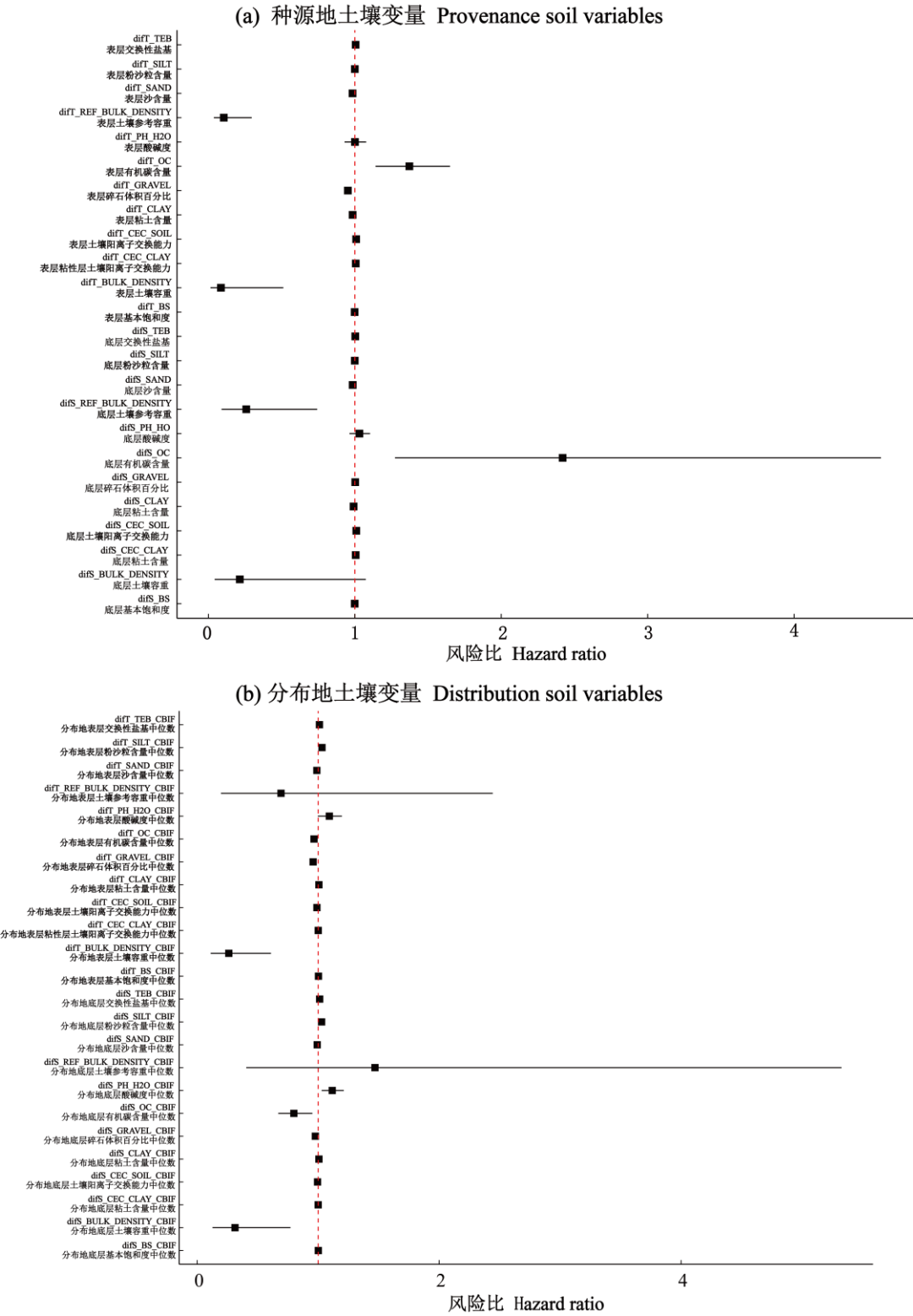
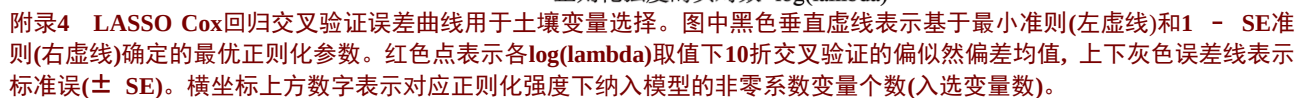




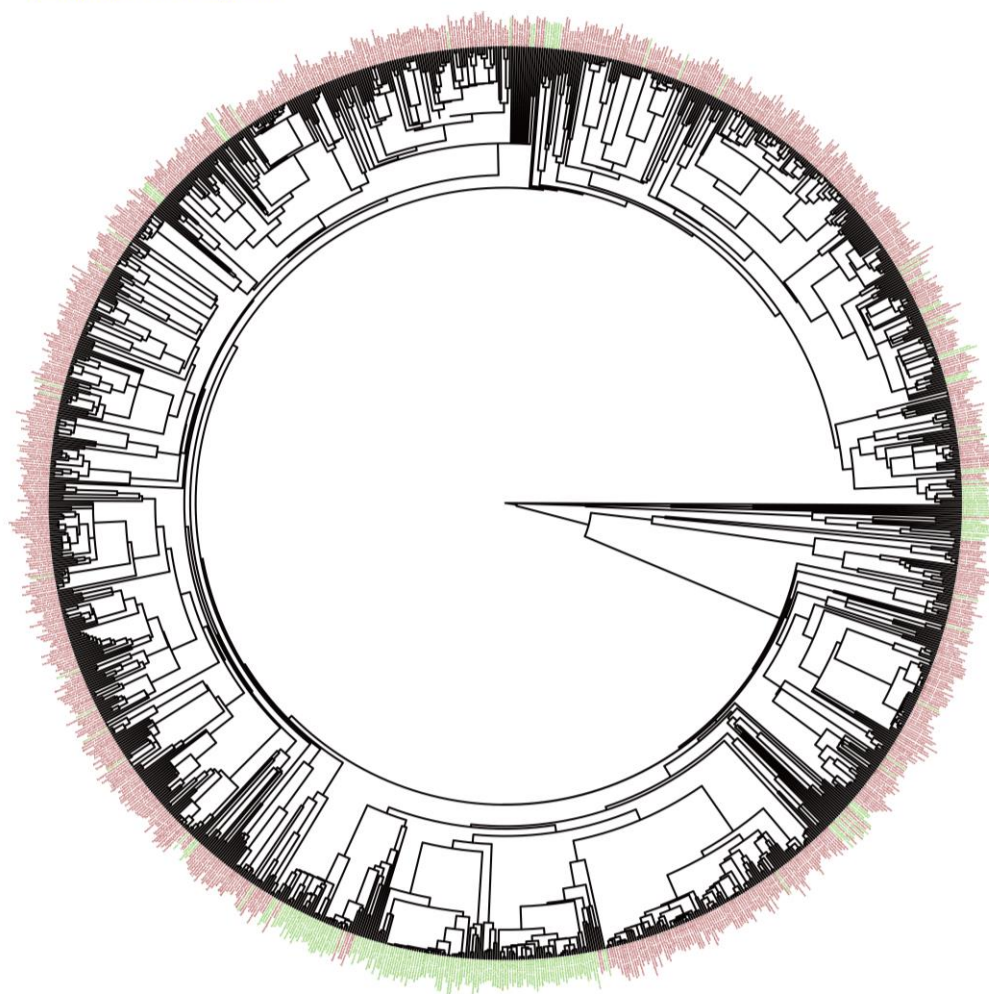
附录3 单因素Cox回归分析评估土壤变量对引种植物存活风险的影响。方形图标表示风险比(hazard ratio, HR)的点估计值, 穿过该图标的黑色水平实线表示95%置信区间。红色垂直虚线表示HR = 1 (无效应线)。若变量的95%置信区间未覆盖无效应线, 则该变量对存活风险的效应具有统计学意义($P < 0.1$)。

Appendix 3 Univariate Cox regression analysis evaluating the effects of soil variables on the survival risk of introduced plants. The square icons represent the point estimates of the hazard ratio (HR), and the black horizontal solid lines passing through them indicate the 95% confidence intervals. The red vertical dashed line indicates HR = 1 (the line of no effect). Variables whose 95% confidence intervals do not overlap with the line of no effect indicate statistically significant effects on survival risk ($P < 0.1$).



木本植物 Woody plant

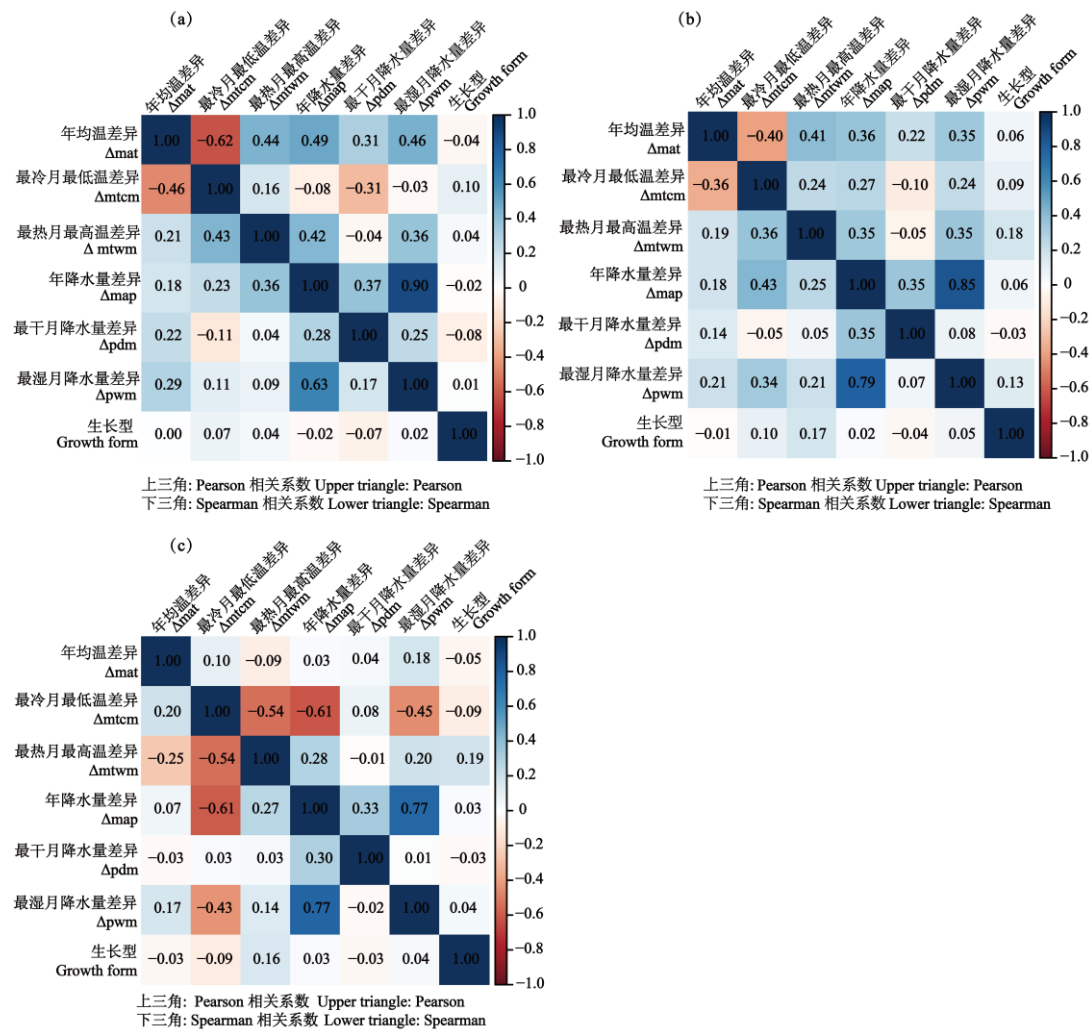
草本植物 Herbal plant



附录5 研究物种在维管植物系统发育树的映射。基于R软件包V.PhyloMaker构建的1,232个研究物种的系统发育树(环形展示)。

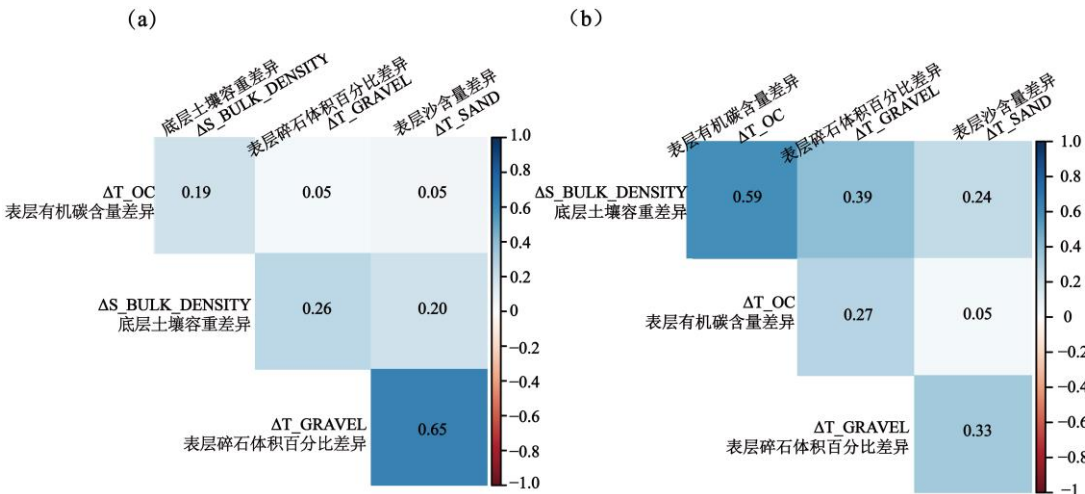
Appendix 5 Mapping of study species onto the Vascular Plant Phylogeny. The circular phylogenetic tree of 1,232 study species was constructed using the R package V.PhyloMaker.

周丽芳, 慈秀芹, 陈筠灵, 苏艳萍, 申健勇, 李捷 (2026) 基于混合效应 Cox 比例风险模型评估气候与土壤对热带引种植物存活的影响. 生物多样性, 34, 25482. <https://www.biodiversity-science.net/CN/10.17520/biods.2025482>



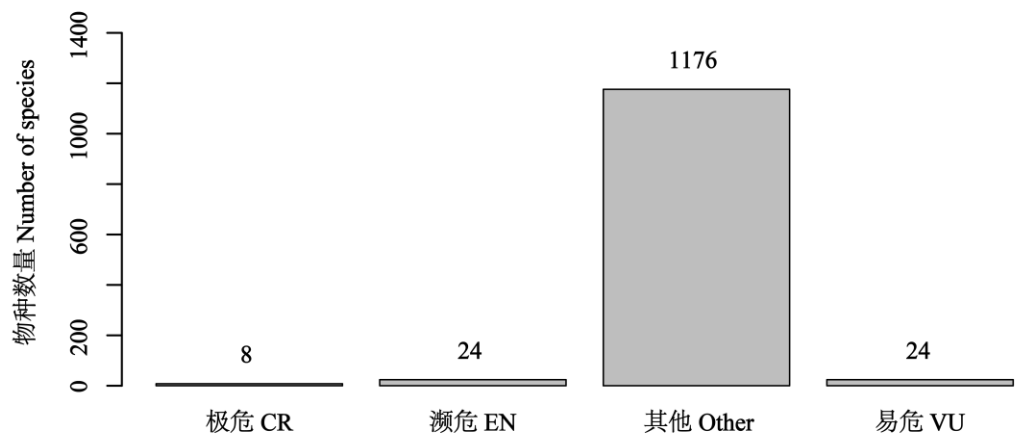
附录6 气候差异变量与植物生长型的相关性分析。在任一Cox模型中, 解释变量之间的相关性导致的共线性均不构成问题。无论采用何种方法来衡量中国科学院西双版纳热带植物园(XTBG)与物种自然分布地之间的气候差异, 即(a)种源地与XTBG之间的气候差异; (b)分布地气候中位数与XTBG之间的气候差异; (c)极端气候的比例, 解释变量之间的相关性均较低。解释变量包括生长型以及6个气候差异变量: 年均温差异(Δmat)、最冷月最低温差异($\Delta mtcm$)、最热月最高温差异($\Delta mtwm$)、年降水量差异(Δmap)、最干月降水量差异(Δpdm)和最湿月降水量差异(Δpwm)。除生长型为二分类变量外, 其余解释变量均为连续型变量。各图的矩阵上三角显示Pearson相关系数, 下三角显示Spearman相关系数。色阶深浅表示相关系数大小, 蓝色和红色分别表示正与负相关。

Appendix 6 Correlation analysis of climatic difference variables and plant growth forms. Collinearity due to correlation between explanatory variables was not an issue in any of the Cox models. Correlation was low between explanatory variables, regardless of the approach to measure climate differences between Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences (XTBG) and the wild distribution of species: (a) Climate differences between provenances and XTBG; (b) Climate differences between the median climate across occurrence records and XTBG; (c) Proportion of extreme climate. Explanatory variables included growth form and six climatic difference variables: difference in annual mean temperature (Δmat), difference in minimum temperature of the coldest month ($\Delta mtcm$), difference in maximum temperature of the warmest month ($\Delta mtwm$), difference in annual precipitation (Δmap), difference in precipitation of the driest month (Δpdm), difference in precipitation of the wettest month (Δpwm). All explanatory variables are continuous except growth form which is binary. Upper triangles display Pearson correlation coefficients; lower triangles display Spearman correlation coefficients. Color intensity indicates correlation strength, with blue and red denoting positive and negative correlations.

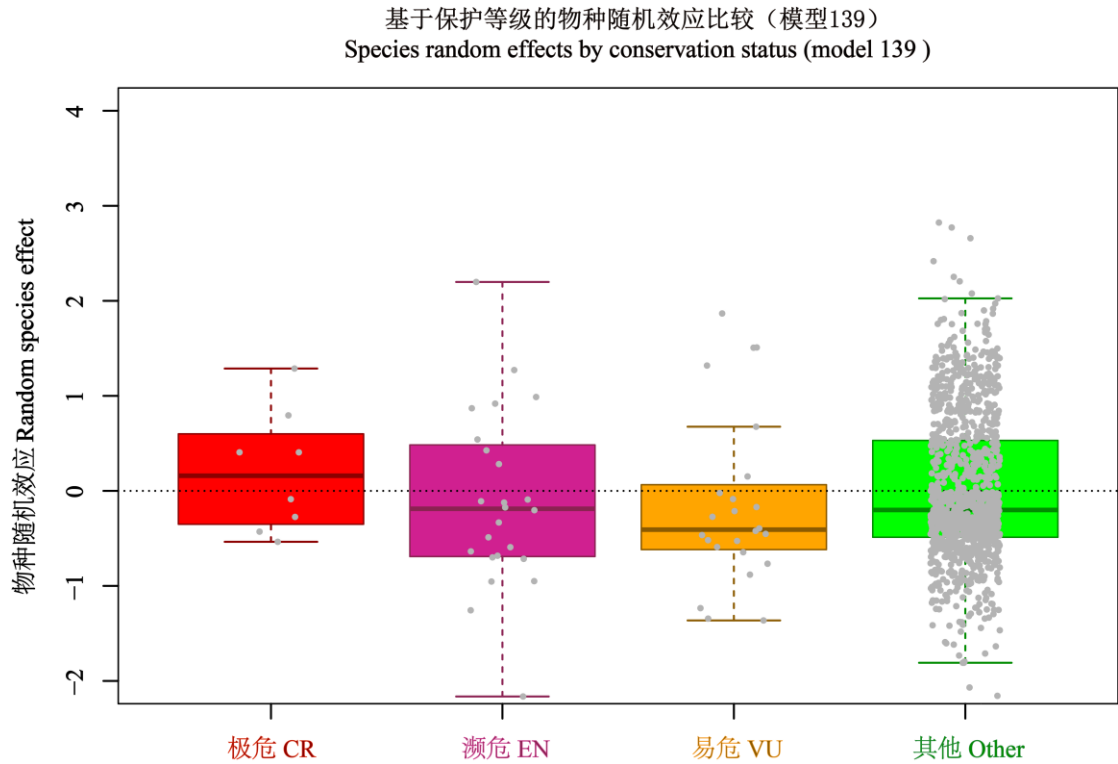


附录7 土壤差异变量与生长型的相关性分析。(a)种源地与中国科学院西双版纳热带植物园(XTBG)之间的土壤差异; (b)物种分布地土壤中位数与XTBG之间的土壤差异。矩阵显示Pearson相关系数。色阶深浅表示相关系数大小, 蓝色和红色分别表示正负相关。

Appendix 7 Correlation analysis of soil difference variables and growth form. (a) Soil differences between provenances and Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences (XTBG); (b) Soil differences between the median soil across occurrence records and XTBG. Matrices display Pearson correlation coefficients. Color intensity indicates correlation strength, with blue and red denoting positive and negative correlations, respectively.



附录14 物种在保护状况等级中的分布。保护状况等级基于《IUCN濒危物种红色名录》(2024)。
Appendix 14 Distribution of species among conservation status categories. Conservation status categories are based on The IUCN Red List of Threatened Species (2024).



附录15 基于最高经验支持度模型之一(模型139)比较受威胁与未受威胁物种类群的随机效应。“其他”类别包括尚未评估的物种类群, 以及经评估后未被列为全球性灭绝威胁的物种类群。对于每个保护等级, 箱线图显示中位数(水平线)、四分位距(箱体)以及延伸至不超过1.5倍四分位距的须线。灰点表示各物种的随机效应值, 均经抖动处理以避免重叠。对于极危和濒危类别, 物种数量较少(分别为8和24)。我们采用不假设方差齐性的 t 检验, 检验未受威胁(“其他”类别)与受威胁物种类群间随机效应的差异。受威胁类群包括极危、濒危和易危。结果显示, 两组差异无统计学意义($t = -0.698$, $df = 58.99$, $P = 0.488$)。

Appendix 15 Comparison of species random effects between threatened and not threatened species taxa, based on one of the models with highest empirical support (Model 139). The ordinate shows species random effects for four threat categories on the abscissa: Critically Endangered (CR), Endangered (EN), Vulnerable (VU), and Other. The latter category includes species taxa that have not been evaluated as well as evaluated species taxa that are not listed as threatened with extinction in a global assessment. For each threat category, boxplots show the median (horizontal line), inter-quartile range (box), and whiskers extending to data points no more than 1.5 times the inter-quartile range. Gray dots show the random effect values for individual species, all of which are jittered to avoid overlap. In the case of the CR and EN categories, there are relatively few species taxa ($n = 8$ and 24 , respectively). We performed a t -test, without assuming equality of variances, to examine differences in species random effects between not threatened (the “Other” category) and threatened species taxa. Threatened taxa included CR, EN, and VU species taxa. We found no significant difference between these two groups ($t = -0.698$, $df = 58.99$, $P = 0.488$).