

Supplementary Material S1

Complete Chinese questionnaire and English translation for manuscript sustainability-4566106.

This supplement reproduces the complete Chinese questionnaire administered in the study, including screening questions, the contextual introduction, response instructions, item wording, and background questions. English translations follow the corresponding Chinese text for reader access.

The EI introduction specifies interest and familiarity endpoints, while its item table uses agreement labels; both are reproduced as administered. EI is an auxiliary measure outside the main latent model. The core agreement scale uses 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree.

文化遗产地古树生态价值感知与可持续保护意愿调查问卷

Survey of Ecological Value Perception and Sustainable Conservation Support for Ancient Trees in Cultural Heritage Sites

正式发放版

Version for formal administration

问卷说明

Survey information

尊敬的受访者：您好！感谢您参与本次问卷调查。本问卷旨在了解公众对文化遗产地中古树生态价值、文化生态系统服务、场所依恋以及可持续保护意愿的看法。

Survey information:

Dear participant, thank you for taking part in this survey. It asks about public perceptions of the ecological value of ancient trees in cultural heritage sites, cultural ecosystem services, place attachment, and willingness to support sustainable conservation.

本研究所称“文化遗产地”，主要包括寺庙、道观、古建筑群、历史园林、古镇、传统村落、历史街区、文物保护单位景区等具有历史文化价值的场所；“古树”指树龄较长、具有较高生态、历史、文化或景观价值的树木，也包括文化遗产地中具有突出景观和历史意义的大树、名木或传统庭院树木。

In this study, cultural heritage sites include temples, Taoist temples, ancient architectural complexes, historic gardens, ancient towns, traditional villages, historic districts, and scenic areas containing protected cultural relics. Ancient trees refer broadly to older trees with substantial ecological, historical, cultural, or landscape value, including large trees, notable trees, and traditional courtyard trees with particular historical and landscape significance in heritage settings.

本问卷采用匿名方式填写，所有数据仅用于学术研究，不涉及任何个人隐私。请您根据真实感受作答，答案没有对错之分。填写本问卷约需 5—7 分钟。

Responses are anonymous and will be used only for academic research. The questionnaire does not request private personal information. Please respond according to your actual views; there are no right or wrong answers.

Completion takes approximately 5–7 minutes.

一、知情同意 (I. Informed consent)

1. 我已了解本问卷的研究目的，并同意匿名参与本次调查。

1. I understand the purpose of this questionnaire and agree to participate anonymously.

☐ 同意，继续填写 ☐ 不同意，结束填写

Agree and continue / Do not agree and end the questionnaire

二、筛选与基本参观经验 (II. Eligibility and basic visitation experience)

2. 您是否年满 18 周岁？

2. Are you at least 18 years old?

☐ 是 ☐ 否

Yes / No

3. 您是否曾参观过含有古树、大树或传统庭院树木的文化遗产地？例如寺庙、道观、古建筑群、历史园林、古镇、传统村落、历史街区等。

3. Have you visited a cultural heritage site containing ancient trees, large trees, or traditional courtyard trees, such as a temple, Taoist temple, ancient architectural complex, historic garden, ancient town, traditional village, or historic district?

☐ 是 ☐ 否，但我了解或见过相关图片、视频或介绍 ☐ 完全不了解

Yes / No, but I am familiar with such places or have seen relevant pictures, videos, or introductions / I am completely unfamiliar with such places

4. 您最近一次参观类似文化遗产地的时间是？

4. When did you last visit a similar cultural heritage site?

☐ 近 1 个月内 ☐ 近 3 个月内 ☐ 近半年内 ☐ 近 1 年内

Within the past month / Within the past three months / Within the past six months / Within the past year

☐ 1 年以上 ☐ 从未实地参观过

More than one year ago / I have never visited in person

5. 您参观过的相关文化遗产地类型主要包括哪些？可多选。

5. Which types of relevant cultural heritage sites have you visited? Select all that apply.

☐ 寺庙 ☐ 道观 ☐ 古建筑群 ☐ 历史园林

Temple / Taoist temple / Ancient architectural complex / Historic garden

☐ 古镇或传统村落 ☐ 历史街区 ☐ 文物保护单位景区 ☐ 其他: _____

Ancient town or traditional village / Historic district / Scenic area containing protected cultural relics / Other:

三、情境说明 (III. Contextual introduction)

请您阅读以下说明后继续作答：

Please read the following description before continuing.

在许多文化遗产地中，古树长期与古建筑、庭院空间、宗教活动、地方记忆和日常游览体验共存。这些古树不仅能够遮阴降温、改善环境、维持生态稳定，也可能承载历史记忆、地方文化、精神象征和审美价值。随着气候变化、旅游开发、病虫害、树体衰老和周边建设活动的影响，文化遗产地中的古树保护也面临新的挑战。

In many cultural heritage sites, ancient trees have long coexisted with historic buildings, courtyards, religious activities, local memories, and everyday visitor experiences. These trees can provide shade and cooling, improve environmental conditions, and maintain ecological stability. They can also embody historical memories, local culture, spiritual symbolism, and aesthetic value. Climate change, tourism development, pests and diseases, tree ageing, and surrounding construction bring new challenges to their conservation.

请您结合自己的参观经历、生活经验或对相关场景的理解，对以下说法进行评价。所有题项均采用 5 级量表：1 = 非常不同意；2 = 不同意；3 = 一般；4 = 同意；5 = 非常同意。

Please assess the following statements in light of your visits, life experience, or understanding of relevant settings. All items use a five-point scale: 1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree.

四、古树生态价值感知 (EVP) (IV. Ecological value perception: EVP)

请判断您对文化遗产地中古树生态价值的看法。

Please assess your views on the ecological value of ancient trees in cultural heritage sites.

Source response columns / 原表回答选项: 1 非常不同意 (strongly disagree); 2 不同意 (disagree); 3 一般 (neutral); 4 同意 (agree); 5 非常同意 (strongly agree).

Code 编号	Original Chinese wording and English translation
EVP1	我认为文化遗产地中的古树具有重要的生态保护价值。 I believe that ancient trees in cultural heritage sites have important ecological conservation value.
EVP2	古树能够改善文化遗产地的环境质量, 如遮阴、降温和净化空气。 Ancient trees can improve environmental quality in cultural heritage sites, for example through shade, cooling, and air purification.
EVP3	古树有助于维持文化遗产地中的生物多样性。 Ancient trees help maintain biodiversity in cultural heritage sites.
EVP4	古树能够增强文化遗产地生态环境的稳定性。 Ancient trees can strengthen ecological stability in cultural heritage sites.
EVP5	与普通景观树木相比, 古树更能体现长期生态积累的价值。 Compared with ordinary landscape trees, ancient trees better embody the value of long-term ecological accumulation.

五、文化生态系统服务感知 (CESP) (V. Cultural ecosystem service perception: CESP)

请判断您对文化遗产地中古树所提供的文化、审美、教育和精神价值的看法。

Please assess your views on the cultural, aesthetic, educational, and spiritual value provided by ancient trees in cultural heritage sites.

Source response columns / 原表回答选项: 1 非常不同意 (strongly disagree); 2 不同意 (disagree); 3 一般 (neutral); 4 同意 (agree); 5 非常同意 (strongly agree).

Code 编号	Original Chinese wording and English translation
CESP1	文化遗产地中的古树能够提升整体景观的审美价值。 Ancient trees in cultural heritage sites can enhance the aesthetic value of the overall landscape.
CESP2	古树能够增强文化遗产地的历史感和时间感。 Ancient trees can strengthen the sense of history and time in cultural heritage sites.

Code 编号	Original Chinese wording and English translation
CESP3	古树能够带来宁静、庄重或精神慰藉的体验。 Ancient trees can provide experiences of tranquillity, solemnity, or spiritual comfort.
CESP4	古树有助于公众理解当地历史、文化和传统生活方式。 Ancient trees help the public understand local history, culture, and traditional ways of life.
CESP5	古树可以作为生态保护和文化遗产教育的重要载体。 Ancient trees can be important resources for education about ecological conservation and cultural transmission.
CESP6	古树使文化遗产地更具有地方特色和文化辨识度。 Ancient trees give cultural heritage sites greater local character and cultural distinctiveness.

六、场所依恋 (PA) (VI. Place attachment PA)

请判断古树是否会影响您对文化遗产地的情感连接和认同感。

Please assess whether ancient trees affect your emotional connection to and identification with cultural heritage sites.

Source response columns / 原表回答选项: 1 非常不同意 (strongly disagree); 2 不同意 (disagree); 3 一般 (neutral); 4 同意 (agree); 5 非常同意 (strongly agree).

Code 编号	Original Chinese wording and English translation
PA1	有古树存在的文化遗产地更容易让我产生亲近感。 Cultural heritage sites with ancient trees more readily evoke a sense of closeness in me.
PA2	古树会增强我对文化遗产地的情感连接。 Ancient trees strengthen my emotional connection to cultural heritage sites.
PA3	我认为古树是文化遗产地不可替代的重要组成部分。 I consider ancient trees an important and irreplaceable component of cultural heritage sites.
PA4	如果文化遗产地中的古树消失，我会感到遗憾。 I would feel regret if the ancient trees in cultural heritage sites disappeared.
PA5	古树让我觉得文化遗产地更有独特性和记忆点。 Ancient trees make cultural heritage sites feel more distinctive and memorable to me.

七、可持续保护意愿（SCS）(VII. Sustainable conservation support: SCS)

请判断您对文化遗产地中古树可持续保护措施的支持程度。

Please assess your support for sustainable measures to protect ancient trees in cultural heritage sites.

Source response columns / 原表回答选项: 1 非常不同意 (strongly disagree); 2 不同意 (disagree); 3 一般 (neutral); 4 同意 (agree); 5 非常同意 (strongly agree).

Code 编号	Original Chinese wording and English translation
SCS1	我支持对文化遗产地中的古树开展长期健康监测。 I support long-term health monitoring of ancient trees in cultural heritage sites.
SCS2	我支持采用支撑、修剪、病虫害防治等方式延长古树寿命。 I support measures such as bracing, pruning, and pest and disease control to extend the lives of ancient trees.
SCS3	即使需要增加管理成本，我也支持对古树进行保护性维护。 I support protective maintenance of ancient trees even if it increases management costs.
SCS4	我支持限制可能损害古树生长环境的旅游开发或商业活动。 I support restricting tourism development or commercial activities that may harm the growing environment of ancient trees.
SCS5	我支持将古树保护与古建筑保护作为一个整体来管理。 I support managing the protection of ancient trees and historic buildings as an integrated whole.
SCS6	我愿意向他人宣传文化遗产地古树保护的重要性。 I am willing to communicate to others the importance of protecting ancient trees in cultural heritage sites.

八、生态风险感知（ERP）(VIII. Ecological risk perception: ERP)

本部分用于了解公众对文化遗产地中古树保护风险的判断。后续分析中可作为控制变量、调节变量或稳健性检验变量。

This section concerns public assessments of threats to ancient trees in cultural heritage sites. In subsequent analyses it may serve as a control, moderator, or robustness-check variable.

Source response columns / 原表回答选项: 1 非常不同意 (strongly disagree); 2 不同意 (disagree); 3 一般 (neutral); 4 同意 (agree); 5 非常同意 (strongly agree).

Code 编号	Original Chinese wording and English translation
	我认为文化遗产地中的古树正面临病虫害、衰老或环境退化等风险。
ERP1	I believe that ancient trees in cultural heritage sites face risks such as pests and diseases, ageing, or environmental degradation.
	游客活动和周边建设可能对古树生长造成负面影响。
ERP2	Visitor activities and surrounding construction may negatively affect the growth of ancient trees.
	极端天气可能增加文化遗产地中古树受损的风险。
ERP3	Extreme weather may increase the risk of damage to ancient trees in cultural heritage sites.
	如果缺乏长期管理，文化遗产地中的古树可能逐渐衰退。
ERP4	Without long-term management, ancient trees in cultural heritage sites may gradually decline.

九、生态保护与文化遗产兴趣 (IX. Interest in ecological protection and cultural heritage)

以下题项仍采用 5 级量表：1 = 非常不感兴趣/非常不了解；5 = 非常感兴趣/非常了解。

These items also use a five-point scale: 1 = very uninterested or very unfamiliar; 5 = very interested or very familiar.

Source response columns / 原表回答选项: 1 非常不同意 (strongly disagree); 2 不同意 (disagree); 3 一般 (neutral); 4 同意 (agree); 5 非常同意 (strongly agree).

Code 编号	Original Chinese wording and English translation
	您对生态保护、环境保护或生物多样性保护的感兴趣程度是：
EI1	What is your level of interest in ecological protection, environmental protection, or biodiversity conservation?
	您对文化遗产、古建筑或传统文化的兴趣程度是：
EI2	What is your level of interest in cultural heritage, historic buildings, or traditional culture?
	您对古树名木保护相关知识的了解程度是：
EI3	How familiar are you with knowledge about the protection of ancient and notable trees?
	您对文化遗产地可持续管理议题的关注程度是：
EI4	How much attention do you pay to sustainable management issues in cultural heritage sites?

十、基本信息 (X. Background information)

1. 您的性别：

1. Your gender:

☐ 男 ☐ 女 ☐ 其他/不便透露

Male / Female / Other or prefer not to disclose

2. 您的年龄：

2. Your age:

☐ 18 岁以下 ☐ 18—25 岁 ☐ 26—35 岁 ☐ 36—45 岁

Under 18 / 18–25 / 26–35 / 36–45

☐ 46—55 岁 ☐ 56 岁及以上

46–55 / 56 or older

3. 您的最高学历:

3. Your highest educational qualification:

☐ 高中/中专及以下 ☐ 大专 ☐ 本科 ☐ 硕士研究生

High school or technical secondary education or below / Junior college / Bachelor's degree / Master's degree

☐ 博士研究生及以上

Doctoral degree or above

4. 您目前的职业:

4. Your current occupation:

☐ 学生 ☐ 企业职员 ☐ 机关/事业单位工作人员 ☐ 教师/科研人员

Student / Enterprise employee / Government or public-institution employee / Teacher or researcher

☐ 自由职业者 ☐ 退休人员 ☐ 其他: _____

Freelancer / Retired / Other: _____

5. 您是否具有以下相关专业或工作背景? 可多选。

5. Do you have any of the following professional or work backgrounds? Select all that apply.

☐ 生态学/环境科学 ☐ 园林/风景园林 ☐ 建筑学/城乡规划 ☐ 文物保护/文化遗产

Ecology or environmental science / Gardening or landscape architecture / Architecture or urban and rural planning / Cultural relics or heritage conservation

☐ 旅游管理/公共管理 ☐ 宗教文化/历史学 ☐ 以上均无 ☐ 其他: _____

Tourism management or public administration / Religious culture or history / None of the above / Other: _____

6. 您过去一年参观文化遗产地的频率是:

6. How often did you visit cultural heritage sites in the past year?

☐ 从未参观 ☐ 1—2 次 ☐ 3—5 次 ☐ 6—10 次

Never / 1—2 times / 3—5 times / 6—10 times

☐ 10 次以上

More than 10 times

7. 您是否曾经主动了解过古树名木保护、文化遗产保护或生态保护相关信息?

7. Have you actively sought information about the protection of ancient or notable trees, cultural heritage, or the environment?

☐ 经常了解 ☐ 偶尔了解 ☐ 很少了解 ☐ 从未了解

Often / Occasionally / Rarely / Never

十一、注意力检测题 (XI. Attention-check item)

为保证问卷质量，请在本题选择“同意”。

To ensure response quality, please select Agree for this item.

☐ 非常不同意 ☐ 不同意 ☐ 一般 ☐ 同意 ☐ 非常同意

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

十二、开放性问题 (XII. Open-ended question)

您认为在文化遗产地中古树保护过程中，最需要关注的问题是什么？请简要填写您的看法。

In your view, what issues most need attention when protecting ancient trees in cultural heritage sites? Please give a brief answer.

感谢您的参与！您的回答将为文化遗产地古树生态保护、文化遗产可持续管理和自然—文化协同保护研究提供重要参考。

Thank you for participating. Your answers will inform research on ancient-tree ecological protection, sustainable cultural heritage management, and integrated conservation of nature and culture.

Variable map and coding

The analysis code uses `visit_exp = 1` for Yes to screening item 3 and `visit_exp = 2` for No but familiar through pictures, videos or introductions. The supplied analysis file contains 390 and 110 records, respectively. The no-familiarity option is not present in the retained sample. The recency response is consistent with this grouping: all 110 mediated-familiarity records report no in-person visit.

Questionnaire codes	Dataset variables	Role or coding
EVP1–EVP5	evp1–evp5	5 core items
CESP1–CESP6	cesp1–cesp6	6 core items
PA1–PA5	pa1–pa5	5 core items
SCS1–SCS6	scs1–scs6	6 core items
ERP1–ERP4	erp1–erp4	4 auxiliary items
EI1–EI4	ei1–ei4	4 auxiliary items
Screening item 3	visit_exp	1 direct; 2 mediated
Screening item 4	recent_visit	1–5 visited; 6 never
Attention check	attention	Agree is the requested response

All response-option wording above is reproduced for transparency, including the under-18 demographic option despite the adult eligibility screen. Core constructs use arithmetic means only for auxiliary descriptive and composite-score analyses; the primary model uses the 22 individual core indicators. The original record identifier and open-ended text are omitted from the shared dataset. Additional variable and value labels are supplied in the File S2 codebook.

Explanatory notes for readers

The notes below clarify the analysis and were prepared for this revision. They are not additional instructions administered to respondents; the complete questionnaire above is reproduced unchanged.

Measurement reference frame

The questionnaire uses 古树 (translated above as ancient trees) for a broad category that includes older trees and large, notable, or traditional courtyard trees with ecological, historical, cultural, or landscape significance in heritage settings. The manuscript uses heritage trees as the umbrella term for that operational category. No verified age threshold, named-tree selection, or single-site anchor was required. The contextual instruction allowed visits, life experience, or understanding of relevant settings to inform responses. The PA instruction concerns the trees' contribution to emotional connection and identification; for mediated-familiarity respondents, this may include symbolic or anticipated connections rather than attachment established through visits.

Item-content boundaries

CESP addresses perceived cultural contributions, PA their personal emotional significance, and SCS endorsement of protective actions. The following comparison identifies the specific content considered in the targeted sensitivity analysis. Statistical separation is evaluated independently in Supplementary Material S2; it does not substitute for this content interpretation.

Item(s)	Content distinction and overlap
CESP6 and PA5	CESP6: local character and cultural recognizability. PA5: personal distinctiveness and memorability. Both share a distinctiveness theme.
PA4 and SCS	PA4: anticipated regret at losing a valued landscape component; this can also reflect conservation concern. SCS: explicit endorsement of management actions or communication willingness.
Sensitivity specification	CESP6, PA4, and PA5 were omitted in a post hoc 19-item model with the same 500 records and structural paths. The administered 22-item specification remains the primary model.