



Argentine Ethnobiology: A Future in Peril

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ABSTRACT

Based on an online survey and workshop with young ethnobiologists, we analyzed the current state and future prospects of the discipline in Argentina. Research topic analysis, geographic distribution, and insights into participant motivations and challenges highlight concerns regarding professional development in the context of underfunding and science devaluation within the country. We propose strategies for strengthening this field, including increased networking and improved representation in university curricula.

Keywords: Coping strategies, environmental transition, interdisciplinarity challenges, labour precarity, science underfunding.

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SIGNIFICANCE STATEMENT

This data-driven opinion piece explores the future of Argentine ethnobiology by drawing insights from a survey and workshop conducted with young practitioners in the field. This text provides information on the state of the discipline in the country, its challenges, and difficulties, and suggests ways to navigate the current challenges Argentine science is facing.

In recent times, the practice of ethnobiology has gained special emphasis internationally, mainly because of its contribution to biocultural conservation in the face of climate change challenges and Anthropocene environmental devastation (Vandebroek et al. 2020). Albuquerque et al. (2024) emphasized that over the next two decades, ethnobiology must be scientifically strengthened to engage proactively with communities in advancing ecological transition processes grounded in socio-environmental justice. In this context, Duarte Almada and Sánchez (2024) explored the academic and social implications of the intersection between ethnobiological research and the challenges faced by indigenous and local communities in Latin America. They propose “Political Ethnobiology” as a framework that acknowledges the central role of traditional ecological knowledge in these communities’ historical struggles for autonomy and rights,

without conflating scientific and political spheres. On that basis, they underscore the potential of ethnobiology as a political instrument, particularly when it facilitates dialogue between the dominant scientific paradigm and knowledge systems of local communities regarding their relationship with nature.

What is happening with Argentine ethnobiology?

Argentine ethnobiology has seen limited development as a discipline in terms of the number of researchers involved. For example, in the public information database of the National Council for Scientific and Technical Research (CONICET), out of a total of 23,000 researchers and fellows, only 43 people state ethnobiology as a keyword for their research topic. While these figures are preliminary, it is undeniable

that this discipline occupies limited space within the country's scientific and technical sectors. This situation raises a debate over the future of ethnobiology over the next 20 years, as the socio-political context of Argentine science faces numerous challenges that jeopardize its development.

Over the last few years, the Argentine scientific system has encountered multiple threats, including high inflation rates, which have significantly impacted scholarships, salaries, and research grants. In addition to this long-standing issue, the right-wing government, which took office in December 2023, initiated a significant budget cut on Argentine science, fulfilling a key campaign promise (De Ambrosio and Koop 2024). There have been unprecedented closures of ministries and government agencies related to science and technology, along with layoffs at the country's foremost scientific institution, CONICET. Similarly, public universities face severe budget constraints, leading to financial asphyxiation (Esteban 2024; Página 12 2024).

Compounding this critical situation is a smear campaign by the current government targeting Argentina's scientific system. The president's anti-scientific rhetoric has cast doubt and fostered distrust about the scope, importance, and relevance of research in Argentina, a situation that some scientists fear may be irreparable (Orfila 2023). The arguments put forth by the executive branch and its cabinet are unfounded, as CONICET has consistently been ranked among the top international organizations in recent years. According to the Scimago ranking, it holds leading positions among government organizations in the region (Scimago Institutions Rankings 2023).

Ethnobiologists in Argentina are currently facing a pivotal moment with regard to the future. On the one hand, the socio-political context seems to limit the scientific development of our discipline in the country. On the other hand, calls are increasingly strong worldwide regarding the concrete contribution that trans/interdisciplinary approaches, such as ethnobiology, provide to socio-environmental management (Albuquerque *et al.* 2024). This awareness has led us to wonder about the current situation of young ethnobiology researchers at the national level, and to understand their concerns and difficulties in relation to their career development. We believe that this diagnosis will account for the strategies needed to foster the discipline for the future.

Young people and ethnobiological research in Argentina

We conducted an anonymous 10-minute online survey consisting of 31 questions via Microsoft Forms with individuals involved in early stage ethnobiological research in Argentina, including undergraduate and graduate students, as well as established researchers

new to the field. The survey, disseminated through the IV Argentine Conference on Ethnobiology and Society (JAES) and the Ethnobiology Group (INIBIOMA), aimed to explore the research topics, motivations, and challenges faced by these individuals. In addition, through multiple-choice and open-ended questions, ideas about the difficulties of conducting ethnobiological research in our country were gathered.

Consent was obtained to share the findings, which were presented in a workshop titled "Mate ConCien- cia: Weaving Networks for the Future" during the IV JAES in May 2024 in Eldorado (Misiones, Argentina). The workshop encouraged dialogue and feedback regarding the results. The name "Mate ConCien- cia" incorporates "mate," a popular infusion in Argentina and the region made from *Ilex paraguariensis* leaves. Mate is often shared in social settings, reflecting the workshop's informal and relaxed atmosphere. The play on words "ConCien- cia" (with science/conscience) emphasizes the importance of science-based events and counters discourses that undermine scientific work.

Thirty collaborators (20 women and 10 men) participated in the survey. Their ages ranged from 26 to 49 years, with an average of 36. The geographical distribution of respondents revealed diverse locations where the discipline is practiced, with the provinces of Córdoba, Río Negro, and Jujuy having the highest representation (Figure 1A), in addition to one participant currently based abroad. The respondents included doctoral students (46%, 14 people), CONICET career researchers (20%, six people), undergraduates (13%, four people) and master's students (10%, three people) at public universities, and postdoctoral students (10%, three people). The majority of them had a background in biological sciences (67%, 20 people), while the remaining participants came from engineering (20%, six people) and other fields, such as veterinary medicine, pharmacy, social communication, and environmental management (13%, four people).

To understand their research interests, the participants were asked to provide three keywords describing their research focus. These data were used to generate a Word Cloud using the online program Word Cloud (WordClouds.com). After removing three connectors from the initial 148 words, 145 words remained. Figure 1B shows a broad range of topics, with the most frequent being conservation, local ecological knowledge, communities, agriculture, ethnobotany, local management, and various biocultural aspects. Interestingly, some research topics implicitly align with the United Nations' Sustainable Development Goals (SDGs), particularly goals 1 (no poverty), 2 (zero hunger), 3 (good health and well-being), and 15 (life on land). This observation echoes the findings of Arrivabene *et al.* (2024), who explored how global ethnobiology addresses the SDGs and its potential as

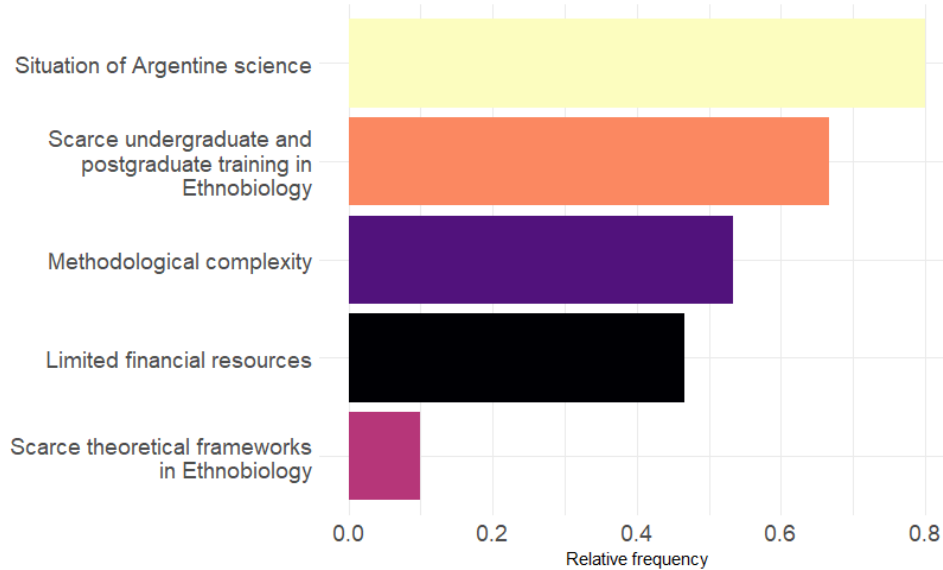


Figure 2. Frequency of difficulties reported by young ethnobiology researchers in Argentina through a multiple-choice question (n=30).

Ambrosio and Koop 2024).

One testimony illustrates these difficulties: “*The lack of stable funding necessitates constant self-management, consuming a significant amount of extra time and impacting our ability to work, publish, and progress in our research.*” Another participant highlighted the impact of the economic situation on fieldwork: “*Ethnobotanical work requires frequent travel to study sites, which is very challenging in the current national context.*” This observation underscores how budget constraints hinder even fundamental aspects of ethnobiological research, such as accessing field sites.

Secondly, a major challenge was the limited availability of undergraduate and graduate training in ethnobiology (20, 66%). Argentina currently lacks formal undergraduate or graduate programmes dedicated to ethnobiology, unlike other Latin American countries. Among them are the PhD in Ethnobiology and Biocultural Studies at the University of Cauca in Colombia (<https://www.unicauca.edu.co/pogrados/programas/doctorado-en-etnobiologia-y-estudios-bioculturales>), the Graduate Program in Ethnobiology and Nature Conservation offered by a University consortium in Pernambuco, Brazil (<https://www.pgetno.ufrpe.br>), and the Diploma in Ethnobiology at the National Autonomous University of Mexico (<https://www.cimsur.unam.mx/index.php/educacionc/diplomados/374>). While some Argentine universities offer courses or subjects at both the undergraduate and graduate levels, these are infrequent and not part of any degree requirements. Undoubtedly, similar efforts in Argentina could help

strengthen this discipline by making its theoretical and methodological frameworks more widely known.

Furthermore, methodological complexities (16, 53%) were directly related to the practice of ethnobiology. Testimonies reveal various obstacles faced by young researchers during fieldwork, such as difficulties in obtaining research permits: “*Arranging interviews with school principals, the distance to rural locations, and issues with student questionnaire completion and delivery were all challenging. Gaining field access can take six months due to permit requirements, if permits are even granted.*”

Another methodological concern is the incompatibility between conducting long-term fieldwork, which is often necessary for qualitative and recursive approaches, and the time constraints imposed by doctoral programs and academia, which prioritize short-term publications for career advancement. The lack of understanding of recursive projects within graduate programs is evident in testimonials like this one: “*One major issue relates to the methodology, which clashes with the typical approach to [biological science research] projects. Generally, it’s better to first understand the field and work with the community before formulating objectives, questions, and proposals. The usual approach tends to be the reverse.*” Ethnobiologists, when studying local ecological knowledge, require recursive approaches that enable them to validate and refine their interpretations in collaboration with communities and revise their results and methodologies based on new information and perspectives (Hurrell 2014, Albuquerque *et al.* 2019).

Finally, although to a lesser extent, the scarcity of well-established theoretical models has been noted (3, 10%). This observation aligns with the suggestion of Albuquerque and Alves (2024), who advocated moving beyond purely descriptive ethnobiology and integrating theoretical and hypothesis-driven approaches. Such an integration would not only strengthen the field's scientific rigor but also enhance its ability to inform policy, management and conservation efforts. As ethnobiology intersects with the social and ecological struggles of local communities, a theoretical grounding is essential to ensure that research can produce actionable insights while remaining sensitive to the complexities of cultural and ecological systems.

Interdisciplinarity in Ethnobiology

When asked if interdisciplinarity posed a challenge to their work, 50% of the participants answered affirmatively. An analysis of their testimonies reveals a nuanced view of multidisciplinary, consistent with prevailing perspectives in ethnobiological and socio-environmental sustainability literature. This reflects the difficulties researchers encounter when striving for a multidimensional approach that encompasses both social and environmental aspects (Tengö *et al.* 2014, 2017). For instance, one participant noted, "*Interdisciplinarity is often discussed, but it's challenging to implement and foster dialogue between fields with different frameworks and methodologies.*"

Issues such as inappropriate fragmentation of local knowledge (Ladio 2017) and power imbalances between researchers and local communities (McAlvay *et al.* 2021) persist as dilemmas within the discipline. While ethnobiologists often assert their multidisciplinary nature, the coexistence of diverse disciplinary agendas can lead to tensions and controversies. Training in different academic traditions within the natural and social sciences not only results in varying methodological approaches but also often fosters a belief in the primacy of one's own discipline within a broader field (Nieves Delgado *et al.*, 2023). Finally, when asked if there was a need to promote greater appreciation for the discipline in Argentina, 97% responded positively.

CONCLUSION

Our findings revealed that young Argentine ethnobiologists firmly believe in ethnobiology's potential to contribute to local development and socio-environmental sustainability. They are actively engaged in diverse research topics within the field and are committed to collaborating with local communities. However, they encounter various challenges stemming from the current underfunding of Argentine sci-

ence, further exacerbated by a lack of recognition of the discipline in the country's academic and university settings.

In light of these circumstances, we believe that community-based work and collaboration are crucial for supporting the present and future of young ethnobiology researchers. Following the recommendations of Albuquerque *et al.* (2024) to develop communities of belonging, we proposed the creation of an Argentine Network of Ethnobiology Researchers during the workshop, the formation of which is currently underway in collaboration with scientists across the country.

This situation presents a complex yet promising landscape. This underscores the urgent need to strengthen the discipline through the development of collaborative networks and the promotion of spaces for dialogue between scientists, communities, and policymakers. Enhancing the presence of ethnobiology in undergraduate and graduate programmes is also essential. We hope that this shared experience and proposal will inspire ethnobiologists elsewhere who face similar challenges in the local development of the discipline, thereby contributing to the strengthening of ethnobiology regionally and globally.

The future of Argentine ethnobiology is at stake, necessitating the recognition and support of young ethnobiology researchers to ensure their vital role in sustainability and cultural and environmental development in Argentina.

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CONFLICT OF INTEREST

There is no conflict of interest.

CONTRIBUTION STATEMENT

Conceived the presented idea: AHL

Carried out the survey and workshop: CRL, PAG and AHL

Performed the data analysis: CRL, PAG and AHL

Wrote the first draft of the manuscript: AHL, CRL and PAG

Supervision: AHL

REFERENCES

- Albuquerque UP, Maroyi A, Ladio AH, Pieroni A, Ab-basi A, Arias B, Dahdouh-Guebas F, Hallwass G, Soldati GT, Odonne G, Vandebroek I, Vallès J, Hurrell JA, Pardo de Santayana M, La Torre Cuadros MA, Pulido Silva M, Jacob M, Fonseca-Kruel VS, Ferreira Júnior WS (2024) **Advancing ethnobiology for the ecological transition and a more inclusive and just world: a comprehensive framework for the next 20 years.** *Journal of Ethnobiology and Ethnomedicine* 20:18. doi: [10.1186/s13002-024-00661-4](https://doi.org/10.1186/s13002-024-00661-4).
- Albuquerque UP, Nascimento A, Soldati GT, Feitosa IS, Campos JLA, Hurrell JA, Hanazaki N, Medeiros PM, Silva R, Ludwinsky R, Ferreira Júnior WS, Reyes-García V (2019) **Ten important questions/issues for ethnobotanical research.** *Acta Botanica Brasili-ca* 33(2) doi: [10.1590/0102-33062018abb0331](https://doi.org/10.1590/0102-33062018abb0331).
- Albuquerque UP, Alves RRN (2023) **Integrating depth and rigor in ethnobiological and ethnomedical research.** *Journal of Ethnobiology and Ethnomedicine* 20:6. doi: [10.1186/s13002-023-00643-y](https://doi.org/10.1186/s13002-023-00643-y).
- Arrivabene A, Lasic L, Blanco J, Carrière S, Ladio AH, Caillon S, Porcher V, Teixidor Toneu I (2023) **A new perspective on the SDGs nexus: ethnobiology's contribution.** *Research Square*. doi: [10.21203/rs.3.rs-3436840/v1](https://doi.org/10.21203/rs.3.rs-3436840/v1).
- Chambers JM, Wyborn C, Ryan M, Reid RS, Riechers M, Serban A, Bennett NJ, Cvitanovic C, Fernandez-Gimenez ME, Galvin KA (2021) **Six modes of co-production for sustainability.** *Nature Sustainability* 4:983-996. doi: [10.1038/s41893-021-00755-x](https://doi.org/10.1038/s41893-021-00755-x).
- De Ambrosio M, Koop F. (2024) **'Despair': Argentinian researchers protest as president begins dismantling science.** *Nature* 627(8004):471-472. doi: [10.1038/d41586-024-00628-1](https://doi.org/10.1038/d41586-024-00628-1).
- Duarte Almada E, Sánchez EP (2024) **Etnobiología Política: De La Antropología Cognitiva Hacia La Defensa De La Pluriversalidad.** *Ethnoscintia* 9(1). doi: [10.18542/ethnoscintia.v9i1/13491](https://doi.org/10.18542/ethnoscintia.v9i1/13491).
- Esteban P (2024) **Las universidades nacionales, al borde del cierre.** Página 12. [<https://www.pagina12.com.ar/716903-las-universidades-nacionales-al-borde-del-cierre>] Accessed 22 August 2024.
- Graduate Program in Ethnobiology and Nature Conservation** (2024) [<https://www.pgetno.ufrpe.br>] Accessed 22 August 2024.
- Hurrell J (2014) **Urban Ethnobotany in Argentina: Theoretical advances and methodological strategies.** *Ethnobiology and Conservation* 3. doi: [10.15451/ec2014-6-3.3-1-11](https://doi.org/10.15451/ec2014-6-3.3-1-11).
- Ladio AH (2017) **Ethnobiology and research on Global Environmental Change: what distinctive contribution can we make?** *Ethnobiology and Conservation* 6:1-8. doi: [10.15451/ec2017-07-6.7-1-8](https://doi.org/10.15451/ec2017-07-6.7-1-8).
- McAlvay AC, Armstrong CG, Baker J, Elk LB, Bosco S, Hanazaki N, Joseph L, Martínez-Cruz TE, Nesbitt M, Palmer MA, Priprá de Almeida WC, Anderson J, Asfaw Z, Borokini IT, Cano-Contreras EJ, Hoyte S, Hudson M, Ladio AH, Odonne G, Vandebroek I (2021) **Ethnobiology Phase VI: Decolonizing Institutions, Projects, and Scholarship.** *Journal of Ethnobiology* 41(2):170-191. doi: [10.2993/0278-0771-41.2.170](https://doi.org/10.2993/0278-0771-41.2.170).
- National Autonomous University of Mexico (2024) **Diplomado Etnobiología: aspectos epistémicos, teóricos y metodológicos - Centro de Investigaciones Multidisciplinarias sobre Chiapas y la Frontera Sur.** [<https://www.cimsur.unam.mx/index.php/educacionc/diplomados/374>] Accessed 22 August 2024.
- Nieves Delgado A, Ludwig D, El-Hani C (2023) **Pluralist Ethnobiology: Between Philosophical Reflection and Transdisciplinary Action.** *Journal of Ethnobiology* 43: 191-197. doi: [10.1177/02780771231194774](https://doi.org/10.1177/02780771231194774).
- Norström AV, Cvitanovic C, Löf MF, West S, Wyborn C, Balvanera P, Bednarek AT, Bennett EM, Biggs R, de Bremond A, Campbell BM, Canadell JG, Carpenter SR, Folke C, Fulton EA, Gaffney O, Gelcich S, Jouffray J-B, Leach M, Österblom H (2020) **Principles for knowledge co-production in sustainability research.** *Nature Sustainability* 3:182-190. doi: [10.1038/s41893-019-0448-2](https://doi.org/10.1038/s41893-019-0448-2).
- Orfila MA (2023) **Argentina's new president has nation's scientists very, very concerned.** *Science* doi: [10.1126/science.adn0696](https://doi.org/10.1126/science.adn0696).
- Página 12 (2024) **Anatomía del derrumbe de los salarios de las universidades nacionales.** [<https://www.pagina12.com.ar/759902-anatomia-del-derrumbe-de-los-salarios-de-las-universidades-n>] Accessed 22 August 2024. .
- Programa de Posgrado en Etnobiología y Conservación de la Naturaleza (PPGETno).** [<https://www.pgetno.ufrpe.br>] Accessed 22 August 2024.
- Tengö M, Brondizio ES, Elmqvist T, Malmer P, Spierenburg M (2014) **Connecting diverse knowledge systems for enhanced ecosystem governance: the multiple evidence base approach.** *Ambio* 43(5):579-591. doi: [10.1007/s13280-014-0501-3](https://doi.org/10.1007/s13280-014-0501-3).

Tengö M, Hill R, Malmer P, Raymond CM, Spierenburg M, Danielsen F, Elmqvist T, Folke C (2016) **Weaving knowledge systems in IPBES, CBD and beyond—lessons learned for sustainability.** *Current Opinion in Environmental Sustainability* 26-27:17-25. doi: [10.1016/j.cosust.2016.12.005](https://doi.org/10.1016/j.cosust.2016.12.005).

United Nations (2015) **Transforming our World: The 2030 Agenda for Sustainable Development.** [<https://sdgs.un.org/2030agenda>] Accessed 26 August 2024. .

University of Cauca (2024) **Doctorado en Etnobiología y Estudios Bioculturales.** [<https://www.unicauca.edu.co/posgrados/programas/doctorado-en-etnobiologia-y-estudios-bioculturales>] Accessed 22 August 2024.

Vandebroek I, Pieroni A, Stepp JR, Hanazaki N, Ladio AH, Nóbrega Alves RRR, Picking D, Delgoda R, Maroyi A, van Andel T, Quave CL, Paniagua-Zambrana NY, Bussmann RW, Odonne G, Abbasi AM, Albuquerque UP, Baker J, Kutz S, Timsina S, Shigeta M, Oliveira TPR, Hurrell JA, Arenas PM, Puentes JP, Hugé J, Yeşil Y, Pierre LJ, Olango TM, Dahdouh-Guebas F (2020) **Reshaping the future of ethnobiology research after the COVID-19 pandemic.** *Nature Plants* 6(7):723-730. doi: [10.1038/s41477-020-0691-](https://doi.org/10.1038/s41477-020-0691-)

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