Región Científica

e-ISSN: 2954-6168
Región Científica. 2025. 4(2), 2025480
doi: 10.58763/rc2025480

Routes and Biodiversity in Chiquimbuy: Agroecological Tourism Potential for Adventure Hiking La Grullas Waterfall, Barinas, Venezuela

Rutas y Biodiversidad en Chiquimbuy: Potencial Turístico Agroecológico para Senderismo de aventura Cascada la Grullas, Barinas, Venezuela

Alfonso José Fernández[1]

ABSTRACT

Introduction: this study analyzed the agroecological tourism potential of adventure hiking trails to Las Grullas Waterfall in Chiquimbuy, Barinas, Venezuela, with the goal of developing a sustainable tourism model.
Methodology: a qualitative descriptive approach with a field design was adopted, utilizing a participatory methodological model. Data collection included field trips with students, photographic records, observation guides, and GPS, followed by content analysis and epistemic matrices.
Results: the findings revealed significant agroecological and adventure tourism potential, highlighting four key resources: the coffee and musaceae agroecological trail, biodiversity viewing, the adventure trail, and Las Grullas Waterfall, with the operator Movida Verde as the key promoter.
Conclusions: it was concluded that Chiquimbuy, with its rich biodiversity and local crops, is ideal for agroecological tourism, requiring infrastructure and training for sustainability. It is recommended to improve trails and safety, diversify adventure activities, and conduct market and carrying capacity studies. Strengthening the local community, diversifying tourism offerings with activities such as birdwatching and gastronomy, and ensuring environmental sustainability through responsible practices and education are crucial for comprehensive and beneficial tourism development.

Keywords: environmental conservation, sustainable development, ecotourism, tourist facility, natural heritage.

JEL Classification: Q01, Q21, Q26

RESUMEN

Introducción: este estudio analizó el potencial turístico agroecológico de las rutas de senderismo de aventura hacia la Cascada Las Grullas en Chiquimbuy, Barinas, Venezuela, con el fin de desarrollar un modelo de turismo sostenible.
Metodología: se adoptó un enfoque cualitativo descriptivo con diseño de campo, utilizando un modelo metodológico participativo. La recolección de datos incluyó excursiones con estudiantes, registros fotográficos, guías de observación y GPS, seguidos de análisis de contenido y matrices epistémicas.
Resultados: los hallazgos revelaron un significativo potencial turístico agroecológico y de aventura, destacando cuatro recursos clave: el sendero agroecológico de café y musáceas, el avistamiento de biodiversidad, el sendero de aventura y la Cascada Las Grullas, con la operadora Movida Verde como promotora clave.
Conclusiones: se concluyó que Chiquimbuy, con su rica biodiversidad y cultivos locales, es ideal para el turismo agroecológico, requiriendo infraestructura y capacitación para sostenibilidad. Se recomienda mejorar senderos y seguridad, diversificar actividades de aventura, y realizar estudios de mercado y capacidad de carga. Es crucial fortalecer la comunidad local, diversificar la oferta turística con actividades como aviturismo y gastronomía, y garantizar la sostenibilidad ambiental mediante prácticas responsables y educación, para un desarrollo turístico integral y beneficioso.

Palabras clave: conservación ambiental, desarrollo sostenible, ecoturismo, instalación turística, patrimonio natural.

Clasificación JEL: Q01, Q21, Q26

Received: 14-03-2025 **Revised:** 28-05-2025 **Accepted:** 17-06-2025 **Published:** 31-07-2025

Editor: Alfredo Javier Pérez Gamboa

[1]Universidad Nacional Experimental de los Llanos Occidentales Ezequiel Zamora. Barinas, Venezuela.

Cite as: Fernández, A. J. (2025). Rutas y Biodiversidad en Chiquimbuy: Potencial Turístico Agroecológico para Senderismo de aventura Cascada la Grullas, Barinas, Venezuela. Región Científica, 4(2), 2025480. https://doi.org/10.58763/rc2025480

INTRODUCTION

Agroecological tourism offers a tourist experience focused on direct immersion in ecological agricultural practices and rural culture. These experiences are due to combining the appreciation of biodiversity with the promotion of sustainable agriculture; precisely for this reason, this type of tourism generates socio-economic momentum in local communities by harnessing their potential, creating a sustainable alternative for future generations (Fernández, 2025). Furthermore, by promoting environmental awareness and revaluing local culture, it will foster an authentic and enriching experience where tourists learn about the practices, management, and marketing of existing products.

In this way, sustainable tourism in communities offers not only a shift from traditional paradigms (sun and beach) but also a combination of a model that leverages the exploration of biodiversity, the natural environment, and authentic landscapes as an income-generating agent. Young people, women, artisans, and local experts perceive new income from agroecological tourism through agricultural practices that minimize environmental impact and contribute to a sustainable environment over time (Macías et al., 2024). Biodiversity is considered a key element in the development of tourism, as it presents a diversity of ecosystems and unique species (Sánchez, 2025).

However, the protection and promotion of biodiversity through agroecological tourism must emerge from a holistic approach in which communities participate in its development as long as it is sustainable over time. For this reason, García (2024) emphasizes that agroecology promotes the conservation of ecosystems, local knowledge, culture, ancestral practices, and beliefs, allowing for the promotion of sustainable tourism (Águila, 2025). Agroecological tourism is distinguished by its participatory approach, actively involving communities with tourism potential (Herrera et al., 2024).

The Chiquimbuy sector, located in the Altamira Parish, Bolívar Municipality, Barinas State, Venezuela, boasts a high level of biodiversity and the Las Grullas Waterfall natural resource. This landscape makes this sector ideal for promoting a tourism model that diversifies the economy, culture, and environment, as it boasts extensive biodiversity. Therefore, activities such as birdwatching, ecosystem interpretation, and agricultural practices have the potential to enrich the visitor experience alongside the waterfall's natural attraction, helping to foster greater environmental awareness.

Furthermore, the agroecological tourism potential along the route to Las Grullas Waterfall presents some weaknesses, such as the lack of adequate accommodations, restaurants, and basic services for overnight stays in this sector. This situation reveals that the community surrounding the Barinas-Merida trans-Andean route shows a need for training in the tourism sector. In addition to these drawbacks, the lack of a study of the biodiversity present in the natural area and its tourism potential represents a significant limitation when addressing the development of a sustainable agroecological tourism offering.

It is necessary to conduct inventories of flora and fauna, as well as to locate endemic and endangered species and assess their impact on the development of tourism activities. This research is relevant for the planning and management of tourism activities, but also for the implementation of conservation measures and environmental education for visitors. Therefore, the aim is to answer the question: What agroecological tourism potential will contribute to the development of a proposed adventure hiking route to Las Grullas Waterfall in the Chiquimbuy sector, Altamira de Cáceres, Barinas, Venezuela?

As Fernández et al. (2024) point out, the success of agroecological tourism lies in the planning, design, and marketing of products and services within a rural or community setting. This approach promotes sustainable development through the integration of local communities, as well as collaboration between private enterprises and government agencies.

In this sense, Chiquimbuy, a rural area with mountainous characteristics at the foot of the Andes and significant coffee production, along with the attractive trail to Las Grullas Waterfall, has ideal potential for tourism development. This development must be based on the identification and appreciation of indigenous natural and cultural resources and on the active participation of communities in tourism management. Therefore, this research aims to address these challenges by analyzing the agroecological tourism potential of the adventure hiking trails to Las Grullas Waterfall in the Chiquimbuy Sector, Altamira de Cáceres, Barinas, Venezuela.

THEORETICAL BASIS

Agroecological Tourism

Agroecological tourism is defined in the literature as a sustainable alternative that integrates agricultural elements and native landscapes as a sustainable tourism offering, as indicated by Castillo (2023). This approach is based on the principles of sustainability and seeks to leverage biocultural resources for development, minimizing environmental impact and promoting social justice and the local economy (Paredes et al., 2023). Furthermore, this tourism modality will provide the Chiquimbuy community with the ability to improve their quality of life not only through the generation of income from agricultural production but also through the use of production units, offering tourists, visitors, and excursionists agricultural spaces as potential agroecological tourism opportunities.

In this way, agroecological tourism highlights the importance of community participation as the primary beneficiaries of sustainable development. Morales (2024) highlights that this type of tourism integrates economic, environmental, and educational elements, which, when properly planned and managed with communities, can diversify improvements to existing tourism infrastructure. Furthermore, harnessing the potential of agroecological tourism will generate income outside of agricultural production. By visiting the adventure trail to La Grullas Waterfall, people living along the trans-Andean route will receive socioeconomic benefits from the sale of coffee, Musaceae, and tourist guidance.

They will also be able to receive comprehensive training in tourism to improve the quality of tourism services, as suggested by Fernández et al. (2025). Similarly, a sense of belonging is fostered by promoting the conservation of biodiversity and the biocultural resources of the area. Therefore, Núñez et al. (2024) highlight that this tourism modality is considered transdisciplinary since it integrates various disciplines, which are essential tools for promoting the principles of tourism sustainability.

Adventure Trails and Hiking

Adventure trails combine diverse mountain landscapes, forests, and wildlife viewing. In addition, the physical challenge and cultural experiences through local traditions create jobs for local tour guides, artisans, and entrepreneurs in areas with tourism potential. According to McCarthy et al. (2024), tourist routes enable the sustainable development of communities, where beneficiaries will improve their quality of life and infrastructure and promote more sustainable and responsible tourism, leveraging biocultural resources and agricultural practices.

Additionally, adventure tourism routes, especially those to Las Grullas Waterfall, are located in mountainous areas. These routes present significant opportunities for development by surrounding communities and tour operators. However, they must be adequately marked by corresponding authorities to prevent risks to tourists and provide information about the surrounding fauna. To achieve this, the signage on trails or adventure routes must comply with international certification standards. Therefore, Cárdenas (2022) indicates that good trail practices will improve the tourist experience, promoting responsible tourism.

From this perspective, the maintenance and upkeep of adventure tourism routes and trails should be managed by the communities and local tour guides. In the case of the route to Las Grulla Waterfall, there are weaknesses in signage, which can negatively affect the vegetation. This area is used by pedestrians living in the Chiquimbuy Community, but it is also part of the natural attraction. Therefore, it is necessary to prevent soil erosion and protect the vegetation, as Díaz (2023) points out. Another interesting point is that routes or trails must respect biodiversity, ecosystems, and natural landscapes, promoting an environmentally sustainable culture (Mungaray et al., 2022). In addition, the Chiquimbuy sector offers a variety of tourism options, including birdwatching, ecotourism, adventure trails, and agroecological tourism.

Likewise, Fernández (2024) highlights how an agroecological tourism route can provide a green employment opportunity in rural settlements while simultaneously combining economic activities and environmental conservation. This approach is key to promoting local development, as proposed by research focused on the potential of adventure tourism in countless towns or by the research of (Murillo, 2023). It is essential that sustainable tourism proposals, such as that of Sánchez et al. (2024), "incorporate ecological principles into their tourist routes" (Fernández, 2024, p. 32). This framework also ensures that tourism activities do not have negative environmental impacts. Route and trail management must benefit tourists while protecting natural resources and contributing to sustainable development in the region.

Therefore, the agroecological tourism potential and the viability of hiking to Las Grullas Waterfall require an analysis of the area's natural and cultural resources, tourist needs and expectations, accessibility, infrastructure, quality and availability of tourism services, safety and environmental impact, etc. For this analysis, there are several tourism potential analysis techniques, as indicated by Fernández et al. (2025) through their participatory model

for the design of agroecological tourism products. These techniques are essential for identifying the strengths, weaknesses, opportunities, and threats of Chiquimbuy's tourism offering.

Overall, the analysis of agroecological tourism potential, routes, and biodiversity in Chiquimbuy, specifically for the development of adventure hiking to Las Grullas Waterfall, will allow for rigorous and objective research that will contribute to the sustainable development of tourism in the Altamira region of Cáceres, Barinas, Venezuela, through an integrated approach that balances economic development with environmental conservation and the well-being of local communities.

METHODOLOGY

This study was based on a descriptive qualitative approach, aiming to analyze the agroecological tourism potential of the adventure hiking trails to Las Grullas Waterfall in the Chiquimbuy sector, Altamira de Cáceres, Barinas, Venezuela. The research is descriptive, as it seeks to detail and characterize the existing tourism potential in the study area. A field design was adopted, as data collection was conducted directly in the natural environment of Chiquimbuy through a practical excursion to Las Grullas Waterfall.

The participatory methodological model proposed by Fernández et al. (2025) was used, which focuses on a process of interconnected phases for the development of tourism products. For the scope of this study, the focus was on Phase I: diagnosis, inventory, and analysis of existing potential. Additionally, the research involved fourth-semester students of the Agroecological Tourism program and first-semester students of the Sports and Recreation Education program at the Universidad Nacional Experimental de los Llanos Occidental Ezequiel Zamora (UNELLEZ), who actively participated in the excursion and data collection.

To proceed with the data collection, the author used the following: 1) a photographic record to document the tourist attractions, biodiversity, and geographical conditions of the route to Cascada Las Grullas; 2) an observation guide prepared to guide the observation and recording of the most relevant information from the excursion. The aspects of interest to be observed in the records referred to the flora, fauna, trail characteristics, and the trail's potential for adventure hiking; and 3) a GPS to record georeferenced points along the route and tourist attractions. The purpose of the GPS was to allow access to the coordinates of the information obtained.

Similarly, the data collection and analysis techniques were Participatory Observation, in which students participated in the field trip and recorded their impressions and observations; Content Analysis, which consisted of reviewing and classifying the information obtained from the photographs and observation guide to identify elements of agroecological tourism potential. Finally, Participatory Mapping was used, which consisted of developing an epistemic matrix of tourist attractions. The author synthesized the information obtained from the field trip to visualize and understand the study area from a spatial perspective.

In this sense, the research process was developed by the author in four main stages: first, the planning of the excursion, during which the route to Las Grullas Waterfall was meticulously designed, the primary objective of which was to ensure safety and take into account points that might be of interest to the participants. Second, the students used the field trip and data recording method, where they collected data on the trail's biodiversity, geographical conditions, and tourist attractions using the observation guide, a photographic record, and a GPS.

Third, epistemic matrices were used to collect data and their attractions. This was the basis for visualizing and interpreting data on the trail's tourism potential and, finally, for preparing the diagnosis. At this point, the information obtained allowed for an account of the strengths, weaknesses, opportunities, and threats to the trail's agroecological tourism potential.

Once the diagnosis of the trail's agroecological tourism potential was completed, an extensive process of triangulation, interpretation, and comparison of the results was carried out. The triangulation of the information obtained from the observation guide and the content analysis of the photographic record. The interpretation of the data was carried out using the participatory methodological model of Fernández et al. (2025), focused on the analysis of existing resources near the Las Grullas Waterfall. Finally, the results were compared with previous research to contribute to strengthening the validity and relevance of the research conclusions.

RESULTS AND DISCUSSION

In this stage, an analysis of the tourism potential of the adventure trail route to Las Grullas Waterfall in the

Chiquimbuy Sector, Altamira de Cáceres, Barinas, Venezuela, is presented. To this end, a field trip was conducted in November 2022 with fourth-semester students of agroecological tourism and first-semester students of Physical Education and Sports at UNELLEZ, Barinas, as part of a field experience exploring the geographic and touristic spaces of the Barinas region. To this end, the Movida Verde Tour Operator offered the route under study to explore and learn about the Chiquimbuy area. To achieve this objective, the proposal by Fernández et al. (2025) was applied, focusing on a model that allows for diagnosing the characteristics of the territory and cataloging the resources or potential of rural areas through a characterization process.

Stage I. Territory Characterization

Las Grullas Waterfall is located in the Chiquimbuy sector, Bolívar municipality, Barinas state. This route's geographic coordinates are 8° 50' 50.91" N latitude and 70° 32' 37.99" W longitude. This attraction offers a tour of coffee and Musaceae plantations, showcasing their agricultural attributes and mountain landscapes, smells of coffee, and the sounds of the area's native birdlife. In the second section, the waterfalls intertwine with the Calderas and Santo Domingo rivers. Finally, the environment changes to an adventure trail, showcasing various waterfalls and climbs, with the unique characteristics of a canyon displaying mysticism and rocky environments of brown and greenish colors.

In this phase of the work, the elements of the tourism system's subsystems were outlined based on Varisco's (2013, p. 63) model, which outlines five subsystems: "Superstructure, infrastructure, supply, demand, and host community" that interact with each other. The results are shown in table 1.

Table 1.
Epistemic matrix for characterizing tourism systems, according to Varisco (2013)

Subsystems	Characterization
Superstructure	The Movida Verde tour operator project promotes this natural attraction in the summer. However, government agencies have not taken into account the potential of the Chiquimbuy area, especially the route to Las Grullas Waterfall and its wonderful natural surroundings.
Infrastructure	Access to Las Grullas Waterfall is via the Barinas-Mérida highway and, therefore, lacks adequate infrastructure. Furthermore, services such as accommodations and restaurants are scarce. Residents provide basic services; however, they do not participate directly in the activity. The nearest health center is located in Altamira de Cáceres or Barinitas, although there is a civil protection presence in the aforementioned area.
Tourism Supply	The adventure route to La Grullas Waterfall offers a complete tourist experience, combining hiking in an agroecological environment of coffee and Musaceae, birdwatching, contemplation of the rich local flora and fauna, the majesty of the Andean landscapes, exploration of ancient stone carvings, and the excitement of an adventure trail that culminates at the impressive La Grullas Waterfall.
Tourism Demand	This tourist resource was launched during the 2022 summer season, with an estimated 300 visitors. Currently, the tour operator Movida Verde and new operators have not recognized this beautiful attraction as a potential destination, nor do they have the support of government agencies to leverage it as a tourist attraction.
Host Community	The route to Las Grullas is located in the Barinas-Mérida trans-Andean region, so the community that can benefit would be the inhabitants of this area. Although the waterfall belongs to Chiquimbuy, it is located in the Altamira Mountains of Cáceres, specifically in the Santo Domingo River area. Therefore, it is essential that the inhabitants of the aforementioned areas receive training and participate in the local tourism industry.

Source: Own elaboration.

Table 1 presents an overview of an agroecological tourism model in the Chiquimbuy region, with agricultural, naturalistic, and adventure tourism potential, such as La Grullas Waterfall. This table also includes an analysis focused on the five subsystems presented in Varisco's (2013) proposal. These components allowed for the identification of

the strengths, weaknesses, threats, and opportunities of the internal and external environment. This idea is based on the fact that tourism development should be planned, managed, and promoted by leveraging existing resources and attractions in an environment with tourism potential. Therefore, a range of opportunities opens up where tourism offerings, linked to infrastructure, superstructure, and demand, converge, with considerable potential benefits for host communities.

In this sense, agroecological tourism allows, among its attributes, the convergence of processes to maximize the use of existing resources through a transformation of the environment where communities participate in its development, as pointed out by Vélez et al. (2024). On the other hand, it is assumed that the route to Las Grullas Waterfall has suffered a lack of promotion by the State over the last three years, and even the Movida Verde tour operator, a pioneer in its marketing, has stopped promoting it. Despite infrastructure weaknesses, this important natural beauty, with teamwork and support from the State and communities, can enhance and improve the quality of the route by establishing family-run restaurants or tourist eateries. This would help residents generate income and promote sustainability by offering accommodation and food.

However, Uribe et al. (2024) emphasize that tourist attractions must have quality infrastructure to provide tourists with authentic experiences. This is why agroecological tourism, as Fernández (2024) points out, is a tourism modality that promotes natural spaces, the principles of sustainability, and respect for agroecosystems through a process of adapting natural resources for their use and enjoyment by tourists or visitors. Despite its weaknesses, the success of this destination depends on its planning, management, and investment in its tourism offering.

According to Varisco (2013), this type of offering presents tourist-friendly resources or attractions, which can be enhanced without the presence of accommodations or restaurants since the most important considerations are accessibility and natural or cultural beauty, which attract tourists, visitors, or hikers. Thus, Cuétara et al. (2022) indicate that nature tourism allows rural communities to experience their development. This means that, by taking advantage of the Las Grullas Waterfall and everything included in the aforementioned trail, progress is being made toward promoting and fostering the sustainability of the area and its surroundings.

In this regard, data indicate that in the last three years, tourist or visitor demand has declined due to a lack of investment by tour operators. In this case, Movida Verde made its main contribution by promoting the route in 2022, attracting approximately 300 visitors from the municipality of Barinas, considering domestic tourism to be the most important factor for tourism activity. According to Rodriguez (2025), this type of activity is carried out by a person within their country of residence as part of a tourist trip. This implied recognizing that not only traditional tourism can be considered a source of income but that agroecological tourism can offer this potential primarily because it combines mountain ecotourism, adventure trails, agricultural practices, and fauna viewing as its main tourist attractions.

Therefore, Fernández et al. (2024) emphasize that the potential of agroecological tourism lies in community participation, its offerings, as well as primary and secondary products in order to become a driver for sustainable development within a rural environment. For this reason, when analyzing and evaluating the strengths, weaknesses, threats, and opportunities, the route to Las Grullas Waterfall presented significant advantages compared to other sites.

Although the community was not closely linked to the activity, it was assessed by the author that they could be motivated to join this alternative tourism initiative through a training process, generation of sustainable ventures, and use of their resources, which coincides with what was proposed by García et al. (2022). This comprehensive approach could align supply and demand, as explored in the tourism reactivation studies carried out by Pita et al. (2024) and Melis (2024), which advocate a balance between the needs of the tourism market and local development.

Stage II. Inventory of Tourism Resources

According to the methodology developed by Fernández et al. (2025) for the development of agroecological tourism, the second phase of the tourism potential analysis was dedicated to a comprehensive inventory and evaluation of a territory's tourism resources. This process involved the detailed identification of the tourism offering, which encompasses natural, agricultural, and cultural attractions (Table 1). Additionally, table 2 provides a precise categorization of each resource, specifying its type and hierarchy, and includes a photographic record for improved visualization.

Table 2.
Inventory of Tourist Resources along the Las Grullas Waterfall Trail

Tourist Resources	Category	Type	Hierarchy
Agroecological coffee tourism trail.	Agroecological	Agricultural Production	I
Birdwatching, landscapes, and biodiversity observation.	Nature	Ecotourism	II
Adventure trail	Nature	Hiking	III
Las Grullas Waterfall	Nature	Ecotourism	III

Source: Own elaboration.

As can be seen, table 2 presents an inventory of four primary tourist resources along the Las Grullas Waterfall trail, classified by category, type, and hierarchy. This analysis highlighted the diversity of the tourist offering and its potential to attract different types of visitors. Furthermore, a sustainable tourist route, according to Benítez and Casanova (2025), seeks to balance long-term economic, social, and environmental benefits through strengthening local governance, implementing strategic partnerships, and capacity building. Thus, the route's redesign would continue to consolidate its position as a competitive and responsible option, aligned with global trends in conscious tourism and the preservation of local heritage.

In this case, the trail presents a variety of distinctive and unique elements, which will allow existing natural resources to be leveraged to enhance a new tourist offering for the surrounding communities. Furthermore, this contribution should benefit tourism operators such as Movida Verde, which, together with the State, could promote the development of tourism in the area (Figure 1).

Figure 1.
Start of the Las Grullas Waterfall Trail

Source: the author

In this context, the agroecological coffee tourism trail was established as a first-class agroecological resource, classified as a Hierarchy I. Furthermore, this resource would allow visitors to learn about the coffee planting, maintenance, harvesting, and processing processes, offering an immersive experience in agricultural practices, local culture, and ancestral knowledge. In this sense, sustainable tourism refers to the exploitation and use of natural resources that do not compromise the needs of future generations (Milanović et al., 2025). Furthermore, the agroecological trail showcases the diversity of mountain agroecosystems, significant for their variety of colors and natural beauty. Therefore, agroecological tourism allows for the integration of all the aforementioned elements into a sustainable tourism modality (Figure 2).

Similarly, figure 2 shows a natural environment with a great diversity of bird species, landscapes, and forests. Based on the criteria used, this was classified and categorized as a natural attraction, classified within the nature tourism, birdwatching, and mountain ecotourism categories, with a hierarchy level II. In this regard, Romero (2021) highlights that mountain destinations are constantly changing and transforming due to the loss of biodiversity and environmental damage caused by tourists or visitors. However, natural wealth provides the opportunity to immerse oneself in an authentic experience, promoting environmental education and awareness through a process of interpreting agrobiodiversity and local mountain fauna (Figure 3).

Figure 2.
Sendero Turístico Agroecológico de Café

Source: the author

Figure 3.
Ecotourism, birdwatching and landscaping tour

Source: the author.

Likewise, the Adventure Trail was identified as a Level III resource. This type of tourism is a high-mountain activity, which includes the Calderas River and large rocks. This canyon allows for sections of varying difficulty, comprised of hidden landscapes and panoramic views. It has become an attraction for those who practice dynamic hiking in a natural environment. According to Novara and Gil (2024), in these cases, the need for hiking planning and its potential for territorial development are highlighted (Figure 4).

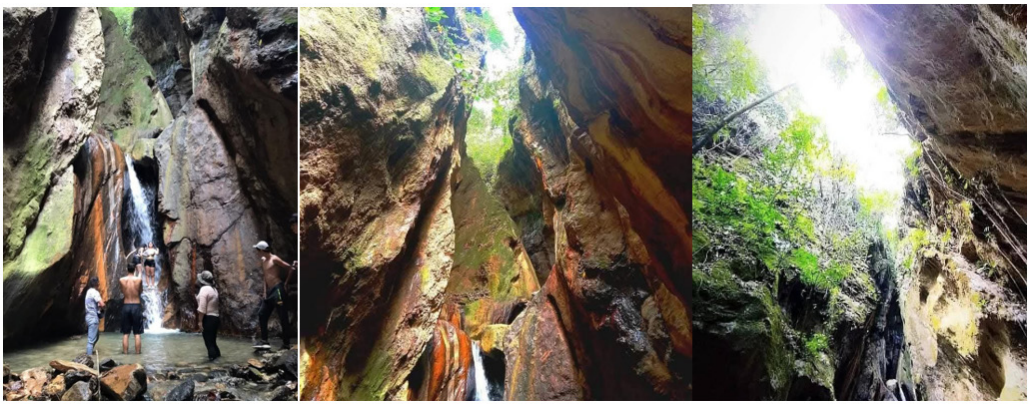
Figure 4.
Las Grullas Waterfall Adventure Trail

Source: the author.

Finally, Las Grullas Waterfall is a 90-meter-high natural attraction characterized by the silhouettes of two

cranes. This site has a level III hierarchy, drawing admiration from visitors for its beauty and homogeneous appeal, with colors ranging from forest green, sedimentary rocks, and dark and light browns (Figure5).

Figure 5.
Las Grullas Waterfall



Fuente: el autor.

Therefore, the tourism potential of the route to the Las Grullas Waterfall trail presented a nature tourism offer, represented by nature and agroecological categories, with levels between I and III, which reflected weaknesses in its infrastructure and integration of host communities. This diversification of the offer, as Naranjo (2022) suggests, is crucial to consolidate the route as a competitive and sustainable destination. Overall, the Las Grullas Waterfall trail route presents a tourism model that balances economic, social, and environmental benefits, promoting local development and heritage conservation. Collaboration between communities, tour operators, and the State is essential to guarantee the long-term sustainability of this destination (Vera & Pelegrín, 2023).

Stage III. Analysis of Potentialities

To analyze tourism potential, the territory was first characterized (Table 1) using the Varisco tourism system subsystem (2013). This procedure showed that the strength of Las Grullas Waterfall is its attractive natural environment (waterfalls, Andean landscapes, and varied fauna), which offers tourists and visitors experiences such as hiking, birdwatching, and agroecological tourism. This route received support from the private company Movida Verde, the leading agent marketing and promoting this destination. Furthermore, the community was interested in participating in its management and planning.

Therefore, the route to the cranes presents weaknesses, such as a lack of accommodations, restaurants, and basic services. This was conditioned by the limited participation of communities in agroecological tourism activities, considering that the limited marketing of this route has caused many tourists to stop taking advantage of this resource. Finally, it is vital to note that the main threat was the lack of support from state agencies in promoting tourism and the competition between other operators and host communities. As a result, a lack of adequate infrastructure and insecurity in the implementation of tourism policies were observed.

CONCLUSIONS

The La Grullas waterfall in Chiquimbuy, Barinas, offers a tool for planning, managing, and marketing a sustainable tourism destination, encompassing modalities such as agroecological tourism, ecotourism, and adventure tourism, thanks to its diverse natural beauty and benefits. Using the tourism subsystem analysis (Table 1) and the SWOT assessment, deficiencies in infrastructure, such as accommodations and food courts, were observed, resulting in low demand from visitors or hikers. Furthermore, the availability of five natural resources and one agroecological resource (Table 2) will provide essential strategies for infrastructure development and training the surrounding community to improve the living conditions of its inhabitants and efficiently exploit this recreational opportunity.

In summary, the analysis of agroecological tourism potential is positioned as a novel strategy to strengthen community sustainability through a paradigm shift from sun and beach tourism to alternative tourism, where the participation of youth, women, artisans, and farmers provides new opportunities for local development. Through tourism or territorial planning, the aim is to introduce a natural resource, such as the Grulla waterfall in Chiquimbuy,

Barinas, to the market to expand demand for trail-based tourism, allowing for the protection of the natural habitat for future generations.

REFERENCES

Águila, C. A. C. (2025). Finca Altos del Platanal en Cerro Plata de Cañazas de Veraguas: un Modelo de Agroturismo Pedagógico. Vinculación universidad y sociedad, 1(2), 156-176. https://doi.org/10.48204/3072-9629.6961

Benítez, J. P., y Casanova, L. E. (2025). Diseño de una ruta turística sostenible en Imantag, Ecuador: aprovechamiento de recursos culturales y naturales: Diseño de una ruta turística sostenible en Imantag, Ecuador: aprovechamiento de recursos culturales y naturales. HOLOPRAXIS. Revista de Ciencia, Tecnología e Innovación, 9(1), 120-139. https://doi.org/10.61154/holopraxis.v9i1.3874

Castillo, B. A. (2023). El saber local de la comunidad Boca de Anaro hacia un turismo agroecológico sustentable. Revista De Investigación Cañetana, 2(1), 7–14. https://doi.org/10.60091/ric.2023.v2n1.02

Cárdenas, S. K. (2022). Turismo rural de sendero como alternativa de desarrollo económico. Caso práctico [Monografía de pregrado, Universidad Nacional de Educación Enrique Guzmán y Valle]. Repositorio UNE. https://repositorio.une.edu.pe/handle/20.500.14039/10652

Cuétara, L. M., Sablón, N., Márquez, L. E., y Cartay, R. C. (2022). Producto turístico de naturaleza para el desarrollo de comunidades rurales en Manabí, Ecuador. Revista de Ciencias Sociales, 28(2), 287-299. https://dialnet.unirioja.es/servlet/articulo?codigo=8378017

Díaz, A. J. (2023). Potencialidad de actividades de turismo de aventura de La Parroquia Rural La Esmeralda del Cantón Montalvo [Examen Complexivo, Universidad Técnica de Babahoyo]. Repositorio Institucional UTB. http://dspace.utb.edu.ec/handle/49000/15536

Fernández, A. J., Lares Jimenez, N. O., Díaz de Montes de Oca, M. E., & Gutiérrez Mendoza, I. S. (2025). Andamio teórico del turismo agroecológico: Una propuesta Epistemológica, Ontológica y Metodológica en los Llanos Barines. METANOIA: REVISTA DE CIENCIA, TECNOLOGÍA E INNOVACIÓN, 11(1), 49–73. https://doi.org/10.61154/metanoia.v11i1.3775

Fernández, A. J., Jimenez, N. O. L., Mendoza, I. S. G., & Díaz, M. E. (2025). Modelo metodológico participativo como herramienta en el diseño de producto turístico agroecológico. Avances, 27(1), 1-12. https://dialnet.unirioja.es/servlet/articulo?codigo=9966716

Fernández, A. J., Cegarra, R., Lares, N. O., y Díaz, M. E. (2025). Turismo agroecológico: Estrategias de capacitación participativa en la comunidad rural del sector Curbatí, Barinas: Turismo agroecológico: Estrategias de capacitación participativa en la comunidad rural del sector Curbatí, Barinas. HOLOPRAXIS. Revista De Ciencia, Tecnología E Innovación, 9(1), 335–361. https://doi.org/10.61154/holopraxis.v9i1.3898

Fernández, A. J. (2025). Turismo agroecológico: un enfoque transdisciplinario para el desarrollo sostenible en zonas rurales. SATHIRI, 20(1), 134-150. https://doi.org/10.32645/13906925.1335

Fernández, A. J., Vizcaíno, V. V., y Lares, N. O. (2024). Potencialidades turísticas para el desarrollo del turismo agroecológico en el Barrio la Federación Estado Barinas-Venezuela. Revista Científica Multidisciplinaria Jetypeka, 4(2), 1–19. https://www.revistajetypeka.edu.py/index.php/revistas/article/view/122

Fernández, A. (2024). Oportunidades de empleo verde: ruta turística agroecológica Finca El Coporo, una alternativa desde los asentamientos rurales. Turismo Y Patrimonio, (22), 127-145. https://doi.org/10.24265/turpatrim.2024.n22.07

García, F., Servat, J., Huatuco, M., y Ochoa, F. (2022). Tourism diagnosis of the Huarmey district in Peru. Retos de la Dirección, 16(2), 249-273. Epub 30 de agosto de 2022. http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S2306-91552022000200249&lng=es&tlng=en.

García, A. (2024). Exploración del beneficio ambiental de las prácticas agroecológicas en comunidades campesinas. ECiencia, 1(10), 134-149. https://doi.org/10.71022/vz6fyb18

Herrera, J. J., Ulloa, N. S., y Piña, E. E. (2024). Caracterización de la tradición agrícola a través de una ruta en espacios rurales en el municipio de Lejanías. [Tesis de pregrado, Universidad Cooperativa de Colombia]. Repositorio Institucional Universidad Cooperativa de Colombia. https://hdl.handle.net/20.500.12494/58221

Macías, E. O., Manjarrez, N. N., y Ortega, V. A. (2024). Sustentabilidad y Desarrollo Cultural: Explorando el Potencial del Agroturismo en la Parroquia San Carlos, Ecuador. Estudios Y Perspectivas Revista Científica Y Académica, 4(4), 906–929. https://doi.org/10.61384/r.c.a.v4i4.713

Mc Carthy, N. G., Fernández, A. J., Díaz, M. E., y Lares, N. O. (2024). Rutas Turísticas Agroecológicas para el Desarrollo Rural Sustentable en Venezuela y Latinoamérica: Experiencia Significativa. Revista Crítica Con Ciencia, 2(4), 1–18. https://doi.org/10.62871/revistacriticaconciencia.v2i4.357

Melis, L. (2024). La cultura como elemento de promoción turística en las Islas Baleares. De la oferta preturística al turismo de masas. PASOS Revista De Turismo Y Patrimonio Cultural, 22(2), 371–382. https://doi.org/10.25145/j.pasos.2024.22.025

Milanović, A., Brankov, J., y Oliveira Moreira, C. (2025). Turismo sostenible y uso de recursos naturales: prácticas contemporáneas y desafíos de gestión. Sustainability, 17(6), 2383. https://doi.org/10.3390/su17062383

Morales, J. A. (2024). Una política pública para impulsar el turismo agroecológico. Hacia un cambio de paradigma. Reflexiones, desafíos y oportunidades. Wani, (81). https://doi.org/10.5377/wani.v1i81.19427

Mungaray, A., López, S. B., Moctezuma, P., & Arroyo Cossío, A. J. (2022). Potencialidades de una ruta transfronteriza de senderismo en Baja California, México. Estudios Fronterizos, 23. https://dialnet.unirioja.es/servlet/articulo?codigo=8530761

Murillo, G. I. (2023). Potencialidad de actividades de turismo de aventura en el Cantón Caluma [Examen Complexivo, Universidad Técnica de Babahoyo]. Repositorio Institucional UTB. http://dspace.utb.edu.ec/handle/49000/15542

Naranjo, L. P. (2022). Rediseño de la oferta de productos turísticos de naturaleza: Región Costa Sur Central de Cuba. Revista de ciencias sociales, 28(5), 376-389. https://dialnet.unirioja.es/servlet/articulo?codigo=8471698 [1]

Novara, M., & Gil, V. (2024). Análisis Espacial Y Planificación Territorial Del Senderismo En Ambientes Montanos Chubutenses. En Libro de resúmenes, 42. http://www.geografiayturismo.uns.edu.ar/uploads/contenidos/Libro_de_resy°menes_VIII_Jornadas_del_Programa_de_Posgrado_del_DGyT_COMPRIMIDO.pdf

Núñez, E., Guerra, E. E., y Vázquez, Y. (2024). Contribución de las antiguas técnicas agrícolas precolombinas al desarrollo del turismo rural sostenible. Revista Iberoamericana Ambiente & Sustentabilidad, 7(0). https://dialnet.unirioja.es/servlet/articulo?codigo=9890202

Paredes, M., Cáceres, B. M., y Fernández, A. J. (2023). Turismo agroecológico como modelo sostenible en las comunidades. Revista De Investigación Cañetana, 2(1), 15–25. https://doi.org/10.60091/ric.2023.v2n1.03

Pita, A.; Pérez, N.; Morales, I.; Aguila, C.; Plúa, N.; Conform, G.; Plú, P.; Pi, W.; Pin, F. (2024). Oferta y demanda como medio de reactivación turística en la provincia de Manabí: ISBN: 978-9942-846-70-9. EDITORIAL INTERNACIONAL RUNAIKI, 1-223. https://www.runaiki.es/index.php/runaiki/article/view/110

Rodriguez, J. L. (2025). La crisis sistémica del turismo en el Caribe: Desafíos para el desarrollo del turismo en Cuba. REVISTA INTERNACIONAL DE TURISMO, EMPRESA Y TERRITORIO, 8(2), 143–159. https://doi.org/10.21071/riturem.v8i2.17025

Romero, J. (2021). El desarrollo del ecoturismo en los destinos de montaña en España (2000-2019): análisis, evaluación y prospectiva (Tesis doctoral, Universitat de Barcelona). https://hdl.handle.net/2445/180043

Sánchez, E. (2025). El Maguey Mexiquense: Patrimonio Biocultural y Sustentabilidad en el aprovechamiento de una Planta Ancestral y Bien Común. Revista Veritas De Difusão Científica, 5(3), 1982–2011. https://doi.org/10.61616/rvdc.v5i3.327.

Sánchez, G. N., Salas, E. M., Esparza, J. F., & Hernández, A. D. (2024). Turismo Sostenible en Cumandá: Integración de Principios Ecológicos en el Diseño de Rutas Turísticas. Polo del Conocimiento, 9(10). https://doi.org/10.23857/pc.v9i10.8169

Uribe, B. A., Frank, P. C., Gutiérrez, B., & Eblin, N. (2024). Planeación turística: el caso del municipio de Santa María Jacatepec, Oaxaca, México. Revista de Estudios Regionales, (130), 257-291. https://www.proquest.com/openview/78f2d806240bc961e93a9b685466c0a4/1?cbl=2028815&pq-origsite=gscholar

Varisco, C. (2013). Sistema turístico. Subsistemas, dimensiones y conceptos transdisciplinarios. En G. Benseny (Coord.), Gestores costeros. De la teoría a la práctica: una aplicación en áreas litorales (pp. 63-78). Universidad Nacional de Mar del Plata. http://nulan.mdp.edu.ar/id/eprint/2208

Vélez, A., Vergara, D., Pérez, J. (2024). Una propuesta de modelo de gestión para el desarrollo del turismo agroecológico. Revista Internacional de Turismo, Empresa y Territorio. RITUREM, 8(1), 47-70. https://dialnet.unirioja.es/servlet/articulo?codigo=9656690

Vera, L. V., y Pelegrín, N. (2023). Diversificación de la oferta turística de naturaleza: teleférico en el Cerro Jaboncillo, Picoazá, Portoviejo. ECA Sinergia, 14(2), 21-39. https://doi.org/10.33936/ecasinergia.v14i2.5601

FUNDING
The author did not receive any funding for this research.

DECLARATION OF CONFLICT OF INTEREST
The author declares no conflict of interest.

AUTHORSHIP CONTRIBUTION
Conceptualization: Alfonso José Fernández.
Data curation: Alfonso José Fernández.
Formal analysis: Alfonso José Fernández.
Research: Alfonso José Fernández.
Methodology: Alfonso José Fernández.
Project administration: Alfonso José Fernández.
Software: Alfonso José Fernández.
Supervision: Alfonso José Fernández.
Validation: Alfonso José Fernández.
Visualization: Alfonso José Fernández.
Writing – original draft: Alfonso José Fernández.
Writing – review and editing: Alfonso José Fernández.