

## Supplementary Information

### Climate Change Drives the Adaptive Distribution and Habitat Fragmentation of *Betula albosinensis* Forests in China

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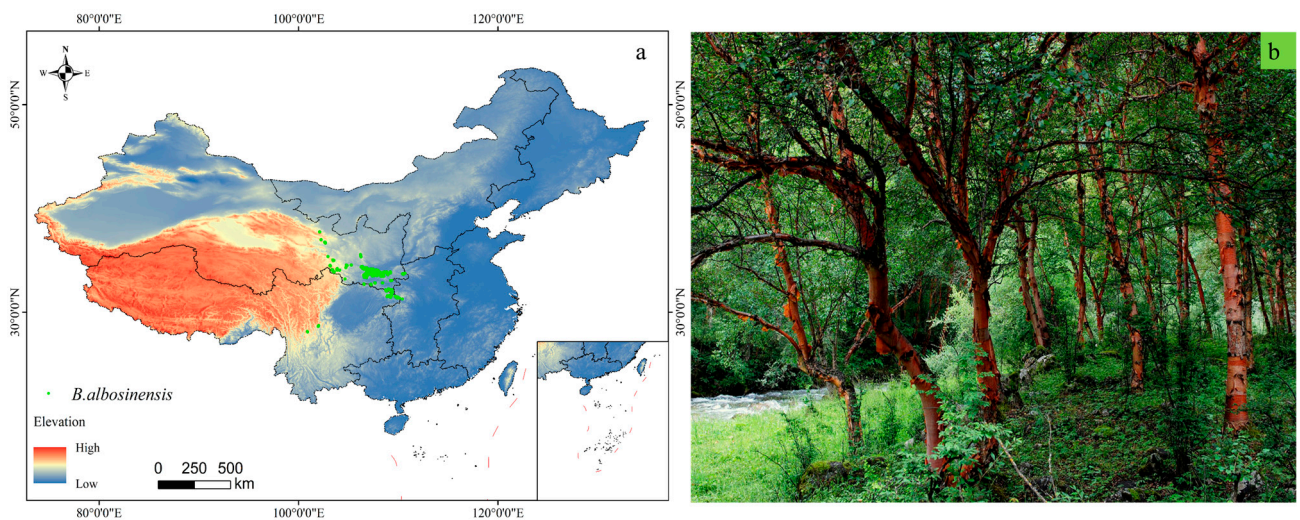
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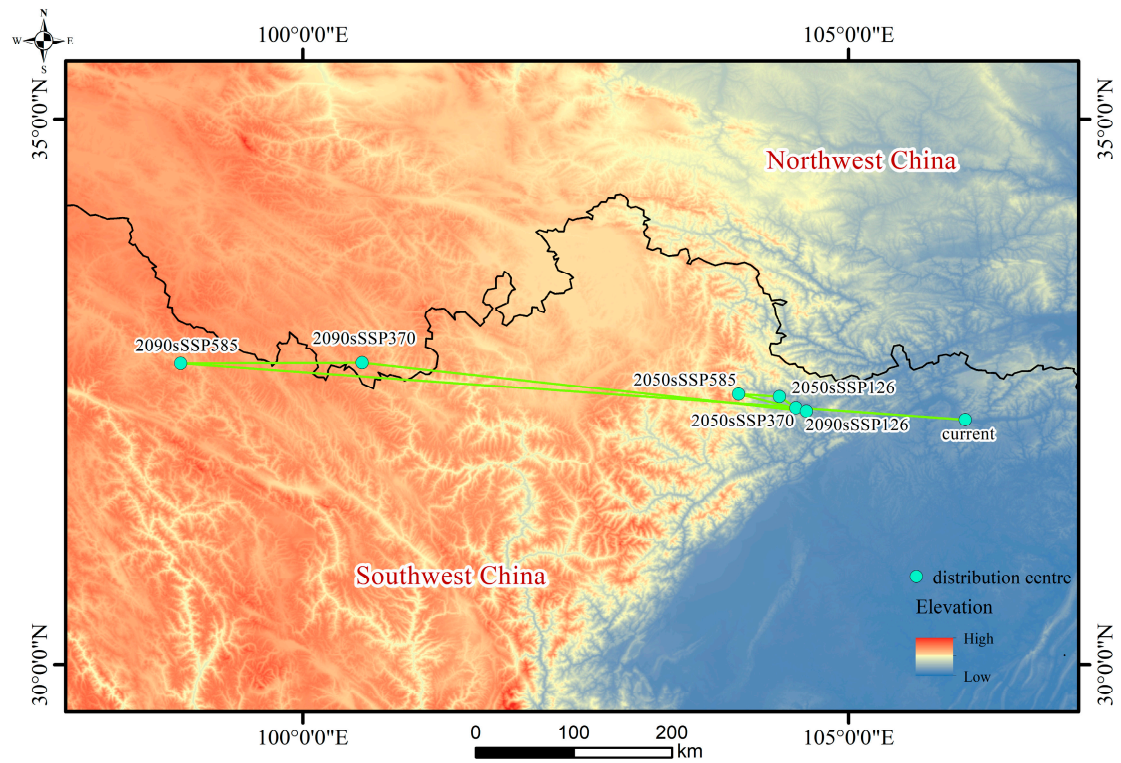
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**Figure S1.** (a) Distribution points of *B. albosinensis* in China ; (b) Landscape of *B. albosinensis*.



**Figure S2.** Migration of *B.albosinensis* distribution center.

**Table S1.** All variables and their abbreviations used in our study.

Symbol	Environmental Variables	Symbol	Environmental Variables
Bio1	Annual mean temperature	ALT	Altitude
Bio2	Mean diurnal range	ASP	Aspect
Bio3	Isothermality	SLO	Slope
Bio4	Temperature seasonality	T_GRAVEL	Topsoil gravel content
Bio5	Max. temperature of the warmest month	T_SAND	Topsoil sand fraction
Bio6	Min. temperature of the coldest month	T_SILT	Topsoil silt fraction
Bio7	Temperature annual range	T_CLAY	Topsoil clay fraction
Bio8	Mean temperature of the wettest quarter	T_USDA_TEX X	Topsoil texture class name and code

Bio9	Mean temperature of the driest quarter	T_REF_BUL K	Cation exchange capacity
Bio10	Mean temperature of the warmest quarter	T_OC	Topsoil organic carbon
Bio11	Mean temperature of the coldest quarter	T_PH_H2O	Topsoil pH (H <sub>2</sub> O)
Bio12	Annual precipitation	T_CEC_CL AY	Topsoil CEC (clay)
Bio13	Precipitation of the wettest month	T_CEC_SOI L	Topsoil CEC (soil)
Bio14	Precipitation of the driest month	T_BS	Topsoil base saturation
Bio15	Seasonality of precipitation	T_CACO <sub>3</sub>	Topsoil calcium carbonate
Bio16	Precipitation of the wettest quarter	T_ESP	Topsoil sodicity (ESP)
Bio17	Precipitation of the driest quarter	T_ECE	Topsoil salinity (Elco)
Bio18	Precipitation of the warmest quarter	T_TEB	Topsoil TEB
Bio19	Precipitation of the coldest quarter		

**Table S2.** Areas of suitable habitat for *B.albosinensis* under different climate scenarios.

km <sup>2</sup>		2050sSSP1	2050sSSP3	2050sSSP5	2090sSSP1	2090sSSP3	2090sSSP5
	current	26	70	85	26	70	85
generally suitable habitat	94,228	113,648	120,814	127,284	112,899	261,981	306,290
moderately suitable habitat	64,524	47,738	45,794	41,894	45,535	35,319	41,229
highly suitable habitat	144,645	95,781	87,437	77,440	100,359	46,987	23,021
total suitable habitat	303,397	257,167	254,045	246,618	258,793	344,287	370,540