

Chapter 7

Community-Based Strategies to Promote Primate Conservation in Agricultural Landscapes: Lessons Learned from Case Studies in South America



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Contents

7.1 Introduction.....	104
7.2 Primates in Agricultural Landscapes.....	106
7.3 Community-Based Conservation Approaches.....	107
7.4 Conclusions.....	115
References.....	116

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Abstract The increasing demand for natural resources has led to continued changes in land use, affecting the survival of many wild species, including non-human primates. One of the major challenges for primate conservation in landscapes dominated by agriculture is to find environmentally friendly alternatives that provide economic benefits to local communities while improving the health of the ecosystems that primates and humans rely on. Community-based conservation is an approach whereby researchers and conservationists work in collaboration with local people to plan, implement, and assess conservation projects. This ensures effective and sustainable management of their natural resources based on the specific needs and cultural traditions of each community. In this chapter, we present an overview of primates living in agricultural landscapes and provide some guidelines for developing community-based conservation projects based on experiences of three case studies from Colombia and Ecuador. It is important to create participatory spaces for local communities to become involved in the co-planning and co-design of conservation actions and provide training that strengthens people's capacities to acquire the necessary skills for implementing sustainable practices that bring revenue to the communities while protecting wildlife. Due to the social nature of community-based approaches, these conservation projects must also consider the socioeconomic and political contexts that influence the relationships between people and wildlife at each intervention site.

Keywords Participatory conservation · Sustainable agriculture · Economic alternatives · Capacity building · Local traditions · Multidisciplinary conservation · Sustainable cacao · Sustainable livestock · Empowering communities · Natural resource management

7.1 Introduction

The continued expansion of human populations around the world has resulted in increased demands for food and other natural resources. This leads to intensified deforestation and land-use shifts towards small-scale subsistence farming, large-scale industrial agriculture, cattle ranching, and extractivist activities (Godfray et al., 2010). Due to these changes in land use, many animal species, including non-human primates (hereafter primates), have been subject to habitat loss, fragmentation, and degradation, leading to significant contractions of their home ranges and an increase in their spatial and ecological overlap with humans (Fuentes & Hockings, 2010). Primates, however, are known for their behavioural and ecological flexibility, including a high degree of **vagility**, and, for some species, the ability to survive in degraded landscapes (e.g. Hending, 2021). This results in a shared space with humans and an increased likelihood of direct human-primate interactions. As habitat alteration continues, it is imperative to understand how wild primates and humans use ecological and social spaces to effectively develop strategies that allow the survival of both taxa (Fuentes, 2012; Fuentes et al., 2016).

Primates and humans share coevolutionary histories due to human modification of landscapes occupied by primates, shaping their movement patterns, ranging, habitat use, and genetic variation. However, primates have also played a significant role in shaping the culture, economy, and everyday lives of people living within close proximity to them (reviewed in Fuentes, 2012; Fuentes et al., 2016). Therefore, understanding the human-primate interface is crucial to ensure the continued survival of the species occupying today's urban **ecotones** and complex **heterogeneous human-modified landscapes** (Lee, 2010). To enable **human-primate coexistence**, it is necessary to integrate the interests and concerns of both taxa and undertake conservation actions that consider an ecological framework accounting for both human and primate requirements (Riley, 2006; Wolfe & Fuentes, 2007).

Community-based conservation is focused on including the participation and buy-in of local communities in the planning, implementation, and assessment of conservation projects (Baldauf, 2020). This bottom-up conservation approach ensures that communities take an active role in the management of local species and their habitats. It also allows local people to gain autonomy in the management and control of their territories in a sustainable manner. This approach not only guarantees that the community's interests are taken into account but also promotes a relationship based on trust and collaboration between local communities, conservation managers, and researchers. Rather than relying on interventions from outsiders who may not understand the nuances of the human-wildlife dynamics at each site, may not have appropriate permissions, and/or are focused solely on the protection of wildlife, community-based interventions are centred around the needs of the people living in the area (Adams & Hulme, 2001; Shaffer, 2015). For human and primate coexistence to occur within agricultural landscapes, the ever-growing demand for agricultural products, the needs of local communities, and the successful conservation of primate populations need to occur simultaneously (Hill, 2002). However, successful coexistence depends on the specific needs and opportunities of each community, their relationship with wildlife, and the geographic, historic, and socio-economic context of each shared landscape. Therefore, it is important to develop inclusive strategies that are environmentally and financially sustainable and meet both primate and human needs.

In this chapter, we present an overview of primates living in agricultural landscapes and provide some guidelines on how to engage with local communities to increase the success of participatory conservation projects. We also present a set of case studies from South America that demonstrate first-hand strategies to co-develop community-based projects to ensure the conservation of primate species in human-modified landscapes. Our goal is that by presenting examples of applied community-based approaches for the conservation of wild primates, we can inform and guide current and future primate conservationists about the different strategies and their varying levels of success in various contexts and scenarios. With this, we want to stress the importance of involving and working with local communities and governments in conservation project decision-making, as well as providing suggestions of what we think are the best practices to implement primate threat mitigation strategies that meet both primate ecological demands and human interests and wellbeing.

7.2 Primates in Agricultural Landscapes

The ongoing expansion of tropical agriculture is particularly catastrophic for primates, as almost all extant primate taxa live within tropical regions, and most of these primates depend exclusively on tropical forest for their survival (Chapman et al., 2003). In the last 30 years alone, agricultural land has expanded by over 1.5 million km² into primate habitat, and this expansion and its associated deforestation are now regarded as one of the biggest threats to global primate populations (Estrada et al., 2017; Fernández et al., 2021). Croplands now occupy 17.1 million km² (35.3%) of the 50.2 million km² global primate distribution (Fig. 7.1), much of which is directly adjacent to remaining tropical forests, resulting in intense anthropogenic encroachment and disturbance of primate habitat (Estrada et al., 2017).

Many tropical landscapes are now dominated by matrices of isolated forest patches surrounded by croplands and plantations (Perfecto & Vandermeer, 2008). Although simplified agroecosystems such as pastures and **monocultures** generally exclude most native biodiversity and restrict the dispersal of many primates, more complex systems (e.g. **successional agroforestry** and **silvopastoral systems**) can support more biodiversity and serve as suitable habitat or travel corridors while providing food resources and dispersal opportunities (Estrada et al., 2012; Guzmán et al., 2016). Over 60 primate species have been observed foraging within croplands and plantations or travelling through them to reach adjacent forest fragments

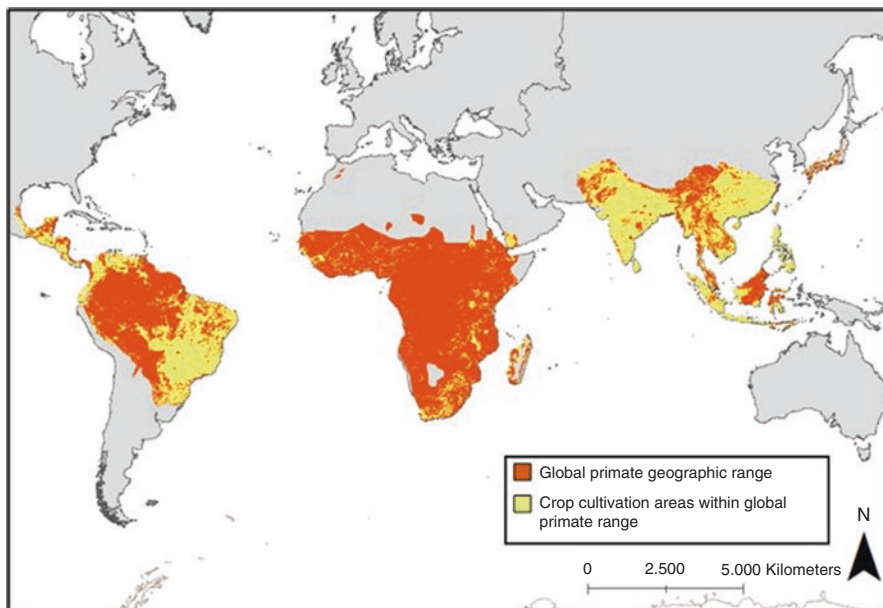


Fig. 7.1 The global distribution of the Primate order (orange) and the land used for crop cultivation within this geographic range (yellow). Map created with a scale of 1:100,000,000. Global crop geoTIFF data downloaded from [Earthstat.org](https://earthstat.org)

(Estrada et al., 2012). For example, several arboreal primates in Central and South America have been observed moving within matrices of cacao, coffee, or bamboo *agroecosystems* and through cattle ranching landscapes (e.g. Estrada et al., 2006; Guzmán et al., 2016; Loría & Méndez-Carvajal, 2017; Gómez-Posada, 2014). In Madagascar, several species of lemur have been recorded in vanilla and cacao plantations, and these areas may represent extensions of suitable habitat for these endemic primates (Hending et al., 2018; Webber et al., 2019). Chimpanzees (*Pan troglodytes*) and a multitude of monkey species use banana, palm oil, and mango plantations as temporary habitats, while they travel between forest fragments in sub-Saharan Africa (Estrada et al., 2012). In Asia, tarsiers (*Tarsius* sp.) have adapted to live in cacao, ylang-ylang, and coffee plantations (Merker & Muhlenberg, 2000), and several cercopithecids use palm oil plantations as **travel corridors** (Campbell-Smith et al., 2010). These examples provide evidence that agricultural practices can provide both economic benefits to local communities while maintaining landscapes with enough **ecological integrity** (Grantham et al., 2020) for primate species to survive, if properly managed. However, more long-term data is needed to ensure that primates can indeed survive, reproduce, and maintain stable and healthy populations in these anthropogenically impacted landscapes.

7.3 Community-Based Conservation Approaches

Community-based conservation takes place when researchers and conservationists collaborate with local communities to ensure sustainable and responsible management of their natural resources based on the specific needs and cultural traditions of each community (Horwich & Lyon, 2007). This bottom-up approach deviates from more traditional top-down models of biodiversity conservation that are often based on the creation of protected areas or interventions from large conservation organisations or international researchers (Baldauf, 2020; Berkes, 2004). Top-down approaches to conservation have been criticised for not including local people and local context as part of the decision-making processes (Baldauf, 2020; Berkes, 2004). Local communities are more likely to participate in conservation projects when they are previously consulted, when their traditions and beliefs are taken into account, and especially when they directly benefit from the interventions to be made (Horwich & Lyon, 2007). These projects may then become attractive to neighbouring communities and among multiple stakeholders, becoming a driver of positive changes towards biodiversity conservation at a regional and national level (Horwich & Lyon, 2007; Savage et al., 2010; Shanee et al., 2020).

To develop and implement potential interventions for reducing or mitigating actions that threaten biodiversity, it is important to have participatory spaces (e.g. Fig. 7.2) where local people can express how they interact and coexist with local wildlife through their beliefs, perceptions, and everyday activities (Jacobson, 2010; Savage et al., 2010). Building trust with communities is crucial to fully understanding the dynamics between people and their environment, including any negative interactions between humans and wildlife (Estrada et al., 2017; Savage et al., 2010;



Fig. 7.2 Examples of participatory methods employed by Proyecto Washu in Ecuador (see Box 7.1) to understand the interactions between local communities and wildlife in shared landscapes. (Photo credits: Proyecto Washu)

Shanee, 2012; Shanee & Shanee, 2015; Waylen et al., 2010), which can become major obstacles for primate conservation. These conversations can help conservationists to design specific strategies and messages tailored towards people's attitudes regarding wildlife and their needs and, by doing so, increase the likelihood of people engaging with conservation projects (Jacobson, 2010; Waters et al., 2019). For example, areas where communities perceive primates as pests (e.g. Hockings & McLennan, 2016; Tweheyo et al., 2005; Warren, 2009; Regmi et al., 2013; Saraswat et al., 2015) or as vectors of disease (e.g. Bicca-Marques & de Freitas, 2010) will require different strategies to those sites where primates are revered (e.g. Lutgendorf, 2007) or seen as key for forest **regeneration** (e.g. Stevenson et al., 2002; González-Zamora et al., 2012; Arroyo-Rodríguez et al., 2015; Franquesa-Soler & Serio-Silva, 2017; de Luna et al., 2016). Therefore, participatory spaces are important for local people to communicate how they interact with their surrounding environment and for conservationists to learn about the communities' relationships with nature, to subsequently co-design the most effective strategies that ensure the protection of natural resources.

Local community members have traditionally managed and utilised natural resources for many generations. They have relied on small-scale and subsistence agriculture, as well as forest-based economies, in accordance with their cultural traditions, to supplement their economic activities (Hill, 2002). However, commercial-scale agriculture, extensive cattle production, and large-scale natural resource extraction represent a major income source for large-scale farm owners, national and international companies, and development agencies who may, or may not, be local to the region or represent the local interests (Estrada et al., 2020). Therefore, one of the major solutions to promote primate conservation in landscapes dominated by agriculture is to find alternative income sources and economic incentives that do not rely on conventional unsustainable practices. Although this is not always possible when addressing large-scale commercial operations, it has proven to be a very effective strategy with local communities who have transitioned to more environmentally friendly approaches (e.g. Boxes 7.1 and 7.2). Alternative sustainable farming methods, such as successional agroforestry, **silvopastoral** systems,

Box 7.1 Protecting Brown-Headed Spider Monkeys in Ecuador Through the Creation of a Sustainable Matrix Model

The Chocó region in western Ecuador is a biodiversity hotspot (Myers et al., 2000) that requires immediate conservation action given that it has lost over 95% of its original vegetation cover (Mittermeier et al., 1999; Myers et al., 2000; CEPF, 2005). This forest loss has led to population decreases of several species in the region, including the Critically Endangered brown-headed spider monkey (*Ateles fusciceps fusciceps*) (Moscoso et al., 2021). The protection of the few remaining forest patches has been promoted by establishing private and state reserves. However, the success of this strategy, based on a protected area model, relies on the connectivity and permanence of unprotected forests located in the buffer zones (Checa et al., 2012). Buffer zones in this region have mainly been used for commercial and illegal logging, intensive agriculture, and cattle ranching by private enterprises, *Mestizo* immigrants, and Afro-Ecuadorians and Indigenous (Chachis/Awa) communities (Sierra & Stallings, 1998) that live in extreme poverty (Unidad de Información Socio Ambiental, 2021).

Proyecto Washu was established as an NGO with the goal of promoting the conservation of brown-headed spider monkeys and their habitats using primarily participatory methods with local communities (Fig. 7.2). Since 2013, *Proyecto Washu* has been working with farmers living in the buffer zones of the protected areas in north-western Ecuador, to create a Sustainable Matrix Model (SMM), which integrates concepts of **agroecological matrices**, sustainable development, and land sharing (Perfecto & Vandermeer, 2010; Butsic & Kuemmerle, 2015). Under this model, *Proyecto Washu* and members of the local communities have established socio-environmental agreements to hold themselves accountable for the protection of the forests and wellbeing of their communities. Additionally, *Proyecto Washu* has played an important role in facilitating local capacity building in biodiversity conservation, sustainability, and leadership, to promote autonomy and ownership of their territories, and, in the process, instilling a sense of community stewardship in conservation projects.

Through these efforts with local communities, *Proyecto Washu* has facilitated the inclusion of more than 500 hectares of land within the SMM. More than 300 hectares of forest, owned by 17 families that currently maintain socio-environmental agreements, are protected until 2025. With these community agreements, the project seeks to have both low-intensity farming and areas dedicated to biodiversity conservation within the same territory, promoting a “high-quality matrix” which allows for the migration of species and for preventing regional extinction trends. Local communities involved in the SMM are committed to protecting their forests while strengthening their capacities to produce high-quality cacao. These activities also help in increasing the communities’ economic opportunities by establishing direct commercial relationships with buyers and farmers, who acknowledge the added value of the high-quality cacao produced within the SMM. This added value has

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Box 7.1 (continued)

resulted in a twofold increment in price per kilogram compared to average cacao prices in the country.

With the SMM framework, *Proyecto Washu* has helped in strengthening the capacities and principal economic activities of local communities in this **biodiversity hotspot** and, by doing so, improved both the people's livelihoods and protecting biodiversity, including the Critically Endangered brown-headed spider monkeys that live in the region.

Box 7.2 The Colombian Sustainable Cattle Ranching Project

The transformation of natural forests for livestock production is the third leading cause of habitat loss worldwide, affecting 31% of primate species (Estrada et al., 2018). In Colombia, cattle ranching occupies over 30% of the national territory and is primarily managed by small family businesses (FEDEGAN, 2021; Giraldo et al., 2018). In 2010, the Colombian Sustainable Cattle Ranching Project was launched as an economic programme to improve the income and the quality of life of ranchers and their families (Uribe et al., 2011; Giraldo et al., 2018). The project promotes the adoption of environmentally friendly cattle ranching practices that improve the management of natural resources and expand the provision of **ecosystem services** while increasing the farms' productivity (Giraldo et al., 2018; Uribe et al., 2011).

The project focuses on three main sustainable practices: (1) creating **living fences** to improve connectivity, to act as a windbreak barrier, and to conserve biodiversity; (2) planting scattered trees in pastures to provide shade for livestock, as windbreaks, and to promote biodiversity and soil improvement; and (3) using intensive silvopastoral systems (Giraldo et al., 2018). It also includes the management of pastures with activities focused on avoiding **soil compaction**, protection of watersheds by the reforestation of river banks, development and application of organic compost, and use of forage species generated by the silvopastoral system to feed cattle and to reduce the costs of supplementary feed to maintain cows (Giraldo et al., 2018; TNC, 2020).

By 2019, a total of 4100 families practising cattle ranching had benefited from this project (Calle, 2021). Between 2010 and 2019, participating farms recorded a 3% increase in secondary forest cover (while the mature forest cover remained the same), a 54% increase in the amount of land converted to silvopastoral systems, and a 151% increase in area covered by living fences, with a significant reduction of pastures and degraded soil (TNC, 2020). In total, 38,390 ha of silvopastoral systems with cattle production have been implemented through the project (TNC, 2020; Calle, 2021). These changes have also brought economic benefits to communities, with a reported average increase of 32% in animal load and 29% in dairy productivity (Calle, 2021). Furthermore, changes in land use and biodiversity (including birds, bats, dung beetles, edaphic microfauna, aquatic macrofauna, and plants) are being

(continued)

Box 7.2 (continued)

monitored in collaboration with local communities (Calle, 2021). Results suggest that, with the expansion of silvopastoral systems (instead of pastures), there has been an increase in biodiversity and the mobility of wildlife between forest patches has improved due to an increase in living fences and scattered trees (Calle, 2021; TNC, 2020).

This project has been implemented in farms located in lowland and mountain areas in the Caribbean, Andes, plains foothills, and the Orinoquia savannas in Colombia. Because of its geographic extension, this project potentially benefits at least 21 of the Colombian primate species that occupy these regions, including the Critically Endangered cotton-top tamarin (*S. oedipus*) and brown spider monkey (*A. hybridus*), and the Endangered white-bellied spider monkey (*A. belzebuth*) and the white-fronted (*Cebus versicolor*) and Colombian white-faced capuchins (*C. capucinus capucinus*). Primate communities inhabiting these regions may benefit from the increase in forest cover and the connectivity provided by living fences, the reforestation of **riparian areas**, and the increase in mobility between forest patches using scattered trees and silvopastoral systems (e.g. Torres et al., 2021). These sustainable livestock initiatives are a potential tool for the conservation of primates in rural landscapes while also benefiting local communities that depend on productive systems in those landscapes.

productive reforestation, as well as **climate smart** and ecosystem-based adaptation approaches (Colls et al., 2009; Lipper et al., 2014; Wezel et al., 2014), can become crucial to provide economic benefits to communities while improving the health of the ecosystems that primates and humans rely on (Jacobson, 2010; Estrada et al., 2012). In parallel to these sustainable practices, it is important to increase capacity and provide the necessary infrastructure that would allow for the integration of local communities into **productive market chains** at the local, regional, national, and international scale. This is important so that local producers have a demand for their sustainably sourced products and for those products to become marketable at competitive prices (Smith, 2008). Additionally, environmental and **fair-trade certifications** for sustainability (i.e. Rainforest Alliance, Wildlife Friendly Enterprises) can provide economic incentives for farmers by providing platforms so that they can sell their products at a higher price than regular market prices. This is due to the ecosystem conservation, wildlife protection, and fair treatment and good working conditions for workers that these certifications promote and that make the product unique and special (Makita, 2016; Box 7.1). By increasing product price, farmers are more willing to switch to more environmentally friendly practices that protect primates and their habitats and promote social, economic, and environmental standards for agriculture. These market integration strategies can be strengthened by creating local **cooperatives** and associations between individual community members or partnering with NGOs and businesses to collaborate towards shared environmental goals (Jacobson, 2010; Smith, 2008). The creation of these partnerships among

local community members, which may be facilitated by NGOs, researchers, or other external organisations, strengthens their participation in sustainable practices. It also empowers communities to become responsible for the ownership and long-term management of the natural resources in their territories (Savage et al., 2010; Shanee et al., 2020).

Conservation initiatives tend to be more successful when implemented alongside a strategy to increase awareness of the threats to target species or ecosystems. Also important are training and **capacity building** programmes that help local communities to gain or strengthen their skills in implementing sustainable practices (that bring revenue to the communities while protecting wildlife) (Horwich & Lyon, 2007; Box 7.3). If conservation projects are not accompanied by awareness and capacity building activities, communities may become dependent on external organisations to adequately manage and maintain sustainable practices within their agroecosystems (Horwich & Lyon, 2007). Including financial literacy within training programmes is also important for key participants to acquire the necessary skills to run financially sustainable projects that empower and ensure the autonomy of local communities (Baldauf, 2020). Conservationists and researchers must also keep in mind that several years of consultation, planning, training, and implementation may be required for a community-based conservation project to become successful (e.g.

Box 7.3 Silvery-Brown Tamarin Conservation in Cattle Ranching Farms in Colombia

Silvery-brown tamarins (*Saguinus leucopus*) are endemic to the Andean region of Colombia and currently threatened by increased habitat fragmentation caused by cattle ranching, agriculture, mining, and dam building (Link et al., 2021; Henao-Díaz et al., 2020). Almost 80% of the tamarin's geographic distribution now consists of cattle ranching pastures (Etter, 1997). Many tamarin populations overlap with human settlements, resulting in a close relationship between local people and these primates, which shapes communities' livelihoods and cultural identity both positively and negatively (Valencia, 2018). For example, *S. leucopus* are in high demand in illegal pet trade markets (Henao-Díaz et al., 2020) representing an important source of income for some local people. Tamarins can also be a nuisance for communities, as they forage for food inside houses and move across roads, electric poles, and fences. Nevertheless, silvery-brown tamarins have become a symbol in the region.

Conservación Titi Gris (CTG) is a community-based conservation and research programme that promotes *S. leucopus* population recovery and long-term survival in cattle ranching farms in Norcasia, Caldas. Through multi-stakeholder coalitions with local government, national and international NGOs, universities, and most importantly the local community, *CTG* has built scientific knowledge about the viability of tamarin populations in highly degraded habitats and has raised awareness of the species' importance

(continued)

Box 7.2 (continued)

(Valencia, 2018). The project recognises that farmers are key allies for the long-term survival of tamarins in this region. At the project's inception, the goal was to understand the perceptions, behaviours, and attitudes of small holders and large-scale cattle ranchers towards tamarins and their habitat. This was achieved through continuous engagement and open communication with the local community, which included informal and formal interviews (Fig. 7.3), conversations over a cup of coffee, and educational workshops. Initially, the local community was not aware of the conservation status, threats, and endemism of the species, nor did they understand how their everyday activities impacted tamarin survival. Using a variety of outreach materials and communication strategies specifically targeted to the local community (e.g. ponchos for cattle ranchers, mugs for cattle farm owners, colouring books for students), the project instilled a sense of pride and stewardship in the community (Fig. 7.3), using taglines like "Let's protect it, it's unique and ours", "The tamarin is as Colombian as myself", and "Tamarins are on my farm, and I protect them".

The project is currently addressing drivers of forest loss and identifying and implementing strategies that could increase the tamarins' chance of survival while improving local communities' livelihoods. Tourism is one of the main economic activities in the area, and the project has highlighted the importance of tamarins to tourists by using the primates as a flagship species. Billboards with the message "Welcome to the land of the Titi Gris" have been installed throughout the region. The project also worked with cattle ranchers to understand beef production practices and landscape management, with a view to designing feasible strategies for the implementation of silvopastoral systems on these farms. *CTG* will now focus on empowering the local community to develop long-term and self-sustainable ecotourism plans, as well as silvopastoral and reforestation activities.



Fig. 7.3 Informal conversations between conservationists and cattle ranchers to understand zoning and management mechanisms of cattle farms (left). Instilling stewardship and pride within local communities (right), both strategies for the conservation of silvery-brown tamarins in Norcasia, Caldas (Colombia). (Photo credits: Lina M. Valencia)

Savage et al., 2010; Horwich et al., 2010), so they should plan a long-term strategy with local communities when developing these projects.

Although some of the socioeconomic factors that affect local communities in primate habitat countries can be alleviated by incorporating sustainable practices, it is also important to consider other social, political, and historical realities to fully understand the dynamics between people and the environment in each area (Jacobson, 2010; Estrada et al., 2020). These socioeconomic and political factors can become major hurdles for conservation initiatives, and they should be considered carefully in the design of community-based conservation programmes. If ignored, interventions can cause more harm than good for local communities (Waters et al., 2021). For example, within the last few decades, there has been a rise in targeted violence, threats, and the assassination of activists, Indigenous people, lawyers, and journalists affiliated with environmental and social justice organisations, as well as agrarian communities who were engaged in the defence of environmental rights and their territories (Butt et al., 2019). This wave of violence has been marked by conflicts over natural resources and is more predominant in megadiverse countries in Latin America, the Caribbean, and South-East Asia (Butt et al., 2019), which host a large percentage of all primate species (Estrada et al., 2012, 2017). Although there is pressure from international organisations calling for governments to advocate for social and environmental justice (e.g. Escazu Agreement, CEPAL, 2018), weak and corrupt institutions and governments continue to leave environmental defenders in a very vulnerable, potentially life-threatening position (Butt et al., 2019; López-Cubillos et al., 2021). Therefore, conservationists must consider these socio-political aspects before planning conservation strategies in order to ensure the safety of local communities.

Finally, in an effort to improve the livelihoods of local communities, it is also important to include an approach that reduces gender inequalities, especially in rural areas where the *gender gap* in job opportunities and land ownership is even more pronounced (FAO, 2011). Cultural traditions and conventional gender roles in the division of labour have often left women in a more vulnerable situation. Men tend to join the workforce and have paid jobs, while women focus on unpaid domestic work and taking care of family or other community members (including children and elders) (Elson, 2017). Additionally, women endure more barriers to access educational programmes, including those offered in community-based conservation initiatives. As a consequence, women are less likely to receive the information and training on sustainable practices that they could implement in their households and transmit to their children (Agarwal, 2009; Gutierrez-Montes et al., 2012). Receiving information and training on sustainable activities is especially important for the development of rural and agricultural communities given that women have a dominant role in obtaining firewood, procuring water, and gathering and cooking food (Gutierrez-Montes et al., 2012). Since women often carry out these activities, it is likely they interact more closely with the environment than men. Women's decisions can, therefore, have significant effects on the use and management of natural resources (Gutierrez-Montes et al., 2012). When designing community-based conservation projects, it is important to find livelihood alternatives that alleviate

poverty and provide leadership to women and other vulnerable populations, and to do so, women should be included in all aspects of the project, including the planning and implementation stages.

In conclusion, community-based conservation approaches are more effective when local community members participate in all the phases of the project and individuals outside the community take a facilitator role rather than a paternalistic and hands-on approach (Appleton et al., 2021). Researchers and conservationists must include local communities in the design and planning of strategies to protect natural resources, support them in obtaining the skills required to put into action the planned interventions, and provide the foundation to ensure their sustainability. Additionally, it is important to mention that despite potential commonalities across sites, each project will vary depending on the specific interests and needs of each local community and on the historical and socio-political context that shape the relationships between people and wildlife in each site.

7.4 Conclusions

Local communities in many primate habitat countries rely on activities related to crop cultivation, livestock farming, and the extraction of natural resources for their subsistence. It is, therefore, vital that conservation projects taking place in agricultural landscapes consider the local traditions and economic interests of all stakeholders involved (Baldauf, 2020). Participatory spaces allow conservationists to collaborate with stakeholders at different scales (i.e. local, regional, national, and international) in working together towards shared environmental goals that benefit both humans and wildlife. Given the social nature of participatory and inclusive conservation programmes, it is important to have a socioeconomic, socio-political, and socioecological approach for understanding the root causes beyond the immediate drivers of biodiversity loss (Baldauf, 2020).

Primate conservationists often have a background in biology, zoology, or biological anthropology that allow them to understand the biological and ecological factors impacting primate populations. However, primatologists tend to lack proper training to understand the social dynamics that may threaten primates directly or indirectly and the socio-political and historical background influencing land use in each region or to resolve social conflicts between different stakeholders (Jacobson, 2010; Horwich & Lyon, 2007; Estrada et al., 2020; Baldauf, 2020). Because of this, many projects result in a trial-and-error approach leading to several unsuccessful strategies that might discourage communities from wanting to participate in future conservation efforts. It is, therefore, crucial for primatologists to collaborate with people with a background in sociology, sociocultural anthropology, history, conflict management, pedagogy, law and policy, accounting, entrepreneurship, marketing, fundraising, and agricultural sciences, as well as local stakeholders, to ensure the long-term success of community-based projects for primate conservation.

Acknowledgements All co-authors are thankful to the editors for their invitation to participate in this volume. Thanks to Siân Waters and an anonymous reviewer whose edits and suggestions greatly improved this chapter. We also thank Gabriela Rezende, Sedera Solofondranohatra, Catherine Hill, and Sam Cotton for their contributions to earlier chapter drafts. The Colombian Sustainable Cattle Ranching Project is an alliance among the Global Environment Facility (GEF), the Government of the United Kingdom, the Federación Colombiana de Ganaderos (FEDEGAN), The Nature Conservancy (TNC), Fundación Centro para la Investigación en Sistemas Sostenibles de Producción Agropecuaria (CIPAV), and the Fondo para la Acción Ambiental (FA), under the supervision of the World Bank. LMV is first and foremost grateful to the local community of Rio La Miel and la Habana, to the Jaramillo family, and to the workers and staff from La Playita and La Reserva farms. LMV is also grateful to all her students and field assistants, local government authorities and other NGO partners, as well as the National Science Foundation (Award No. BSC-1540270), the Margot Marsh Biodiversity Foundation, Primate Conservation, Inc., the Rufford Foundation, the Primate Society of Great Britain, the Conservation Leadership Programme, and the Schlumberger Foundation – Faculty for the Future programme. FAC and NF from Proyecto Washu would like to thank the farmers’ families of ASOPROTESCO and ASOCONCANANDE associations for this joint effort and work; the communities of Tesoro Escondido and Cristobal Colon; the work of Sylvana Urbina, Francesca Angiolani, Sofía Trujillo, and the students and volunteers of ISTOM. Proyecto Washu is also thankful for the support of Conservation Leadership Programme, Mohammed Bin Zayed Species Conservation Fund, University of Sussex, The Network For Social Change Charitable Trust, The Newman’s Family, WCCN, Bouga Cacao, Samuel Von Rutte and Ana Basurto, Van Tienhoven Foundation, Bingo - Environmental Foundation of Lower Saxony, Germany, Bioparc de Doué-la-Fontaine, WNEF - Wildlands Nature Education Fund, and Wildlands Adventure Zoo Emmen.

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