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## Residents' Perceptions of Use on Community Interface Areas at Protected Areas' Boundaries: A Comparison Between Users and Non-users

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lasanti@clemson.edu

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RESIDENTS' PERCEPTIONS OF USE ON COMMUNITY INTERFACE AREAS AT  
PROTECTED AREAS' BOUNDARIES: A COMPARISON BETWEEN USERS AND NON-  
USERS

PERCEPCIONES DE LOS RESIDENTES HACIA EL USO DE UN ÁREA DE INTERFAZ  
COMUNITARIA EN LOS LÍMITES DE ÁREAS PROTEGIDAS: UNA COMPARACIÓN  
ENTRE USUARIOS Y NO USUARIOS

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A Thesis  
Presented to  
the Graduate School of  
Clemson University

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In Partial Fulfillment  
of the Requirements for the Degree  
Master of Science  
Parks, Recreation, and Tourism Management

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by  
Louis A. Santiago Brevan  
May 2024

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Accepted by:  
Jeffrey C. Hallo, Committee Chair  
Kennan Adams  
Robert Powell

## EXECUTIVE SUMMARY

Managing Protected Area (PA) boundaries is a challenging and complex process. Past human interactions caused detrimental consequences to the environment that led to the exclusion of community participation from decision-making. However, due to their ongoing interactions with natural resources and familiarity with the surrounding landscape, adjacent communities near PAs are increasingly seen as playing a crucial role in achieving conservation and sustainability goals. Consequently, PA managers have shifted from the traditional top-down approach to a more collaborative and participatory management model that integrates the needs and perspectives of local communities. El Yunque National Forest (EYNF) in Puerto Rico, the only tropical rainforest within the USDA Forest Service, is an example of the gradual worldwide shift in PA management by adopting a community-based resource management model. Its current management plan developed a new management zone, known as the Community Interface Resource Management Area (CIRMA), located in the administrative forest boundaries to foster shared stewardship based on the community's social and conservation interests. This community interface area is intended to provide new recreational opportunities adjacent to neighboring communities and reduce visitation pressure (e.g., crowding-related issues) on existing recreational sites and sensitive areas.

This study assessed the perceived constraints of visitation, the attitudes toward tourism development, and the level of involvement in decision-making among community members residing near a community interface area on a PA's boundaries. Specifically, the study examined differences between those who visit and do not visit the west side of CIRMA at EYNF. A questionnaire was used to collect data within EYNF's surrounding communities during the peak summer use season of June through mid-August 2023 (n = 129). Overall, most analyses found no

differences between users and non-users of the protected national forest area nearby communities, except in the perceived visitation constraints.

The most common constraint found in this study (i.e., the poor state of the road and facilities) was related to the structural domain. These findings align with the prevailing trends observed in previous studies on visitation constraints in PA. These constraints reflect broader challenges faced by the region, including economic hardships, natural disasters, and limitations in governmental capacities. Research findings indicated no significant differences between users and non-users in their attitudes toward tourism development and their level of involvement regarding CIRMA's planning and management. Both groups indicated strong support for further tourism development. These findings align with previous research which indicates that PAs' surrounding communities perceive tourism as a development alternative that improves the way of living in areas where low levels of tourism activity and low economic development occur. Nearly half of the respondents want to be partially involved with CIRMA's decision-making processes. Based on their preferences toward the type of involvement, community members are seeking direct interaction with EYNF staff, following a top-down approach, within their community through meetings and educational, volunteer, citizen science, or any other projects led by PA's managers. The results of this study highlight the importance of integrating PAs with their surrounding communities by understanding the perceived constraints of visitation, the attitudes toward tourism development, and the level of involvement in decision-making among community members residing near a community interface area on a PA's boundaries.

## RESUMEN EJECUTIVO

Gestionar los límites administrativos de las Áreas Protegidas (AP) es un proceso desafiante y complejo. En el pasado, las interacciones humanas con su entorno natural provocaron secuelas perjudiciales en el medio ambiente que llevaron a excluir comunidades en la toma de decisiones en AP. No obstante, en la actualidad se considera que las comunidades adyacentes a las AP desempeñan un rol crucial en el logro de los objetivos de conservación y sostenibilidad, debido a sus continuas interacciones con los recursos naturales y su familiaridad con el paisaje circundante. En consecuencia, las AP se han movido del tradicional enfoque de gestión centralizado, donde la toma de decisiones está guiada por los funcionarios de la agencia, a uno más colaborativo y participativo, el cual integra las necesidades y perspectivas de las comunidades locales. El Bosque Nacional El Yunque (EYNF por sus siglas en inglés) en Puerto Rico, el único bosque tropical dentro del Servicio Forestal del USDA, es un ejemplo del cambio gradual y global en la gestión de AP al adoptar un modelo de gestión basado en la comunidad. Su nuevo enfoque desarrolló una zona de gestión comunitaria, conocida como Área de Interfase para el Manejo de Recursos de Comunitarios (CIRMA por sus siglas en inglés), ubicada en los límites forestales administrativos para fomentar la custodia compartida basada en los intereses sociales y de conservación de los miembros de la comunidad. Se espera que esta área de interfaz comunitaria proporcione nuevas oportunidades recreativas adyacentes a las comunidades vecinas y reduzca los problemas asociados a la visitación en las principales áreas recreativas existentes y en áreas ecológicamente susceptibles al uso recreativo.

Este estudio evaluó las restricciones percibidas de visitación, las actitudes hacia el desarrollo turístico y el nivel de participación en la toma de decisiones entre los miembros de las comunidades que residen cerca de un área de interfaz comunitaria en los límites de un AP.

Específicamente, el estudio examinó las diferencias entre aquellos que visitan y los que no visitan las áreas naturales ubicadas a lo largo de la carretera 186 en el lado oeste del EYNF. Se utilizó un cuestionario para recopilar datos en las comunidades durante la temporada de mayor visitación, desde principios de junio hasta mediados de agosto de 2023 (n = 129).

La mayoría de los análisis no encontraron diferencias significativas entre usuarios y no usuarios, excepto en las restricciones percibidas de visitación. El factor más prominente que limita las comunidades visitar el CIRMA está asociado a las restricciones estructurales, específicamente el mal estado de la carretera y las instalaciones. Estos factores limitantes están relacionados a las dificultades económicas, los desastres naturales y las limitaciones en las capacidades gubernamentales del país. Por otro lado, los hallazgos de la investigación indicaron que no existen diferencias significativas entre usuarios y no usuarios en sus actitudes hacia el desarrollo turístico y su nivel de participación en la toma de decisiones del CIRMA. Ambos grupos manifestaron un sólido respaldo al desarrollo turístico al percibir el turismo como una alternativa viable para el crecimiento económico, y como un medio para mejorar la infraestructura vial e instalaciones del CIRMA. Casi la mitad de los encuestados desean participar parcialmente en los procesos de toma de decisiones mediante la participación en reuniones dentro de su comunidad y en programas que permitan vincular las comunidades con los administradores de EYNF.

Los hallazgos de este estudio destacan la importancia de integrar las AP con sus comunidades vecinas, al comprender sus percepciones, actitudes y grado de participación deseado en la gestión de espacios comunitarios situados en límites forestales administrativos. Este enfoque es crucial para garantizar una toma de decisiones fundamentada en los intereses y

necesidades de la población local, y, en última instancia, contribuir al logro de los objetivos de conservación y sostenibilidad a largo plazo.

## DEDICATION

To the forest and to all those who care for it.



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ON THE EDGE: UNDERSTANDING COMMUNITY PERCEPTIONS OF USE ON  
PROTECTED AREAS BOUNDARIES

Louis A. Santiago Brevan<sup>1</sup>, Jeffrey C. Hallo<sup>1</sup>, Robert Powell<sup>1</sup> and Keenan Adams<sup>2</sup>

<sup>1</sup>Department of Parks, Recreation, and Tourism Management, Clemson University

<sup>2</sup>Forest Service, United States Department of Agriculture

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Louis A. Santiago Brevan<sup>1</sup>, Jeffrey C. Hallo<sup>1</sup>, Robert Powell<sup>1</sup> y Keenan Adams<sup>2</sup>

<sup>1</sup>Departamento de Manejo de Parques, Recreación y Turismo, Universidad de Clemson

<sup>2</sup>Servicio Forestal, Departamento de Agricultura de los Estados Unidos

## ABSTRACT

Over the past fifty years, Protected Area (PA) management has gradually transitioned from the traditional top-down approach toward a more collaborative and participatory management model, which integrates the needs and perspectives of local communities. This quantitative study used a questionnaire to assess the perceived constraints of visitation, the attitudes toward tourism development, and the level of involvement in decision-making among community members residing near a community interface area on a PA's boundaries. Structural constraints were the most prominent barrier to visiting (i.e., the poor state of the road and facilities). Residents indicated strong support towards tourism development and nearly half of the respondents want to be partially involved in decision-making. The results of this study highlight the importance of understanding the community's perception, attitudes, and desired level of involvement in decision-making regarding PA management that achieves long-term sustainable goals.

**Keywords:** Resource management, tourism development, constraints, visitation, decision-making, boundaries, community.

## RESUMEN

Durante los últimos cincuenta años, a nivel mundial las Áreas Protegidas (AP) se han movido del tradicional enfoque de gestión centralizado, donde la toma de decisiones está guiada por los funcionarios de la agencia, a uno más colaborativo y participativo, el cual integra las necesidades y perspectivas de las comunidades locales. Este estudio cuantitativo utilizó un cuestionario para evaluar las restricciones percibidas de visitación, las actitudes hacia el desarrollo turístico y el nivel de participación en la toma de decisiones entre los residentes



aledaños a un área gestión y de uso comunitario situado en los límites forestales del Bosque Nacional El Yunque, Puerto Rico. Según los resultados de este estudio, el factor más prominente que limita la visitación a este espacio comunitario está asociado a las restricciones estructurales, específicamente el mal estado de la carretera y las instalaciones. Los residentes indicaron un fuerte apoyo hacia el desarrollo turístico y casi la mitad de los encuestados desean participar parcialmente en la planificación y el manejo del área destinada para el uso y gestión de las comunidades. Los hallazgos de este estudio destacan la importancia de integrar las AP con sus comunidades vecinas para garantizar una toma de decisiones fundamentada en los intereses y necesidades de la población local, para así lograr los objetivos de conservación y sostenibilidad a largo plazo.

## INTRODUCTION

Managing Protected Areas (PAs) is a challenging and complex process. Past human interactions with the natural environment, predominantly characterized by resource consumption and exploitation, had detrimental consequences on the ecosystem's functionality (Keniger et al. 2013, Ripl & Wolter, 2000). Anthropogenic alterations to landscapes and seascapes, such as habitat loss, fragmentation, and degradation, disrupt fundamental natural cycles, (e.g., nutrient flow and exchange), resulting in adverse effects on ecosystem services upon which all forms of life depend (Hammit et al., 2015). These outcomes led to strict conservation measures where communities adjacent to protected areas were marginalized from decision-making (Maldonado Ibarra et al., 2020). Over time, the resulting conflicts between the ecological-oriented goals and local livelihoods have driven PA managers to move from the traditional top-down approach toward a more collaborative and participatory management model, which integrates the needs and perspectives of local communities (Dovers et al., 2015; Geoghegan & Renard, 2002). This global shift in PA management has increasingly recognized the crucial role of communities adjacent to protected lands in contributing to the achievement of conservation and sustainability goals (Buta et al., 2014).

In the preceding five decades, different management approaches have been developed aimed at balancing conservation and sustainable development in PAs. Based on a comprehensive literature review, Du and colleagues (2015) identified 23 management models that focus on integrating PAs with their surroundings. These models have played a significant role in addressing the challenges faced by PAs, particularly those originating from activities in surrounding areas (Buta et al., 2014). Incorporating community input has the potential to enhance the effectiveness of management practices, drawing upon their historical uses of resources, local knowledge, and

intimate familiarity with the surrounding landscape (Buta et al., 2014). Consequently, many PAs worldwide are transitioning towards models that incorporate local perspectives. El Yunque National Forest (EYNF) in Puerto Rico, the only tropical rainforest within the USDA Forest Service, has adopted a community-based resource management model. Its current management plan developed a new zone, known as the Community Interface Resource Management Area (CIRMA), located in the administrative forest boundaries with the intention of fostering shared stewardship based on the community's social and conservation interests. To date, community attitudes and perceptions towards use in this interface area are unknown and are needed to inform the future direction of the forest and its management.

Effective planning and management actions in community interface areas are profoundly influenced by the attitudes and perceptions of local residents (Dimitrakopoulos et al, 2010; Liu et al., 2010). Perception plays a significant role in shaping people's experiences and use of natural settings (Romagosa, 2018). How people perceive a natural setting, particularly those that provide recreational opportunities, will influence how they relate to and interact with it. Hence, understanding residents' perceptions regarding recreational site development, attitudes toward other visitors (e.g., non-local users), and the factors limiting their visit holds particular importance, especially in recently community-designated sites, as it can influence community behaviors, quality of life, and potential support in the decision-making process. Consequently, given that community members may harbor diverse perceptions and motivations for using – or not using – a designated community interface area, differences between users and non-users must be clearly identified and addressed to avoid future conflicts (Dovers et al., 2015). For instance, previous research in other locations has identified significant differences between users and non-users in

terms of ethnicity, level of income and education, awareness of park units, and intrapersonal constraints (Xiao et al., 2022). However, notwithstanding these findings, PA management has given little attention to understanding the perceptions of users and non-users on community recreational sites.

The relationship between PAs and nearby communities significantly influences people's perceptions, and thus, their attitudes toward PA settings (Belkayali et al, 2016). The values inherent in protected areas attract a significant number of visitors (Newsome et al., 2013), rendering them important tourist destinations worthy of study. Previous research found that the level of tourism development and the proximity of tourism activity to local neighboring communities is an important factor influencing attitudes (Allen et al., 1993). Specifically, it has been found that in rural communities with low economic activity and low tourism development, community members tend to exhibit favorable attitudes toward development in their region (Allen et al., 1993). As the development of CIRMA is linked with community-based resource management, aiming for shared stewardship, host communities can play a fundamental role in tourism initiatives. More research is needed since there are insufficient studies on local residents' attitudes toward future tourism development (Halim et al., 2022).

Therefore, this study assessed the perceived constraints of visitation, the attitudes toward tourism development, and the level of involvement in decision-making among community members residing near a community interface area on a PA's boundaries. Acknowledging the existence of different visitation groups, the study compares users and non-users across each of the aforementioned research areas. Specifically, this study endeavors to address the following questions:

1. How do community members differ in their constraints for visiting a community interface area at EYNF?
2. How do community members who either use or do not use a community interface area differ in their attitudes toward tourism development?
3. How much do community members want to participate in both planning and management of a designated community interface area? Does this differ based on users and non-users of this area?
4. Do desires for involvement in both planning and management match current involvement? If not, what opportunities for involvement are needed?

## LITERATURE REVIEW

### **Defining community**

Community is an elusive term and defining it is often problematic (Wondirad & Ewnetu, 2019). However, different scholars have recognized three key elements present across disciplines, which are: geographic place, social interaction, and common ties. Altogether, a community can be defined as “people living within a specific area, sharing common ties, and interacting with one another” (Lyon & Driskell, 2011, p. 5). Although this definition could provide consensus among disciplines, some authors have argued that the concept of community goes far beyond a geographical space. Nevertheless, rural communities, such as the ones related to CIRMA, are indeed delimited and socially shaped by their surroundings, which makes them dependent on their nearby human and natural resources for their subsistence or development (Mihai & Iatu, 2020). Communities characterized in this manner are delineated within a more specific concept known as a place-based community. Since EYNF’s surrounding communities

are closely related to CIMRA's natural resources, the term place-based community was chosen for defining these communities. Particularly, we adopt Liberato and colleagues' (2011) definition, which defines community as "specific groups and networks of groups organizing around specific issues" within a shared territory. We find this definition suitable for our study as the communities are intricately linked to CIRMA's decision-making processes and are geographically bound to EYNF's surrounding landscape.

### **Defining protected areas and their boundaries**

PAs constitute one of the main conservation mechanisms to safeguard and maintain the ecosystem processes on which all life forms depend (Dudley, 2008). At present, different governance and management types of PAs worldwide have adopted the definition given by the International Union for Conservation of Nature (IUCN) for these designated sites. According to the IUCN, PAs are "a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values" (Dudley, 2008, p. 3). Overall, their purpose lies in conserving "nature by eliminating, minimizing, or reducing human pressures and threats operating within their boundaries" (Schulze et al., 2008, p. 2). In this sense, the meaning of *boundary* becomes relevant in the conceptualization and future directions of a protected area. However, because the term boundary could be understood differently by many people, a well-defined description is needed (Fall, 2003).

The term boundary can be constituted in two ways. For instance, a boundary can be represented as ecological features (e.g., patches of different habitats) in a landscape (ecological boundaries) or as a demarcation of an administrative limit in a geographic space (socio-political

boundaries) (Dallimer & Strang, 2015). In the latter, the terms boundaries, borders, frontiers, and limits have been used interchangeably to denote a line, visible or non-visible, that represents the division between two entities (Fall, 2003). This representation is socially constructed and intended to determine who owns and manages a space or territory (Dallimer & Strang, 2015). Nevertheless, PA managers should be aware that “protected areas are embedded within ecosystems that extend beyond their administrative boundaries” (DeFries et al., 2010, p. 1). Conversely, ecological boundaries are “areas of transition, contact or separation between contrasting elements of a mosaic, which are functionally connected by fluxes of organisms, material, energy, and information” (Cadenasso et al., 2003, p. 2). Therefore, given that PAs are influenced by the dynamic nature of their surrounding communities, the term boundary must be conceptualized in its ecological and socio-political context. Consequently, in this text, the PA’s boundary is referred to as a spatially defined area demarcated by administrative limits subject to the dynamic synergy between ecological and social systems.

### **Negative impacts on protected areas boundaries**

PAs borders receive substantial pressure when human activities cross their boundaries (Hansen & DeFries, 2007). This cross-boundary dynamism may compromise the integrity of natural resources through the direct or indirect effects of human interactions (Hansen & DeFries, 2007). Throughout history, human activities that have caused significant land-use changes have been livestock farming, poaching, mining, and logging (Worboys et al., 2015). However, today recreational and tourism activities are among the main pressures or stressors factors to terrestrial protected areas in developed countries despite the assumption that these activities are largely non-consumptive and non-extractive (Schulze et al., 2008). The severity of recreational impacts depends primarily on the type of activity and the context in which it occurs (Hammit et al.,

2015; Newsome et al., 2013). PA managers must have a high level of understanding of recreational and tourism impacts since many occur rapidly at initial or low levels of use and can accumulate over time, thus compromising ecological, social, and managerial values (Farrel & Marion, 2002).

### **Positive impacts on protected areas boundaries**

Outdoor recreational activities can also have positive impacts. One way to understand the positive impacts of outdoor activities is by gaining knowledge about the quality of ecosystem services. This concept refers to all the benefits that humans obtain from their natural environment derived from healthy ecosystems (Reid et al., 2005). In the past, this relationship was poorly understood and was only valued after ecosystems were degraded or lost (Janishevski et al., 2008). According to Manning and colleagues (2022), “recreation-related ecosystem services are identified as a unique line of cultural ecosystem services in that they require direct interaction between people and places in forms of recreation activities” (p. 179). The interaction between peoples’ activities and places contributes to obtaining the following benefits: psychological benefits (e.g., increased self-esteem), cognitive benefits (e.g., reduced mental fatigue), physiological benefits (e.g., stress reduction), social benefits (e.g., support and cohesion) spiritual benefits (e.g., increased inspiration), economic benefits (e.g., increasing property value) and environmental benefits (e.g., support for conservation) (Holland et al., 2018; Keniger et al., 2013; Stodolska et al., 2011). The perceived benefits can be substantially important to PAs since their attainment can foster an “attachment to place that inspires place-protecting” (Larson et al., 2017, p. 4).



Place protection can be expressed in different ways. One way could be as a form of pro-environmental behavior that is understood as individual or group actions that improve the quality of the environment and promote the responsible use of natural resources (Larson et al., 2018). Furthermore, recreational activities could promote place protection by fostering a sense of environmental stewardship, which led to the awakening of people's interest in actively participating in resource management initiatives (e.g., community interface decision-making process) that help to improve, restore, or maintain the quality of visitor and community-related experience and resource protection (Miller et al., 2020). PA managers should carefully understand the perception and attitudes toward recreational settings and the potentially emerging place-protecting behavior to address issues in protected area boundaries.

### **Integrating PAs with their surroundings**

Early conservation efforts focused mostly on protecting and preserving natural resources from extractive human activities, which led to the exclusion of local communities from participation in decision-making (Maldonado Ibarra et al., 2020; McGinley, 2017). However, it has been recognized over time that PAs are not isolated islands, but rather are part of a larger social-ecological system (Du et al., 2015). This evolving process in PA management acknowledges that nature and people have historically been linked to each other (Castro-Prieto et al., 2019; Niedziałkowski et al., 2018). Local people's values, knowledge, and interests have increasingly been seen as playing a crucial role in achieving conservation and sustainability goals (Buta et al., 2014). This new paradigm shift asserts that PAs can only be effective if they are managed in a way that integrates local communities in a participatory and active decision-

making role. Due to national policies, as well as local challenges, several ways to integrate PAs with their surrounding communities have emerged.

### *PA integration models*

Many researchers have studied the different integration processes of PAs and their surroundings. Du and colleagues (2015) reviewed an extensive range of efforts focused on conserving and developing PAs and found 23 representative models that integrate PAs with their surroundings. They recognized that most models could be grouped into two main categories: area-oriented and process-oriented approaches. The area-oriented approach aims to integrate PAs with their surroundings through zoning or mapping. It is based on the premise that management must be focused on allocating human activities in clearly defined areas (Du et al., 2015). An early and well-known area-oriented approach model is the Biosphere Reserve, an internationally recognized area by the United Nations Educational, Scientific and Cultural Organization (UNESCO). Biosphere Reserves use spatial management models where the outer boundaries are flexible transition areas to be used by adjacent communities (Fall, 2003).

The other model type that integrates the PAs with its surroundings is the process-oriented approach. These models emphasize collaborations among different stakeholders and the establishment of a systematic and integrated process for managing PAs (Du et al. 2015). Most of these models have participation-based components, which “involved local people to some extent in areas such as the planning process, tourism development, or implementation” (Du et al. 2015, p. 8164). A representative model in this category that has gained wide attention is co-management. This model “can be defined as multilevel resource governance when the central government shares power and responsibility with other actors, typically including resource users,

local government and often also the private sector and civil society” (Petursson & Kristofersson, 2021, p. 1). This approach can help to build trust and partnership between conservation authorities and local communities. Ultimately, local people can have active participation in the planning and management of site-specific areas such as designated community interface areas located along PA’s boundaries. Despite this, collaborative and participatory approaches on PA’s boundaries are still evolving and more research is needed (Du et al. 2015; Niedziakowski et al., 2018).

### *Forms of community involvement*

During the last decades, participatory processes have become more relevant in natural resource management (Matarrita-Cascante et al. 2019). Environmental problems are complex, multi-dimensional (e.g., critical habitat affected by recreational activities and climate change), multi-scale (e.g., local, regional, and global), and usually uncertain, all of which require flexible and transparent decision-making processes that encompass a broad range of perspectives (Reed, 2008). Over time, it has been argued that traditional centralized agency-led management, known as the top-down approach, has been limited in achieving long-term sustainable goals due to its reduced collaborative and inclusive decision-making environment (Matarrita-Cascante et al. 2019). Therefore, new participatory policies have been established in many countries as a precondition for planning and managing natural resources (Karadeniz et al. 2022). Consequently, diverse terminology around public participation has expanded to encompass different terms such as stakeholder engagement, civic engagement, public involvement, and public input (IVUMC, 2019). These terms have been used interchangeably to refer to a process where citizens have a voice in public policy decisions (Molokwane & Lukamba, 2008). Therefore, this study defines

community involvement as an engagement process where community members participate (direct, indirect, active, passive) in PA's decision-making.

The concept of community involvement encompasses multiple dimensions, showcasing its versatility across various contexts and domains (Gyan, 2021). Among the existing models, Arnstein's Ladder of Citizen Participation is the most influential and commonly cited model that describes different forms of participation. It is a metaphorical ladder of hierarchy that comprises eight levels of citizen participation. The ladder ranges from non-participation (manipulation, therapy), to tokenism (informing, consultation, placation), to citizen control (partnership, delegated power, citizen control). Arnstein argued that as one ascends the ladder, from non-participation to citizen control, the participation process moves from superficial forms of engagement toward more empowering participation. The Ladder of Citizen Participation has been very useful for analyzing levels of participation across different contexts, including sustainable tourism development (Mak et al., 2017, Wondirad & Ewnetu, 2019). However, the power-centric approach of the ladder has been criticized because it oversimplifies the complexity and dynamism of participatory processes (Collins & Ison, 2006). Therefore, more recent, and alternative models have emerged to address Arnstein's ladder limitations.

In the context of environmental decision-making processes, Reed and colleagues (2017) developed a "more comprehensive, rigorous and useful alternative to the ladder of participation" (p. 4), known as the Wheel of Participation. This model is a metaphorical wheel that consists of a pair of dials, one internal and one external, which can be rotated in either direction to generate varied combinations based on who initiates and leads the process (i.e., top-down, and bottom-up) and modes of engagement (Reed et al. 2017). The resulting combination of dials provides four types of community engagement.

According to Reed and colleagues (2017), the first type of engagement is known as top-down one-way communication and/or consultation. This involves information dissemination or seeking feedback from communities, which means that they don't have active participation in decision-making. The second is top-down deliberation and/or co-production. A deliberative approach implies that members of the community identify issues and define a suitable course of dialogue (Reed, 2008). Conversely, a co-production approach commonly involves deliberation, but the decisions are developed and owned by both the PA staff and community members. This type of engagement suggests a two-way discussion that allows the decision-making body to thoroughly comprehend and consider recommendations from community members before reaching a decision. The third mode of engagement is bottom-up one-way communication and/or consultation. Here, the engagement is initiated and led by communities with limited formal decision-making power where stakeholders provide input or feedback to decision-makers. The fourth and last type of engagement is bottom-up deliberation and/or co-production. This type of engagement is characterized by initiatives led by community members, which is a form of active participation.

The arrangements of combinations of the Wheel of Participation suggested that in some contexts and purposes, top-down involvement may be just as suitable and successful as bottom-up strategies (Bell & Reed, 2021). Also, it removes the assumption of Arnstein's model, which suggests that engagement improves linearly with ascending levels of the ladder (Reed et al., 2017). The Wheel of Participation can serve as a useful tool in engaging community members in recreational settings and tourism development within CIRMA as it is aligned with natural resource management and enables the right selection of involvement according to what is required in a given situation. Moreover, Bell and Reed (2021) argued that understanding and addressing

contextual factors, such as historical and cultural influences, are crucial for designing effective and inclusive participatory processes.

Effective community-based management models not only require finding common ground between different community members but also developing a high level of understanding of the sociopolitical context in which they are developed. Puerto Rico is a country that has been subjected to successive political regimes of colonialism since the 15th century. During the Spanish era, especially in the 19th century, Puerto Rico experienced one of the most drastic land cover changes in its history (Robinson & Lugo, 2014). Excessive logging led the Spanish authorities to take strict measures that prohibited surrounding communities from accessing natural resources (Cristóbal & Carlos, 2007). This exclusion persisted even after forest reserves were created by the Spanish government and the island was ceded to the United States government after the Spanish-American War in 1898 (McGinley, 2017; Robinson & Lugo, 2014). Historical marginalization, as well as the imposition of colonial conservation practices, could represent a factor that limits communities from engaging in active participatory and collaborative management approaches. More research is needed to understand how the collective memory of communities influences the decision-making process in community interface areas.

### **Understanding attitudes toward tourism development for future involvement**

Many case studies worldwide showcase how tourism, when appropriately planned and developed with genuine community participation, can greatly enhance the livelihoods of communities and contribute positively to socio-cultural and ecological conservation efforts (Wondirad & Ewnetu, 2019). Although there are studies focused on analyzing the relevance of incorporating local communities in planning and management processes, most existing works have

been developed in English-speaking countries (Cordero, 2009). As one of the most tourism-dependent regions in the world, the Caribbean islands merit increased research focus (Harrison, 2001).

The literature provides substantial evidence in favor of the importance of community involvement in tourism development (Giampiccoli & Mtapuri, 2015), and PA decision-making (Du et al. 2015). This support aligns with the expected tourism-related benefits that both community members and PAs can obtain. According to Mak and colleagues (2017), local communities are likely to exhibit greater support for tourism development when they are provided with opportunities to actively participate in the planning and development processes. Additionally, the authors state that insufficient knowledge of tourism development poses a significant barrier to the success of community participation in rural areas, as is CIRMA. Therefore, assessing community members' attitudes toward tourism development can be an important antecedent process for future community involvement and CIRMA's development.

### **Understanding perceptions toward PA integration with their surroundings**

Understanding community perceptions can provide valuable insights into how people interact with and perceive PA settings, as well as their governance, management, and policies. The information collected can be used to inform decision-making processes in all planning and implementation stages related to PAs, such as identifying potential conflicts and developing strategies to address them, improving user experiences, and community acceptability for current and future managerial models and actions (Bennett, 2016). Understanding these factors can help to establish or strengthen the relationship between PA and their surrounding communities and “improve people’s awareness of resource conservation” (Belkayali et al., 2016, p. 2). As a social

science concept, the study of people's perceptions can be applied in different ways. In the outdoor recreation field, researchers and practitioners have studied constraints related to visitation or non-visitation and attitudes toward PA settings.

### *Constraints for visiting*

Since at least the 1980s, studies have been conducted to determine the constraints that prevent people from visiting PAs (Zanon et al., 2013). Most studies have used Leisure Constraints Theory as a theoretical framework for understanding individual barriers or constraints for participating in leisure settings (Zanon et al., 2013). Constraints in recreation have been described as factors “that can affect leisure preferences, limit participation, and reduce enjoyment and satisfaction” (Rushing et al., 2019, pp. 1-2). Three types of recreational constraints have been identified. *Intrapersonal constraints* are those internal factors that limit an individual's participation in leisure activities. These constraints involve individual psychological states and self-perceptions “which interact with leisure preferences rather than intervening between preferences and participation” (Crawford & Godbey, 1987, p. 122). Some intrapersonal constraints include a lack of skills or knowledge, physical limitations, or personal beliefs and attitudes. *Interpersonal constraints* are external factors related to social interactions such as social norms, lack of social support, or the inability to find a suitable leisure partner (Zanon et al., 2013). *Structural constraints* are external factors related to the situational and functional conditions that limit an individual's participation in leisure activities (Rushing et al., 2019). The latter has been recognized as the most prevalent barrier to PA visitation, and includes lack of time, insufficient socioeconomic resources, distance from recreational settings, and lack of information (Rushing et al., 2019). Other authors point out that the lack of awareness is another



prominent constraint (Zanon et al., 2013). This could be relevant in PAs that are transitioning towards more collaborative and participatory management models since it will depend on the PA's capacity (e.g., financial, and human resources) to inform or integrate citizens in management. The outcomes of community participation in PA management can increase the awareness of the perceived benefits of local people in their well-being and foster responsible use of natural resources (Buta et al., 2014).

## METHODS

The present study assesses and compares users' and non-users' constraints for visiting, attitudes toward tourism development, and level of involvement in management and planning within a community interface area on a PA's boundaries. Data were collected within EYNF's surrounding communities during the peak summer use season of June through mid-August 2023.

### *Study site*

El Yunque National Forest (EYNF), located in northeastern Puerto Rico, is the only tropical rainforest protected by the USDA Forest Service (Figure 1). The forest covers an area of about 28,000 acres in the Sierra de Luquillo Mountains, which is one of the largest primary remnant forests on the island (McGinley, 2017; Robinson et al., 2014). Its ecological and cultural value make EYNF the second most visited place in Puerto Rico (de Puerto Rico, G., 2022), attracting 1.1 million visitors annually (Quiñones et al., 2018). Recreational opportunities in EYNF can be organized by road corridors. This study focused on the less-developed 186 Road Corridor located on the western boundaries of the national forest, specifically between Canóvanas and Río Grande municipalities. This 600-meter corridor was declared a Scenic Byway and has four water-based recreational attractions (i.e., Quebrada Sonadora, Río Espíritu Santo Observation Point,

Quebrada Recreation Area, and Río Grande crossing) and one national recreation trail (i.e., El Toro Wilderness trailhead). The 186 Corridor represents an alternative attraction for those who seek a more natural and rural experience away from the heavily developed and most visited 191 Road Corridor.

The 186 Road Corridor overlaps with EYNF's CIRMA, which represents the most accessible lands for local visitors. This section of the forest is intended to provide new recreational opportunities adjacent to neighboring communities since many of the recreational facilities (e.g., visitor center, trails, parking lots, food services, and restrooms) are located at the core of the national forest. Moreover, CIRMA's development can potentially reduce crowding-related issues on existing recreational sites and visitation pressure on ecologically sensitive areas along 191 Road Corridor (USDA, 2018). The 186 Corridor in CIRMA serves as a model for the gradual shift in the management of natural resources worldwide and, therefore, the reason for conducting this study. To date, little research has been done to understand community perceptions of use, attitudes toward tourism development, and level of involvement in planning and managing at EYNF.

### *Study population*

Nine municipalities border EYNF. This study focuses on the municipalities located to the west side of EYNF, especially Canónavas and Río Grande (Figure 1). These municipalities were selected because they are part of the CIRMA and have low to moderate levels of recreational use on designated and non-designated sites. Participants in this study included members belonging to communities adjacent to the EYNF boundaries. According to the U.S. Census (2022), CIRMA's communities in Canónavas comprise a population of 6,660 individuals, with an average age of

49.7. The per capita income is reported to be \$14,553, with educational attainment levels indicating that 75.1% have completed high school, while 29.1% hold a bachelor's degree. However, CIRMA's communities in Río Grande comprise a population of 1,542 individuals, with an average age of 46.7. The per capita income is reported to be \$21,606, with educational attainment levels indicating that 82.5% have completed high school, while 28.3% hold a bachelor's degree. A questionnaire was developed to assess the research questions within these communities.

### *Questionnaire*

A questionnaire was developed to assess the perceived constraints of visitation, the attitudes toward tourism development, and the level of involvement in decision-making among community members residing near EYNF's CIRMA. The survey was intended to collect data in communities adjacent to Road 186, especially from those who visit and do not visit the west side of CIRMA at EYNF. The questionnaire was available both in English and Spanish. The survey was designed by a native English speaker and translated by a native Spanish speaker from Puerto Rico. To maximize time and resources, the questionnaires also collected basic and necessary information needed by EYNF managers. The questionnaires consisted of fixed-choice (i.e., 5-point Likert scale) and partially open-ended questions related to the following areas: use level, demographics, constraints in visitation, tourism development, and desires for community involvement in both planning and management. Questions were adapted from previous surveys developed by Citarella et al. (2018) and Buta et al. (2014).

The level of use was assessed by asking participants to specify the total number of visits to natural areas in EYNF along Road 186 over the past 12 months. Respondents who answered "0" to this question were defined as non-users. The demographic section included information related to respondents' age, gender, place of residence, and whether they were born and raised in

Puerto Rico. Constraints for visiting were assessed based on Crawford and Godbey's (1987) three broad-dimensional constraints (intrapersonal, interpersonal, structural) and adapted versions found in the literature (e.g., Ghimire et al. 2014; Lai, et al. 2013, Metcalf et al. 2013, Metcalf et al. 2015; White, 2008). Respondents were asked to rate 14 potential constraints to visiting on a scale ranging from 1 (strongly disagree) to 5 (strongly agree). Perceptions of tourism development were measured using an acceptability scale based on Normative Theory that evaluates social norms (Manning et al., 2022). Community members used this scale to rate different increases in the amount, not type, of tourism development from the current levels on Road 186. Increases were expressed as a percentage starting with no increase to a 100% increase levels, at intervals of 20%.

Lastly, the survey assessed the level of community involvement in decision-making for the planning and management of CIRMA using the Inclusion of the Other in the Self (IOS) scale. The IOS scale is a psychological tool designed to measure the degree of psychological overlap or connectedness between the self and others (Gächter et al. 2015). The IOS Scale consists of seven pairs of circles, with each pair representing the self and another person or group, in this case EYNF. The circles have varying degrees of overlap, with the first pair being completely separate and the last pair overlapping to the point of being almost indistinguishable (see representation in Table 6). Participants were asked to select the pair of circles that best represents both their current and desired future level of involvement in the decision-making of CIRMA. The degree of overlap between the circles is used as an indicator of the level of participation.

#### *Data collection and management*

Data were collected within EYNF's designated community interface area and in the surrounding communities during the peak summer use season of June through mid-August 2023. A

systematic sampling technique was used to select survey respondents. Only individuals 18 years of age and older were randomly selected and asked if they were willing to participate in the research. Community members were surveyed in public spaces (e.g., basketball courts, churches) and near residences between 11:30 am and sunset. Data collection efforts occurred evenly between weekdays and weekends. This sampling approach allowed for obtaining a more representative sample of both users and non-users.

### *Data analysis*

Prior to analyses, the data were screened for missingness in RStudio (version 2023.06.1). A total of 38 observations (30.1%) were found to have an amount of missing data greater than 5%. Little's test was employed, using Naniar package, to assess if data were missing completely at random (MCAR). The non-significant results of this analysis indicated the missing data were MCAR ( $p = .250$ ). According to Carpita and Marisera (2008), when the data is MCAR researchers can choose to ignore the missing data from the study. Nonetheless, the data was imputed using the predictive mean matching method from the Mice package.

Data were prepared for multivariate assumptions (normality, linearity, homogeneity, and homoscedasticity) by simulating a regression analysis. The significant results of the analysis indicated the data were non-normal in their distribution for both users and non-users (Shapiro test,  $p < .05$ ). Conversely, the Q-Q plot confirmed the assumption of linearity is not violated in each group. In addition, no evidence of heteroscedasticity across the measured variables was observed when using Abline function. For the homoscedasticity assumption, a plot was created to visualize how spread out the residuals are and thus discard the possibility of heteroskedasticity in the residuals. Based on these assumptions' checks, a non-parametric analysis was used for testing differences between users and non-users. Particularly, the Mann–Whitney U test was employed to

assess the differences in constraints for visiting, preferences for tourism development increases, and involvement in management and planning for EYNF's CIRMA. Chi-Square test was used for testing differences between frequencies for both users and non-users. Lastly, frequency analysis was used to assess the preferences for the different types of tourism development and the type of involvement between communities and EYNF.

## RESULTS

A total of 126 questionnaires, with a response rate of 64.2%, were completed by community members. This reflects a margin of error for results (i.e., confidence interval) of  $\pm 8.6\%$  at a 95% confident level. Of the 126 completed questionnaires, 73 were from Río Grande municipality with a response rate of 58.9% and 81 were from Canóvanas municipality with a response rate of 69.8%. Overall, the average and standard deviation for age were 52.0 and 15.9, respectively. The average and standard deviations for age in the users' group were 51.8 and 16.1 and for non-users were 52.0 and 15.9. Among respondents, 69.1% were females and 30.9% were males. Most of the participants were born and raised in Puerto Rico, 95.2% and 96.7% respectively. Participants were asked to list how many times they had visited the natural areas along Road 186 during the last 12 months. Two-thirds of the respondents (66.1%) reported that they had not visited it. Only 13.0% reported visiting once, 18.3% mentioned visiting between two to 10 times and 2.6% more than 11 times.

Reliability analyses of the constraint dimensions were performed using Cronbach's alpha. An alpha coefficient ranging from 0.65 to 0.80 is commonly considered "adequate" for a scale in human dimension research and suggests that several variables are assessing the same underlying factor, validating their aggregation into an index (Vaske et al, 2017; Rushing et al. 2019). Alpha

coefficients indicated internal consistency for all the constraints associated with visiting (0.81), as well as for the structural (0.68) and intrapersonal dimensions (0.70) (Table 1). The first research question focused on any differences in constraints to visit a community interface area between users and non-users that live in communities close to it. The most constraining factors for visiting the recreational sites at Road 186 were “the road damages my vehicle”, “the facilities are in poor conditions”, and “my physical condition prevents me from going there.” The least constraining factors were “I don’t feel safe visiting it” and “the sites are too far away.” There were statistically significant differences between users and non-users in the overall constraints index scores ( $p = .024$ ) and the structural constraints ( $p = .014$ ), but no differences in intrapersonal constraints ( $p = .065$ ) (Table 1). Additionally, there was a significant difference between interpersonal and intrapersonal constraints ( $p = .004$ ), between structural and interpersonal constraints ( $p < .001$ ), and between structural and intrapersonal constraints ( $p < .001$ ).

The second research question assesses users’ and non-users’ preferences for tourism development in amount (not type) in a community interface area. Respondents rate different increases in the amount, not type, of tourism development from the current levels on Road 186. Increases were expressed as a percentage starting with no increase to a 100% increase levels, at intervals of 20%. No significant differences exist in responses between users and non-users for all levels of increase in tourism development (Figure 2). On average, community members reported that the current low level of tourism development is unacceptable but once it reaches 14% or higher it becomes marginally acceptable. Additionally, respondents indicated that the most acceptable increase in tourism would occur when development is between 60% and 100% higher than the current amount of use. The most frequently supported ways to develop more tourism on

Road 186 reported by community members were “improved roads”, “river access sites”, “restoration of old trails”, “educational trails”, “scenic overlooks”, and “parking facilities to promote use” (Table 2). The least selected ways were “guided tours by non-local tourist guides”, “scenic overlook”, and “bus tours.” None of the respondents indicated “I don’t think more tourism development should occur on Road 186.” No statistical differences were found between users and non-users for these potential ways to develop more tourism ( $p = .758$ ). When respondents were asked if EYNF should prioritize the tourism economy over local use, 64.3% responded that they agreed, 18.8% did not know and 17.0% did not agree (Table 3). No statistical differences were found between users and non-users ( $p = .065$ ). When respondents were asked to explain their reasons for whether EYNF should prioritize the tourism economy over local use they indicated “it will improve the local economy (e.g., more opportunities for local business and employment)”; “because it is a good place for tourism and it will foster access and encourage others’ willingness to visit”; and “it will improve the area (e.g., increase safety, services, facilities)” (Table 4). Other respondents argued that “it should be an equal balance (e.g., fair for both parties)” and “not affect local people and natural resources (e.g., free access and control of operational hours, traffic, and noise).” However, the minority who did not agree argued that the tourist economy should not be prioritized over local use since “it is a natural, public and close area to the communities.” Moreover, they said that the needs of local people must be considered first rather than the tourism economy.

The third research question focuses on involvement in decision-making in a community interface area. There was no statistical difference between users and non-users for the current level of involvement ( $p = .343$ ) and for future involvement ( $p = 0.746$ ) (Table 5). The mean and standard deviation for the level of current involvement were 1.33 and 0.98, which indicates



based on the IOS Scale a 6.3% involvement in management and planning between EYNF and the communities. Conversely, the mean and standard deviation for the desired level of future involvement were 3.04 and 1.6, which represent a desired involvement of 41.0%. These differences in current and future involvement were significant ( $p < 0.001$ ).

The fourth research question assesses the preferences for the type of involvement between communities and EYNF. Community members were asked to identify in which ways they are now involved and how much they would like to be in the future. Currently, 16.0% of community members reported being involved in programs that help link the community to EYNF, and 15.9% were involved in meetings in the community (Table 6). Conversely, community members reported that they would like to be slightly involved in all forms of engagement presented and in the same order that they are currently involved. No significant differences were found between users and non-users for each type of involvement (Table 6).

## DISCUSSION

This study assessed the perceived constraints of visitation, the attitudes toward tourism development, and the level of involvement in decision-making of community members residing near a community interface area on a PA's boundaries. Mainly, the research examined differences between those who visit and do not visit the west side of the CIRMA at EYNF. Based on the literature, there were reasons for considering potential differences between users and non-users (see Kerstetter et al., 2002; Xiao et al., 2021). Overall, most analyses found no differences between users and non-users of the protected national forest area nearby communities, except in the perceived visitation constraints.

Reducing constraints for visiting a community interface area is an important management action to enhance the surrounding community's experiences and future involvement in the decision-making process. The most common constraint found in this study (i.e., the poor state of the road and facilities) was related to the structural domain. Also, this domain appears to be more relevant than other constraints (i.e., intra and interpersonal) in the study area. These findings align with the prevailing trends observed in previous studies on visitation constraints in PA (Rushing et al., 2019; Zanon et al., 2013). In the context of Puerto Rico, these results might be related to the compound effect of challenges that have taken place in the last two decades. The persistent national debt that emerged in 2006, the impact of the most intense tropical cyclone in the world in 2017 (i.e., Hurricane María), and the series of earthquakes that shook the island in 2020 have compromised the federal and local government's abilities to maintain the infrastructure on the island (Ahumada et al., 2024; Rivera, 2019). Furthermore, the concerning conditions on the island influence the local government's decision-making process (e.g. redistribution of the allocated repair funds), further limiting the improvement of the area (Guillama, 2023). Because of these circumstances that have affected EYNF's facilities and their accessibility, fewer than half of the respondents seem to have managed the structural constraints in visitation. Vehicles equipped with off-road features and/or users that do not depend on facilities for their recreational experience can potentially explain the existing visitation. While a portion of community members persist in visiting, structural barriers continue to impede a significant segment of the population from accessing the community interface area. Consequently, this might hinder the community's inclination to engage in decision-making processes. EYNF's management team may be able to address this situation through partnerships with local authorities and by implementing resilient infrastructure adapted to local challenges.

After the structural constraints, physical limitations seem to be another prominent constraint to visit in this region. While visitation constraints tend to increase with age (Shores et al. 2007), results from this study showed that both users and non-users exhibit very equal age distributions, suggesting that age may not be directly correlated with visitation level in CIRMA. On one occasion the researcher observed an individual in a wheelchair visiting one of the recreational areas on Road 186. Therefore, when contemplating improvements to recreational facilities, EYNF's managers should carefully consider potential physical barriers to enhance accessibility among different groups. In general, personal constraints do not differ between users and non-users. A potential explanation for this finding could be that both groups share an affinity for this area. Even though structural constraints represent a constraint to visitation, both groups still have a common interest and preference for visiting it.

This study focused on community members who either use or do not use a community interface area. Since constraints for visitation may vary between groups, further studies should consider off-island visitors and those who come from other parts of the island. For instance, Thapa (2011) found that local visitors exhibited a higher propensity to perceive financial costs and road conditions and international visitors were more likely to perceive personal constraints (i.e. fear of personal safety, inability to find a suitable travel partner) and other structural constraints such as lack of information about the area.

Research findings indicated no significant differences between users and non-users in their attitudes toward tourism development and their desired level of involvement regarding CIRMA's planning and management. Both groups expressed strong support for further tourism development. This finding coincides with previous studies conducted in rural communities,

which have identified a correlation between economics, tourism levels, and attitudes toward tourism development (i.e., more support in regions with low economic activity and low tourism development) (Allen et al., 1993). As previously noted, the national economic crisis and environmental challenges have profoundly impacted the region's economy, employment rates, and many other socioeconomic factors. According to the U.S. Census (2022), 42% of the regional population was living below the poverty level. Furthermore, compared to other parts of EYNF, Road 186 has very low development in recreational facilities and, therefore, is visited less by off-island visitors. All these factors may explain the community's inclination toward supporting tourism development, as residents currently have less interaction with tourists and are keen to improve their current infrastructure conditions and economic circumstances. This could further explain the preferences of community members in prioritizing tourism development over local use and in enhancing existing conditions, instead of adding more PA's amenities (e.g., visitor centers), and tourism services (e.g., bus tours). These findings align with previous research which shows that, in many instances, PA's surrounding communities perceive tourism as a development alternative that improves the way of living (Newsome et al., 2013). Although this section of the forest is not considered a major tourist destination, future development should consider the attitudes and perceptions of other visitors since they may not be influenced by socio-economic factors, unlike locals.

While community members reported a desire for a high level of tourism development, attitudes toward tourism could become less positive over time as tourism activity and development increase within or near the community (Abas & Hanafiah, 2013). Although tourism development can bring benefits to community members, negative impacts can arise if not managed properly (Epler-Wood & Ahamed-Broadhurst, 2019; Lo et al., 2014). The development of short-term

rental can be a potential revenue for the community. However, this can benefit some community groups and affect others by the inflation of the cost of living in the area (Harun et al., 2018).

There are already concerns from communities and grassroots organizations about the rapid expansion of short-term rentals across the island, which has driven gentrification and residential displacement among communities (Santiago-Bartolomei et al., 2022). Furthermore, previous research found that communities have emphasized how their quality of life and local cohesion have suffered as a result of the increase in tourist traffic, which has been facilitated by short-term rentals (Santiago-Bartolomei et al., 2022). Since respondents reported a desire for the development of short-term rentals and expressed minimal low levels of concern about noise and traffic, a thorough long-term planning and monitoring process is necessary to achieve sustainable development in CIRMA. The existing literature suggests that community participation is the foundation of sustainability since they are the major actors in tourism development initiatives (Choi & Sirakaya, 2005).

Substantial evidence in the literature supports the need for community involvement in tourism development (Giampiccoli & Mtapuri, 2015), and PA decision-making (Du et al., 2015). Although some community members do not want to engage in planning and managing a community interface area, nearly half of the respondents want to be partially involved with CIRMA's decision-making processes. Based on their preferences toward the type of involvement, community members are seeking direct interaction with EYNF staff within their community through meetings and educational, volunteer, citizen science, or any other PA programs. According to the Wheel of Participation, these findings may suggest a top-down deliberation and/or co-production approach as a place to start. This means that EYNF staff should initiate and lead decision-making

initiatives that engage community members in a two-way discussion dialogue. The term deliberation implies that community members identify issues and establish an appropriate purpose for dialogue (Reed, 2008). In this manner, ownership of the process is more likely to increase, fostering partnership building, and the outcomes will be more likely to become aligned with community members' needs and priorities, thereby inspiring active engagement from all involved parties (Reed, 2008). Conversely, a co-production process commonly involves deliberation, but the decisions are developed and owned by both the EYNF staff and community members (Reed et al., 2017).

It is important to recognize that participatory processes are not static throughout a project, program, or initiative. These strategies are shaped by sociocultural, political, economic, and biophysical contexts as well as PA managerial actions, necessitating tailored adjustments to meet specific needs and objectives. Overall, employing an inclusive and transparent participatory approach holds the potential to mitigate conflicts, foster trust, and enhance learning among community members and other partners. Consequently, this strategy increases the likelihood of garnering support for project objectives and facilitating the long-term implementation of decisions (Reed, 2017).

More research opportunities are needed to inform future planning and management concerning community interface areas on PA boundaries, building upon the learning outcomes and limitations of this study. In general, data collection was negatively affected on rainy days. Therefore, forthcoming research should consider anticipated climate conditions when scheduling data collection dates. In addition, low levels of intervention occurred within communities characterized by an urban lifestyle (i.e. middle and lower parts of Barrio Jiménez). The presence of com-

munity members outside of their homes was minimal in these communities. Moreover, the prevalence of gated access in this area constrains the research's ability to engage with residents. In response to this challenge, adjustments were implemented to enhance community interventions and data collection rates, such as expanding the data collection timeframe.

Another limitation was related to the willingness of participants to complete the questionnaire. It was common that residents exhibited reluctance to complete the questionnaire immediately upon request, which required subsequent visits (i.e., one or two) by the researcher in order to give the respondent time. Additionally, it became evident that community members encountered difficulties in responding to compound questions, particularly related to the level of tourism development. Usually, respondents tended to select only one level of development, the most preferred, even though the question specifies rating each of the presented increases. This trend was likely influenced by culture and had not been previously observed by the researchers in other contexts. To address this issue, each survey was meticulously reviewed upon its return. If any incompleteness was identified, respondents were provided with assistance to ensure understanding and completeness. Future research needs to acknowledge these cultural behaviors and constraints. For instance, since people were usually open to establishing conversations, other methods for data collection can be applied such as structured interviews.

Developed in sociology and social psychology, Normative Theory has been used in outdoor recreation research and management for measuring desirable or acceptable conditions based on social norms (Manning et al., 2022). Norms are generally measured through short or open-ended questions and, more recently, have been used in combination with photo visualization. The use of simulated photos combined with associated survey questions follows the best practices for the measurement of norms related to recreational settings as established in the current scientific

literature (for details see Manning, 2007). Measuring attitudes toward tourism development can be accompanied by different photo simulations. For instance, comparison among types of tour buses, amount of parking lots and infrastructure, and other similar tourism-related developments. Consequently, this technique can potentially be applied in CIRMA or other contexts since represents an improvement in the validity of participants' responses.

Social norm curves have been applied to inform management decisions in outdoor recreational settings by using indicators of quality. Indicators are specific resource or experiential attributes that managers measure over time to evaluate progress made toward obtaining and maintaining desirable conditions (IVUMC, 2019). A substantial body of research has identified different indicators of quality for a variety of recreational areas, some of them are people-at-one-time (PAOT), encounters with other visitors, presence of wildlife, vehicles per view, available parking, and number of boats (Manning et al., 2022). However, to the authors' knowledge, no other research has used the normative approach to evaluate attitudes towards increases in tourism development, representing a potential advancement within this field. In this study, the generated norm curve helps EYNF's managers to visually understand that no increase and a low increase in tourism development in amount were unacceptable for community members. At the same time, aids in understanding that large increases in tourism development were acceptable, almost to the same degree once it reached 60%. Therefore, norm curves serve to quantify and interpret a range of desired development levels based on community perception that easily facilitates communicating the research findings to PA managers.

### *Conclusions*

This study highlighted that structural constraints, particularly related to poor road conditions and facilities, are predominant in impeding visitation in a PA boundary. These constraints



are associated with broader challenges faced by the region, including economic hardships, natural disasters, and limitations in governmental capacities. The findings underscore the critical importance of reducing barriers to visiting community interface areas for enhancing community experiences and fostering future involvement in decision-making processes. Future research could explore constraints among off-island and other visitors from other parts of the island to provide a more comprehensive understanding of visitation dynamics.

Research findings also revealed strong community support for tourism development in the region. It's crucial to recognize this support could shift over time as tourism activity increases. Proactive management actions, adequate regulation, and collaboration among community members and other stakeholders are essential to mitigate potential impacts (e.g., inflation of living costs, residential displacement, traffic, and noise) within and near CIRMA. Future involvement can be envisioned since community members express a desire to participate, at least partially, in decision-making regarding the community interface area. Especially, their preferred mode of engagement involves direct interaction with EYNF staff within their community through various programs and meetings. An initial top-down deliberation or co-production approach appears to be desirable, where EYNF staff lead initiatives that engage community members in meaningful dialogue. It's important to recognize that participatory processes are dynamic and shaped by various contextual factors, necessitating tailored adjustments to ensure effectiveness and inclusivity.

Ultimately, there is a need for further research to inform planning and management of community interface areas on PA boundaries, considering the limitations of the study. Cultural attitudes and barriers should be acknowledged to overcome reluctance and data collection constraints. Incorporating the Normative Theory into outdoor recreation research and management

offers a valuable measuring tool for evaluating desirable or acceptable conditions based on social norms. By employing this methodological approach, researchers can gain a comprehensive understanding of community attitudes toward tourism development, facilitating informed decision-making in recreation management and policy.

Integrating PA with their surrounding community is a process that is still evolving. Based on a Grounded Theory Analysis of the literature, Reed (2008) provides a series of recommendations that aim to improve the effectiveness of community participation in environmental decision-making. The author underscores the imperative of perceiving participation as a dynamic process, emphasizing empowerment, equity, learning, and trust. Of particular significance is the development of trust, which plays a pivotal role not only in the decision-making phase but also in its prior stages. Hence, initiating community involvement as early as possible can mitigate potential pitfalls. Highly skilled facilitation is necessary alongside the integration of local and scientific knowledge to foster a holistic comprehension of complex socio-ecological systems and processes. Lastly, the author accentuates the necessity of institutionalizing community participation to engender organizational cultures conducive to negotiating objectives and embracing uncertain outcomes.

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TABLES

**Table 1: Reported constraints related to visiting a community interface area at EYNF.**

Dimension/Items	Overall		User		Non-user		p-value	$\alpha$
	M	SD	M	SD	M	SD		
<b>Overall constraint index score</b>	<b>2.48</b>	<b>0.81</b>	<b>2.31</b>	<b>0.85</b>	<b>2.60</b>	<b>0.78</b>	<b>.024</b>	<b>0.81</b>
<b>Intrapersonal</b>	<b>2.25</b>	<b>0.95</b>	<b>2.37</b>	<b>0.96</b>	<b>2.09</b>	<b>0.92</b>	<b>.077</b>	<b>0.70</b>
I have no interest in going there	2.13	1.28	1.92	1.20	2.22	1.31		
My physical condition prevents me from going there	<b>3.04</b>	1.61	2.95	1.54	3.16	1.66		
I don't feel safe visiting it	1.93	1.27	1.62	0.99	2.04	1.36		
I prefer indoor activities	2.28	1.37	2.08	1.38	2.35	1.34		
I prefer to visit other natural areas	2.44	1.28	2.28	1.32	2.54	1.28		
<b>Structural</b>	<b>2.70</b>	<b>0.88</b>	<b>2.57</b>	<b>0.91</b>	<b>2.82</b>	<b>0.88</b>	<b>.014</b>	<b>0.68</b>
I'm too busy; I have no time	2.73	1.35	2.71	1.36	2.69	1.37		
I am not familiar with Road 186 resources or facilities	2.82	1.47	2.67	1.40	2.94	1.52		
The road damages my vehicle	<b>4.00</b>	1.43	3.90	1.48	4.20	1.27		
Facilities are in poor condition	<b>3.85</b>	1.34	3.87	1.34	3.89	1.36		
The sites don't offer the facilities that I would like to use	3.25	1.39	3.13	1.30	3.36	1.46		
The sites are too far away	1.71	1.12	1.49	1.00	1.81	1.17		
I don't have a way to get there	1.94	1.33	1.62	1.21	2.08	1.35		
The sites don't offer the activities that I want to do	2.45	1.43	1.95	1.26	2.70	1.45		
<b>Interpersonal</b>								
I don't have anyone to go with me	2.07	0.88	2.57	0.91	2.82	0.88		

Note: Mean (M) and standard deviation (SD) are on a scale of 1 (strongly disagree) to 5 (strongly agree). The *p*-values correspond to the Mann-Whitney U Test for differences between users and non-users towards barriers perception in a community interface area. There was a significant difference between interpersonal and intrapersonal constraints ( $p = .004$ ), between structural and interpersonal constraints ( $p < .001$ ), and between structural and intrapersonal constraints ( $p < .001$ ).



**Table 2: Frequencies for potential ways for tourism development in a community interface area.**

<b>Potential ways for tourism development</b>	<b>Overall Frequency</b>	<b>User Frequency</b>	<b>Non-user Frequency</b>
Improved road	108	37	71
River access sites	103	35	68
Restoration of old trails	100	32	60
Educational trails	92	32	57
Parking facilities to promote use	89	29	60
Recreational trails	83	27	56
Guided tours by local tour guides	78	26	52
Renovation of old facilities	75	29	46
A shuttle system	61	19	42
Guided adventure tours (e.g., rappelling, canyoneering, snorkeling)	60	18	42
Visitor center	56	22	34
Guided scenic tours	51	20	31
Wellness experiences (e.g., yoga, forest therapy)	51	20	31
Private commercial business and services	49	20	29
Bus tours	46	17	29
Scenic overlooks	31	32	29
Guided tours by non-local tourist guides	27	9	18
None, I don't think more tourism development should occur on Road 186	0	0	0

Note: The Chi-Square statistical significance between users and non-users was .758 (*p*-value).

**Table 3: Attitudes toward whether the tourist economy should be prioritized over local use.**

<b>Prioritize</b>	<b>Overall Frequency</b>	<b>User Frequency</b>	<b>Non-user Frequency</b>
Yes	72	30	42
Don't know	21	3	18
No	19	6	13

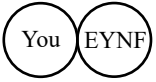
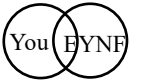
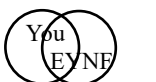
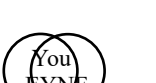
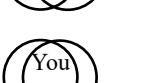
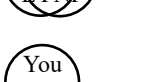
Note: The Chi-Square statistical significance between users and non-users was .065 (*p*-value).

**Table 4: Perception of users and non-users towards prioritizing the tourism economy over local use.**

<b>Codes</b>	<b>Overall Frequency</b>	<b>User Frequency</b>	<b>Non-user Frequency</b>
<b>Improve local economy:</b> Help local businesses (e.g., artisans, owners of short rentals) and bring more opportunities. Generate employment such as maintenance workers, tourist guides, security and informative staff.	21	11	10
<b>Because it is a good place for tourism:</b> Tourism is good. It fosters access and encourages tourists/communities to visit it.	18	8	10
<b>Improve the area:</b> It is currently abandoned, places to share with family are limited and far away; it will allow alternative use; services and facilities development (e.g., road, restrooms, craft stores, places to eat, parking, lighting, camping). Increase safety (e.g., police patrol).	16	6	10
<b>Should not be prioritized:</b> It should not be prioritized because we lose access to them and is a natural and public place, and close to communities. It will increase vandalism. It should not take away from families the option of bringing their own food and snacks.	6	1	5
<b>Equal balance:</b> It must be fair to both parties. We have the same right to enjoy these areas. It should not affect local people and natural resources.	6	3	3
<b>Priority to locals:</b> People from the middle/lower class do not always have the money to visit other places. Sometimes tourism is given greater priority instead of seeing the needs of the people in the community.	4	1	3
<b>Charge-free and controlled:</b> Should be free of charge, with control of operational hours, traffic, and noise.	2	1	1
<b>Analyze strategic plan:</b> We need to analyze the strategic plan for that. Know how to use the revenue to maintain Road 186.	2	0	2
<b>The current local economy is fine.</b>	1	0	1
<b>Needs more improvement to be attractive.</b>	1	1	0

Note: The Chi-Square statistical significance between users and non-users was .692 (*p*-value).

**Table 5: Current and future level of involvement in planning and managing a community interface area.**

Level of involvement	Current involvement			Future involvement		
	Overall Frequency	User Frequency	Non-user Frequency	Overall Frequency	User Frequency	Non-user Frequency
 0% overlap	97	33	64	25	9	16
 20% overlap	8	3	5	22	6	16
 40% overlap	7	3	1	25	11	14
 60% overlap	3	1	2	15	6	9
 80% overlap	0	0	0	8	2	6
 100% overlap	3	0	3	16	4	12

Note: The level of involvement was on a scale of 1 (0% overlap) to 6 (100% overlap). Mean (M) and standard deviation (SD) for current involvement were 1.33 and 0.98 (6.3% overlap) and for future involvement were 3.04 and 1.6 (41.0% overlap). Mann -Whitney U Test for differences between current and future involvement was significant ( $p < 0.001$ ). The Chi-Square statistical significance between users and non-users was .343 for current involvement and 0.746 for future involvement.

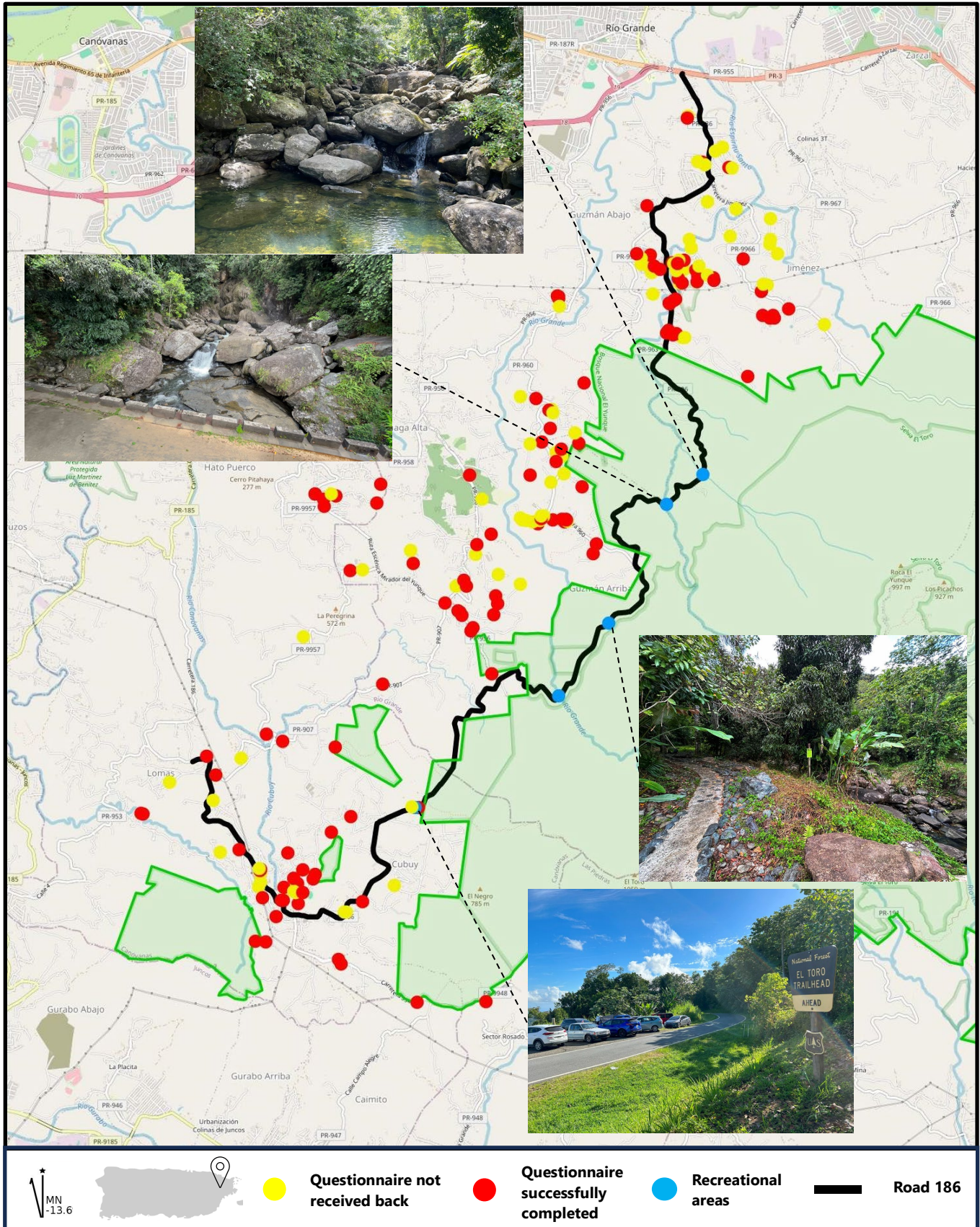
**Table 6: Preferences toward future involvement between communities and El Yunque National Forest.**

Type of involvement	Current involvement (%)	Overall		User		Non-User		<i>p</i> -value
		Mean	SD	Mean	SD	Mean	SD	
Participating in programs that help link the community to EYNF (e.g., educational sessions, volunteer programs, citizen science projects, etc.)	16.0	2.74	1.50	2.89	1.58	2.67	1.47	.449
Meetings in the community	15.9	2.51	1.52	2.56	1.50	2.56	1.57	.927
In-person meetings lead by EYNF Staff	11.1	2.45	1.47	2.52	1.54	2.49	1.46	.967
In person meetings lead by a non-profit (e.g., Vitrina Solidaria, Amigos de El Yunque) related to EYNF	10.3	2.42	1.43	2.45	1.50	2.36	1.36	.832
Online meetings lead by non-profits (e.g., Vitrina Solidaria, Amigos del Yunque) related to EYNF	7.9	2.41	1.51	2.56	1.56	2.41	1.51	.682
EYNF focus group meetings	7.9	2.07	1.36	1.94	1.32	2.19	1.41	.434

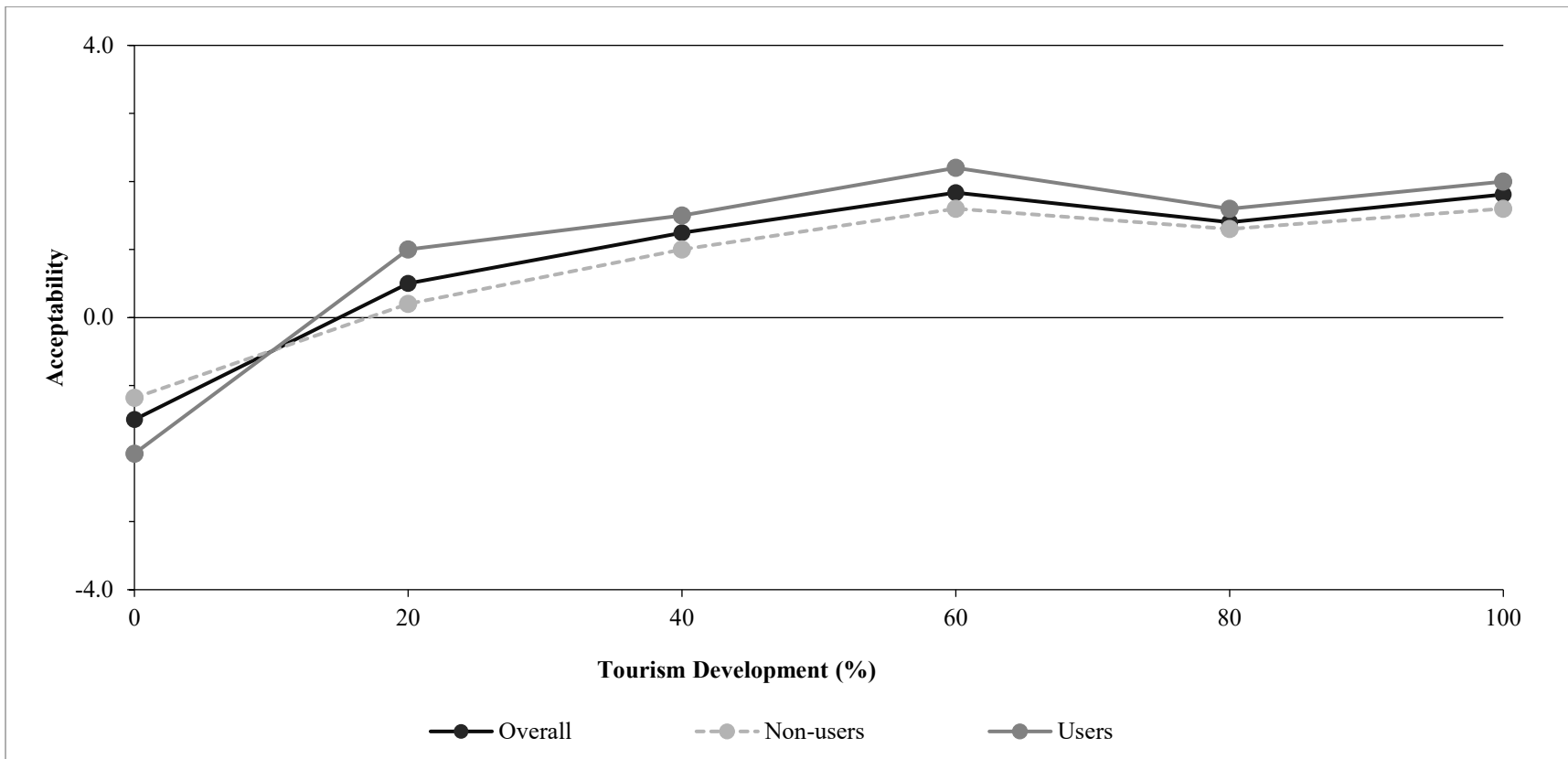
Note: Mean and standard deviation are on a scale of 1 (strongly disagree) to 5 (strongly agree). The *p*-values correspond to the Mann -Whitney U Test for differences between users and non-users toward future involvement in a community interface area.

# FIGURES

**Figure 1: Map of the study site and community sampling area in EYNF**



**Figure 2: Users' and non-users' preferences for tourism development in amount (not type) from the current level in a community interface area.**



Note: Mann -Whitney U Test for differences between users and non-users for 0%, 20%, 40%, 60%, 80% and 100% in tourism development were .496, .212, .467, .302, .567 and .677, respectively.

## REFLECTION

Our existence and the way we have evolved as a society are closely related to how we have adapted to and utilized the different natural resources in our environment. From pre-Columbian times to industrialization, our relationship has been fundamentally one of direct consumption and exploitation of resources. In Puerto Rico, this trend was so pronounced that by the 1930s, our island had only 6% forest cover. Such effects had significant repercussions on subsequent generations. Therefore, the need to manage our resources efficiently sparked interest in understanding and valuing them differently.

One of the most important events in our archipelago was the designation of the Sierra de Luquillo in 1876, now El Yunque National Forest, as the first Protected Area (PA), marking a historic precedent in our geographic space. Nowadays, we have at least 16% of our lands protected. However, despite having passed 148 years, we have not yet reached the minimum ideal conservation percentage to ensure a sustainable future. While expanding our conservation areas is commendable, it is even more important to understand that designating an area as protected does not guarantee its conservation. Therefore, the best management tools are required, along with trained staff able to address current and future challenges.

In general, effective visitor management practices in PAs in Puerto Rico have not been given the recognition and importance they deserve. Many areas lack trained staff and visitor use management frameworks. If visitation is considered one of the main threats to PAs worldwide, why is its management not considered a priority? We need to stop managing responsively and start acting proactively and adaptively, based on theoretical and practical guidelines and continuous monitoring programs, especially considering that Puerto Rico continues to position itself as one of the most important international tourist destinations to date. In the last four years, we have consecutively broken records back-to-back for island-wide visitation. Consequently, natural resources and host communities succumb to the current tourist trend. Eroded trails, overcrowding, traffic congestion, voceteo (local word for specific noise pollution), and



displacement of residents from their communities are some of the problems associated with the increase in visitation in Puerto Rico. We need to act before it is too late. As Glasson and colleagues (1995, p. 7) stated, “tourism contains the seeds of its own destruction: tourism can kill tourism, destroying the very environmental attraction which visitors come to a location to experience.”

Integrating community members in tourism-engaged initiatives could hold a promising future for the sustainability of our natural resources and the communities themselves. However, it must first be considered whether the communities are willing to serve as hosts for this industry. While revenue generation is often cited as one of the primary benefits of tourism, local communities can also benefit from non-economic tourism development. Some of the benefits include cultural exchange; community pride and identity, improved access to services (e.g., infrastructure, transportation), and capacity development. The latter is particularly important in Community-based tourism (CBT). CBT is a form of tourism that emphasizes the involvement and empowerment of local communities in the planning, development, and management of tourism activities within a place-based community. It is an approach to sustainable tourism development that promotes the conservation of cultural and natural resources and maximizes the generated benefits from tourism activities to local communities. According to Lo and Janta (2020), CBT “as a community development tool helps to strengthen and empower remote communities by assisting in tourism resources management and ensuring community participation” (p. 3). Some authors argue that community empowerment, as a multi-dimensional social process that helps people gain greater control over their lives and resources, is a prerequisite for sustainable tourism development (Khalid et al., 2019; Mayaka, 2020). Empowerment is influenced by the level of trust between the community and the organizations they partner with since it has the potential to enhance learning, build relationships, and allow dialogue between different actors. Hence, the concepts of trust, empowerment and capacity building are crucial for enhancing the relationship between communities and conservation agencies in fostering tourism participation and thus require further research and analysis, especially in CIRMA.

Additionally, some scholars argue that for tourism development to yield positive outcomes, communities must foster a sense of help to their community (Abas & Hanafiah, 2013). This could be closely related to the concept of sense of community, which is a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to being together. During the time that I was doing my data collection, I felt that the communities were not well organized in this region. It was hard to find community leaders and the community gathering places were very deteriorated, at least in one of the municipalities. Of the few leaders I met, they were no longer active in their community. As John Maxwell said in one of his books, being a leader takes an immense amount of energy, and if they don't take time to rest leaders get tired. Local challenges in Puerto Rico (e.g., hurricanes) place significant pressure on community leaders, and this situation is exacerbated when community members lack a sense of community. Consequently, it is very important to understand this concept of tourism host communities and, therefore, potential future research is needed.

Community awareness of tourism-related impacts is another crucial area to explore. As we see from this research, people expressed a tremendous desire for very high levels of tourism development. From my intervention experience, many people may not be fully aware of the implications of a development of such magnitude on their communities. As previous research points out, in communities that are starting to introduce themselves to tourism initiatives, there may be a lack of awareness of critical issues, and community members might not fully understand the negative impacts of tourism development. This introduces a new research dimension that merits exploration in CIRMA. Dr. Duffy, a current faculty member in our department, and other colleagues developed a Sustainable Tourism Development Index, which is a tool that assesses awareness of tourism impacts and agreement to principles of sustainable tourism development. The implementation of this tool can serve as a valuable source of information that can inform future management actions.

To conclude, CIRMA stands as a natural gem nestled within a unique landscape, complemented by the warmth and hospitality of its inhabitants. These mountains shaped me and influenced many parts of my being. My passion for the natural world started here, in the cloudy mountains of Sierra de Luquillo. Being surrounded by this landscape and growing up exploring the trails, rivers, and mountain peaks of EYNF, allowed me to lay the foundation of my nature-based academic work and outdoor interests. I wonder, how many people have been touched by the forest? How many people would have been inspired? The answer to these questions lies in all those beautiful beings that live in this region.

In the heart of these communities lies a profound bond with their natural world. As we look towards the future, it is imperative that we not only preserve this connection but strengthen it through active engagement and collaboration. By fostering open dialogue and inviting community members to participate in the planning and management in CIRMA, we can ensure that their voices are not only heard but integrated into every decision that shapes the landscape we cherish. For instance, previous research found that activities such as hiking, gardening, birdwatching, and festivals influence the community's levels of support toward local tourism initiatives and sustainable tourism. Implementing an educational program aimed at fostering participation in CIRMA activities stands as a pivotal managerial initiative to enhance the bond between communities and EYNF, consequently bolstering conservation awareness and understanding of PA policies among community members. Through inclusive partnerships with local communities and grassroots organizations, we can forge pathways that sustain PA-people connections, weaving together the threads of shared stewardship and pro-environmental behaviors. Together, we can build a legacy of harmony between communities and their forests, inspiring generations to come with the power of unity, purpose, and love for the land that they call home.

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## APPENDIX A: Community Survey English Version



### Community Engagement Survey

1. We would like to know how aware you are of the Road 186 in this region. Many people are not aware of this, so it is OK if you are not. Please just answer as correctly as possible.

<u>How aware are you that...</u>	Not at all aware	Slightly aware	Somewhat aware	Moderately aware	Extremely aware
...many locations along Road 186 are within the <i>El Yunque National Forest (EYNF)</i> ?	1	2	3	4	5
...many areas along Road 186 are part of a designated area (known as <i>CIRMA</i> ) where the community and <i>EYNF</i> staff work together to manage what happens there?	1	2	3	4	5
...the <i>EYNF</i> and the <i>CIRMA</i> are managed by the United States Department of Agriculture's Forest Service (i.e., U.S. Forest Service)?	1	2	3	4	5
...Road 186 is <u>not</u> a federal road, and <u>not</u> managed and maintained by <i>EYNF</i> staff?	1	2	3	4	5
... <i>EYNF</i> wants to manage the forest considering local input and developed a plan to help do this?	1	2	3	4	5

**Please read.** El Yunque National Forest (EYNF) is the only tropical rainforest protected by the USDA Forest Service. Since 2018, El Yunque has adopted a shared stewardship management model, known as co-management. This model invites the public (as stakeholders and key partners) to collaborate with the Forest Service (as an agency) in planning and managing site-specific localities within the forest. The areas designated with this approach are located in the lower elevation parts of the national forest, officially known as the Community Interface Resource Management Area (CIRMA). This area is intended to provide new opportunities for adjacent communities and reduce visitor pressure on ecologically sensitive areas and other recreational sites.

2. During the last 12 months, how many times did you visit the natural areas in *EYNF* along Road 186?

Your response: \_\_\_\_\_ . If you didn't visit, proceed to the next question.

3. To what extent do you agree or disagree that each of the following may be barriers to you visiting the recreational sites at Road 186?

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly Agree
I prefer to visit other natural areas	1	2	3	4	5
I'm too busy; I have no time	1	2	3	4	5
I am not familiar with Road 186 resources or facilities	1	2	3	4	5
The road damages my vehicle	1	2	3	4	5
Facilities are in poor condition (e.g., signs, picnic shelters, parking)	1	2	3	4	5
The sites don't offer the facilities that I would like to use	1	2	3	4	5
I have no interest in going there	1	2	3	4	5
The sites are too far away	1	2	3	4	5
I don't have a way to get there	1	2	3	4	5
I don't have anyone to go with me	1	2	3	4	5
My physical condition prevents me from going there	1	2	3	4	5

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly Agree
I don't feel safe visiting it	1	2	3	4	5
I prefer indoor activities	1	2	3	4	5
The sites don't offer the activities that I want to do	1	2	3	4	5
Others (please specify):	1	2	3	4	5

4. EYNF wants to partner with the community to develop tourism along the Road 186, both within and outside of the forest. The following scenarios are potential ways to develop more tourism along Road 186. Which of these would you like to see occur on Road 186? (Check all that apply)

<input type="checkbox"/> River access sites	<input type="checkbox"/> Private commercial business and services
<input type="checkbox"/> Scenic overlooks	<input type="checkbox"/> Parking facilities to promote use
<input type="checkbox"/> Educational trails	<input type="checkbox"/> Guided tours by local tour guides
<input type="checkbox"/> Recreational trails	<input type="checkbox"/> Guided tours by non-local tourist guides
<input type="checkbox"/> Improved road	<input type="checkbox"/> Guided adventure tours (e.g., rappelling, canyoneering, snorkeling)
<input type="checkbox"/> Visitor center	<input type="checkbox"/> Restoration of old trails
<input type="checkbox"/> A shuttle system	<input type="checkbox"/> Renovation of old facilities
<input type="checkbox"/> Bus tours	<input type="checkbox"/> Wellness experiences (e.g., yoga, forest therapy)
<input type="checkbox"/> Guided scenic tours	<input type="checkbox"/> None, I don't think more tourism development should occur on Road 186
<input type="checkbox"/> Other (please specify): _____	

5. What factors would you want EYNF managers and the communities to consider in developing tourism along Road 186?

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6. Please consider the amount and type of tourism that currently exists along the Road 186 corridor. If this same type of tourism were to increase by different amounts how acceptable or unacceptable do you think it would be? Please rate below the acceptability of each percent increase in amount (from the current type of tourism) that could potentially occur along the Road 186 corridor?

	Tourism development (% increase)	Very unacceptable	Unacceptable	Moderately unacceptable	Slightly unacceptable	Neither acceptable or unacceptable	Slightly acceptable	Moderate acceptable	Acceptable	Very acceptable
↓	0% (No Change)	-4	-3	-2	-1	0	+1	+2	+3	+4
	20%	-4	-3	-2	-1	0	+1	+2	+3	+4
	40%	-4	-3	-2	-1	0	+1	+2	+3	+4
	60%	-4	-3	-2	-1	0	+1	+2	+3	+4
	80%	-4	-3	-2	-1	0	+1	+2	+3	+4
	100%	-4	-3	-2	-1	0	+1	+2	+3	+4

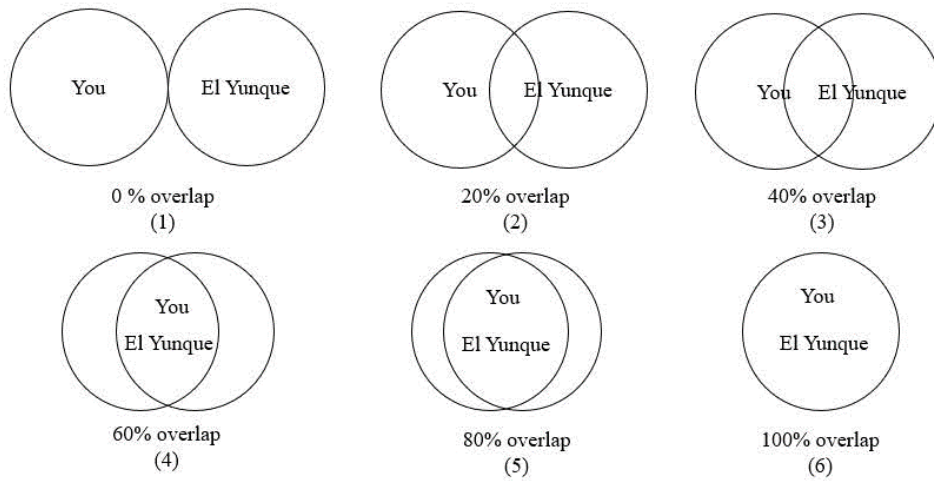
7. Should EYNF prioritize the tourism economy over local use on Road 186? →  Yes  No  Don't Know

8. Please explain the reason for your answer to the previous question. Provide examples or details if possible.

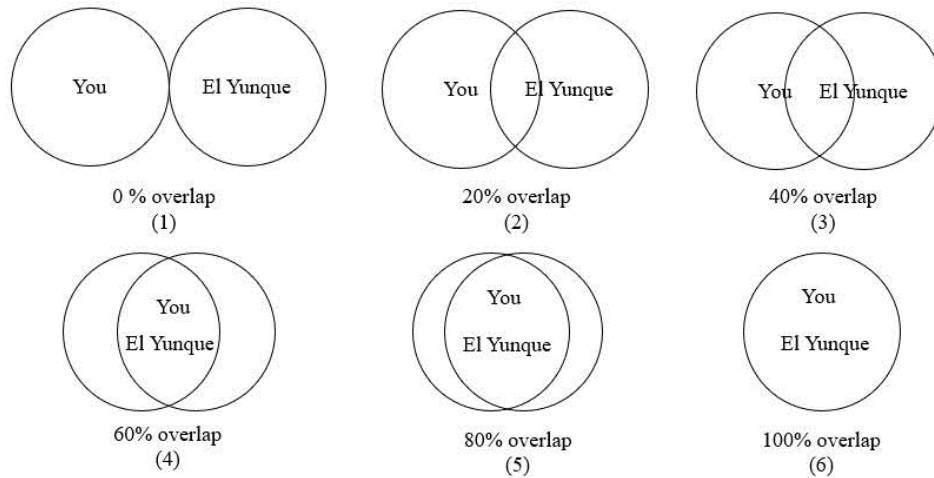
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9. How involved are you currently in the in planning and/or management of the CIRMA with EYNF? Mark one set of circles that represent your current level of involvement.



10. How involved would you like to be in planning and/or management of the CIRMA with EYNF? Mark one set of circles that represent your desired level of involvement.



11. Which ways are you involved now and how much would you like to be involved in the future with planning and/or management of the CIRMA with EYNF?

	Which way are you involved now?	How much would you like to be involved in the future?					
		Not at all	←————→			A lot	
EYNF focus group meetings	<input type="checkbox"/>	→	1	2	3	4	5
Meetings in the community	<input type="checkbox"/>	→	1	2	3	4	5
In-person meetings lead by EYNF Staff	<input type="checkbox"/>	→	1	2	3	4	5
Online meetings lead by non-profits (e.g., Vitrina Solidaria, Amigos del Yunque) related to EYNF	<input type="checkbox"/>	→	1	2	3	4	5
In person meetings lead by a non-profit (e.g., Vitrina Solidaria, Amigos del Yunque) related to EYNF	<input type="checkbox"/>	→	1	2	3	4	5
Participating in programs that help link the community to EYNF (e.g., educational sessions, volunteer programs, citizen science projects, etc.)	<input type="checkbox"/>	→	1	2	3	4	5
Other (please specify):		→	1	2	3	4	5

12. Which of the following ways would you like to receive information about EYNF and CIRMA? (Please select all desired alternatives.)

<input type="checkbox"/> Social media (Facebook, Twitter, Instagram, etc.)	<input type="checkbox"/> Through community leaders
<input type="checkbox"/> Electronic newsletter	<input type="checkbox"/> Flyers or posters
<input type="checkbox"/> Emailing	<input type="checkbox"/> EYNF website
<input type="checkbox"/> Radio	<input type="checkbox"/> Phone call
<input type="checkbox"/> At recreational sites along Road 186	<input type="checkbox"/> Text (WhatsApp group)
<input type="checkbox"/> TV/newspaper	<input type="checkbox"/> None
<input type="checkbox"/> Other (please specify): _____	

13. To what extent do you agree or disagree with the following statements about engagement between communities and EYNF regarding CIRMA?

	Strongly disagree	Somewhat Disagree	Neither agree nor disagree	Somewhat agree	Strongly agree	Don't know
My community should play a significant role in the <u>planning</u> of CIRMA	1	2	3	4	5	<input type="checkbox"/>
My community should play a significant role in the <u>management</u> of CIRMA	1	2	3	4	5	<input type="checkbox"/>
EYNF staff should lead the planning and management of CIRMA	1	2	3	4	5	<input type="checkbox"/>
My community and EYNF staff should play equal roles in planning and management of CIRMA	1	2	3	4	5	<input type="checkbox"/>
The EYNF staff need to improve their co-operation with local communities in the planning and management of CIRMA	1	2	3	4	5	<input type="checkbox"/>



14. To what extent do you agree or disagree with the following statement about your experience with EYNF's CIRMA?

	Strongly disagree	Somewhat Disagree	Neither agree nor disagree	Somewhat agree	Strongly agree	Don't know
I now have more access to EYNF leadership and staff than I did before	1	2	3	4	5	<input type="checkbox"/>
Information about meetings and workshops is distributed sufficiently to reach everyone	1	2	3	4	5	<input type="checkbox"/>
Living close to CIRMA is good for the livelihood of my family and me	1	2	3	4	5	<input type="checkbox"/>
My family and I support the direction of shared responsibilities for management of CIRMA	1	2	3	4	5	<input type="checkbox"/>
My family and I are willing to volunteer to help CIRMA	1	2	3	4	5	<input type="checkbox"/>
If given the opportunity, I believe that my views will be considered in decision-making by EYNF managers	1	2	3	4	5	<input type="checkbox"/>
EYNF listens to my views when developing their management plans	1	2	3	4	5	<input type="checkbox"/>
EYNF managers develop management plans based on mutual understanding between stakeholders	1	2	3	4	5	<input type="checkbox"/>
EYNF regularly and openly presents their plans	1	2	3	4	5	<input type="checkbox"/>
The current plans are clear and understandable	1	2	3	4	5	<input type="checkbox"/>
Developing tourism along the 186 Road will be good for my community	1	2	3	4	5	<input type="checkbox"/>

15. To what extent do you agree or disagree with the following statements in regard to expressing, co-operating, and participating in environmental conservation and sustainable use of natural resources in EYNF's CIRMA.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree	Don't know
Information about EYNF meetings and workshops is distributed sufficiently to reach local people	1	2	3	4	5	<input type="checkbox"/>
EYNF managers organize activities for listening to views of local people	1	2	3	4	5	<input type="checkbox"/>
EYNF managers take action to resolve concerns and issues of local people	1	2	3	4	5	<input type="checkbox"/>
There is enough information and understanding of the rights of the community regarding co-operation and formal participation in environmental management in EYNF	1	2	3	4	5	<input type="checkbox"/>
I know how to express my concerns or issues with what EYNF does	1	2	3	4	5	<input type="checkbox"/>

16. Indicate how much you agree or disagree with the following statements about your trust in EYNF.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree	Don't know
EYNF efficiently spends money	1	2	3	4	5	<input type="checkbox"/>
EYNF is effective in solving problems	1	2	3	4	5	<input type="checkbox"/>
I can trust EYNF to do what is right	1	2	3	4	5	<input type="checkbox"/>
EYNF supports my views	1	2	3	4	5	<input type="checkbox"/>
EYNF and I share similar ways of thinking	1	2	3	4	5	<input type="checkbox"/>
EYNF has similar goals to mine	1	2	3	4	5	<input type="checkbox"/>
EYNF employees are considerate of others in decision-making	1	2	3	4	5	<input type="checkbox"/>
EYNF employees really care what happens to me and my community	1	2	3	4	5	<input type="checkbox"/>
EYNF employees are sensitive to the local economic impacts of tourism and recreation	1	2	3	4	5	<input type="checkbox"/>
I trust the EYNF administration more than the U.S. Federal Government	1	2	3	4	5	<input type="checkbox"/>
I trust the EYNF administration more than the Puerto Rican Government	1	2	3	4	5	<input type="checkbox"/>
I trust the EYNF administration more than the Municipal Government	1	2	3	4	5	<input type="checkbox"/>
I trust the EYNF more in the last three years than I did before that	1	2	3	4	5	<input type="checkbox"/>

This final section asks about your household and demographic information.  
This information will be kept confidential and used for statistical purposes only.

17. What year were you born? \_\_\_\_\_

18. What is your gender? (Please select one)  Female  Male

19. Are you Puerto Rican?  Yes  No

20. Were you raised in Puerto Rico?  Yes  No

21. Where is your primary residence? Please check one answer and include details.

Puerto Rico (Please specify municipality \_\_\_\_\_ Zip Code \_\_\_\_\_)

United States of America (Please specify Zip Code \_\_\_\_\_)

Other (Please specify country \_\_\_\_\_)

## APPENDIX B: Community Survey Spanish Version



### Encuesta de Participación Comunitaria

1. Nos gustaría saber qué tan consciente está usted de la Carretera 186 en esta región. Muchas personas pudieran no estar conscientes, por lo que está bien si no lo estás. Por favor, responda lo más correctamente posible.

<u>¿Qué tan consciente está usted que...</u>	No del todo consciente	Un poco consciente	Algo consciente	Moderadamente consciente	Extremadamente consciente
... algunas áreas a lo largo de la Carretera 186 están dentro del <i>Bosque Nacional El Yunque</i> (en adelante El Yunque)?	1	2	3	4	5
... algunas áreas a lo largo de la Carretera 186 son parte de un <i>área designada (conocida como CIRMA)</i> en donde la comunidad y el personal de El Yunque trabajan juntos para manejar lo que allí sucede?	1	2	3	4	5
... El Yunque y el CIRMA son manejados por el Servicio Forestal del Departamento de Agricultura de los Estados Unidos?	1	2	3	4	5
... la Carretera 186 <u>no</u> es una carretera federal y <u>no</u> es administrada ni mantenida por el personal de El Yunque.	1	2	3	4	5
... El Yunque quiere manejar el bosque considerando los insumos locales y desarrolló un plan para apoyar este proceso?	1	2	3	4	5

**Favor de leer.** El Bosque Nacional El Yunque (en adelante El Yunque) es el único bosque tropical lluvioso protegido por el Servicio Forestal de los Estados Unidos. Desde el 2018, El Yunque adoptó un modelo de gestión de responsabilidad compartida, conocido como co-manejo, el cual invita al público (como partes interesadas y aliados claves) a colaborar con el Servicio Forestal (como agencia) en la planificación y el manejo de áreas específicas dentro del bosque. Las áreas designadas con este enfoque se encuentran en las partes más bajas del bosque nacional, áreas oficialmente conocidas como Área de Interfase para el Manejo de Recursos Comunitarios. Esta área tiene como objetivo brindar nuevas oportunidades a las comunidades adyacentes y reducir la presión ejercida por visitantes en otros sitios recreativos y áreas ecológicamente sensibles dentro del bosque.

2. Durante los últimos 12 meses, ¿cuántas veces visitó las áreas naturales de El Yunque a lo largo de la Carretera 186?

Su respuesta: \_\_\_\_\_ . (Favor de responder con un número)

3. ¿Hasta qué punto está de acuerdo o en desacuerdo con que cada uno de los siguientes puede ser una barrera para que usted visite nuevamente los sitios recreativos en la Carretera 186?

	Muy en desacuerdo	Algo en desacuerdo	Ni de acuerdo ni en desacuerdo	Parcialmente de acuerdo	Totalmente de acuerdo
Prefiero visitar otros espacios naturales	1	2	3	4	5
Estoy demasiado ocupado; No tengo tiempo	1	2	3	4	5
No estoy familiarizado con los recursos o facilidades de la carretera 186	1	2	3	4	5
La carretera daña mi vehículo	1	2	3	4	5
Facilidades están en condiciones inadecuadas (ej. rótulos, gazebos, estacionamiento)	1	2	3	4	5
Los sitios no ofrecen las facilidades que me gustaría usar	1	2	3	4	5
No tengo interés en ir	1	2	3	4	5
No tengo forma de llegar	1	2	3	4	5
No tengo a nadie que me acompañe	1	2	3	4	5
Mi condición física me impide ir allí	1	2	3	4	5
No me siento seguro(a) visitándolo	1	2	3	4	5
Prefiero hacer actividades que no sean al aire libre	1	2	3	4	5
Las áreas están demasiado lejos	1	2	3	4	5
Las áreas no ofrecen las actividades que quiero hacer	1	2	3	4	5
Otro (por favor especifique):	1	2	3	4	5

4. El Yunque está considerando afiliarse con la comunidad para desarrollar el turismo a lo largo de la carretera 186, tanto dentro como fuera del bosque. Los siguientes escenarios son formas potenciales de desarrollar más turismo a lo largo de la carretera 186. ¿Cuál de estas le gustaría ver que ocurra en la carretera 186?

<input type="checkbox"/> Lugares para acceder al río	<input type="checkbox"/> Servicios y negocios comerciales privados
<input type="checkbox"/> Miradores panorámicos	<input type="checkbox"/> Facilidades de estacionamiento para promover el uso
<input type="checkbox"/> Veredas educativas	<input type="checkbox"/> Recorridos guiados por guías turísticas locales
<input type="checkbox"/> Veredas recreativas	<input type="checkbox"/> Recorridos guiados por guías turísticas no locales
<input type="checkbox"/> Carretera mejorada	<input type="checkbox"/> Recorridos de aventura (ej. rappelling, cañonismo, snorkeling)
<input type="checkbox"/> Centro de visitantes	<input type="checkbox"/> Restauración de veredas antiguas
<input type="checkbox"/> Sistema de transporte	<input type="checkbox"/> Renovación de antiguas instalaciones
<input type="checkbox"/> Recorridos en autobús	<input type="checkbox"/> Experiencias de bien estar (ej. yoga, terapias de bosque)
<input type="checkbox"/> Recorrido escénico guiado	<input type="checkbox"/> Ninguno, no creo que deba ocurrir más desarrollo turístico en la carretera 186
<input type="checkbox"/> Otro (por favor especifique): _____	

5. ¿Qué factores le gustaría que los administradores de El Yunque y las comunidades consideraran en el desarrollo del turismo a lo largo de la Ruta 186?

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6. Considere el turismo actual a lo largo de la carretera 186. Si este turismo aumentara, ¿Qué tan aceptable sería para usted? A continuación, marque su nivel de aceptabilidad PARA CADA UNO de los siguientes incrementos en turismo (0%, 20%, 40%, 60%, 80%, 100%) que podrían ocurrir a lo largo de la carretera 186.

Incrementos en turismo (%)		<i>Muy inaceptable</i>	<i>Inaceptable</i>	<i>Moderadamente inaceptable</i>	<i>Ligeramente inaceptable</i>	<i>Ni aceptable ni inaceptable</i>	<i>Ligeramente aceptable</i>	<i>Moderadamente aceptable</i>	<i>Aceptable</i>	<i>Muy aceptable</i>
↓	0% (No cambio al turismo actual)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	20%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	40%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	60%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	80%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	100%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. ¿Debe El Yunque priorizar la economía del turismo sobre el uso local en la Carretera 186?

Sí  No  No sé

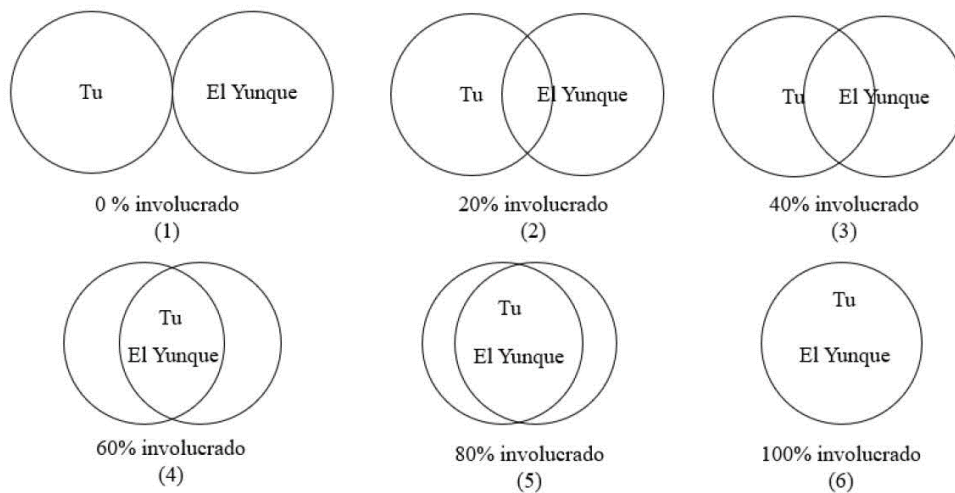
8. Favor de explicar el motivo de su respuesta en la pregunta anterior. Proporcione ejemplos o detalles si es posible.

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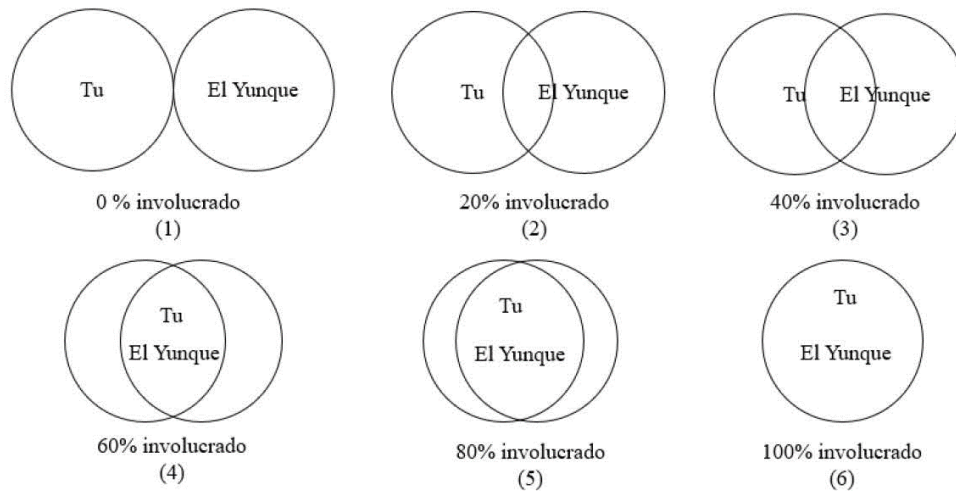


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9. ¿Qué tan involucrado está actualmente en la planificación y/o manejo del CIRMA con el personal de El Yunque? Marque la representación que mejor ilustra su nivel actual de participación.



10. ¿Qué tan involucrado le gustaría estar en la planificación y/o manejo del CIRMA con el personal de El Yunque? Marque la representación que mejor ilustra su nivel deseado de participación.



11. ¿De qué maneras está involucrado ahora y que tanto le gustaría estarlo en el futuro con la planificación y/o gestión del CIRMA con el personal de El Yunque?

	¿De qué manera estás involucrado ahora?	¿Cuánto le gustaría participar en el futuro?				
		Nada	←————→			Mucho
Grupos focales en El Yunque	<input type="checkbox"/>	→ 1	2	3	4	5
Reuniones en la comunidad	<input type="checkbox"/>	→ 1	2	3	4	5
Reuniones presenciales lideradas por el personal de El Yunque	<input type="checkbox"/>	→ 1	2	3	4	5
Reuniones virtuales lideradas por organizaciones sin fines de lucro (ej., Vitrina Solidaria, Amigos del Yunque)	<input type="checkbox"/>	→ 1	2	3	4	5
Reuniones presenciales lideradas por organizaciones sin fines de lucro (ej. Vitrina Solidaria, Amigos del Yunque)	<input type="checkbox"/>	→ 1	2	3	4	5
Participar en programas que ayuden a vincular a la comunidad con El Yunque (ej., sesiones educativas, programas de voluntariado, proyectos de ciencia ciudadana, etc.)	<input type="checkbox"/>	→ 1	2	3	4	5
Otro (por favor especifique):		→ 1	2	3	4	5

12. ¿De cuál de las siguientes formas le gustaría recibir información sobre El Yunque y el CIRMA? (Por favor seleccione todas alternativas deseadas)

<input type="checkbox"/> Redes sociales (Facebook, Twitter, Instagram, etc.)	<input type="checkbox"/> Mediante líderes comunitarios
<input type="checkbox"/> Boletín electrónico	<input type="checkbox"/> Flyers o posters
<input type="checkbox"/> Correo electrónico	<input type="checkbox"/> Página web de El Yunque
<input type="checkbox"/> Radio	<input type="checkbox"/> Llamada telefónica
<input type="checkbox"/> En las áreas recreativas a lo largo de la carretera 186	<input type="checkbox"/> Texto (grupo de WhatsApp)
<input type="checkbox"/> TV/periódico	<input type="checkbox"/> Ninguno
<input type="checkbox"/> Otro (por favor especifique): _____	

13. ¿En qué medida está de acuerdo o en desacuerdo con las siguientes afirmaciones sobre el compromiso entre las comunidades y El Yunque con respecto a CIRMA?

	Muy en desacuerdo	Algo en desacuerdo	Ni de acuerdo ni en desacuerdo	Parcialmente de acuerdo	Totalmente de acuerdo	No sé
Mi comunidad debe desempeñar un papel importante en la <u>planificación</u> del CIRMA	1	2	3	4	5	<input type="checkbox"/>
Mi comunidad debe desempeñar un papel importante en el <u>manejo</u> del CIRMA	1	2	3	4	5	<input type="checkbox"/>
El personal de El Yunque debe liderar la planificación y manejo del CIRMA	1	2	3	4	5	<input type="checkbox"/>
Mi comunidad y el personal de El Yunque deben desempeñar roles iguales en la planificación y gestión del CIRMA	1	2	3	4	5	<input type="checkbox"/>
El personal de El Yunque necesita mejorar su cooperación con las comunidades locales en la planificación y manejo del CIRMA	1	2	3	4	5	<input type="checkbox"/>

14. ¿En qué medida está de acuerdo o en desacuerdo con las siguientes afirmaciones sobre su experiencia con el CIRMA?

	Muy en desacuerdo	Algo en desacuerdo	Ni de acuerdo ni en desacuerdo	Parcialment e de acuerdo	Totalmente de acuerdo	No sé
Ahora tengo más acceso al liderazgo y al personal de El Yunque que antes	1	2	3	4	5	<input type="checkbox"/>
La información relacionada a las reuniones y los talleres se distribuye lo suficiente para llegar a todos	1	2	3	4	5	<input type="checkbox"/>
Vivir cerca de CIRMA es bueno para el sustento de mi familia y mío	1	2	3	4	5	<input type="checkbox"/>
Mi familia y yo apoyamos la responsabilidad compartida deseada en el futuro para manejar el CIRMA	1	2	3	4	5	<input type="checkbox"/>

	Muy en desacuerdo	Algo en desacuerdo	Ni de acuerdo ni en desacuerdo	Parcialmente de acuerdo	Totalmente de acuerdo	No sé
Mi familia y yo estamos dispuestos a ser voluntarios para ayudar a el CIRMA	1	2	3	4	5	<input type="checkbox"/>
Si tengo la oportunidad, creo que mis puntos de vista serán considerados en la toma de decisiones por parte de los manejadores de El Yunque	1	2	3	4	5	<input type="checkbox"/>
El Yunque escucha mis puntos de vista al desarrollar los planes de manejo	1	2	3	4	5	<input type="checkbox"/>
Los manejadores de El Yunque desarrollan planes de manejo basados en el entendimiento mutuo entre las partes interesadas	1	2	3	4	5	<input type="checkbox"/>
El Yunque presenta regularmente y abiertamente sus planes	1	2	3	4	5	<input type="checkbox"/>
Los planes actuales son claros y comprensibles	1	2	3	4	5	<input type="checkbox"/>
Desarrollar el turismo a lo largo de la Carretera 186 será bueno para mi comunidad	1	2	3	4	5	<input type="checkbox"/>

15. ¿En qué medida está de acuerdo o en desacuerdo con las siguientes afirmaciones en cuanto a expresar, cooperar y participar en la conservación del medio ambiente y el uso sostenible de los recursos naturales en el CIRMA?

	Muy en desacuerdo	Algo en desacuerdo	Ni de acuerdo ni en desacuerdo	Parcialmente de acuerdo	Totalmente de acuerdo	No sé
La información sobre las reuniones y talleres de El Yunque se distribuyen lo suficiente como para llegar a las personas locales	1	2	3	4	5	<input type="checkbox"/>
Los manejadores de El Yunque organizan actividades para escuchar la opinión de la población local	1	2	3	4	5	<input type="checkbox"/>
Los manejadores de El Yunque toman medidas para resolver inquietudes y problemas de la población local	1	2	3	4	5	<input type="checkbox"/>
Hay suficiente información y comprensión de los derechos de la comunidad en cuanto a la cooperación y participación formal en el manejo ambiental en El Yunque	1	2	3	4	5	<input type="checkbox"/>
Sé cómo expresar mis inquietudes o problemas relacionados a lo que El Yunque hace	1	2	3	4	5	<input type="checkbox"/>



16. Indique su grado de acuerdo o desacuerdo con las siguientes afirmaciones sobre su confianza en El Yunque.

	Muy en desacuerdo	Algo en desacuerdo	Ni de acuerdo ni en desacuerdo	Parcialmente de acuerdo	Totalmente de acuerdo	No sé
El Yunque invierte el dinero de manera eficiente	1	2	3	4	5	<input type="checkbox"/>
El Yunque resuelve problemas de manera efectiva	1	2	3	4	5	<input type="checkbox"/>
Puedo confiar en que El Yunque hará lo correcto	1	2	3	4	5	<input type="checkbox"/>
El Yunque apoya mis puntos de vista	1	2	3	4	5	<input type="checkbox"/>
El Yunque y yo compartimos formas de pensar similares	1	2	3	4	5	<input type="checkbox"/>
El Yunque tiene objetivos similares a los míos	1	2	3	4	5	<input type="checkbox"/>
Los empleados de El Yunque son considerados con los demás en la toma de decisiones	1	2	3	4	5	<input type="checkbox"/>
A los empleados de El Yunque realmente les importa lo que me pase a mí y a mi comunidad	1	2	3	4	5	<input type="checkbox"/>
Los empleados de El Yunque son sensibles a los impactos económicos de la recreación y del turismo local	1	2	3	4	5	<input type="checkbox"/>
Confío más en la administración de El Yunque que en el Gobierno Federal de los EE. UU.	1	2	3	4	5	<input type="checkbox"/>
Confío más en la administración del El Yunque que en el Gobierno de Puerto Rico	1	2	3	4	5	<input type="checkbox"/>
Confío más en la administración de El Yunque que en el Gobierno Municipal	1	2	3	4	5	<input type="checkbox"/>
Confío más en El Yunque en estos tres últimos años que antes	1	2	3	4	5	<input type="checkbox"/>

Esta sección final pregunta sobre su hogar e información demográfica.  
Esta información se mantendrá confidencial y se utilizará únicamente con fines estadísticos.

17. ¿En qué año naciste? \_\_\_\_\_

18. ¿Cuál es tu género? (Favor seleccione uno)  Femenino  Masculino

19. ¿Eres puertorriqueño?  Sí  No

20. ¿Se crió en Puerto Rico?  Sí  No

21. ¿Dónde está su residencia principal? Marque una respuesta e incluya detalles.

Puerto Rico (Por favor especificar municipio \_\_\_\_\_ código postal \_\_\_\_\_)

Estados Unidos de América (Especifique el código de área \_\_\_\_\_)

Otro (Por favor, especifique el país \_\_\_\_\_)