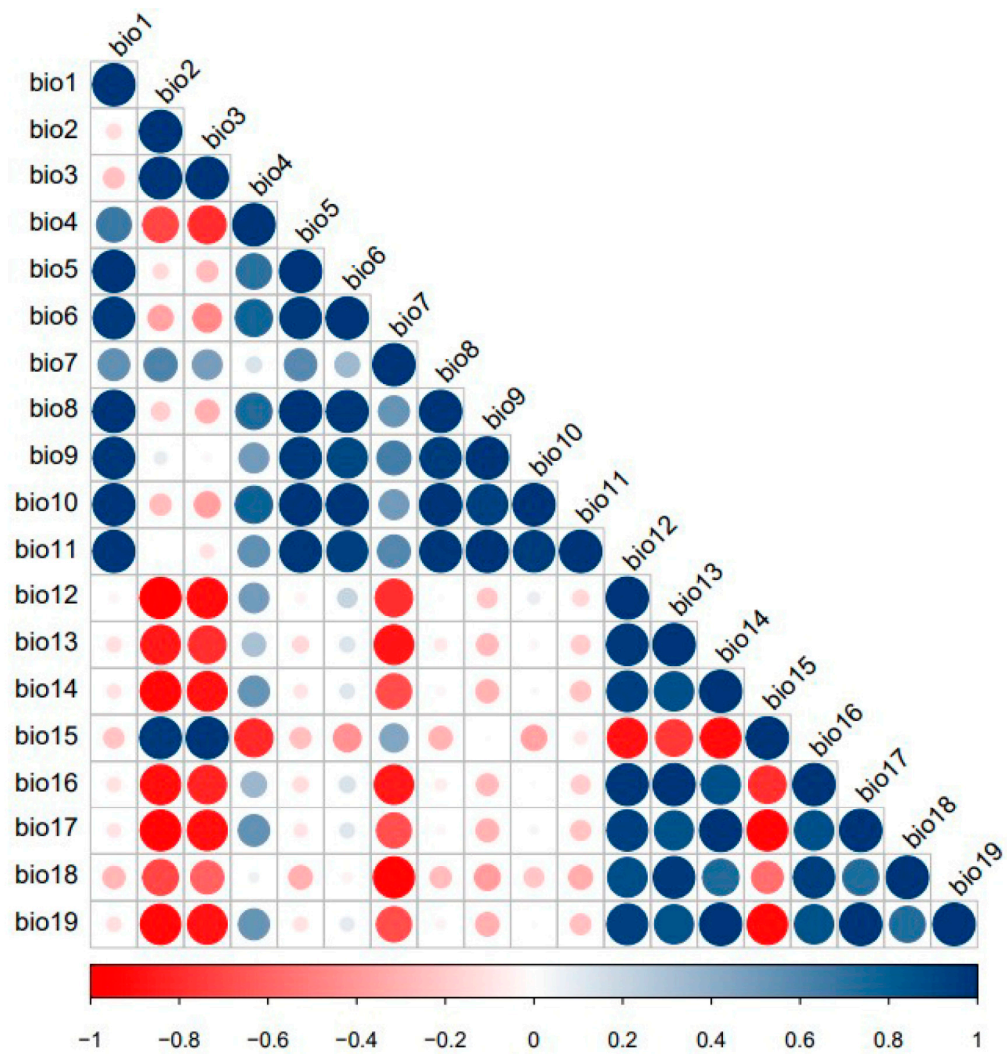
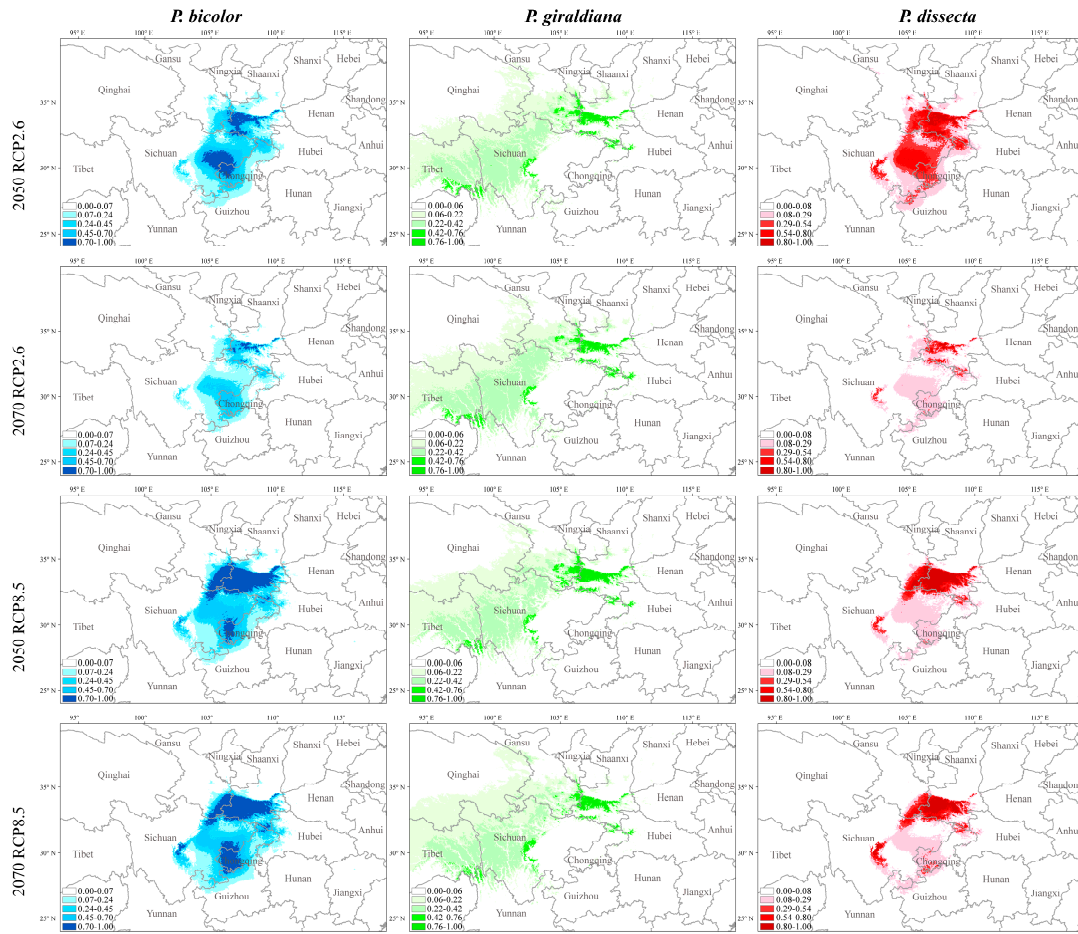


**Figure S1.** Geographical distribution of sampled populations of three *Pedicularis* species. (a) blue, green, and red indicate *P. bicolor*, *P. dissecta* and *P. giraldiana*, respectively. Photographs of representative individuals of (b) *P. bicolor* and (c) *P. giraldiana*



**Figure S2.** Correlation analysis of various environmental factors. Red represents positive correlations and blue represents negative correlations.



**Figure S3.** Prediction of potential geographical distributions of three *Pedicularis* species in different climatic scenarios in the future based on ecological niche modeling.

**Table S1.** Taxa and GenBank accessions used in phylogeny and divergence time analysis.

<b>Taxon</b>	<b>Accession</b>	<b>Chloroplast Genome (bp)</b>
<i>Pedicularis cheilanthifolia</i>	MT040754	147,807
<i>Pedicularis longiflora</i>	NC_046852	153,547
<i>Pedicularis verticillata</i>	MT040753	142,733
<i>Pedicularis hallaisanensis</i>	NC_037433	143,469
<i>Pedicularis muscicola</i>	NC_046853	152,907
<i>Pedicularis resupinata</i>	NC_046397	153,145
<i>Pedicularis oederi</i>	NC_046854	153,139
<i>Pedicularis oederi</i> var. <i>sinensis</i>	MW770457	153,770
<i>Pedicularis dissecta</i>	NC_056312	152,120
<i>Pedicularis shansiensis</i>	NC_058762	151,902
<i>Pedicularis ishidoyana</i>	NC_029700	152,571
<i>Orobanche pancicii</i>	NC_031443	88,525
<i>Orobanche crenata</i>	NC_024845	87,529
<i>Orobanche rapum-genistae</i>	NC_031444	91,517
<i>Orobanche densiflora</i>	NC_031442	83,024
<i>Siphocranion macranthum</i>	MT473779	152,126
<i>Siphocranion flavidum</i>	MT473778	152,039
<i>Scutellaria baicalensis</i>	NC_027262	152,731

**Table S2.** Environmental variable information of distribution area prediction.

Type	Variables	Descriptions	Units
Climate	bio1	Annual Mean Temperature	°C
	bio2	Mean Diurnal Range (Mean of monthly (max temp-min temp))	°C
	bio3	Isothermality (bio2/bio7) (×100)	/
	bio4	Temperature Seasonality (standard deviation ×100)	/
	bio5	Max Temperature of Warmest Month	°C
	bio6	Min Temperature of Coldest Month	°C
	bio7	Temperature Annual Range (bio5-bio6)	°C
	bio8	Mean Temperature of Wettest Quarter	°C
	bio9	Mean Temperature of Driest Quarter	°C
	bio10	Mean Temperature of Warmest Quarter	°C
	bio11	Mean Temperature of Coldest Quarter	°C
	bio12	Annual Precipitation	mm
	bio13	Precipitation of Wettest Month	mm
	bio14	Precipitation of Driest Month	mm
	bio15	Precipitation Seasonality (Coefficient of Variation)	/
	bio16	Precipitation of Wettest Quarter	mm
	bio17	Precipitation of Driest Quarter	mm
	bio18	Precipitation of Warmest Quarter	mm
	bio19	Precipitation of Coldest Quarter	mm