



Figure S1. Pictures of rare and endangered plants. A: *Cycas taiwaniana*; B: *Aquilaria sinensis*; C: *Litchi chinensis*; D: *Dimocarpus longan*; E: *Xylocarpus granatum*; F: *Toona ciliata*; G: *Dalbergia odorifera*; H: *Ormosia pinnata*; I: *Richeriella gracilis*; J: *Sonneratia alba*; K: *Stemona parviflora*; L: *Ellipanthus glabrifolius*; M: *Kopsia hainanensis*; N: *Ancistrocladus tectorius*; O: *Vitex pierreana*; P: *Amesiodendron chinense*; Q: *Sorghum propinquum*; R: *Heritiera littoralis*; S: *Firmiana pulcherrima*; T: *Entada phaseoloides*; U: *Erycibe obtusifolia*; V: *Amomum chinense*; W: *Hetaeria finlaysoniana*.

Table S1. List of rare and endangered species in the Sanya River Basin, Hainan Province, China. 1. *List of National Key Protected Wild Plants in China* (2021) --- I: National Class I Protected Plants, II: National Class II Protected Plants; 2. *China's Red List of Biodiversity* (2015) - extremely endangered (CR), endangered (EN), vulnerable (VU), near endangered (NT).

Species	Family	Location	2021 List of National Key Protected Wild Plants in China	2015 China's Red List of Biodiversity	Endemic feature
<i>Cycas taiwaniana</i>	Cycadaceae	Tangta Hydropower Station, Banling Reservoir	I	EN	Unique to China
<i>Cycas rumphii</i>	Cycadaceae	Banling Reservoir	I		
<i>Aquilaria sinensis</i>	Thymelaeaceae	Tangta Reservoir, Banling Reservoir	II	VU	Unique to China
<i>Litchi chinensis</i>	Sapindaceae	Banling Reservoir	II		
<i>Dimocarpus longan</i>	Sapindaceae	Tangta Reservoir, Banling Reservoir, Caopeng Reservoir	II		
<i>Amesiodendron chinense</i>	Sapindaceae	Tangta Reservoir, Tangta Hydropower Station, Banling Reservoir		VU	

<i>Xylocarpus granatum</i>	Meliaceae	Yuechuan Park, City Park, Fengxinglong Ecological Park, Linchunhe Park, mangroves along Sanya River East Road, Egret Park	II		
<i>Toona ciliata</i>	Meliaceae	Tangta Reservoir	II	VU	
<i>Dalbergia odorifera</i>	Fabaceae	Banling Reservoir	II	CR	Unique to China
<i>Ormosia pinnata</i>	Fabaceae	Tangta Reservoir, Shuiyuanchi Reservoir, Banling Reservoir, Caopeng Reservoir, Egret Park	II		
<i>Entada phaseoloides</i>	Fabaceae	Tangta Reservoir, Tangta Hydropower Station, Shuiyuanchi Reservoir		EN	
<i>Sorghum propinquum</i>	Poaceae	Areca Cultural Park	II	EN	
<i>Sonneratia</i> × <i>gulngai</i>	Lythraceae	City Park, Linchun River Park		NT	
<i>Sonneratia alba</i>	Lythraceae	Near City Park, Linchun River Park, mangroves along Sanya River East Road		VU	
<i>Stemona parviflora</i>	Stemonaceae	Tangta Hydropower Station		EN	Unique to Hainan
<i>Ellipanthus glabrifolius</i>	Connaraceae	Shuiyuanchi Reservoir		EN	Unique to Hainan
<i>Heritiera littoralis.</i>	Sterculiaceae	Mangrove Ecological Park		VU	
<i>Firmiana pulcherrima</i>	Sterculiaceae	Tangta Hydropower Station		EN	Unique to Hainan
<i>Kopsia hainanensis</i>	Apocynaceae	Banling Reservoir		EN	Unique to Hainan
<i>Amomum chinense</i>	Zingiberaceae	Tangta Reservoir, Banling Reservoir		VU	Unique to Hainan

<i>Lasianthus</i>	Rubiaceae		
<i>austrosinensis</i>		Tangta Reservoir	EN
<i>Richeriella gracilis</i>	Euphorbiaceae	Tangta Hydropower Station	EN
<i>Erycibe obtusifolia</i>	Convolvulaceae	Banling Reservoir	VU
<i>Hetaeria</i>	Orchidaceae		
<i>finlaysoniana</i>		Tangta Reservoir	VU
<i>Ancistrocladus</i>	Ancistrocladaceae	Tangta Hydropower Station,	
<i>tectorius</i>		Banling Reservoir	VU
<i>Vitex pierreana</i>	Verbenaceae	Tangta Reservoir, Tangta	
		Hydropower Station, Banling	
		Reservoir	VU
<i>Hypolytrum</i>	Cyperaceae		
<i>hainanense</i>		Tangta Reservoir	VU

Table S2. Community similarity of the samples with *Ormosia pinnata*

	C-B-2	C-B-10	C-T-7	Y-B-4	Y-B-6	Y-B-10	Y-B-X-5	Y-C-2
C-B-10	0.1154							
C-T-7	0.1212	0.1111						
Y-B-4	0.1373	0.1091	0.0952					
Y-B-6	0.1471	0.0769	0.0638	0.2909				
Y-B-10	0.1515	0.0789	0.1136	0.3208	0.2750			
Y-B-X-5	0.0938	0.0857	0.0952	0.1754	0.2000	0.2368		
Y-C-2	0.0476	0.0930	0.0377	0.0704	0.0962	0.0980	0.1277	
Y-S-11	0.1429	0.0938	0.0750	0.1636	0.1250	0.1282	0.2813	0.1628

Table S3. Community similarity of the samples with *Dimocarpus longan*

	B-3	C623-1	Y-C-2	Y-C-6
C623-1	0.0370			
Y-C-2	0.0571	0.1042		
Y-C-6	0.0556	0.1667	0.2571	
Y-C-3	0.0345	0.1795	0.2222	0.3704

Table S5. Community similarity of the samples with *Xylocarpus granatum*

	B-5	C621-14	C621-9	C621-5
C621-14	0.3750			
C621-9	0.4000	0.6250		
C621-5	0.3000	0.3333	0.5000	
C621-2	0.3333	0.3750	0.5556	0.6250

Table S6. Community similarity of the samples with *Sonneratia* × *gulngai*

	L-4	LCH	C621-10	C621-7
LCH	0.6250			
C621-10	0.5000	0.4286		
C621-7	0.3333	0.2857	0.2500	
C621-4	0.5000	0.6250	0.5000	0.3333

Table S4. Community similarity of the samples with *Ancistrocladus tectorius*

	C-8	C-B-2	Y-B-4	Y-B-6	Y-B-10	C-3	C-4	C-5	C-9	C-10	C-11	C-B-8	C-B-18	C-B-19	Y-B-5	Y-B-13
C-B-2	0.0909															
Y-B-4	0.1525	0.1600														
Y-B-6	0.1951	0.1471	0.2909													
Y-B-10	0.0909	0.1515	0.3208	0.2750												
C-3	0.2368	0.1212	0.2321	0.1905	0.1395											
C-4	0.1250	0.1892	0.2459	0.2391	0.1429	0.1957										
C-5	0.1176	0.0769	0.2245	0.2424	0.2121	0.2581	0.1795									
C-9	0.1316	0.1379	0.1207	0.1220	0.0976	0.2222	0.1333	0.1667								
C-10	0.1176	0.0769	0.1321	0.1714	0.1765	0.1818	0.0698	0.2500	0.0938							
C-11	0.2222	0.2143	0.2222	0.2051	0.3939	0.2857	0.1556	0.1613	0.2059	0.2414						
C-B-8	0.1143	0.2609	0.2200	0.1053	0.2059	0.2121	0.2051	0.2400	0.1250	0.1481	0.1563					
C-B-18	0.1714	0.1481	0.1250	0.1892	0.1944	0.2000	0.0889	0.1786	0.0857	0.2692	0.2581	0.2593				
C-B-19	0.1000	0.1500	0.0784	0.1613	0.1429	0.1724	0.1081	0.1905	0.0714	0.3158	0.1923	0.2381	0.3333			
Y-B-5	0.1220	0.1250	0.2830	0.2250	0.2000	0.1750	0.2558	0.1875	0.1944	0.1515	0.2222	0.1818	0.1389	0.1379		
Y-B-13	0.0811	0.0714	0.1698	0.1944	0.1053	0.1389	0.1429	0.1852	0.0882	0.1429	0.1176	0.1379	0.0789	0.1250	0.1765	
Y-B-6	0.1176	0.1667	0.2000	0.1714	0.2121	0.1818	0.1500	0.2000	0.0938	0.1111	0.2000	0.1481	0.1000	0.1364	0.2258	0.3333

Table S7. Probability value of correlation between influencing factors and the species number and population size of rare and endangered plants, respectively. A representing threat factor; B representing vegetation type; C representing vegetation coverage degree; D representing vegetation improvement degree. Dash means no probability value.

Influencing Factor	Species Number	Population Size
A	0.010	0.324
B	0.153	0.825
C	0.013	0.848
D	-	-
A+B	0.025	0.688
A+C	0.003	0.043
A+D	-	-
B+C	-	-
B+D	-	-
C+D	-	-
A+B+C	-	-
A+B+D	-	-
A+C+D	-	-
B+C+D	-	-
A+B+C+D	-	-