

Assessment of Nature-Based Tourism in Sta. Cruz, Zambales: A Mixed-Methods Study

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ABSTRACT

This study assessed the status of nature-based tourism in Sta. Cruz, Zambales through a convergent mixed-methods approach that combined quantitative surveys and qualitative interviews. Sixty respondents, comprising local visitors ($n = 25$), community residents ($n = 25$), and local government unit (LGU) employees ($n = 10$), participated in the survey. In addition, four key informant interviews were conducted with tourism officers, resort owners, and local community leaders to enrich the interpretation of results. Quantitative data were analyzed using descriptive statistics and ANOVA, while qualitative responses were thematically analyzed. Findings revealed that nature-based tourism activities were rated “Excellent” ($M = 4.53$), highlighting the attractiveness of both land-based ($M = 4.43$) and water-based ($M = 4.62$) activities. No significant differences ($p > .05$) were observed among respondent groups. However, several least-encountered issues emerged, including limited signage, safety equipment, and accessibility. Interview insights underscored the need for consistent LGU monitoring, environmental education, and infrastructure improvement to sustain eco-tourism practices. The study concludes that Sta. Cruz has high tourism potential but requires enhanced coordination between stakeholders for long-term ecological balance.

Keywords: Nature-based tourism, mixed-methods, Sta. Cruz Zambales, Philippines, sustainable tourism, ecotourism

INTRODUCTION

Nature-based tourism represents a sustainable alternative to mass tourism, focusing on outdoor recreation and environmental conservation. In the Philippine context, destinations such as Sta. Cruz, Zambales, with its pristine beaches, caves, and inland parks, exemplify the potential of community-based eco-tourism to promote both livelihood and stewardship. However, challenges such as inadequate infrastructure, environmental risks, and uneven community involvement persist. This study, therefore, assessed nature-based tourism in Sta. Cruz, Zambales to determine its effectiveness, challenges, and implications for sustainable management.

THEORETICAL FRAMEWORK AND SUSTAINABLE DEVELOPMENT GOALS ALIGNMENT

Theoretical Framework

This study is grounded on the Sustainable Tourism Development Theory (Butler, 1999) and the Triple Bottom Line (TBL) Framework (Elkington, 1998). Butler’s Sustainable Tourism Development Theory posits that tourism should evolve in a way that maintains equilibrium between environmental preservation, socio-cultural integrity, and economic viability. In the context of Sta. Cruz, Zambales, this theory provides a lens through which nature-based tourism can be managed sustainably — ensuring that tourism growth does not lead to ecological degradation or cultural erosion.

Complementing this, Elkington’s TBL Framework emphasizes the integration of three pillars of sustainability — people, planet, and profit. Applying this model, the study examines how nature-based tourism supports local livelihoods (people), conserves natural resources (planet), and stimulates local enterprise (profit).

Furthermore, the study reflects principles from the Community-Based Tourism (CBT) Model (Murphy, 1985), which underscores the importance of local participation in tourism planning and management. The engagement of community residents and LGU employees demonstrates a shared responsibility in maintaining environmental and cultural heritage.

Alignment with the United Nations Sustainable Development Goals (SDGs)

- Nature-based tourism directly contributes to several UN Sustainable Development Goals, notably:
- SDG 8: Decent Work and Economic Growth — by creating green employment opportunities for local residents and fostering entrepreneurship in eco-tourism enterprises.
- SDG 11: Sustainable Cities and Communities — through the promotion of community-driven tourism practices that balance urban development with ecological stewardship.
- SDG 13: Climate Action — by encouraging responsible tourism behaviors, climate adaptation, and environmental education among tourists and residents.
- SDG 15: Life on Land — by supporting biodiversity conservation and sustainable land use in key natural attractions such as Hermana Menor and Daang Kalikasan.

Through the integration of these frameworks, the study underscores that nature-based tourism in Sta. Cruz, Zambales, can serve as a strategic model for achieving both local development and global sustainability goals.

METHODOLOGY

Research Design

A convergent mixed-methods design was used. Quantitative data were collected through structured surveys, while qualitative insights were derived from semi-structured interviews. Both datasets were analyzed independently and integrated to validate and deepen the findings.

Table 1 A purposive sampling technique selected 60 participants:

Respondent Group	Frequency (f)	Percentage (%)
Local Visitors	25	41.67
Community Residents	25	41.67
LGU Employees	10	16.67
Total	60	100.00

Qualitative data were gathered from four key informants:

1. Municipal Tourism Officer
2. Barangay Captain of Bolitoc
3. Owner of a local resort
4. Representative of the Municipal Environment Office

Research Instruments

A survey questionnaire was used, comprising:

Part I: Respondent Profile

Part II: Assessment of Nature-Based Tourism Activities (land- and water-based)

Part III: Problems Encountered

A 5-point Likert scale assessed levels of agreement and frequency. Interviews were conducted face-to-face and recorded with consent, then transcribed and coded for thematic analysis.

Data Analysis

- Quantitative: Weighted mean, percentage, and ANOVA ($\alpha = 0.05$)
- Qualitative: Thematic analysis to identify recurring patterns on management, community participation, and sustainability.

RESULTS AND DISCUSSION

Table 2 Assessment of Nature-Based Tourism Activities by Respondent Group

Criteria	Local Visitors (M)	Community Residents (M)	LGU Employees (M)	Composite Mean	Interpretation
Land-Based Activities	4.31	4.26	4.73	4.43	Excellent
Water-Based Activities	4.50	4.56	4.80	4.62	Excellent
Overall Mean	4.41	4.41	4.77	4.53	Excellent

Overall, respondents rated nature-based tourism as Excellent ($M = 4.53$), with both land- and water-based activities scoring highly. Activities such as hiking at Daang Kalikasan, cave exploration in Sagrada Familia, and island hopping at Hermana Menor contributed to the high ratings.

Qualitative findings emphasized tourists' appreciation for natural serenity but raised concerns about limited amenities. One interviewee stated: "Sta. Cruz has amazing natural spots, but maintenance and access roads are inconsistent, especially during rainy months." (Resort Owner, Interview #2)

Differences Among Respondent Groups

ANOVA revealed no significant differences in assessments across respondent groups for both land- and water-based activities ($F = 0.06495$, $p > .05$; $F = 0.32926$, $p > .05$).

This indicates shared perceptions of the positive state of tourism offerings, consistent with the collaborative community engagement observed

Table 3 Problems Encountered

Criteria	Local Visitors M	Residents M	LGU M	Composite M
Land-Based Activities	1.99	2.40	2.12	2.17
Water-Based Activities	2.52	2.44	2.18	2.38
Grand Mean	2.26	2.42	2.15	2.28

Frequent issues involved incomplete infrastructure, inadequate safety gear, and weak waste management systems. Upon deeper analysis, these issues stem from limited budget allocation for tourism infrastructure, seasonal tourist influxes that strain local resources, and lack of technical expertise in environmental planning. For instance, the unpaved access roads to Daang Kalikasan often become impassable during monsoon months,

hindering both accessibility and emergency response. Similarly, the absence of standardized safety protocols and waste segregation facilities indicates a gap in interdepartmental coordination between the Municipal Tourism Office and the Municipal Environment and Natural Resources Office (MENRO).

Addressing these underlying causes requires a multi-stakeholder approach that integrates local government planning, private sector investment, and environmental engineering consultation, consistent with Fennell's (2021) ecotourism management principles and Aransyah's (2025) sustainability-oriented innovations in tourism.

Summary of Problems Encountered

Frequent issues involved incomplete infrastructure, inadequate safety gear, and waste management. Qualitative interviews revealed recurring concerns about sustainable practices, including the need for regular environmental education and community training.

Qualitative interviews revealed recurring concerns about sustainable practices:

"Tourists enjoy the beaches, but waste disposal remains a challenge, especially during holidays." (Municipal Environment Officer, Interview #4)

"We need more local training on eco-guiding so residents can take active part in promoting responsible tourism." (Barangay Captain, Interview #3)

These narratives reinforced the need for environmental education and community capacity-building to maintain the area's ecological integrity.

CONCLUSION

Nature-based tourism in Sta. Cruz, Zambales exhibits high potential as a sustainable destination; however, sustaining this trajectory demands addressing systemic constraints in infrastructure, governance, and inclusivity. Beyond improving physical structures, sustainability requires policy coherence, stakeholder accountability, and community co-ownership of tourism development. Thus, the integration of participatory governance and green infrastructure can transform Sta. Cruz into a model of regenerative tourism, aligned with SDG 11 (Sustainable Communities) and SDG 13 (Climate Action).

RECOMMENDATIONS

Based on the findings and conclusions, the following recommendations are proposed to strengthen nature-based tourism management in Sta. Cruz, Zambales:

Infrastructure Improvement.

The local government should prioritize the completion of access roads, installation of handrails, and maintenance of trail paths to ensure tourist safety and accessibility, especially in sites such as Daang Kalikasan and Sagrada Familia Cave.

Environmental Management and Waste Control.

Implement stricter waste disposal regulations and schedule regular coastal and inland clean-up drives. Installing visible garbage bins and educational signage in picnic and beach areas can help maintain cleanliness and promote ecological awareness.

Safety and Facility Enhancement.

Provide basic safety equipment such as life vests, first aid kits, warning signages, and telescopes or binoculars in tourism sites to enhance visitor experience and safety.

Tour Guide and Local Training Programs.

Conduct capacity-building seminars for local tour guides and community members to develop knowledge in eco-guiding, heritage interpretation, and customer service aligned with sustainable tourism principles.

Community Participation and Feedback Mechanism.

Establish a feedback hotline or digital platform where visitors can report concerns or suggestions. This will allow the LGU to respond quickly and improve service quality.

Marketing and Partnership Development.

Promote Sta. Cruz as a model of sustainable nature-based tourism through collaboration with regional tourism boards, educational institutions, and private resorts.

Sustainability Policy Formulation.

The Municipal Tourism Office may develop a local ordinance that ensures the protection of natural assets, regulates visitor capacity, and encourages responsible tourism practices.

Formation of Community Tourism Councils – Multi-sectoral councils can ensure equal representation and decision-making power across local groups (UNWTO, 2024).

Women and Youth Empowerment Workshops – Providing specialized training for women and youth in guiding, handicraft production, and eco-hosting can create alternative livelihoods.

Revenue-Sharing Schemes – Establishing transparent mechanisms where a portion of tourism income supports local projects (e.g., waste management or education).

Inclusive Digital Platforms – Encouraging the use of mobile-based reporting and community feedback tools (Nautiyal et al., 2023) to widen participation and accountability.

Local-Led Conservation Programs – Integrating environmental education in barangay activities, where community residents become active stewards of tourism sites.

These approaches align with the Community-Based Tourism Model (Murphy, 1985) and current regenerative tourism practices (Lalisan, 2024), emphasizing inclusive growth and social equity.

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