

## Article

# Ecological Legacies and Ethnotourism: Bridging Science and Community in Ecuador's Amazonia

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**Abstract:** This paper offers paradigmatic insights from an international workshop on *Ecological Legacies: Bridge Between Science and Community*, in Ecuador, in the summer of 2023. The conference brought together foreign and local scholars, tour operators, village community, and Indigenous leaders in the upper Amazonia region of Ecuador with the goal of developing a vision for a sustainable and regenerative future of the upper Amazon. The conference offered three epistemological contributions to the existing literature in the emergent field of Montology, including addressing issues of (a) understanding the existing linguistic hegemony in describing tropical environments, (b) the redress of mistaken notions on pristine jungle environments, and (c) the inclusion of traditional knowledge and transdisciplinary approaches to understand the junglescape from different perspectives and scientific traditions. Methodologically, the conference bridged the fields of palaeoecological and ethnobotanical knowledge (as part of a wider conversation between science and local communities). Results show that local knowledge should be incorporated into the study of the junglescape and its conservation, with decolonial approaches for tourism, sharing language, methodology, tradition, and dissemination of the forest's attributes. Our research helped co-create and formulate the "Coca Declaration" calling for a philosophical turn in research, bridging science and ethnotourism in ways that are local, emancipatory, and transdisciplinary. We conclude that facilitating new vocabulary by decolonial heightening of Indigenous perspectives of the junglescape helps to incorporate the notion of different Amazons, including the mountainscape of the Andean–Amazonian flanks. We also conclude that we can no longer consider Ecuador the country of "pure nature" since we helped demystify pristine nature for foreign tourists and highlighted local views with ancestral practices. Finally, we conclude that ethnotourism is a viable alternative to manage heritagization of the junglescape as a hybrid territory with the ecological legacies of the past and present inhabitants of upper Amazonia.

**Keywords:** ecotourism; ethnotourism; adventure tourism; regenerative tourism; ecological legacy; jungle-garden; jungle-park; fusion landscape; culture–nature hybrid

## 1. Introduction

Tourism in Ecuadorian Amazonia has become a *de facto* economic activity along settlements associated with riparian environments, including oxbow lakes and meandering riverfronts. Tourism operations, often served by either national or international firms exploiting the scenic beauty and the rich biodiversity of the tropical forest, cater to tourists from the Global North who are mesmerized by the lush greenery of the apparently pristine nature. One of the effects of the COVID-19 pandemic was to foster a desire to find new outdoor experiences. The urge to travel, stymied for two years, has led to a surge of ecotourists wanting to explore and experience novel (to them) settings [1]. Such destinations include isolated areas of the tropical rain forest of upper Amazonia, typically translated for tourists by local guides. It is in this space of translation and re-engagement (after the pandemic) that this paper is located.

We are a team of ecologists and social scientists seeking to theorize and create appropriate frames of narrativizing ecological experience that move away from outdated tropes such as the virgin forest (c.f., *natura naturata*) and replace them with accessible, but scientifically accurate narratives. An important goal in this regard is to incorporate cultural and historical accounts into the content of tourism offerings (c.f., *natura naturans*). There is a clear research gap to distinguish the characteristics of mature forests that have never been altered by people with those that may bear legacy effects of past human activities, such as enrichment with species valued for their fruits or depletion of timber species. It is important to remember that territorial occupations by indigenous communities is often dynamic through space and time, and that the current occupiers were not necessarily directly descended from those who altered the forest. Thus, there is a role for scientists to help inform local people of the history and timelines of a site that reach beyond folk memory. In turn, tourists are often eager to understand these foreign and potentially complex histories [2]. Our hope is that tourists, once exposed to these ideas, will welcome the inclusion of an Indigenous human element as opposed to the previous tourist-centered discourse that only emphasized physical and biological factors [3] or those who exoticized the Indigenous [4]. An added benefit is that these newer narratives ring truer to domestic, as opposed to foreign, ecotourists. The purpose of this study is to explore the “ethnotourism turn” [5] through community efforts. The objectives include (1) to promote acquisition of a new vocabulary that introduces the idea of “working” production landscapes of the UNU’s “Satoyama Initiative” and the ‘jungle-garden’ or the ‘jungle-park’, (2) to compare traditional notions of “the pristine jungle” [6] or “pristine island” [7] that pervades the tourism offerings of Ecuador, touted as “country of pure nature” [8], and (3) to help tourists to appreciate that the current landscape configuration is a manifestation of a blend of natural and altered habitats that often coexist in a predictable mosaic [3,9,10]. The jungle is a grown fusion landscape, rather than the extant of a mature, untouched forest community, where humans have not made significant impact in the composition, structure, or function of the forest [3,11].

We argue for switching the nature emphasis of ecotourism or culture-emphasis of sociotourism towards a much-needed action of ‘co-creation’ with sustainable options for local tourism operators and domestic tourists [12]. We advocate the biocultural emphasis inherent to ethnotourism as the decolonial tool to bridge science and community stewardship, embraced by the “Kuk’á Umawa declaration” (see Appendix A below). In doing so, we build on earlier works dealing with place attachment and identity of tropandean mountains with the field notes [13] and with the “three ecologies” by Guattari [14]—of physical frameworks—nature, mental constructs—social, and spiritual dimensions—culture—of the junglescape. Here, we seek the application of montology [15] as the transdisciplinary approach of Western, Eastern and Global South science) for knowing of, and caring for, the tropandean mountainscape, and posit a call for revisiting the biocultural narrative that tourists receive when visiting upper Amazonia.

## 2. Materials and Methods

### 2.1. Methods of Bridging Science and Community Stewardship

As part of a multimethod research dealing with the ecological legacies of the Amazon, we conducted interpretative constructivism research on the riverine communities along the rivers of upper Amazonia in Ecuador to complement research performed on the paleoecology and biogeography of the Napo communities. We developed open-ended interviews, a survey questionnaire comprising, interviews with experts, site visits for walked registers, direct observations, and a focus workshop. The research included local and foreign scientists, college students from local universities (ESPOCH, UNA, IKIAM, USFQ, UTE), tourist operators along the Napo, Cuyabeno, Aguarico and Pastaza rivers, bilingual (English-Spanish) and local (Kichwa-Spanish) nature guides of riverfront destinations, a representative sample of women from Shuar, Waorani and Kichwa communities, and privilege witnesses from the central government and Amazonian GADEs, as well as local administrators. Overall, there were 45% female and 55% male participants, with most of them adults from 18 to 60 years old. Just a few elders were available for interviews.

To share the information generated by a research project on the ecological legacies of the Upper Amazon, we convened an international workshop on these topics in May 2023. Scientists, students, tourism operators, nature guides and community members of riverfront destinations attended the workshop (Figure 1). Keynote presentations and guest speeches were offered in the mornings, while workshop communal work took place in the afternoons, with survey questionnaires and open-ended questions leading to a Declaration that was drafted as the co-creation of the stakeholders and scientists (Table 1).



**Figure 1.** Participants in the International Workshop of Ecological Legacies and Ethnotourism organized at the Orellana Extension of the Superior Polytechnic School of Chimborazo (ESPOCH). Source: Photo by John Weatherford. May 2023.

We decided to tally 52 responses to four main areas of concern that correlate with acceptance of bridging science and community: (1) on the research proprieties and community development; (2) on the ancestral wisdom about the forest and its implications; (3) on the recovery of the memory of the Amazon “discovery”; and (4) on the perceived priorities for the management of the jungle’s ethnotourism. Appendix B shows the summaries of the survey results of 260 possible options. Each of the four sections of enquiry included thirteen open-ended questions related with their themes, with two interspersed control questions to calibrate the certainty of registered answers. Work with Indigenous communities is often exploratory and inductive. Hence, the study design being deductive and confirmatory helps to create the appropriate approach for the community survey. For tallying and expressing the importance given to several entries during the questionnaire, we used a Likert scale that incorporated five choices, namely: does not matter; a little important; somewhat important;

important, and very important. Similarly for those questions related to the likelihood of implementing changes in the behavior towards science and community, the Likert scale was maintained with five choices, namely: (1) very difficult; (2) difficult; (3) somewhat difficult, (4) easy; and (5) very easy. See Appendix B (below) for a visualization of the data.

**Table 1.** Structure of the survey questionnaires distributed in four main areas of concern with thirteen questions each to be classified in penta-Likert scales for importance and for ease. See Appendix B for visualization of the data and explanation of results.

#	Research Priorities and Community Development	Ancestral Wisdom	Memory of Discovery	Ethnotourism Management
1	Field coordination	Learning tools	Who discovered	Increase visitor numbers
2	Major players	Community access	Motives of discovery	Type of tourist experience
3	Community immersion	Access in elderly	Prior rubber booms	Class of tourist experience
4	Original language	Storytelling at home	Keeping chroniclers	Culture as experience
5	Publications in vernacular	Legends from father	Spanish version	Jungle as explanatory
6	Scientist whereabouts	Legends from mother	Ecuador is Amazonia	Difficult of translation
7	Knowledge of scientists	Schooling tradition	Richest exploitation	Assuming landscape fabric
8	Commoners' whereabouts	Lost wisdom	Historical limits	Access to local knowledge
9	Knowledge of commoners	Using shamans	Catholic influence	Jungle lifescapes
10	Applying findings	Traditional medicine	Protestant influence	Culture management
11	Sharing knowledges	Keeping tradition	Lost cities tales	Harmonic study practice
12	Time length in relation	Applying wisdom	Jungle settlements	Children and youngsters
13	Transmission of wisdom	Loosing wisdom	Orellana's example	Governmental support

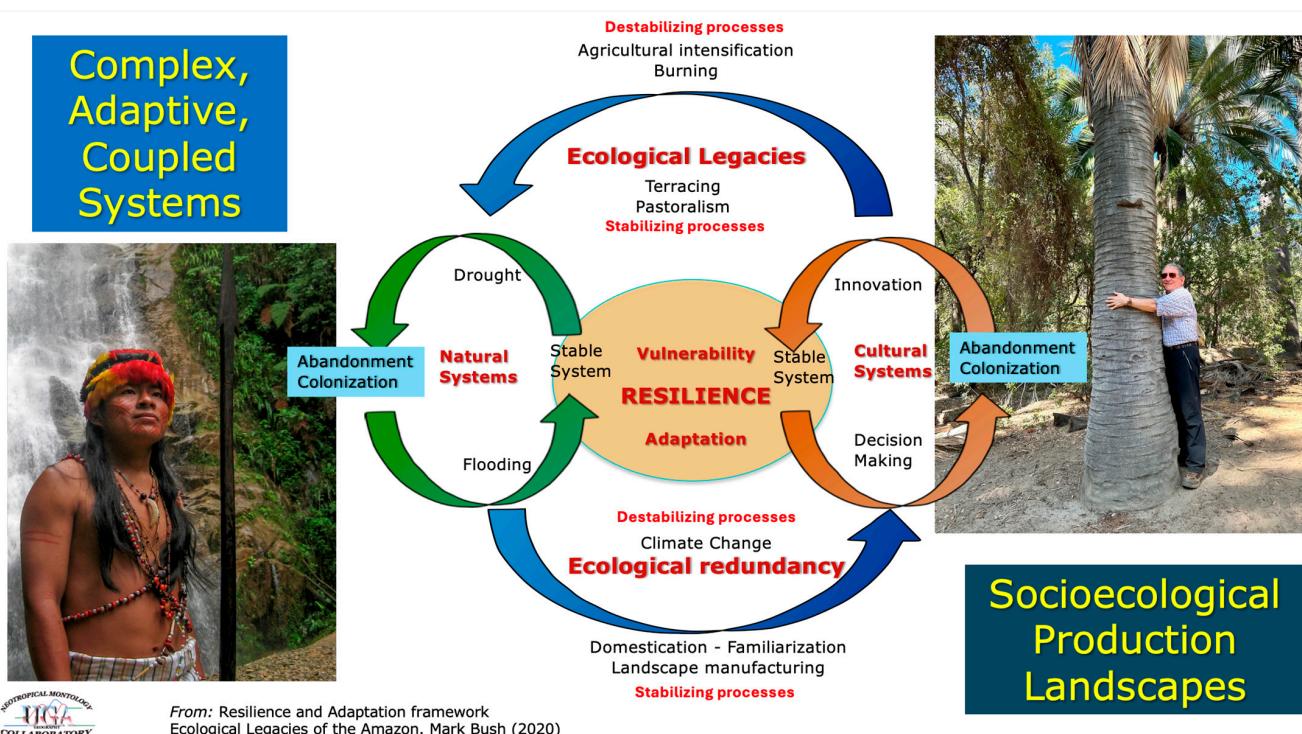
During the workshop, survey instruments and personal interviews took place to highlight the need to incorporate regeneration within the current discourse of sustainability. Indeed, most young researchers agreed with the imperative poised by [16] about restoring the tropical forests as a way forward. One important angle in the restoration effort that must be accomplished is the adoption of a unified Amazonian identity of the Indigenous people. It must be realized that these nations clashed in fierce competition—even lethal encounters in the recent past—but now share an ongoing political unification (i.e., CONAIE Confederation of Indigenous Nationalities of Ecuador), active inter-Indigenous identity markers, and place-making of pan-Amazonian collective homogenization vis à vis the influence of globalization [17]. Recently, for the first time in history, five different Indigenous nations found in and around Cuyabeno Faunal Reserve (i.e., Siona, Secoya, Kofan, Kichwa, and Waorani) gathered in a single intercultural celebration at the Eno Pluricultural Center (Jaime Rodríguez, GADE Cuyabeno, personal communication).

## 2.2. Ecological Legacies of the Amazon and Ecotourism

Steep ecological and cultural gradients created by the uplift of the Andes created abundant, distinct, microclimates and isolation of plants, animal, and human populations that fostered biodiversity [18,19]. Overlying these patterns, the relatively constant climate of much of Amazonia contrasted with glacially induced migrations of species and together produced the biodiversity hotspot of the Andean flank and western Amazonian lowlands [20]. Recently, there has been considerable discussion as to the role that humans, both Pre- and Post-Columbian, have played in influencing species abundances and diversity in apparently natural forest settings; what used to be radical suggestions of heavy human presence in the Amazon are increasingly now being confirmed through archeological, soil, and aerial/LIDAR, and other scientific surveys [21–26] (Figure 2). Mountain geography consistently used landscape characterization of climatic envelopes and biotic distributions to define the “*first nature*” in which physical components, which considered tropical rain forests as pristine or untouched [27]. With the realization of human transformations due to resource management and exploitation by agriculture and mining, the “*second nature*” of the rain forests emphasized the past utilitarian use of timber, rubber, gold, and oil [28]. This realization is fundamental to modern historical geoecology. Recently, and mostly

fueled by Indigenous revival and decolonial scholarship, the “*third nature*” of the jungle is gaining traction as evidence mounts for nature–culture hybridity [29,30].

At the same time, ecologists have recognized the hyperdominance of just 227 out of an estimated 16,000 tree species, which account for 50% of Amazonian stems [31]. A disproportionate number of these hyperdominant species have fruit edible to humans or are palm trees [10]. It is speculated that for at least some of these trees, they owe their abundance to past use and the creation of the ‘jungle-garden’ or ‘jungle-park’, particularly in riparian zones with riverine human occupations (‘*cowode*’ in Waorani or ‘*ribereños*’ in Spanish) from ancient ‘*Omagua*’ and recent ‘*Kichwa*’ river migrants [32,33]. Several ‘lost cities’ found throughout the Andean crescent are now considered ‘urban gardens’ of substantially dense and architecturally sophisticated ancient cities in the upper Amazon, such as in the *Serranía de La Lindosa* in Colombia, the *São Gabriel da Cachoeira* site in Brazil, the *Montegrande* site in Jaén, Perú, the *Wapula* site in the Upano valley, Ecuador, or the *Umawa* sites along the Napo River in Ecuador [26,34–36].



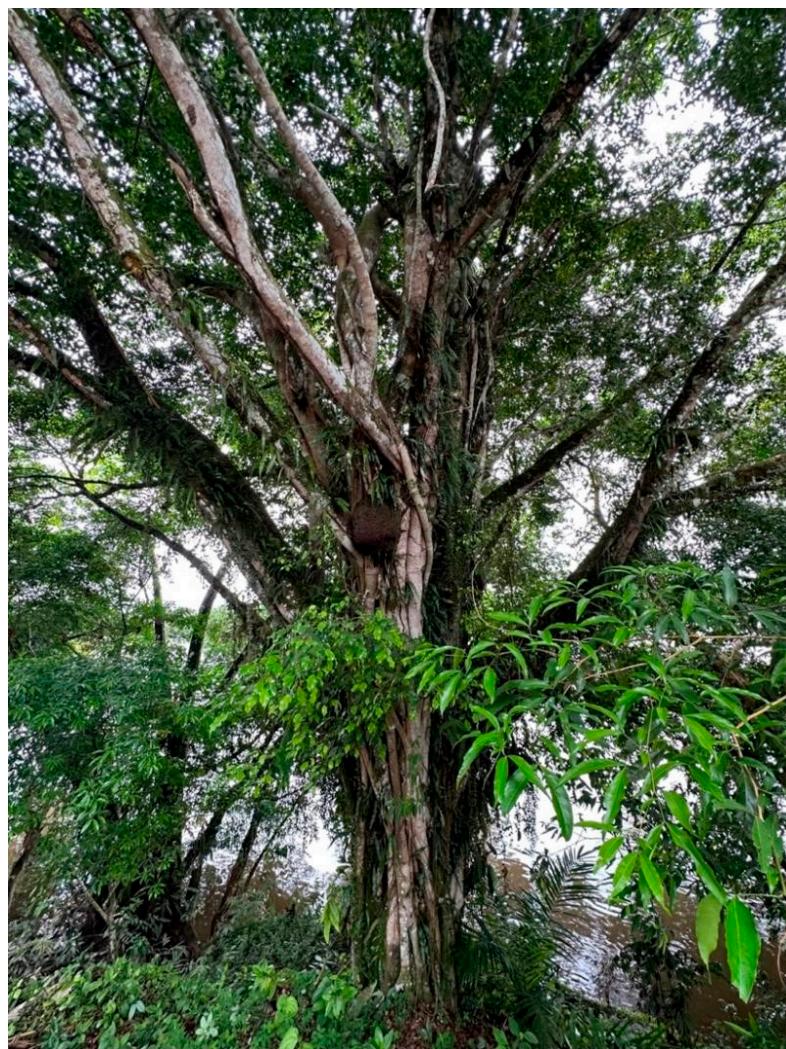
**Figure 2.** Infographic depicting the relationship of processes and factors that determine the socioecological production landscape as a complex, adaptive, and coupled system between nature and culture, highlighting the important contribution of resilience, vulnerability and adaptation to understand the jungle as redundant ecological legacies acted from ancestral interactions [37].

Palaeoecological findings of the lower Amazon provide evidence of a human-dominated landscape in the seasonally flooded Varzea forests with rich alluvial deposits. Yet, this evidence diminishes towards the inner sites of Terra Firme with red clay and sandy soils [38]. Amazonian black Earths or ‘*Terra Preta do Indio*’ are soils modified by human activity mostly between 2000 and 1000 years ago. Additions of organic waste, ash, fishmeal, and pot sherds, created small islands of soil rich in nutrients and organic content amid unfertile lateritic soils and sandy red clays of lower Amazonia [21]. Records from the upper Amazon are still being studied but show the same preponderance of human impacts along rivers with fertile alluvial terraces with soils showing continuity of occupation and trade in the lowlands and in the montane sites, stretching from Venezuela to Northern Argentina. In the case of Ecuador, for instance, the Quijos River basin has shown ancient agriculture and settlement in areas now covered with mature montane forests [39]. Orellana’s famous first

expedition traversing Amazonia in 1542 chronicled a transition from a scarcely populated landscape and few resources to steal in what is today Ecuador and Peru, to the presence of extensive settlements and cities in what would now be Brazil, when Europeans arrived in this territory. With the discovery of a major settlement in the shadows of Sangay volcano in the Upper Amazon, Ref. [26] trusted Orellana's chronicle and further emphasized notions of the "lost city" in the Upano valley, which had laid covered with jungle for centuries before the LIDAR technology allowed researchers to grasp the magnitude of the settlement and the extent of the human imprint in the upper Amazon; unfortunately, they mistakenly equated it as the 'tropical Pompeii' seemingly with same ash-laden fate of the Joya de Cerén in Zapotitlán, El Salvador, where Mt. Loma Caldera might have wiped out that Maya site. Conversely, geomorphic, sedimentology, and eruptive studies have demonstrated that no catastrophic accumulation of tephra or other volcanic deposition affected the Upano valley [40] in Ecuador.

Paleoecology, the study of past ecosystems, has provided some important insights into the human history of western Amazonia. Perhaps the most important of all, is that fire was almost unknown in Amazonia until the arrival of humans [41]. Consequently, we can detect the arrival of people in any setting. Although there are some records of people in Amazonia as early as 13,000 years ago, the first occupations of western Amazonia begin approximately 7000 years ago, with cultivation of maize being practiced soon after. What has become apparent is that while some settings have a long overall history of occupation, people moved in and out of landscapes, with few sites showing continuous long-term occupation [42,43]. Ancient people, same as today's Indigenous and 'colonos', used rivers to travel and communicate (Figure 3). They fished, collected turtle eggs, and could hunt animals along the forest edge. So, rivers became the epicenter of occupation of resilient societies and riverine landscapes [44]. Riverbanks were far more likely to be inhabited, burned, and cultivated, than interior terra firme forests [45–47]. Even a single low-intensity fire can have long-term consequences changing which plants and animals can survive in both terra firme and varzea forests. Over hundreds, even thousands of years, human forays and settled occupations introduced edible plants, depleted timber plants, altered soils, and hence modified the plant composition and community structure. What is unclear is how long those effects would last after abandonment [48] before the cultural imprint is lost and the jungle-garden erasure is complete, if succession ecology is to drive tropical forest regeneration in centennial cycles. Here, paleoecology can help develop the narrative.

First records of occupation and abandonment are evident in the charcoal (caused by forest fires) with data recovered from the soils and sediments of ancient lakes [49]. Fossilized pollen can tell us what plants grew around the lake when it was first occupied and how those plant communities changed when the site was abandoned [38,43]. If the changes caused by human activity persist long after they have gone, it is known as an ecological legacy. A topic of very active debate is to what extent, and over what areas, are modern Amazonian forests a legacy of past land use [50,51]. Research is ongoing, but for now it is important for ecotourists to recognize the potential role of Indigenous people in shaping the forest, while not telling them that all forests are the product of past land use. Balancing the narrative is as important as updating it. Nevertheless, there are huge opportunities for improved educational value of ecotourism in these regions, greater cultural heritage preservation, and diversification of the overall interpretive portfolio available for tour guides, business models, governmentality, community-based conservation, and sustainability; something that can translate into greater 'length of stay' related earning potential and profitability for Indigenous tourism companies.



**Figure 3.** Socioecology and spirituality represented with the three ecologies (“3Es”) embodied by a single emergent tree (which at the same time is habitat with co-inhabitants with different habits (the “3Hs”) of environmental ethics, and its epiphytic symbionts together on the banks of the Coca River at Francisco de Orellana’s river front, Ecuador. Source: Photo by John Weatherford. May 2023.

### 2.3. Eco-Ethnotourism in Amazonia

Early forms of tourism in Amazonian contexts can be traced to trophy hunting expeditions organized for European and North American travelers. By the 1970s, these rustic jungle lodges developed to cater to this clientele opened up to broader nature-based tourists [52,53]. With many of these sites also housing biological research projects providing empirical support for the role of tourism for biodiversity conservation, it has been argued that the “standard model of ecotourism” was realized early in Amazonian contexts [54]. Ecotourism in the Amazonian context was heavily promoted as an alternative to other extractive livelihoods and earners of foreign exchange, like gold, timber, Brazil nuts, and latex [32,54–58]. Examples abound of tourism-related enterprises established in partnership with the Cofan [59,60], Shuar, Achuar, Kichwa [32,58,61,62], and Waorani peoples [60] in Ecuador, the Matsiguenga and Ese Ejá peoples in Perú [57,61,63–65], and Quechua-Tacana in Bolivia [61], and other Indigenous community across the Amazon basin. As a result, the percentage of the Amazonian population working in tourism is growing in recent years [66].

While scholars have raised important concerns about the potential for exploitation when Indigenous peoples and other rural residents of the Amazon are integrated into international, neoliberal, and market-based tourism [32,62,67], much of the literature remains

hopeful about tourism's value, particularly in relation to other threats facing biological and cultural diversity in the Amazon [68]. Scholars have acknowledged ecotourism economic contributions to Indigenous community well-being [57,69–71], ways that tourism reinforces and revitalizes cultural identities [61], its direct support for conservation [12,60], and the alternative it provides to engagement in more environmentally extractive activities [58,60,70]. Fruitful efforts were made to share best practices and lessons learned between Indigenous tourism ventures [61].

Yet perhaps most pertinent to the present discussion is the inherent educational value of ecotourism in these settings. Scholars have highlighted opportunities for “learning both ways” between hosts and guests in Indigenous ecotourism settings in the Amazon [64,72,73]. In addition to the obvious potential of ecotourism to provide education about cultural heritage of ethnic Amazonian communities [64,74,75], the diversification of the overall interpretive portfolio available for tour guides and businesses can translate into greater “length of stay” and thus earning potential of Indigenous tourism ventures. While not always fully realized [66,67,76], a valuable educational interface nevertheless exists between hosts and guests that permits challenges to “the pristine myth” and prospects countering it with alternate narratives about the critical role of Indigenous practices in shaping Amazonian ecology.

Recent trends of adventure tourism, extreme sports tourism, and social tourism have incorporated eco-ethnotourism angles with popular destinations for culture-based experiential learning, such as the Ayawashka tours in the Colombian, Ecuadorian or Peruvian jungle communities [77–79]. Unfortunately, the emphasis placed on ‘vision quests’ experienced by the paying curious tourists is based on the multichromatic, psychedelic challenge of novel bodily hallucinogenic experiences [80], trivializing the long-lasting core tradition of ancestral shamanic practice of respect, ritual, and divination, separating the true essence of wisdom seeking from the most mundane chemical effects [5,79,81].

#### 2.4. Upper Amazonia and Tourism of Cultural Mountainscapes

Despite current devastating influences of oil exploration and mining exploitation, pockets of Amazonian rain forest continue to preserve the most biodiverse terrestrial ecosystem of the planet in what is considered a cultural landscape [24]. With the integration of data from permanent botanical plots from over 1400 Amazonian sites, within protected areas or Indigenous territories, new insights contribute to our understanding of the huge plant and animal diversity within the tropical rain forest ecosystem. There is a continuum of slope overlap from the Andes in the headwaters to the flatland Amazonian plain, covered with a thick layer of greenery, so that a detailed tapestry of forest canopy cover appears to a casual observer as uniformly verdant [19,82]; but in reality there is no one monolithic Amazon, there are several Amazons [83], including the ones in the Andean flanks.

The Orellana expedition’s chronicle pointed out the existence of large cities, such as Aparia 1, Aparia 2, and Aparia-the-greater, along the lower Napo and Marañon rivers. Because other aspects of these accounts were laced with fantasy, the central themes of sophisticated settlement and large populations have long been doubted. New visualizations of known archaeological settings using LIDAR help to identify human-made structures such as mounds, pyramids, roads, and canals in what is described as impressive ‘urban gardens’ along a huge extent of the Upano valley [26]. While these structures, which lie on the Amazonian flanks of the Sangay volcano at ca. 800 m–1200 m elevation, do not speak directly to occupation of lowland Amazonia, they refute ideas that Indigenous peoples did not work collaboratively to achieve an organized outcome. The Upano city was abandoned about 550 AD, but subsequent occupations re-used that site.

Even in the heart of the Yasuni National Park, apparently ‘pristine forests’ have a history of disturbance. During the rubber boom exploitation, camps were established along the Curaray River in the first half of the 20th century. These camps where scenes of deforestation and emptying of the forest of huntable species. Yet, today, the forest has returned and there is scant evidence of those human impacts in seemingly pristine Waorani

jungles [84]. Similar footprints of colonial use marked exploitation further north along the Cuyabeno and Aguarico rivers in the seemingly pristine Kofan, Siona and Secoya jungles [85].

### 3. Results

We tabulated responses ( $N = 260$ ) showing answers with a total of 52 possible values from questions (Q<sub>1</sub>–Q<sub>14</sub>) for each of the 4 main areas of concern (A<sub>1</sub>–A<sub>4</sub>), namely: (1) research priorities and community development; (2) ancestral wisdom; (3) memory of discovery; and (4) ethnotourism management. While descriptive statistics are presented below, full visualization of tabulated data and interpretation of results are shown in extenso in Appendix B, Figures A1–A4.

In Area A<sub>1</sub> (research priorities and community development), the coordination of research activities shares  $\chi = 29.3 \pm 4.1$  responses of either neutrality, importance, or very importance, but 10% shows that it matters little or no matter at all (Q<sub>1</sub>). The largest contrast in agreement was found between Q<sub>2</sub> and Q<sub>3</sub>, since while 54% of responses identified it as very important to know who is doing research in biodiversity, only 10% identified it as very important to know who is doing research in the community. Only a fraction (14%) showed indifference to Q<sub>4</sub>, but a large majority (73%) emphasized agreement with Q<sub>5</sub>. Respondents were more interested in Q<sub>6</sub> (73%) to know what researchers were doing on biodiversity than in Q<sub>7</sub> on community matters (70%). There is a median 50 percent agreement that Q<sub>8</sub>, Q<sub>9</sub>, and Q<sub>10</sub> are very important to know the whereabouts of scientists and community members in the jungle. Almost everyone (93%) agreed on the importance of using a community registry in Q<sub>11</sub>, while maintaining similar response (91%) to Q<sub>12</sub>. Finally, linkages between community and scientists for knowledge sharing were also high, with 84% and 89% for Q<sub>13</sub> and Q<sub>14</sub>.

In Area A<sub>2</sub> (ancestral wisdom), the consolidated figures show  $\chi = 44.6 \pm 3$ . Nine responses are neutral to considerations of access to ancestral wisdom. For Q<sub>1</sub>, 44% showed easy or very easy learning from traditional knowledge holders, mainly elders of their communities. Q<sub>2</sub>–Q<sub>5</sub> offers a glimpse of the easy access of traditional information from the elderly and family members ( $\mu = 38.75$ ), but clearly more from mothers (86%) than fathers (74%). Q<sub>6</sub> and Q<sub>7</sub> show that it is harder to learn this from colleges or universities (31%) than from their parents (44%). Because of the jungle environment (Q<sub>8</sub>), most respondents found it difficult to access shamanic or traditional medicine (76%), and Q<sub>9</sub> and Q<sub>10</sub> show that 55% and 27%, respectively, could find them in communities where ancestral knowledge is maintained. The translation from scientists to traditional knowledge holders is lacking, as reflected by 27% of responses to Q<sub>11</sub>. However, most of the perceived risk of easily losing the ancestral wisdom is shown in Q<sub>12</sub> as 39% and in Q<sub>13</sub> as 53%.

In Area A<sub>3</sub> (memory of discovery), the average on recovering the imaginaries of the discovery ( $\chi = 48.58 \pm 9.2$ ) reflects Q<sub>1</sub>, where the need to know who really discovered the Amazon is very important (79%). Other similar responses were found in Q<sub>6</sub>, Q<sub>8</sub>, Q<sub>11</sub>, and Q<sub>12</sub>, namely: 60%, 63%, 47%, and 39%. Also of note, Q<sub>13</sub> is found to be significant, with 47% identifying it as very important. One-third of respondents to Q<sub>7</sub> found agreement on the motives of the discovery, while indicating less importance to Q<sub>9</sub> and Q<sub>10</sub> with 66% and 61% affirming the influence of religion. In addition, 67% of respondents considered important to Q<sub>12</sub>.

Finally, in Area A<sub>4</sub> (ethnotourism management), there is a division of ease associated with the practice of ethnotourism and its management, since five questions ( $\mu = 45$ ) were identified as very easy or easy (Q<sub>1</sub>, Q<sub>5</sub>, Q<sub>6</sub>, Q<sub>9</sub>, Q<sub>11</sub>), and five questions ( $\mu = 32.8$ ) were identified as hard or very hard (Q<sub>4</sub>, Q<sub>7</sub>, Q<sub>10</sub>, Q<sub>12</sub>, Q<sub>13</sub>) with 40%, 31% and 12%, respectively. However, they showed a preponderance of neutral responses ( $\mu = 39.67$ ) ranging from 33% to 48% in the consolidated responses.

#### 4. Discussion

Existing assessments of biodiversity have been displayed to foreign audiences to inform the biotic potential of one small oxbow lake (i.e., Limoncocha) in only one hectare of forest, by the Napo river, more bird species than in the whole of continental US [86]. These data and the use of iconic flagship species to highlight conservation priorities of the ‘pristine forest’ became staples for conservation campaigns and research efforts [87] with inventories and massive museum and herbarium collections (à-la Erwin, fogging insecticide to an entire column of emergent trees to capture fallen insects). New remote sensing and genomic techniques have helped with less intrusive field collecting methodologies, and those have changed our traditional taxonomic classification as well as notions of functional ecology and their ecological legacies to justify current biodiversity content and spatial distribution models [88]. The biological-science-driven momentum of Amazonian research has provided much of the data about upper Amazonia. Conversely, social-science-driven research has lacked behind in grasping with these socioecological systems. Hence, tourism policy as well as practice has favored the idea of nature-based tourism, with the many facets available what in sum is referred to as “sustainable tourism” for complying with some, if not all, of the United Nations’ Sustainable Development Goals (SDGs) proposed for global transitions to sustainability. The priorities of conserving nature were easily distinguished within ecotourism [56,64] with an emphasis of incorporating the Indigenous groups as a focal point for a redefined “tropicality” of Amazonian nations [58,59,74,89]. However, funding tourism operations has taken a key role in generating GDP indicators for many tropical countries, including Costa Rica, Peru, and Ecuador, especially after COVID-19 [90], where existing assessments of biodiversity have consistently ignored biocultural heritage and socioecological co-creation.

Our survey responses were useful in clarifying and situating the nexus between science and community, highlighting opposition to Gourou’s eurocentric ruling of “tropicality”. There was agreement that foreign scientists should work with members of the community, speaking their language, and training their youngsters in the research areas investigated, to bring about a newer, better understanding of tropical landscapes. As one member poised:

*“Hay que entrar a las comunidades con la actitud de pares, reconociendo el conocimiento ancestral y el conocimiento científico. Hay que depositar la información y no sólo extraerla”* [We must enter the communities with the attitude of peers, recognizing ancestral knowledge and scientific knowledge. Information must be deposited and not just extracted]

Not only does this help to reinvigorate indigeneity at large, but it also affirms the positive influence of ancestral practices in the maintenance of forests for millennia, claiming to recuperate the local traditional ecological knowledge [91]. All agreed that recuperating vernacular literacy is imperative and that current efforts of research in the tropical rain forest should integrate the dialogue of different ways of knowledge (c.f., diálogo de saberes) to reclaim and sustain Amazonian identity. Another comment for debate was on

*“Las atrocidades de los conquistadores deben concientizarse, ¡pero hay que mirar hacia adelante! Nosotros somos una descendencia originaria y la mayoría; se debe respetar la cultura, nuestra música, nuestra gastronomía y ponderarla para que a nivel internacional llegue el mensaje de nuestras bellezas”* [Conquerors’ atrocities must be acknowledged, but we must look forward! We are original descendants and the majority; We must respect the culture, our music, our gastronomy and praise it so that the message of our beauties reaches the international level].

In the same token, bridging the past with the present, the respondents claimed the need to emphasize respect for Amazonian identity, including the symbols, legends and oral histories given as ontological and epistemological generational equity:

*“Habrá que confabular la innovación con lo de antaño. Para ponderar al mundo la belleza de la Amazonía. El secreto es el respeto de las etnias y los conocimientos ancestrales. Hay*

*que reclamar y sostener la identidad amazónica*” [Innovation will have to be combined with the old. To show the world the beauty of the Amazon. The secret is respect for ethnic groups and ancestral knowledge. We must reclaim and sustain the Amazonian identity].

There was also an important case to empower community members themselves and have public policy to subsidize and promote environmentally friendly investment, avoiding mitigation of the destruction of the forest by oil and mining companies, with tourism as a white elephant.

*“Debería ser que la objetivación de los miembros de la comunidad termine. Somos sujetos, no objetos. Se tiene que cuidar del concepto de etnoturismo, que debería tener una ordenanza de política pública desde el gobierno, y las unidades de desarrollo deben beneficiarse de la inversión turística. No hay que hacer elefantes blancos para compensar el daño ambiental de las petroleras y mineras en la selva”* [It should be that the objectification of community members ends. We are subjects, not objects. The concept of ethnotourism must be taken care of, which should have a public policy ordinance from the government, and the development units must benefit from it. tourism investment. There is no need to create white elephants to compensate for the environmental damage of oil and mining companies in the jungle].

Throughout the workshop and the survey instrument, the ideas now proposed by the regenerative tourism were amply supported; however, ethnotourism was highlighted as the likely bridge between science and community, with the insistent emphasis on three main discussion components: (1) to give priorities to training and capacity building to operate Indigenous-conceived and Indigenous-led tourism operations; (2) to aim for a pan-Amazonian identity that will bring into uniform practice of respect and valuation of ecological legacies to help maintain the forest cover against the pressures of development; and (3) to care for the forest by caring for the people who have traditionally lived in the territories now menaced by extractivism.

Whether the pristine myth is debunked *di novo* in the Upper Amazon, the transdisciplinary basis of the montological turn to understand mountainscapes allows for the inclusion of the new “third nature” that has been co-created by tropical climate and biogeography and by the habitat generated by the co-inhabitation of people with their habits and ritualized practices of ancient adaptations [92].

The nexus of these “3 Hs” [93] explains the intricate relations that have “manufactured” the junglescape of the present ‘hybrid’ forests (Figure 1). Linkages between forest composition, climate stability, and Indigenous land use are relevant to a broad portion of the scientific community. Similarly, working to save biodiversity in western Amazonia has both global and local significance. At the global level, Amazonia is a climate engine and the center of global biodiversity. At the local level, Indigenous, community-owned, ecotourist operations manage large areas for wildlife, but this protection is threatened economically by post-COVID-19 impacts.

International and national tourists alike visit the upper Amazon motivated by a desire to explore its impressive regional biota, which is sorely in need of protection. Very few of those visitors, however, could reach isolated sites and learn about the jungle people and their communities. As tourism resumes after COVID-19, we hope to be able to strengthen their flow of customers by improving their ecotourism experience, providing new scientific findings and bilingual interpretative information linked to QR codes to be deployed in these conservation lands and at lodges, as well as a website ([wayusada.com](http://wayusada.com)) to mass communicate the nature–culture linkages. In consultation with the Indigenous communities, we provide information on site ecology, site land-use histories, the histories of useful species in their forests, and narratives for the guides that reflect modern scientific understandings of ecological legacies. We have found that the community guides welcome this information. Through more engaging narratives, we hope to boost positive referrals and visitation rates in favor of ethnotourism in lieu of ecotourism, or adventure tourism, solely

focused on tropical fauna and flora. Closer to the objectives of regenerative tourism [94], we propose a decolonial approach for the important tool of ethnotourism for the conservation and development of upper Amazonia.

## 5. Conclusions

The contribution of recent scholarship in the paleoecology of the upper Amazon, relying on the concept of nature–culture hybrids and the co-creation of the jungle’s socioecological system, allows for the transformation of tourism, the syncing of Indigenous revival movements, and the local community’s participation in their continual manufacturing of the intricate landscape fabric of the Andean Amazonian flanks [95]. To this end, our paper sought to achieve three objectives: (1) to promote acquisition of a new vocabulary that introduces the idea of working landscapes and the ‘jungle-garden’ or the ‘jungle-park’, (2) to compare traditional notions of “the pristine jungle” or “pristine island” that pervades the tourism offerings of Ecuador, touted as “country of pure nature”, and (3) to help tourists to appreciate that the current landscape configuration is a manifestation of a blend of natural and altered habitats that often coexist in a predictable mosaic.

Our first objective of developing new vocabulary found echoes with the decolonial trend of heightening Indigenous perspectives of the junglescape as well as to incorporate the different Amazons, including the mountainscape of the Andean–Amazonian flanks. For our second objective, we conclude also that we can no longer consider Ecuador the country of “pure nature” since we helped demystify pristine nature for foreign tourists and highlighted local views with ancestral practices. Finally, for our third objective, it was clear that the current landscape configuration blends natural and altered habitats coexisting in a predictable mosaic of the jungle’s socioecological system.

Our multimethod analysis assessed the likelihood of sustainable and regenerative tourism in the upper Amazon [96]. The resulting information collected both at the workshop and with the survey instrument, is described in Appendix A. Results from the survey helped to elucidate the difficulties faced by ethnotourism with the importance of knowledge sharing and coordination between scientists and local communities in the Upper Amazon. No matter the age, sex, or the educational level of the informants, there is a perceived need to find the truth about the discovery of the Amazon and the urgency of disseminating these findings by rewriting history with vernacular descriptors and use of local language, as well as to retell oral histories as a way of infusing transdisciplinary approaches for learning about the jungle as an ecological legacy instead of a mere concentration of flora and fauna.

First, we conclude that Research Priorities and Community Development options need to be revisited in future research interventions, by incorporating the ethnobiology’s Code of Ethics as well as considerations of IRB’s Human Subjects when dealing with socioecological research of the upper Amazon. Most responses highlight that a modern cross-cutting of Western and Indigenous approaches to the co-creation of the nature–culture hybrid forest ecosystem is warranted and longed for. Second, in relation to ancestral wisdom, the subsample of majority Kichwa and Waorani members interviewed at the workshop had clear and definitive pride of the ancestral lineage connecting them with ancient practices and continual occupation of the jungle territory, whether be the riparian/alluvial terraces or the terra firme forests. Other groups represented also indicated that pan-Amazonian identity will help them in cementing their communal land rights helping conservation of biocultural diversity. Third, appertaining to the memory of the discovery of the Amazon, we conclude that producing updated sources of information about the contribution of Indigenous people to the co-creation of the upper Amazon ecoregion. It has been indicated that an excess of emphasis has been given to the figures of Spaniard explorers and a dearth of information on the role of the native Amazonians in the co-creation of the junglescape. Last, the ethnotourism management priorities point to empowerment of local tourism operation and Indigenous planning and communal ownership, via cooperative structures or out-right business ventures, will facilitate increasing the about-face from nature-only to the nature–culture manufacture landscape touristic experience. A significant

attempt to stimulate this trend is the appearance of both scientific and layman literature in reference to the “lost cities” of the Amazon, as well as social media and websites (e.g., [www.wayusada.com](http://www.wayusada.com)) with information supporting decolonial scholarship.

The perception of local community members is that scientists have been disconnected from local realities where traditional knowledge is still prevalent, as the tenets of decolonial scholarship have not yet permeated to international funding schemes. There is consensus on working together with scientists, local governments, and communities to incorporate the socioecological dimensions of ethnotourism into future biocultural heritage conservation planning, with a shared outlook of pan-Amazonian ethnic futures.

## 6. Patents

No patents resulted from the work reported here.

**Author Contributions:** Conceptualization, F.O.S., M.B.B. and C.N.H.M.; methodology, F.O.S., C.R.C. and J.F.C.; software, J.F.C. and J.W.; validation, C.R.C., G.R.-T., A.K. and C.A.H.; formal analysis, C.A.H.; investigation, F.O.S., C.R.C. and J.F.C.; resources, M.B.B.; data curation, C.R.C. and J.F.C.; writing—original draft preparation, F.O.S.; writing—review and editing, A.K. and C.A.H.; visualization, C.R.C. and J.F.C.; supervision, F.O.S.; project administration, C.R.C.; funding acquisition, M.B.B. and F.O.S. All authors have read and agreed to the published version of the manuscript.

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**Institutional Review Board Statement:** This study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board of Florida Institute of Technology IRB #22-017 of 21 February 2022.

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in this study and participation in the focus workshop.

**Data Availability Statement:** Data supporting results can be found at the link of AMALEG in the Neotropical Montology Collaboratory portal (<https://montology.franklinresearch.uga.edu/current-projects>, accessed on 21 April 2024).

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## Appendix A. The *Kuk'a Umawa* Declaration for Bridging Science and Ethnotourism

### **Kuk'a Umawa Declaration (Coca or Orellana)**

On behalf of those attending the international workshop on *Ecological Legacies and Ethnotourism: Nexus between Community and Science*, both the members of original communities and tourism operators and the participating national and foreign scientists, after presentations and deliberations for two days (19 and 20 May 2023) in the tropandean city of Coca, the “gate to the Amazon”, declare:

**Whereas**

- *That the Higher Polytechnic School of Chimborazo (ESPOCH) Orellana Campus, the Pan-American Center for Geographic Studies and Research (CEPEIGE), and the Neotropical Montology Collaboratory of the University of Georgia (UGA) have organized a successful international workshop on Ecological Legacies and Ethnotourism: Nexus between Community and Science.*
- *That the participants representing the points of view of Amazonian, national, and foreign universities, as well as of the original peoples' communities located in the Napo River basin of western upper Amazonia, identified the need to join efforts between scientists and communities.*
- *That there is an urgent need to find alternate decolonial models, allowing for transdisciplinary scientific activity that favors inclusion of ancestral knowledge and ending objectification of local researchers and community scholars as mere informants, imperative in this time of global environmental change.*
- *That inventories of flora and fauna be complemented with linguistic records of the communities to maintain the lists of species with vernacular names and that new species that are being discovered receive the appropriate binomial nomenclature naming the species with the vernacular territorial name or of the community that owns that biocultural element.*
- *That scientific research is segmented by short-term financing, hence when the financing ends, the generated science ends. This hiatus implies the needed activation of museums, herbariums, insectariums, serpentariums, university organizations, and civil society organizations, supporting long-term scientific activity.*
- *That the influence of the prevailing religion (i.e., Catholic, Evangelical, etc.) has penetrated ancestral practices and rituals, and is a sign of accelerated acculturation tendencies of some groups that assume it to satisfy the visitor curiosity, instead of invigorating shamanism, with local animism and vernacular literacy. In addition, the religious division generated between missionaries of foreign cults sometimes caused violent crashes in the local communities (e.g., between the Enomenga Waorani in the Dícaro community and the Iromenga Waorani in the Toñanpade community).*
- *That the future of tropandean forests in the Andean–Amazonian flanks depends on the sustainability and regeneration of cultural landscapes, considering them from a montological, integrative, and transdisciplinary perspective, for which it is necessary to prioritize geoethnotourism operations over mining exploitation activities and eco-tourism that focus only on the fauna and flora of the Amazon Hylea and not on its custodians, and in many cases its creators of the domesticated and manufactured “garden jungle” of yesteryears.*

#### Declare

- *To make joint efforts to favor the hybridity of Amazonian culture and nature and thus maintain the ecological legacy of the original peoples who survived with their traditional knowledge and vernacular descriptors that explain, according to ancestral science and their habitual practices, the cohabitation of non-human entities with humans.*
- *To advocate for improving the dissemination of traditional and Indigenous knowledge in a multicultural way, so that scientists who come to study the jungle put aside elitist feelings and superiority of scientific studies on vernacular literacy, the jungle worldview, and ways of accessing it, to share knowledge through shared methodologies and results, both in its planning and in its execution and subsequent publication.*
- *To require researchers be able to communicate in the national language (Ecuadorian Spanish) and, preferably, in the local language of native nationalities of these territories (e.g., *a'ingae*—Kofán; *paicoca*—Siona dialect; *sikopai*—Secoya dialect; *waotodedo* and *waotidido*—Sabela, Guikita, Tiweno and Aushiri dialects; *Chicham* or *šiwar'a*—Shwar, Shiwiar, and Achwar dialects); and *kichwa*—Amazonian (or Eastern) dialect. Whenever possible, researchers must have international approval for research on human subjects and sign the ethical code of the International Society for Ethnobiology that requires both prior and informed knowledge and consent of the communities, as well*

as the equitable distribution of the results of the research, be it **intellectual, academic, professional, or commercial and industrial**.

- *To insist on creating research stations in productive socioecological landscapes* in which the communities become custodians of the jungle and administrators of the facilities for long-term research whose financing guarantees continuation of basic and applied research, as well as the monitoring of environmental conditions in socioenvironmental aspects of protected cultural landscapes, especially in iconic trees, food supplies, memory reserves, sacred sites, landscape reserves, Indigenous territories, literary reserves, and **biocultural reserves and micro-refuges of biodiversity and cultural and linguistic diversity**.
- *To recognize the persistence of knowledge and the will of the people* who are in the territory. The country's legal and legislative frameworks must be integrated into the disciplinary curricula of universities so that they have a more authentic interculturality. There must be motivation of foreign researchers to expand and facilitate the process of integration of knowledge and the formation of local expert knowledge, be it from grade school to postgraduate degrees, or from the oral history of local scholars who can be **non-Western science teachers of researchers who come from abroad**.
- *To demand that the Andean–Amazon flank's schools* teach content required by the national curriculum, but in the languages and dialects of the area, with trained presential (face-to-face) instructors who teach *kichwa* of the Amazon—not *kichwa* from the mountains—or who teach radiophonic schools in *kichwa* not only in *Shwar*, **favoring distance education with online, virtual connections**.
- *To promote the integration of elements of modernity without prejudice* to maintaining the Indigenous identity by crafting religious syncretism and strengthening the transmission of ancestral knowledge in a proud revival of interculturality and intergenerational transmission of knowledge from the **elderly and older adults in their non-school special education and vernacular literacy**.
- *To insist on the need for these types of workshops and seminars* that integrate ecological legacies and geoethnotourism to be replicated in many other Amazonian sites, so that the local authorities in charge of managing GADs and government **institutions value and prioritize the integration of communities and scientists**.

#### Recommend and Commit

- *To promote and demand that the Law of Planning for the Special Circumscription of the Amazon Territory* with respect to gender equality, preferred employment, environmental protection, and wise use of natural resources be observed. Also, that the Fund for Sustainable Development of Amazonia (FDSA) and the Common Fund (FC) coordinated by the Amazonian Technical Secretariat **serve to augment the collaborative activities of scientific research and ethnotourism** in the Amazonian decentralized, autonomous governments, including administrators, scientists, and community members working on those territories.
- *To prevent economic powers from prevailing over the ecological powers* of the Amazonian cultural landscape by limiting extractive actions (e.g., illegal mining, drilling, and oil exploration activities in protected areas, biopiracy, and abuse of native practices for folklorized tourism purposes, **disguising their authenticity to please ephemeral visitors**).
- *To enter communities with the attitude of peers*, recognizing the collaborative effort between ancestral knowledge and scientific knowledge, and thereby depositing the information and not just extracting it **without local benefit or published record of intellectual authorship** of the research.
- *To confabulate innovation with ancestral practice*, to ponder to the world the beauty of the Amazon generated by the jungle gardeners, the domestication and familiarization of the biota in the **Pan-Amazon ancient and modern cultural landscape and the Andean–Amazon flanks**.
- *To show respect for the ethnic group and the ancestral knowledge* that they still cherish. It is necessary to reclaim and sustain the Amazonian identity, eliminating features that

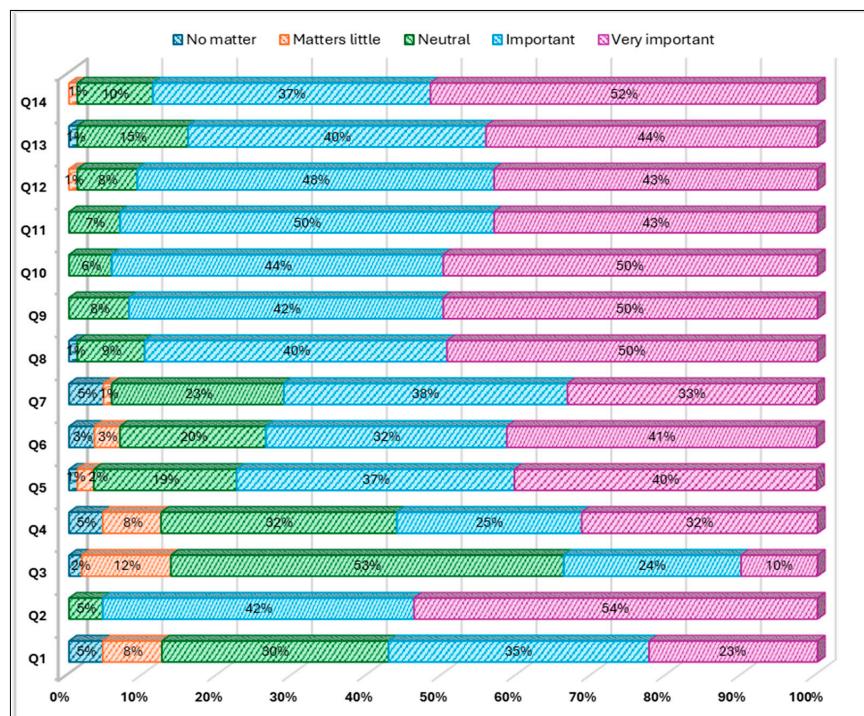
'folklorize' identity markers such as hammocks, necklaces, earrings, ribbons, *chigras*, tattoos of various colors and symmetries that **reflect origin and affiliation instead of a mere ornament** attractive to tourists.

- *To become aware of atrocities of the "conquest" that must be analyzed not only in their historical but also moral and ethical frameworks. But we must look ahead. We are of original descent and most mestizos and foreigners respect the culture of the jungle, including music, gastronomy, art, and legends. We must weigh the message of our endangered beauties, preventing them from getting lost in the maelstrom of globalization. In doing so, we must recover the valuation of characters, geographical landmarks, civic dates of nationalities and **erect monuments to these indicators instead of the "conquerors" or "discoverers"**.*
- *To pay for communities' instruction in their quest to defend their ethnicity and financing sustainable and regenerative development of native peoples, since they are a treasured legacy and they do not have access to the available facilities. Therefore, to ask the public powers and the corresponding private, civil groups to then carry out the **diverse, equitable, and inclusive scientific advancement with a pan-Amazonian inspiration**.*
- *To eliminate the idea of the community as an "object" and to integrate it as a "subject" of science with considerations of convergent and integrative montology. To seek that the concept of geoethnotourism has a public policy ordinance. The government and regional development units should benefit from the investment, not as white elephants but as **proactive action units for the conservation of biocultural heritage**.*
- Given in the city of Coca, Ecuador, in the auditorium of the Orellana headquarters of ESPOCH campus, on Saturday, 20 May 2023, on behalf of the workshop participants,

#### *The Organizing Committee*

Fausto Sarmiento, Ph.D.	Renato Chávez, Ph.D.(c)	Nelson Ortega, M.Sc
CMN_UGA-CMS_IGU	ESPOCH	CEPEIGE

#### Appendix B. The Tabulation of Results and Visualization of Values from the Survey of Ecological Legacies and Ethnotourism: The Link between Community and Science



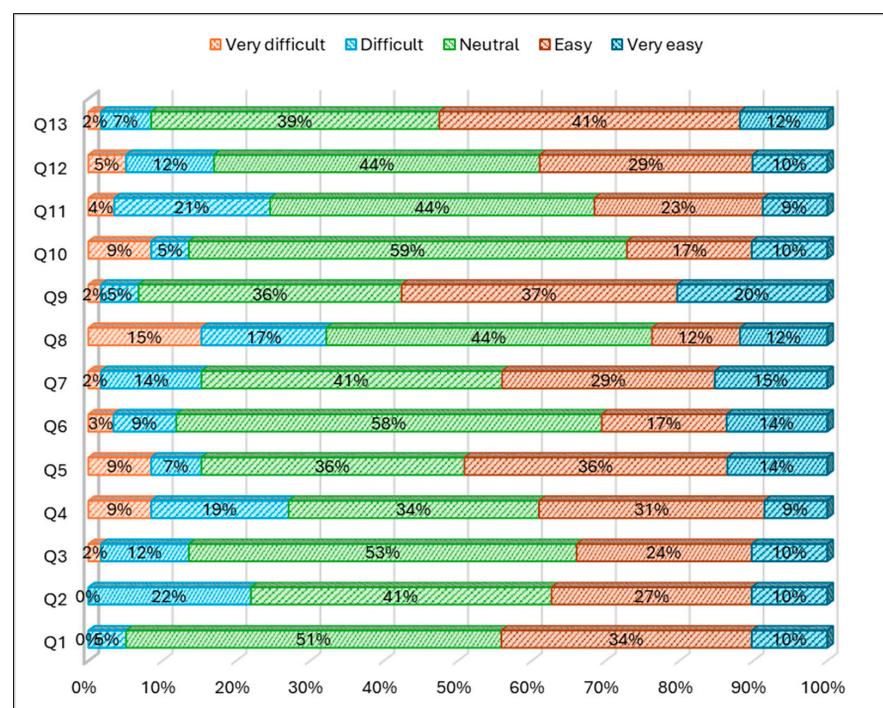
**Figure A1.** Identification rate of scientific research priorities and community support, identified by

the communities of the Andean Amazon flank: Q1: How important do you consider the coordination between scientific research and the communities? Q2: How important do you think it is to know who does the research on biodiversity? Q3: How important do you think it is to know who is doing the research on the community? Q4: Do you think it is important that researchers should communicate with their native language? Q5: Do you think it is important to publish the scientific report in the native or vernacular language? Q6: Do you think it is important to know what researchers do in the jungle? Q7: Do you think it is important to know what researchers do in the community? Q8: How important do you consider it to be known what the community members do in the jungle? Q9: How important do you consider it to be known what the community members do in the communities? Q10: How important do you think it is to know how ancestral knowledge is maintained in your community? Q11: If there were a registry of researchers in the community, would you use it? Q12: Is it important to know how long the relationship between the scientist and the community lasts? Q13: Do you consider it important to share the knowledge of the communities with researchers? Q14: Do you think it is important that each biodiversity study have a specific community link?

Based on the surveys carried out, 35% consider it important that there is coordination between scientific research and the communities, followed by 30% who consider it neutral, while 23% consider it very important, this allows us to identify that the existence of coordination between Scientific research and communities are important, because through this the process, results and/or progress of research can be evidenced, forming an information network that is vital for the development of the territory. For Q2, 54% and 42% consider it very important and important, respectively, to know those who do research on biodiversity; 49% detail that it is very important to know who conducts research on the community, followed by 44% who mention that it is important, since knowing who conducts research allows for correct dissemination of information. Furthermore, 32% of those surveyed detail that It is very important, and an equal number of respondents consider it neutral, that researchers communicate using their native language; 40% and 37% consider that it is very important and important, respectively, that the publication of the scientific report be in the native or vernacular language, this is due to the importance that native languages have as the basis of systems of thought and ways of looking. and interact in the world. For Q6, 41% responded that it is very important, followed by 32% who consider it important to know what researchers do in the jungle. In relation to Q7, 38% and 33% of the people surveyed consider that it is important and very important, respectively, to know what researchers do in the community. Q8 reflects that for half (50%) of the people surveyed it is very important and important for 40% to know what the community members do in the jungle, while for 50% and 42% of the people surveyed, it is very important and important, respectively, to know what activities the community members carry out in their territories, since this allows them to understand and maintain the ways of living, uses, customs and traditions that the towns have managed over time. For 50% of respondents it is very important, while for 44% it is important that ancestral knowledge be maintained in their community, as it is the key to training new generations, maintaining and transmitting knowledge, to 50% of the people surveyed consider the existence of a registry of researchers in the community to be important, while 43% consider it very important, 48% and 43% of those surveyed state that it is important and very important, respectively, to know how long the scientist-community relationship lasts., for 44% of the sample studied it is very important to share the communities' knowledge with researchers, while 40% responded that it is important, since by disseminating their traditional knowledge, in addition to making it known, they develop a social commitment to protect cultural identity, in addition, more than half (52%) of respondents consider it very important that each biodiversity study have a specific community link, while 37% of respondents responded that it is important. Finally, an open question was asked that reflects concerns on the part of the surveyed population, among the most frequent are: Is it important to know what resources the researcher will use and how it can positively or negatively affect the community? Should we support with promotion, research, and resources only the communities or all those who are part of the

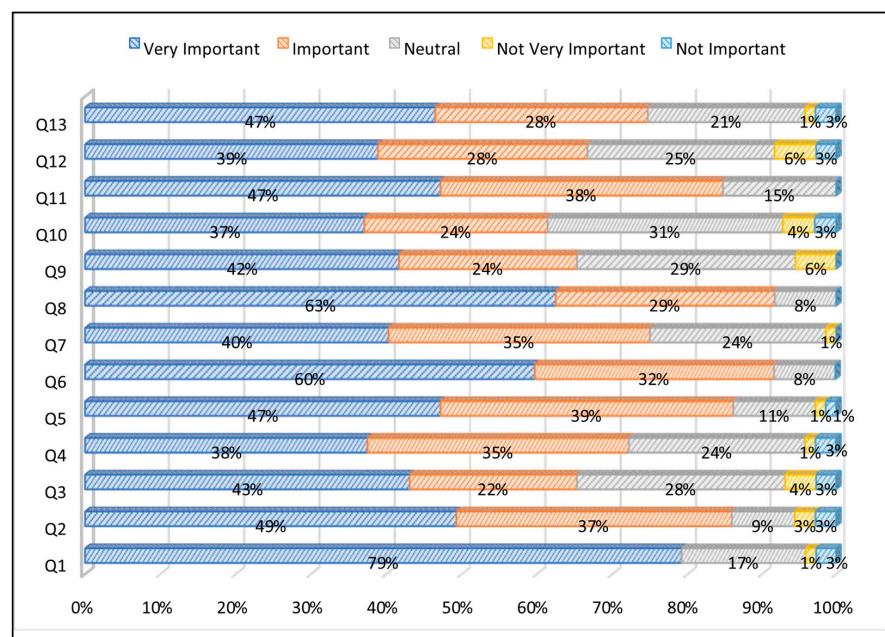
territory? Is it important to publicize the links between various scientific institutions? This reflects the high interest of the population in collaborating in investigative acts ensuring the preservation of the territory.

In the survey applied, in Q1 more than half of the sample studied (51%) detailed that their learning was neutral, while 34% mentioned that it was easy, in Q2 41% responded that access to Information provided by the elders of their community was obtained in a neutral manner, and 27% responded that it was easy. For 53% of those surveyed, access to information given by their close ancestors is neutral, while 24% responded that it is easy or accessible; 34% answered that obtaining information from their father about ancestral knowledge is neutral, while 31% reported that access to it is easy. In relation to obtaining information from their mother, the people surveyed detailed that they obtain it easily and neutrally in the same percentage (36%), in addition. For Q6, 58% of the sample surveyed responded that they find the incorporation of this information with what they learn at school/university neutral; 41% mention that they have spoken neutrally with their grandparents about topics that are currently unknown. 44% mentioned that they have consulted with native shamans/yachas/healers/spiritual guides in a neutral manner; 37% of the people surveyed explained that traditional medicine can be easily trusted, while 36% responded neutrally. In addition, more than half of the respondents (59%) mentioned that the ancestral knowledge in their community is maintained. in a neutral way that is to say without changes; 44% of the sample surveyed in Q11 responded that the exchange between the knowledge of scientists and ancestral knowledge is neutral, while 23% mentioned that the exchange of knowledge is easy; 44% of the population surveyed detailed that they find the duration of the scientist-community relationship neutral; 41% of the sample studied mentioned that ancestral knowledge or knowledge can be easily lost, while 39% responded that this information is neutral. Finally, an open question was added to the survey where the most frequently asked questions were "What efforts should universities and public policies make to value local knowledge and integrate it into the university curriculum with respect?", "What do authorities and society do that ancestral culture and nature prevail?", "Why are there no certified books of ancestral knowledge?", with this it can be evidenced that there is a high interest of the population in the conservation and valorization of ancestral knowledge.



**Figure A2.** Identification rate of inventory of ancestral knowledge about the jungle and its implications,

identified by the communities of the Andean Amazon flank: Q1: How was your learning of the traditions and anecdotes of the community? Q2: How was your access to information provided by the elders of your community? Q3: How is your access to information given by your close ancestors? Q4: How do you obtain information about ancestral knowledge from your father? Q5: How do you obtain information about ancestral knowledge from your mother? Q6: How do you find integrating that information with what you learn at school/university? Q7: How have you ever talked about what your grandparents knew and are no longer known? Q8: How have you ever consulted with native shamans/yachas/healers/spiritual guides? Q9: How can traditional medicine be trusted?; Q10: How is ancestral knowledge maintained in your community? Q11: How do you find the exchange between the knowledge of scientists and ancestral knowledge? Q12: Is it important how long the relationship between the scientist and the community last? Q13: In what way could this knowledge or ancestral knowledge be lost in your community?



**Figure A3.** Recovering the memory of the “discovery” of Amazonia. Q1. Do you think we should know who discovered the Amazon? Q2. How important is it to know if the Amazon was discovered out of ambition or not? Q3. Do you know that the Amazon was defined as “the promised land” in the rubber era? Q4. Do you think it is important to reprint the chronicles of Friar Carvajal to know the chronicle of the discovery? Q5. Would you recommend printing in Spanish the books related to the discovery of the Amazon? Q6. Do you agree with the idea of maintaining that “Ecuador has been, is, and will be an Amazonian country? Q7. Do you think that Orellana, like many conquistadors, was looking for gold and riches in the “Oriente”? Q8. Do you think it is useful to recognize the historical limits of Ecuador in the Amazon? Q9. How great was/is the influence of the Catholic Church in the communities? Q10. Have you witnessed the increasing influence of the evangelical missionaries in the jungle? Q11. Do you think it should be known if the jungle was occupied by many people in the remote past? Q12. Do you think that Orellana was an example for wealth seekers to follow in the Amazon? Q13. Does it matter to discover the help provided by the communities to the explorers?

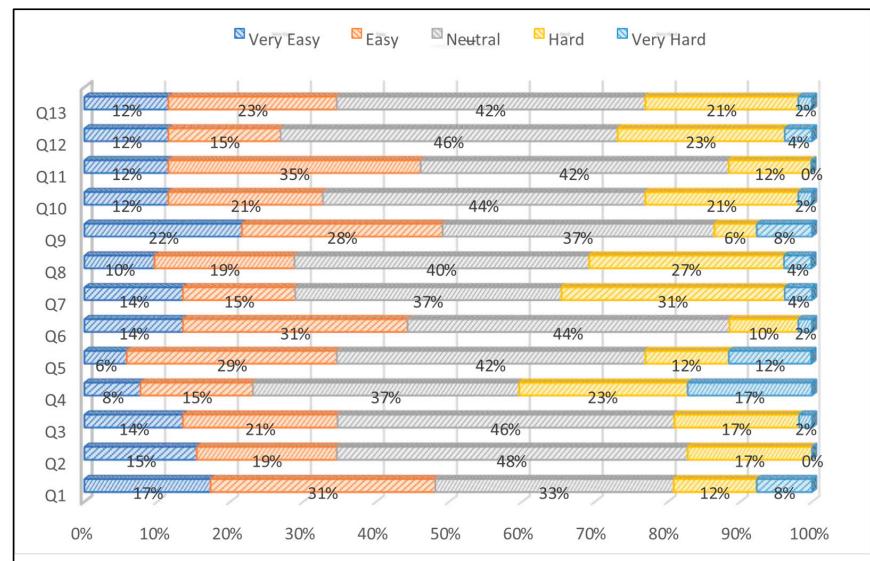
The survey conducted with the audience at the Ecological Legacies Workshop in Orellana focused on the recovery of the memory of the discovery of the Amazon showed the following results:

The audience, for Q1 consider in their great majority, 79% that it is very important to know who discovered the Amazon, while 17% remain neutral. For Q2, 49% think it is very important to know if the discovery was motivated by human ambition, while 37% think it is important, less than 10% are neutral. For Q3, the majority, 43% assign it very important in relation to the Amazon known as the promised land, followed by 22% as important rating

and 22% are neutral. Q4 was rated very important by 38%, followed by 35% as important for reprinting the chronicles of Friar Carvajal, less than 10% are neutral. For Q5, the majority 47%, followed by 39% think that it is very important and important, respectively, to print the books related to the discovery of the Amazon in the Spanish language, 11% remain neutral and 1% believe that it is not important. In relation to Q6, 60% agree that it is very important to maintain the idea of Ecuador as an Amazon country, followed by 32% and 8% are neutral to the mentioned idea. For Q7, most of the audience, 40% believe that the idea that Orellana was looking for gold and riches in the Oriente is very important, followed by 35% who think it is important, while 24% remain neutral and less than 2% think it is not important. For Q8, 63% think it is very important to recognize the historical limits of Ecuador in the Amazon, followed by 29% who consider it important, while 8% are neutral. For Q9, in relation to the influence of the Catholic Church in the communities, 42% of the audience considered this idea very important, followed by 24% who considered it important, followed by 29% with a neutral response and 6% who considered it not very important. For Q10, in relation to the increase in evangelical missionaries in the jungle, 37% of the people agree that this statement is very important, followed by 24% who consider it important, while 31% voted neutral, 4% and 3% consider it little or not important, respectively. For Q11, the audience affirms that the idea that it should be known whether the forest was occupied by many people in the past is very important by 47%, followed by 38% who consider it important, while 15% remain neutral. In relation to Q12 people mostly determined 39% that it is very important the fact that Orellana was an example to follow for wealth seekers in the Amazon, followed by 28% who consider this idea important and 25% are neutral, in addition, 6% think it is not very important and 3% believe it is not important. For Q13, the votes of very important reached 47%, followed by important with 28%, 21% in relation to the importance of knowing how the communities help the explorers in the Amazon, 2% think it is not important and 3% say it is not important.

Question 14 of the survey was intended for respondent observations, and the responses were:

- The response options were not appropriate.
- The questions should be more understandable
- Is it important to know the vernacular names of places in the Amazon?
- Should the province of Orellana be called in honor of the conquistador yes or no?
- Does it matter what we are and what we will do in the face of global warming?
- Do you think it is important that the communities can relate to the students in the form of mutual teaching?



**Figure A4.** Priorities for effective management of rainforest ethnotourism. Q1. Is it possible to increase

the number of tourists in forest communities? Q2. How would you qualify the nature-based tourism operation, or ecotourism? Q3. How would you rate the culture-based tourism operation, or ethnotourism? Q4. How difficult is the task of presenting cultural information about the rainforest? Q5. How easy is it to present jungle flora and fauna information to tourists? Q6. Do you think it is feasible to present the ancestral ecological legacies as a culture–nature unity? Q7. Do you think that the idea of the manufacture of the domesticated landscape by the ancients is comprehensible? Q8. Is the scientific information of ancestral knowledge accessible in your community? Q9. Do you believe that teaching the way of life in the rainforest will help to conserve the Amazon rainforest? Q10. How manageable is the work of ethnotourism on rainforest communities with tourists? Q11. Is it feasible to harmonize scientific research and ethnotourism activities? Q12. How do you see the ancestral knowledge of the rainforest being transmitted to children and young people? Q13. How do you see support for the maintenance of ancestral practices for ethnotourism?

The audience survey conducted at the Ecological Legacies Workshop in Orellana focused on priorities for effective ethnotourism management in the rainforest yielded the following results:

According to the level of difficulty, for Q1 33% of respondents give a neutral response regarding whether it is possible to increase the number of tourists in rainforest communities, followed by 31% who vote that it would be easy, while 17% say it would be easy to do, on the other hand, 12% and 8% say it would be hard or very hard, respectively. Q2 the audience rates nature-based tourism operation or ecotourism, 48% rate it as neutral, followed by the easy vote at 19%, very close at 17% they consider it hard and 15% easy, but no one considers it something very hard to be. Respondents for Q3 regarding the tourism operation based on culture and ethnotourism 46% give a neutral answer, 21% consider it easy, 14% very easy, 17% hard and 2% very hard, and the answers are quite like Q2 in relation to another important activity of tourism use, which denotes the close relationship between nature and culture. For Q4, 37% believe that the task of presenting cultural information about the rainforest is arduous on a neutral level, followed by 23% who think it is hard to do, 15% contrasted with 17% who affirm that it is easy and very hard, respectively, and finally 8% consider it to be very easy. For Q5, the fact of presenting information regarding flora and fauna is considered by 42% of the respondents neutral in level of difficulty, followed by 29% who affirm that it is something easy, then 12% say it is either very hard or hard, on the other hand, only 6% affirm that it is easy. Q6 on presenting ecological legacies as a culture–nature unit, 44% of the respondents say it is of neutral difficulty, 31% think it can be easy, while 14% contrast with 10% who rate it as hard and very easy, respectively, only 2% consider it very hard. Q7, on whether it is understandable from the idea of manufacturing landscape domesticated by the ancients, 37% consider the idea neutral, followed by a group 31% who consider it hard, while 15% and 14% voted very easy and easy, respectively, and only 4% consider it very hard. Q8 asked about the difficulty of access to scientific information on ancestral knowledge in the communities to which the respondents belong, the response was neutral in 40%, followed by 27% hard, 19% easy, 10% very easy and 4% considered it to be very hard. For Q9, the response of the respondents regarding whether the teaching of jungle life will succeed in conserving the Amazon, 37% consider it neutral, followed by 28% who say it would be easy, for 22% it is something very easy, on the other hand, 8% consider it something very hard. For Q10, respondents voted on how manageable the work of ethnotourism on rainforest communities with tourists is, 44% voted neutral, followed by 21% who share percentage between easy and hard, also, very easy contrasts with very hard with 12% and 8%, respectively. For Q11, on whether it is feasible to harmonize scientific research and ethnotourism activities, 42% voted neutral, 35% voted easy, followed by 12% similar but shading between very easy and hard. For Q12, 46% responded neutral about the transmission of ancestral knowledge of the forest to children and youth, 23% responded hard, 15% easy, 12% very easy; however, only 4% thought it was very hard to achieve. For Q13, the audience was asked about the maintenance of ancestral practices for ethnotourism, for which 42% gave a neutral response, followed by 23% who said it was easy, a percentage

close to those who said it was difficult with 21%, 12% thought it was something very easy but only 2% saw it as something very hard.

Question 14 of the survey was intended for observations of the interviewees, and the answers were:

- What do you act or how do you help the forest to conserve it, research is done, but many times it does not help to conserve and save it from mining?
- How can you encourage society to take an interest in such an important topic?

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