



## Recife Charter – Pathways for the future of ethnobiology

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### ABSTRACT

At the 5th International School of Ethnobiology in Recife (4–5 November 2025), researchers from Brazil and around the world gathered in a spirit of collaboration and shared purpose to envision the future of ethnobiology. This document presents the central agreements and commitments from this transformative meeting, affirming the imperative for an ethnobiology that is theoretically robust, socially relevant, and ethically responsible. The Recife Charter sets forth guiding principles and bold strategic actions for the decades ahead, championing epistemic justice, co-creation, social relevance, methodological rigor, broadened ethics, and responsible use of technology.

**Keywords:** Epistemic Justice; Co-creation; Ethics; Reproducibility; Public Policy; Biocultural Diversity.

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## INTRODUCTION

The 5th International School of Ethnobiology brought together students, lecturers, and professionals from diverse institutions to discuss the theoretical and methodological aspects of the field and to foster reflections on the future of ethnobiology, considering its contemporary challenges before and after the School. Since 2013, the International School of Ethnobiology has served as a space for the academic and scientific training of students, lecturers, and professionals interested in the interfaces among culture, nature, and society. The event seeks to promote dialogue among different theoretical, methodological, and epistemological perspectives, strengthen research networks, and stimulate critical reflection on the directions of ethnobiology.

The field, now an interdisciplinary space across the natural, social, and human sciences, faces a decisive moment. Escalating socio-environmental crises, climate change, persistent extractive research, and concerns over data governance and epistemic asymmetries reveal limitations of current frameworks. These challenges accompany a paradigmatic shift in ethnobiology, centered on ethics of care, reflexivity, and relational responsibility, as noted in recent publications<sup>1</sup>. As ethnobiology grows in scope and diversity, so does the demand for rigor, transparency, social impact, and ethical engagement. A shared Charter is therefore needed to define common principles and guide the field's future.

The Recife Charter is a living and inspiring manifesto, born from open dialogues, rich exchanges, and attentive listening to the diverse voices present at the International School of Ethnobiology. This Charter also welcomes those who, though not at the event, unite behind its ambitious vision. It aims not to prescribe rigid models but to chart a path of shared principles that invigorate the connections between theory and practice, science and society, data and story, and researchers and communities. Moving forward, the Charter presents a constellation of core principles—ethical, epistemic, and social—and pillars of action, each envisioned as practical ways to transform these commitments into a thriving future for ethnobiology.

## PRINCIPLES

### Epistemic justice

Ethnobiology must be grounded in epistemic justice, promoting effective recognition of local knowledge and overcoming historical and epistemological asymmetries. This commitment goes beyond listing tra-

ditional knowledge and requires recognizing its legitimacy and incorporating its particularities. Practices such as the inclusion of community members as co-authors, when appropriate, should be understood as a responsible and contextualised option rather than a symbolic gesture, and exercised ethically with communities and in accordance with standards of integrity in academic practice.

Even so, it is necessary to recognise that scientific articles are cultural products of academia and that their value is linked to the context in which they are produced. Assigning co-authorship should not be confused with providing feedback to communities, for if done automatically or symbolically, this practice may become a form of neo-colonialism in which the researcher avoids genuine and ongoing engagement with the real needs and interests of the communities involved. To avoid this, co-authorship practices should be grounded in transparent, shared authorship criteria; long-term commitments to capacity building and reciprocal learning; and collaborative decisions about how knowledge is produced, written, and disseminated, including respect for local languages, temporalities, and preferred forms of contribution.

Beyond providing feedback or returning results, ethnobiological research must embrace responsibility and accountability toward the communities with whom knowledge is generated. This includes making visible how data, analyses, and publications contribute to collective benefit, self-determination, and locally defined priorities. Responsible research requires mechanisms through which communities can govern or meaningfully influence how knowledge circulates, is used, and, over time, is distributed. Accountability, in this sense, requires transparent and openly accessible evidence of these commitments and their outcomes.

Epistemic justice also entails recognising persistent absences within scientific practice itself. As in scientific research more broadly, in ethnobiology, people with disabilities or those who diverge from the so-called neurotypical standard have been systematically forgotten. Their voices, thoughts, and perspectives remain absent from debates, data collection, and theoretical formulations. A plural science and a genuinely engaged ethnobiology must acknowledge and confront these absences, creating means to listen to and incorporate these experiences into knowledge production. Reflecting on how these voices can be effectively included is an essential part of the commitment to epistemic justice and to building a field that is more inclusive and representative of human diversity.

Epistemic justice also requires attention to intergenerational aspects of knowledge, responsibility, and care. This includes recognising young people not only as future beneficiaries of science but also as present

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<sup>1</sup>Some of the important references reflecting these debates are listed at the end of this document.

interlocutors, learners, and knowledge holders within social-ecological systems. It also means acknowledging ethnobiology's responsibility to future generations, especially regarding climate change, biodiversity loss, and environmental degradation. Ethical knowledge production must consider how research choices, narratives, and outputs shape long-term social-ecological paths and enable intergenerational equity.

Linguistic justice should be part of epistemic justice. Addressing language barriers—through translation resources, multilingual dissemination, and recognition of non-English scholarship—is essential for equitable participation by Global South researchers and communities. This commitment requires valuing oral knowledge, acknowledging that many local collaborators offer rich ecological expertise without mastering written language. Limited access to digital or writing tools should not bar participation; instead, ethnobiology must develop inclusive ways to incorporate knowledge across communicative modes. Advances in accessible, low-cost translation technologies broaden opportunities for multilingual collaboration, but must be used critically and ethically, respecting context, meaning, and authorship.

## Rigor and transparency

The strengthening of ethnobiology depends on the clear articulation of research questions and methods, regardless of whether researchers identify with qualitative or quantitative approaches. Transparency and the co-construction with local actors, from planning to publication, are essential for reproducibility and for dialogue among different approaches. The use of open repositories, protocols, and field documentation represents an ethical and scientific commitment, but should always be guided by principles of Indigenous and community data sovereignty, and carried out in consultation with source communities and their knowledge holders. Decisions regarding access, storage, reuse, and circulation of data should respect community-defined governance frameworks, consent processes, and collective rights.

## Social relevance

Ethnobiology should be oriented toward social and environmental relevance. However, this orientation does not imply homogenising research agendas. The field accommodates diverse theoretical, methodological, and regional perspectives, each with its own questions and ways of producing knowledge. Thus, the incentive should be for projects aimed at local problems that are encouraged and valued on an equal footing with any other branch of the discipline. Whenever pertinent and applicable, research questions and objec-

tives may be defined jointly with local communities, seeking robust data and results that are relevant to territorial management, conservation, and public policy, without limiting the diversity of perspectives that characterise ethnobiology.

## Expanded ethics

Ethics in ethnobiology is not limited to securing signatures on a consent form. It encompasses respect for cultural dynamics, ways of life, and forms of local governance. It must include data-sharing plans, prior agreements for mutual benefit, and guarantees for the protection of culturally sensitive or sacred information and practices, which are necessary even when not explicitly required by national regulations or legislation, as they stem from a broader ethical commitment to communities and to research integrity. Ethnobiologists working in zones of armed conflict or criminalised environmental frontiers must adopt precautionary strategies that prioritise the physical security of the researcher and all participants.

Ethics in ethnobiology should also encompass relations between and within researchers, institutions, and scientific communities. Combating so-called parachute or helicopter science, in which external researchers conduct studies in countries or cultural contexts without the equitable involvement of local researchers and partners, is an inseparable part of this commitment. Scientific partnerships must be built with transparency, respect, and shared responsibility from the planning stage onward, not only at the time of publication. Invitations to collaborate must be ethical, based on mutual understanding and recognition of competencies, and avoid extractivist data practices, ensuring that the knowledge produced benefits all parties involved. Promoting genuinely collaborative science requires rethinking power dynamics within the scientific community itself and valuing local leadership as an essential component of academic integrity. Equitable North-South collaboration requires confronting structural funding asymmetries. Ethical partnerships must include transparent budgeting, shared financial decision-making, and recognition that Global South institutions often face systemic underfunding that shapes research capacity.

## Training and communication

The future of ethnobiology depends on the formation of researchers committed to ethical reflection, critical inquiry, interdisciplinary research, and social responsibility. Training must include both theoretical foundations and practices of public science communication, promoting an ethnobiology that is accessible and dialogical. Just as ethical respect is required to-

wards the communities with whom many ethnobiologists work, the same respect must prevail among the researchers themselves. It is necessary to recognise and value the diverse agendas, academic traditions, and scientific practices that comprise the field, while avoiding hierarchical attitudes and fostering an environment of intellectual cooperation, constructive critique, and epistemological plurality.

## **PILLARS OF ACTION**

### **Co-creation and participation**

Ethnobiology should operationalise its ethical commitments through research practices built in dialogue with communities, and not merely about them. Co-creation is a process that may occur at different levels of involvement, from defining research questions to interpreting results, whenever there is pertinence and mutual willingness to collaborate. The engagement of local people as research partners contributes to the legitimacy and social relevance of the knowledge produced.

### **From description to explanation**

The maturation of ethnobiology requires moving beyond the description of practices and knowledge. It is necessary to develop explanatory models that articulate cultural, ecological, and cognitive dimensions. This involves working with hypotheses, testing causal relationships, integrating quantitative and qualitative methods, and, above all, cultivating critical thinking. Integrating descriptive and explanatory perspectives also reflects a value for science and its capacity to contribute to public policy. This trajectory reinforces that good science, even when theoretically driven, can generate concrete impacts in the short, medium, or long term.

### **Return and public policy**

The return, including processes of rematriation and repatriation, understood as the return of knowledge, data, and materials to their source communities under conditions defined by them, must be planned in advance, with specific resources, accessible formats, and defined timelines, preferably by listening to the needs of the communities involved. We recommend that calls for proposals and funding agencies include specific budget lines for social return and the social impact of research. Ethnobiology plays an essential role in shaping and enhancing public policies on conservation, health, and education, but this requires that its results circulate beyond scientific articles. This is because policies often do not reflect local realities, which

are frequently made invisible, leading to rules that are impossible to comply with or to extensive bureaucracies that are not aligned with the way of life of local communities and populations. For this, it is crucial that researchers and postgraduate programmes cultivate the habit of translating their findings into accessible dissemination materials designed for broad and diverse audiences. These may include, but are not limited to, written reports, visual, oral, and audiovisual formats, according to local contexts and community preferences, and should be capable of engaging managers, policymakers, and local communities. Even when articles are published in other languages, efforts must be made to produce versions or summaries in the languages of the communities involved and, when relevant, in the languages used by decision-makers, with accessible content and, if possible, aimed at the practical application of the transdisciplinary knowledge generated.

### **Ethics and data governance**

Digital expansion imposes new ethical challenges. Ethnobiological data may contain culturally sensitive information about territories, species, or cultural practices. We propose adopting data governance plans that clearly define who decides on the access, storage, and use of information, particularly in publications. Open data are desirable when safe and ethically appropriate; restricted data are necessary when serving protective functions. It is essential that research using such data indicates, in both project documents and published outputs, which ethical measures were adopted to ensure data integrity, privacy, and respect for the contexts of origin. Ethics must guide technology, not the other way around.

### **Reproducibility, free software, and responsible use of artificial intelligence (AI)**

Reproducibility is a cornerstone of scientific credibility. Ethnobiological projects should document code, scripts, and analyses transparently, preferably using free software and open systems. The use of artificial intelligence must be undertaken critically, with explicit declaration of its role and limitations. It is imperative to ensure that algorithms do not reproduce colonial biases or expose community data that requires protection. Addressing these risks requires not only technical safeguards but also careful and sustained review by local collaborators and co-authors, whose perspectives are essential for identifying culturally embedded biases. Such processes demand time and flexibility, recognising that the temporal rhythms of scientific production do not always align with com-

munity routines, cultural practices, or ecological cycles. These technological practices must be embedded within expanded ethical frameworks that include community oversight, participatory data governance, and ongoing evaluation of algorithmic bias and social impact.

## Co-learning and dialogue

To sustain a dynamic and responsive ethnobiology, concrete investments are needed in training structures and communication strategies. It is important to mobilize highly qualified individuals who are sensitive to contemporary challenges, fostering the development, circulation, and debate of ideas. We need curricula that integrate epistemology, decoloniality, ethics, and science policy, as well as training spaces that stimulate co-learning and dialogue between generations and different knowledge systems, without relativising science or romanticising traditional knowledge. Moreover, we need communication strategies that broaden the social reach of scientific findings. Ethnobiology must speak the language of science, but also the language of the communities that inspire it.

Decoloniality, in this process, must be understood as a practical commitment rather than a rhetorical stance. It must begin within ethnobiology itself, through responsible and inclusive citation practices that recognise and value contributions from diverse contexts, genders, ethnicities, and geographical origins. This stance enables cross-fertilisation among scientific traditions of different nations and prevents the insularity of knowledge. Confronting the biases that operate within science itself is part of the ethical commitment to building a truly plural and equitable ethnobiology.

## Conservation and climate

The climate crisis is reshaping the relationship between society and nature, affecting multiple dimensions of human life, such as health, food, territories, and livelihoods. It is a multifaceted phenomenon that disproportionately affects vulnerable and marginalized communities and that requires equally complex responses. Ethnobiology, by integrating ecological, cultural, and social dimensions, is a key field for understanding and addressing these challenges. Beyond observing impacts, ethnobiology must engage actively with this agenda, producing high-quality research and other outputs (policies, educational practices, letters, among others) that are situated and contextualised within local and regional realities. Such actions can make crucial contributions to helping human communities adapt to the changes imposed by climate change and environmental degradation driven by hegemonic

models of human development.

Local communities and Indigenous Peoples, who are already experiencing the most severe effects of climate change, have developed territorially grounded adaptation and resilience strategies. These forms of knowledge and practice must be actively heard, valued, and incorporated within academic and policy arenas. Addressing complex socio-environmental problems requires collaborative, bottom-up approaches, in which active listening and long-term partnerships replace top-down intervention models. We therefore propose a biocultural approach to conservation, one that recognises communities as guardians of biodiversity and of the ecological memory of their territories, and as essential partners in building strategies for climate justice.

## MINIMUM COMMITMENTS

We recommend that all ethnobiological projects explicitly incorporate, when appropriate to the specificity of their research question, the following elements:

- A co-creation plan that defines roles, responsibilities, and decision-making criteria, recognising the diversity of partnerships both within and beyond academia and respecting the autonomy of the communities involved.
- For all collaborations between researchers and communities, particularly those involving structural asymmetries, a clear commitment to equitable, non-extractive research and a mutually agreed plan for meaningful reciprocity should be established.
- A feedback plan with a timeline, budget, and accessible formats to ensure social return in a language that is understandable and useful to communities and partner institutions.
- A data-management plan with clear guidelines on levels of access, storage, and protection of culturally sensitive information, aligned with FAIR and CARE principles of data stewardship and data sovereignty, ensuring ethical community governance, respect for collective rights, and robust digital security.
- An ethics and potential bias checklist, including informed consent, risk analysis, mitigation measures, and a commitment to transparency in reports and publications.
- A social impact report that systematises lessons learned, results, challenges, and limitations, enabling the assessment of effectiveness and improving the relationship between research and society.

- A proposal for producing Statements or Policy Briefs, especially for studies adopting the political ethnobiology approach, as instruments for synthesising and communicating recommendations aimed at public policies and collective action. These documents should be understood as legitimate research outputs, oriented towards preserving the dignity of human life in its cultural and ecological contexts. In this sense, it would be interesting if postgraduate programmes encouraged students to develop such products as part of their training, alongside scientific articles, fostering forms of academic practice that are socially engaged and policy-relevant.

These commitments should not be viewed as bureaucratic impositions but as practices of scientific responsibility that strengthen the credibility and social relevance of ethnobiology.]

## APPEALS FOR THE FUTURE OF ETHNOBIOLOGY

We call upon funding agencies to create and expand specific lines of support for the return (rematriation and repatriation) of results, ethical data governance, and the maintenance of collaborative, transdisciplinary research networks.

We urge scientific journals in the field to adopt editorial policies that value reproducibility practices, ethical data and code sharing (in compliance with the General Data Protection Regulation (GDPR) and other norms or protocols dedicated to safeguarding sensitive data, traditional knowledge, and ecological information), and transparent declarations on social impact and community involvement in each study.

We request that universities and postgraduate programmes include, within their training, components dedicated to co-creation, transdisciplinary research, science communication, the translation of knowledge into public policy, including ethics and decolonial perspectives on knowledge, so as to prepare professionals capable of contributing both to the production of science and to its social application.

We appeal to public managers to incorporate ethnobiological evidence in the formulation and evaluation of policies and programmes, recognising the strategic value of this field for conservation, health, education, and territorial management.

The ethnobiology we defend is plural, rigorous, and sensitive. It is a science that does not fear dialogue or constructive criticism, that values diversity, and that recognises itself as part of a project to rebuild, with justice and imagination, the bridges between science and society. These commitments are not fixed or final. Their realisation depends on ongoing dialogue, peri-

odic collective reflection, and adaptive forms of governance that allow this Charter to evolve in response to changing contexts and shared learning.

## ACKNOWLEDGMENTS

We gratefully acknowledge the financial support provided by the Brazilian National Council for Scientific and Technological Development (CNPq; Grant no. 441073/2025-5) and by the Foundation for the Support of Science and Technology of the State of Pernambuco (FACEPE; Grant no. ARC-0203-2.05/25), which made the realization of the V International School of Ethnobiology, held in Recife, possible.

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**Received:** 05 February 2026

**Accepted:** 13 February 2026

**Published:** 18 February 2026

