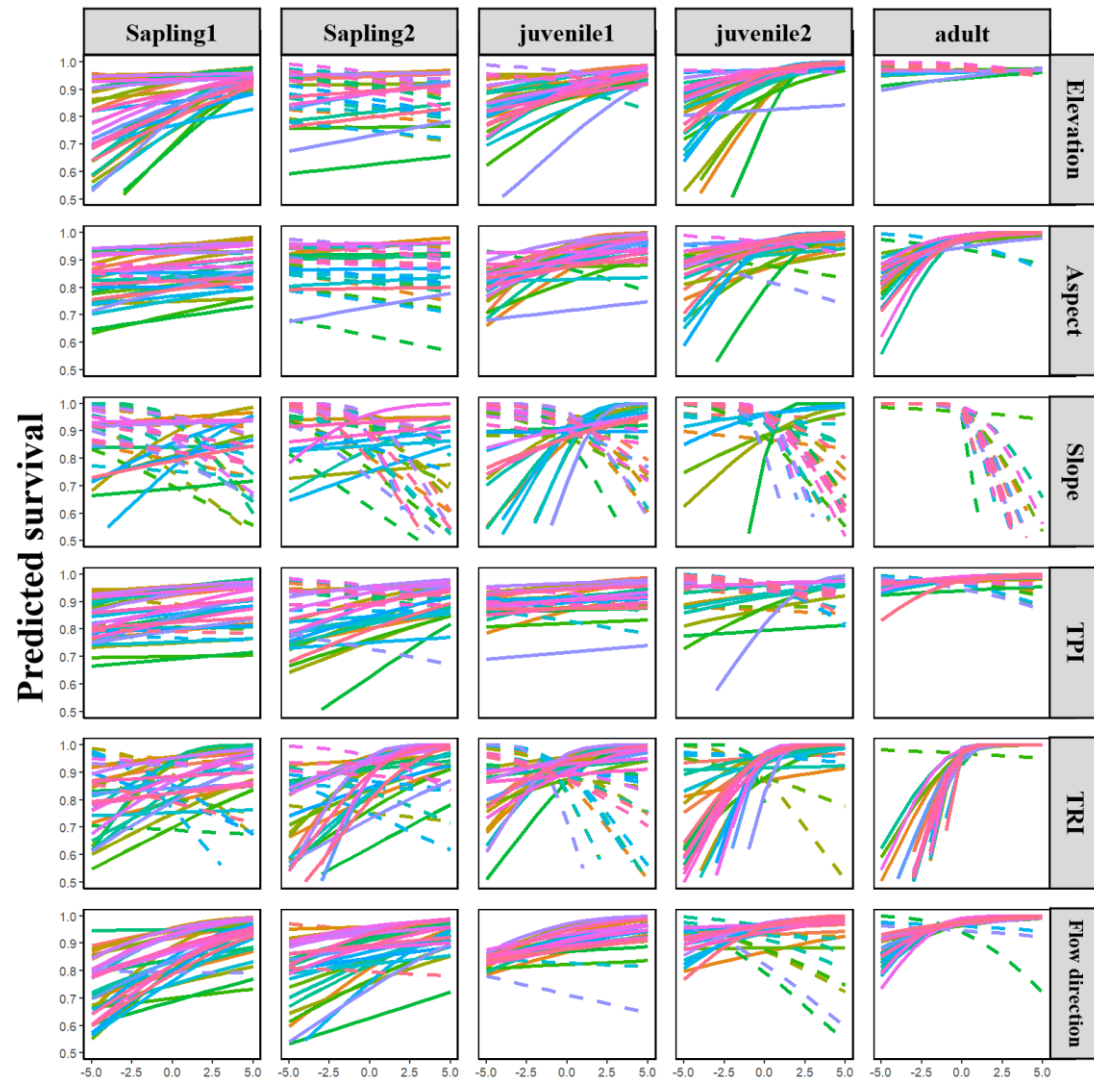


Figure S5. Relationship Between micro topographic (Elevation, Aspect, Slope, TPI, TRI, and Flow direction) and individual survival across life stage at scale of 20 m. It displays inter-census predicted survival probability for each of the 32 co-dominant tree species is represented by lines of different colors, with solid lines indicating a positive relationship and dashed lines indicating a negative one. The predicted individual survival were obtained by back-transforming from the general linear mixed models, with all diversity effects quantified by Z-score transformation.



Effects for each species across life-stage at scale of 20 m

Figure S6. Relationship Between neighborhood effect (Size asymmetry CNDD, NSR) and individual survival across life stage at scale of 5 m, 10 m, and 20m. It displays inter-census predicted survival probability for each of the 32 co-dominant tree species is represented by lines of different colors, with solid lines indicating a positive relationship and dashed lines indicating a negative one. The predicted individual survival were obtained by back-transforming from the general linear mixed models, with all diversity effects quantified by Z-score transformation.

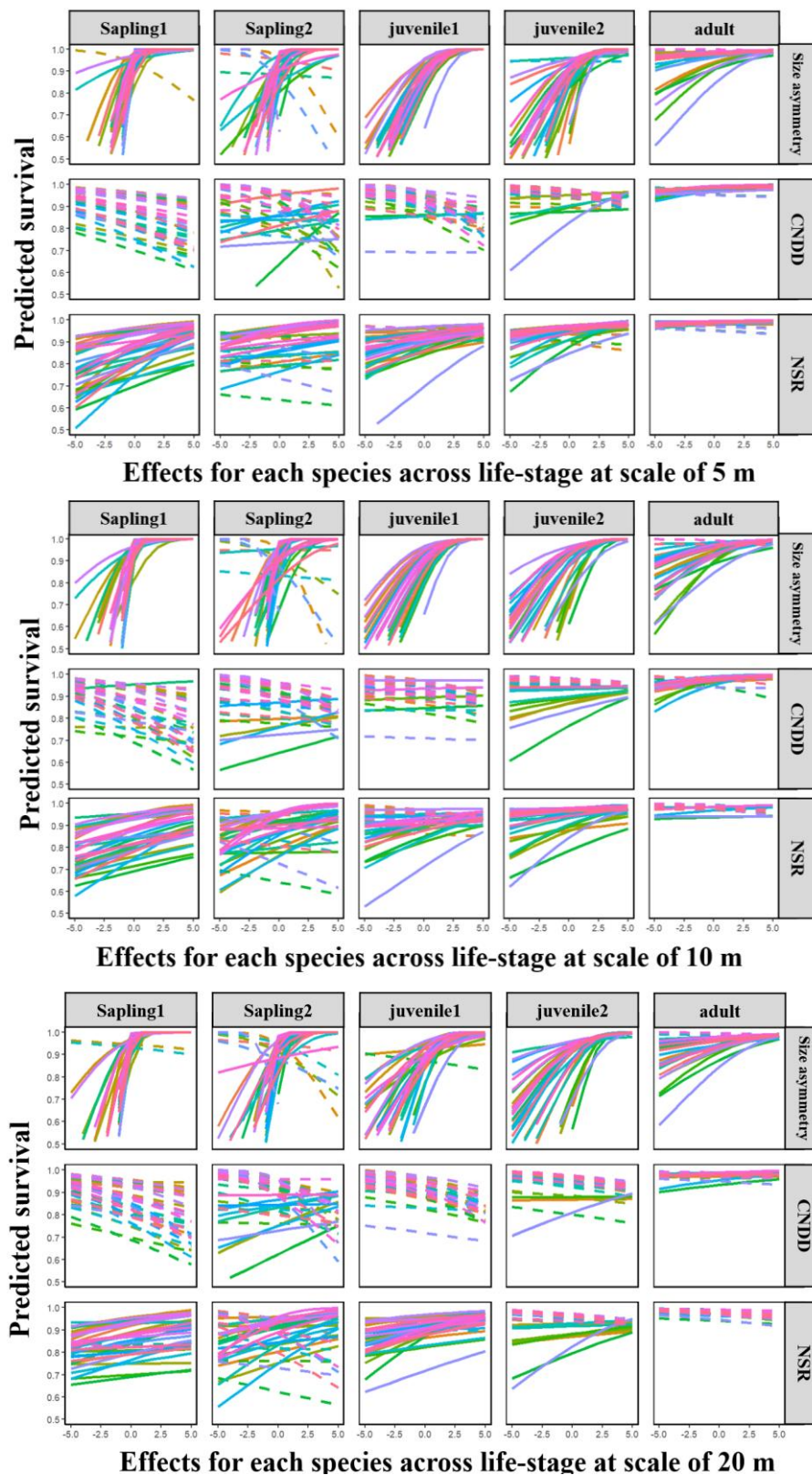


Table S1. Basic characteristics of the 32 co-dominant tree species in dynamic forest plot in the Wuyi Mountains, China. Note: Species names and family assignments in the table are based on the Flora of China and conform to the accepted names in Plants of the World Online (PoWO; <https://powo.science.kew.org/>).

Species	family	Importance Value (%)	Average of DBH (cm)
<i>Castanopsis carlesii</i>	Fagaceae	7.16	11.65 ± 0.26
<i>Castanopsis fordii</i>	Fagaceae	5.29	7.52 ± 0.13
<i>Castanopsis eyrei</i>	Fagaceae	4.57	11.44 ± 0.27
<i>Engelhardia fenzlii</i>	Juglandaceae	4.37	7.57 ± 0.14
<i>Syzygium buxifolium</i>	Myrtaceae	3.67	2.89 ± 0.05
<i>Schima superba</i>	Theaceae	3.16	7.96 ± 0.20
<i>Rhododendron henryi</i>	Ericaceae	2.91	3.52 ± 0.05
<i>Itea omeiensis</i>	Iteaceae	2.89	2.83 ± 0.03
<i>Eurya muricata</i>	Theaceae	2.78	2.53 ± 0.04
<i>Liquidambar gracilipes</i>	Hamamelidaceae	2.66	6.17 ± 0.18
<i>Magnolia fujianensis</i>	Magnoliaceae	2.49	3.72 ± 0.06
<i>Elaeocarpus japonicus</i>	Elaeocarpaceae	2.44	13.03 ± 0.26
<i>Camellia cuspidata</i>	Theaceae	2.33	2.06 ± 0.02
<i>Castanopsis fargesii</i>	Fagaceae	2.25	11.57 ± 0.40
<i>Elaeocarpus chinensis</i>	Elaeocarpaceae	2.12	8.58 ± 0.20
<i>Lithocarpus harlandii</i>	Fagaceae	2	7.19 ± 0.18
<i>Ormosia henryi</i>	Fabaceae	1.75	3.82 ± 0.09
<i>Machilus grijsii</i>	Lauraceae	1.65	2.02 ± 0.04
<i>Eurya hebeclados</i>	Theaceae	1.55	2.49 ± 0.03
<i>Symplocos congesta</i>	Symplocaceae	1.43	3.56 ± 0.09
<i>Quercus myrsinifolia</i>	Fagaceae	1.36	6.84 ± 0.37
<i>Magnolia maudiae</i>	Magnoliaceae	1.35	4.34 ± 0.14
<i>Dendropanax dentigerus</i>	Araliaceae	1.31	6.33 ± 0.17
<i>Rhododendron ovatum</i>	Ericaceae	1.2	3.84 ± 0.07
<i>Cinnamomum chekiangense</i>	Lauraceae	1.2	3.52 ± 0.12
<i>Adinandra millettii</i>	Theaceae	1.09	3.74 ± 0.12
<i>Ilex elmerrilliana</i>	Aquifoliaceae	1.02	3.65 ± 0.10
<i>Ilex pubescens</i>	Aquifoliaceae	1.01	1.94 ± 0.04
<i>Ternstroemia gymnanthera</i>	Theaceae	0.94	3.28 ± 0.07
<i>Diospyros tsangii</i>	Ebenaceae	0.91	3.14 ± 0.11
<i>Neolitsea aurata</i> var. <i>chekiangensis</i>	Lauraceae	0.87	3.39 ± 0.09
<i>Rhododendron rivulare</i>	Ericaceae	0.81	2.31 ± 0.03

Table S2. Forest Dynamic of the 32 co-dominant tree species in the Subtropical Evergreen Broad-Leaved Forest plot in the Wuyi Mountains, China for the Years 2013 and 2018

Year	Number Of live trees	Species richness	Mortality rate (%)
2013	50765	32	10.83
2018	45266	32	