

## Conservation in Context: A Comparison of Conservation Perspectives in a Mexican Protected Area

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**Abstract:** The conservation of biodiversity in protected areas depends on the interests and agendas of stakeholders involved in the planning and enforcing of management actions. The challenge, therefore, has been to identify and include the perspectives of multiple participants important to local conservation. This paper describes the social context in which local conservation is conducted in a natural protected area in Yucatan, Mexico. In particular, it examines the agreement and expectations among local stakeholders on the main goals the reserve should achieve. Through participatory observation and semi-structured interviews, we analyzed the perceptions on conservation of the five groups relevant to the area management: 1) local people; 2) conservation government agency; 3) scientists; 4) non-governmental organization, and 5) a tourist agency. All actors agreed that the protected area should fulfill two main goals: i) to conserve biodiversity and, ii) to improve local welfare and development. In general, ecotourism is perceived as the best option for protecting the forest and promoting local development. Traditional agriculture, on the other hand, is perceived as the main conservation threat, but recognized as a crucial component of local wellbeing. We discuss these results in the context of the Yucatan Peninsula.

**Keywords:** conservation of biodiversity; ecotourism; local livelihoods; perceptions; protected areas; Yucatan peninsula

## 1. Introduction

For decades, the prevailing model to conserve biodiversity has been to exclude humans from the natural habitat by setting aside protected areas (PAs). Despite the fact that a significant number of conserved territories are inhabited by people, indigenous in many cases [1], the powerful doctrine of the “cult of wilderness” (*i.e.* the defense of untouched Nature), has influenced the conservation strategy around the world [2]. Examples exist where regulation of human activities in PAs have reduced or eliminated land conversion (e.g., [3,4]); however, there is still debate about the effectiveness of strict conservation measures [5]. In fact, some studies have shown that this conservation approach has not only failed to accomplish its main goal (preventing land conversion and conserving biological diversity), but has created social conflicts, derived from the displacement of residents, restriction of traditional activities, and in some cases the criminalization of local land-use practices (e.g., [6,7–9]).

In recent years, conservation voices have argued that biodiversity would be more effectively protected if the residents of PAs were actively involved in the conservation process (e.g., [7,10,11]). In fact, several studies have pointed out that successful approaches would be those incorporating local perceptions on conservation and engaging communities in the management of reserves [12–19]. As a result, efforts to include local participation and values in conservation projects have increased [20–22].

The challenge to achieve integral conservation projects in PAs, therefore, has been twofold: to include interest of local residents, and to incorporate the agendas of external stakeholders involved in the implementation of local conservation actions [18]. However, power asymmetries and lack of consensus on the main goals have usually resulted in projects representing the interests of few stakeholders, thus, challenging conservation initiatives. Many examples exist in Mexico where lack of communication or differences in perceptions among relevant actors have jeopardized the success of conservation strategies [16,17,23–25].

A balanced representation of interests among participants involved in the local decision-making process of ‘what’ to conserve (e.g. species, ecosystems, processes), and ‘how’ to conserve it (*i.e.* instruments), would provide the optimal conditions to achieve a widely accepted management plan [14,26]. Identifying priorities as well as similar interests among stakeholders is an important step for the conceptualization and design of management plans and conservation strategies [14,27,28].

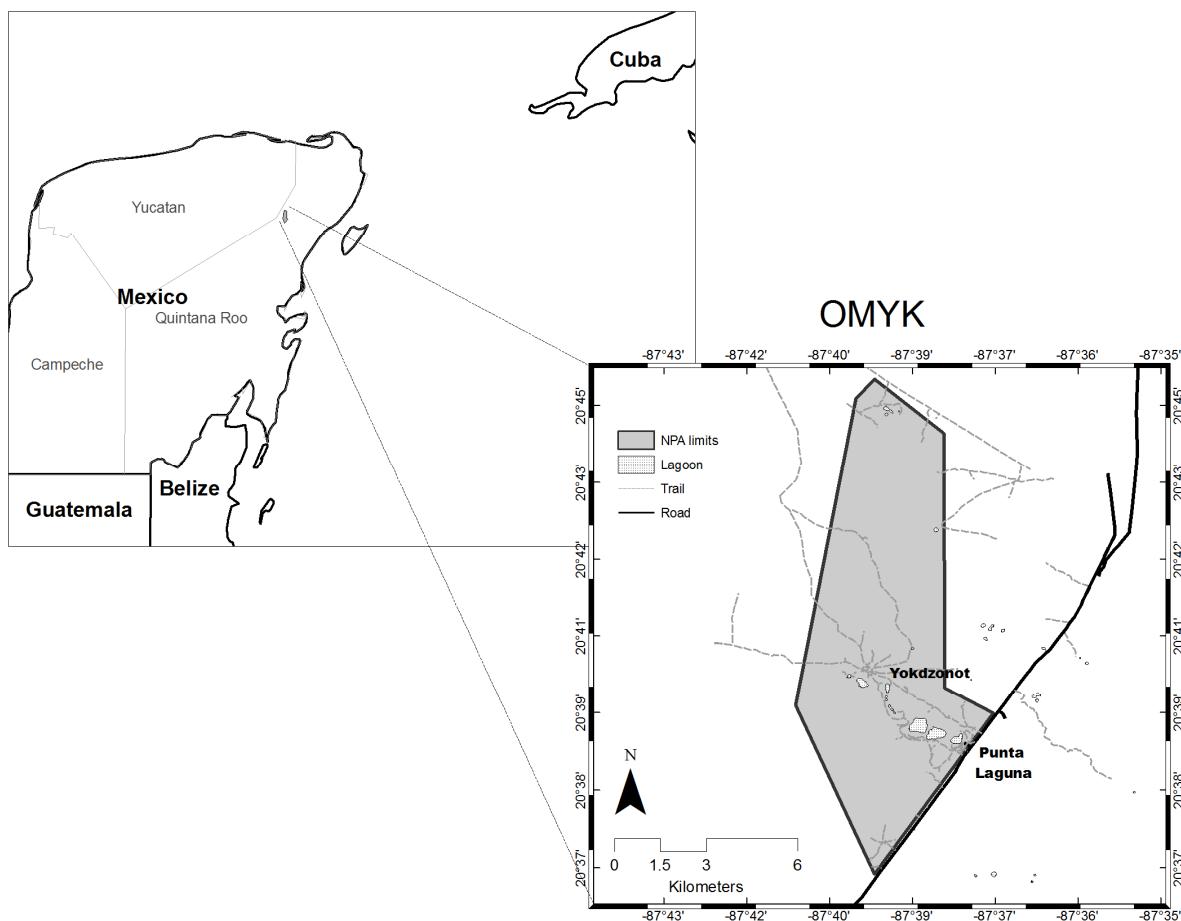
In this paper, we identified the perceptions different stakeholders, relevant to local conservation, had on the management of a PA in the Yucatan Peninsula, Mexico. In particular, we 1) identified goals perceived as the most relevant for the PA, and 2) identified the perceived threats and opportunities to achieve the proposed goals. In addition, we analyzed if goals included in the management plan were perceived as priorities by local stakeholders. Results from this research study provide empirical and comparative evidence of stakeholders’ attitudes toward a federal PA, and illustrate the extent to which the understanding of conservation varies among local people and external stakeholders. This information is relevant for the design of management policies that aim to incorporate local interests as part of long-term conservation strategies inside PAs, particularly in the Yucatan Peninsula.

## 2. Study Case and Methods

### 2.1. Study Case: The Social Context of the Otoch Ma'ax Yetel Kooh Protected Area

Otoch Ma'ax Yetel Kooh (OMYK, “House of the monkey and the jaguar” in the Yucatec Mayan language) is a PA located in the Northeastern part of the Yucatan Peninsula at the border of Yucatan and Quintana Roo states (Figure 1). OMYK, also known as the Punta Laguna reserve, occupies 5367 hectares. The predominant vegetation is semi-evergreen seasonal forest [29] in different successional stages [30]. For over a decade, several studies have been conducted in the reserve, including research on primates [31–34], land-use change [35], forest management and conservation [36–39], and forest recovery [40,41]. In 2002, following a community-based initiative [37], the National Commission on Protected Areas (CONANP) designated OMYK as a “Flora and Fauna Protection Area”, one of the six categories of PA existing in Mexico (CONANP 2011).

**Figure 1.** Otoch Ma'ax Yetel Kooh (OMYK) protected area.



At the time of the study, two communities lived within the PA limits: Punta Laguna, with an estimate of 30 families and 130 inhabitants, and Yokdzonot with 50 inhabitants; however, part of them migrated to Punta Laguna after the study was concluded. Members of both communities are indigenous Yucatec Mayas, who still maintain some of their cultural traditions, including language, agricultural practices, and religious ceremonies [38]. Both communities were established around 1960 when a small group of families emigrated from their natal town (about 50 km Northeast) in search of

land for forestry and agricultural purposes [38]. Despite being relatively close to large tourist destinations such as Cancun and the Riviera Maya, the area remained in relative isolation until 1982, when a road was built connecting it to nearby towns (Nuevo Xcan and Coba).

In the 1980s, Punta Laguna initiated an ecotourism project based on the observation of spider monkeys in their natural habitat. The initiative promoted conservation of mature forest fragments around the communities, the main habitat of the primates. The ecotourism project was managed entirely by the local community; however, it was strongly supported by external agents, including government institutions, a non-governmental conservation organization (NGO), and primatologists doing research in the area.

Soon after the area was declared a PA in 2002, several tourist agencies showed interest in it, and the number of visitors greatly increased (around 900 tourists per month). In 2006, the PA suffered a number of catastrophic fires, triggered by wood accumulation resulting from a severe hurricane season in 2005, and unattended fire used during slash-and-burn agriculture. Both situations (the rapid increase in tourism and the catastrophic fires) incited the CONANP and other involved actors to elaborate a management plan to guide and regulate the area activities. The management plan was developed by the CONANP, the NGO in collaboration of researchers (including authors of this paper), and members of the local communities [42]; however, the CONANP was the institution that defined the rules to enforce. Despite the intention of developing a participatory management plan, administrative and financial deadlines reduced the participation of local people to participative workshops (see [43]). The workshops with local communities (from Punta Laguna, Yokdzonot and those situated on the boundaries of the PA), helped to delimitate two preservation areas, while the rest of the reserve's area was designated for multiple-uses (Area of Sustainable Exploitation of Natural Resources).

According to the management plan, the only activities allowed in the preservation areas are those that do not modify the land-cover, such as scientific research, environmental education, or low-impact tourism. Within the area for multiple-use, the management plan establishes that productive and extractive activities can be conducted only under "sustainable practices" [42]. These activities include agriculture, apiculture, traditional charcoal production, or game. However, the management plan also states that the use of fire is forbidden inside and within the reserve limits [42]. As a consequence, this regulation has restricted traditional milpa practices, which depends on the use of fire to prepare the land for planting.

The management plan clearly specifies the Federal Attorney for Environmental Protection (PROFEPA) and the General Law of Ecological Equilibrium and Environmental Protection (LGEEPA) as the institution and the instrument, respectively, in charge of rule enforcing in the PA. However, the lack of human and monetary resources for administrating the site has limited the decision-making process, including the achievement and evaluation of the management plan goals [37]. This situation has allowed some locals to manage the area themselves, getting involved in "environmental friendly activities" as ecotourism guides or research assistants. However, residents with mostly agriculturally based incomes have been excluded from these activities.

## 2.2. Stakeholder Selection

Based on previous work in the area, which included participatory observations and informal conversations, we identified five groups of stakeholders involved in the use and management of resources in OMYK. Between 2006 and 2007, we conducted semi-structured interviews with representatives of each group-category. We tried to include all representatives of each group; when this was not possible, key respondents from each group were selected. Table 1 shows the list of interviewees by group-category and their role in the PA. Group categories are described below.

- Government Agency (GA)—The GA was represented by the CONANP regional office, which supervises all the reserves within the Yucatan Peninsula (Campeche, Quintana Roo, and Yucatan). The CONANP is the agency in charge of the reserves' management at the local, state, and federal levels, it is responsible for designing and detailing the management plans. In 2005, García-Frapolli interviewed CONANP local staff and reported that the agency originally did not have any interest in designating OMYK as a federal PA because the area did not represent a large regional extension (only 0.4% of the total land protected in the Yucatan Peninsula) [37]. In fact, a field technician was assigned after three years following the PA designation; however since then, the CONANP has had continued presence in the area. Interviews were conducted with all the staff involved in OMYK's management.
- Local People (LP)—The LP were represented by individuals living or conducting activities within the OMYK boundaries. All local people were Yucatec Mayas and their activities were based on two broad categories: 1) individuals employed as tourist guides or field assistants for scientific research, and 2) individuals whose livelihoods depended on traditional subsistence activities. At the time of the interviews, some local residents had combined these activities with alternative projects generated by CONANP, such as honey production and queen bee commercialization, road clearing, or handcrafts, all serving as opportunities to generate additional income. All respondents were key representatives of the two communities settled in the PA (Punta Laguna and Yokdzonot).
- Scientific Researchers (SR)—The SRs were represented by a group of researchers conducting primatologist studies in the reserve. This group had been present in the area for at least a decade previous to its designation as a PA. Respondents included two professors with long-term projects in the area and three graduate students who spend long periods in the field conducting research. These respondents covered the majority of representatives within this group.
- Non-Governmental Organization (NGO)—This group was represented by Pronatura-Peninsula de Yucatan (PPY), the main organization working with communities residing within the PA limits. According to previous interviews with PPY members [36], the agency's primary goal was to conserve local biodiversity and promote local development. In addition, the NGO also facilitated the interaction between local communities and other stakeholders. As in the case of the GA, respondents in this group included all the representatives involved with the reserve at various levels.
- Tourist agencies (TA)—TAs are a growing business in the region and represent an important component of regional economy. TAs do not have direct influence on the management or conservation of resources; however, they provide local economic opportunities, which indirectly influence the use of resources. LP have worked with several TAs over the years, and by the end of

the study period the community had signed an agreement with one of the most important TA in the region. According to their web page, the mission of the agency is “to provide tourists with amazing and unforgettable experiences through our natural-cultural and adventure expeditions”, and “to be distinguished internationally as both the best alternative for adventure expeditions [...], and an example of sustainable recreational tourism” [44]. The only respondent of this group was the regional manager.

**Table 1.** Interview respondents. Columns indicate the group; the role of each interviewed member; their activity or relation with the PA; and the number of respondents within role category.

Group	Role	Activity	Number
Government Agency (GA)	Regional director	In charge of supervising all the PAs in the Yucatan Peninsula.	1
	Reserve director	In charge of the management of the PA.	1
	Field technician	In charge of field projects.	1
Local People (LP)	Yokdzonot	Community living far from roads. They still rely on slash and burn agriculture as their main subsistence activity. The four respondents all represent working men from the community.	4
	Punta Laguna	Community living next to the main road. The community is transitioning from subsistence to economic activities where they work on tourist-related activities or as “field assistants” for scientific studies. One of the respondents was the president of the cooperative, who is in charge of administrating revenues from tourism. The other respondent was the representative for local tourist guides.	2
Scientific Researches (SR)	Principal researchers	Have long-term projects in the area. They started working in the area in the late 1990s.	2
	Graduate students	Spend long periods of time (> one year) in the field carrying out their research.	3
Non-Governmental Organizations (NGO)	Executive director	In charge of supervising all the projects the NGO has in the Yucatan Peninsula.	1
	Advisor	Involved with the NGO and the PA for over a decade. The advisor has to coordinate alternative projects, with particular emphasis to those targeting women, and advises the board committee regarding communities in the PA.	1
Projects assistants		In charge of field projects in two communities.	2
Tourist Agency (TA)	Regional coordinator	Supervises the regional agency activities. Is in charge of tour crews and negotiations with local people.	1

### 2.3. Interviews

Semi-structured interviews were conducted with all or key representatives of the selected groups. During the interviews, respondents were asked to answer questions, provide definitions, or categorize concepts (Annex 1). We guided the interviews using a questionnaire, but respondents were also invited to offer information without focused prompts, allowing them to define their own vision on local conservation.

Interviews were divided into two components. In the first section, participants were provided a set of goals relevant for local conservation and asked to rank them in order of importance (from the most to the least important). Two or more options could be ranked as equally important. The list of predetermined goals included the following options: conserve biodiversity; preserve traditional use of resource and extraction activities; contribute to regional development; improve local quality of life; preserve cultural traditions; promote scientific research. Goals not included in the list could be suggested by the respondent. We calculated the percentage of stakeholders (overall and by group) that considered each goal as the most important to achieve, and compared the values within and among groups.

The second section of the interview included a set of open-ended questions that explored visions on local conservation. Each interview was recorded with permission from respondents and notes were taken during the interview. We assessed the recorded interviews twice. The first time we identified the key concepts of each respondent associated with local conservation. We indexed the key concepts (noting the time when it was mentioned during the interview) and recorded the number of times it was mentioned. During the second assessment, we focused only on the identified key concepts and the narrative to explain whether the concept represented a challenge or an opportunity to achieve local conservation. Then, we compared the context and narratives used to evaluate local conservation issues within and among groups.

## 3. Results

Results were grouped in two main categories: i) goals identified as priorities in the PA; and ii) challenges and opportunities to achieve forest conservation and local wellbeing.

### 3.1. Priority Goals

According to the management plan, the main goal of the PA is “to protect, conserve, and recover the natural environment, and to maintain the equilibrium and continuity of ecological processes through the appropriate management and sustainable use of natural resources, including the participation of involved actors” [42]. In addition, there are six particular objectives: biodiversity conservation; cultural preservation; ecosystem restoration; scientific research; promotion of sustainable activities; and assistance in the organization of communities [42].

Across all stakeholders, improving local livelihoods and conserving biodiversity showed the highest percentages of overall agreement as the most important to be achieved in OMYK (almost 90% and 84%, respectively; Table 2).

Although the objectives included in the management plan were mentioned by at least one respondent as priorities for the PA in the goal-ranking questionnaire, only two goals (those related to

biodiversity conservation and improvement of local livelihoods) were consistently mentioned across all groups as the most important (Table 2). However, we found per group-category variations regarding the goals considered priorities for the PA (Table 3). All members of SR agreed that improving local livelihood was the most important goal to achieve; conserving biodiversity was the next goal most agreed on (60%). All members of the GA and the NGO were consistent in considering conserving biodiversity as the primary goal, followed by improving local livelihoods (67 and 75%, respectively). The TA member considered that improving local livelihoods was the only important goal. LP was the only group that ranked both goals as equally important (Table 3).

**Table 2.** Most important goals to achieve in the PA across all stakeholders. Values represent the number of respondents that ranked each option as the most important divided by the total number of respondents.

Most important goal	%
Improve local livelihoods	89.5
Conserve biodiversity	84.2
Promote regional development	42.1
Preserve cultural traditions	21.0
Use and extraction of nat. resources	15.8
Scientific research	15.8

**Table 3.** Goals that should be prioritized in the PA. Values indicate the percent of respondents by each group-category that ranked each goal as the most important to achieve by the PA. Percentages were calculated based on the number of people from each group that ranked the option as highest divided by the total number of people in that category. Since two or more goals could be ranked as equally important, more than 1 option per group-category could have 100% agreement. Number of respondents by group-category is in parenthesis.

Goal	Goal equivalent in the management plan	Government (3)	Local (6)	Researchers (5)	NGO (4)	Tourist Agency (1)
Biodiversity Conservation	1) Protect, conserve, and recover the natural environment, and maintain the equilibrium and continuity of ecological processes through the appropriate management and sustainable use of natural resources, including the participation of all relevant actors.  2) Conserve the diversity and integrity of ecosystems, species, and germplasm, as well as the ecological processes associated with them.	100	100	60	100	0
Preserve cultural traditions	Conserve and protect cultural, archeological, and historical heritage, protecting the landscape and scenery beauty.	0	17	20	50	0

**Table 3.** Cont.

Goal	Goal equivalent in the management plan	Government (3)	Local (6)	Researchers (5)	NGO (4)	Tourist Agency (1)
Scientific Research	Promote scientific research important for the use and protection of important species; assist environmental and social issues, and provide elements for the monitoring and evaluation of the use of natural resources.	0	33	0	25	0
Improvement of local livelihoods	Promote the development of sustainable activities based on scientific information, improve local activities, and as consequence, improve the quality of life of local communities.	67	100	100	75	100
	Recover and restore endangered or deteriorated areas important for local species and ecosystems.	33	0	0	0	0

### 3.2. Forest Conservation: Challenges and Opportunities

Key concepts mentioned as relevant for forest conservation and local wellbeing, included milpa agriculture, tourism, education, hunting, charcoal, hurricanes, fires, social development, monkeys, apiculture, Mayan culture, and modernization/development. The context to describe each key concept varied among stakeholders.

A truly important aspect regarding success in local conservation is that none of the stakeholder perceived signs of forest degradation as important. In fact SRs argued that the increase in the spider monkey population was an indicator of viable forest conditions. GAs and NGO members showed optimism that the reserve would never be in danger of deforestation because conservation measures had been taken (*i.e.*, enforcement of existing conservation rules, such as prohibiting the use of fire for agriculture).

Despite these views, respondents identified several natural events and human activities as potential threats to forest conservation if regulations were not enforced. These activities had been carried out in the reserve before the management plan was implemented and included charcoal production, hunting, unplanned tourism, milpa agriculture, fire (natural and human induced), and hurricanes. From these responses, milpa agriculture was determined as the most serious threat to conservation; at least one interviewee from each group cited it as a threat, and not one respondent indicated the practice as neutral or positive for forest conservation.

Tourism was identified as the most important activity to protect the forest and as the factor that more likely would promote local development. This perception was shared by all actors. In addition, local-scale tourism was perceived as the best option to prevent milpa agriculture or extractive activities, while the increase in regional-scale tourism was perceived as threat to local forest conservation.

### 3.3. Local Wellbeing: Challenges and Opportunities

For the community of Punta Laguna, the establishment of the reserve was perceived as an opportunity. People acknowledged that the reserve had improved their economic conditions, allowing them to stay instead of migrating to nearby cities in search of temporary jobs. People from the community of Yodkzonot did not share this vision and stated that they still felt impoverished, as one remarked: “maybe we are doing a little better than before the site was declared reserve, but not much”. As they pointed out, not all communities within the PA limits received the same benefits from tourism. Since their community is far from roads and does not have exuberant natural attractions, they were more dependent on resource extraction and milpa agriculture, and therefore more vulnerable to agricultural land use regulations. Yodkzonot people also stated that the hard work involved in doing milpa (*i.e.*, preparing the land, sowing, taking care of the cultivated land, and harvesting) limited their participation in other activities and projects that offered some economic incentives, such as those promoted by the GA (beekeeping or greenhouses, for example). SRs agreed on this point, but suggested that even if traditional activities were more labor intensive and less economically beneficial, the practices allowed communities to be more self-sufficient. In fact, one NGO member noted that the decrease in the milpa practice (and the consequent decline in maize production) had indirectly promoted negative effects on the community. As examples, she mentioned the changes in food habits and nutrition, the increase in garbage accumulation, as well as the economic burden to some families were experiencing since they were forced to purchase the food they had previously grown.

Although the impact of tourism was generally perceived as an opportunity for forest conservation and local development, some groups identified tourism as the primary threat to local culture and traditions. GA established that communities away from roads and tourism activities (such as Yodkzonot) were less exposed to external influences. SRs suggested that the rapid increase of money from tourism activities, coupled with the lack of assistance from government agencies, had greatly altered the local economy and social structure. NGO interviewees highlighted the urgency to assist communities in the abrupt transition from a subsistence-based to a cash-based economy to prevent the loss of traditional knowledge and practices. The NGO noted that the increase in tourism had promoted regional “modernization”, affecting the local lifestyle. According to the views of all NGO members, these changes were promoting a type of acculturation, where ceremonies and traditions had been abandoned. LPs, however, did not indicate any change in their traditions. In fact, they mentioned that Mayan language was still spoken, and that their ceremonies and traditions were still an integral part of their identity; however, they acknowledged that the number of performed ceremonies in tribute to natural resources had declined. As an example, they mentioned that in the last years few people had performed the rain-calling ceremony, or *cha-chac*, which is related to milpa agriculture. TA agreed cultural traditions were primarily threatened by changes in life habits and exposure to more visitors to the region. Together, these influences could translate into locals abandoning their traditional ways of life. However, the TA representative expressed that an important element of the agency’s mission was to promote the preservation of local traditions and exemplified that part of the visit included the performance of a traditional ceremony acted by locals. For the SRs, these representations for tourist purposes only devalued local traditions.

#### 4. Discussion

Views on the role of protected areas vary according to group interests [14,16,17,45]. Although OMYK's stakeholders expressed different interests in the PA, all groups shared a collective vision of the goals that should be prioritized. According to our interviews, conserving biodiversity and improving local welfare should be the top PA priorities. This is an important finding because, independently of the stakeholders, it seems visions on conservation approaches are similar (*i.e.*, strict conservation *versus* people-oriented management), and are consistent with the emergence of a wide range of conservation initiatives, including “community-based conservation”, “extractive reserves”, “collaborative”, “joint” or “co-management” that seek to bring together biodiversity conservation and socioeconomic development of local communities [7].

In recent years, policymakers involved in conservation actions have firmly maintained that market-oriented activities mitigate local monetary needs, substitute traditional productive activities, and consequently reduce human pressures on natural ecosystems [46,47]. Inside PAs, this one-dimensional interpretation of needs perceives monetary revenues as the answer to access basic goods without depleting natural resources. This was the perception of all stakeholders including local people who did not have access to ecotourism. Stakeholders showed consensus on the idea that ecotourism would be the central activity to achieve both biodiversity conservation and local improvement. This result is particularly relevant given that the number of tourists visiting PAs in developing countries has risen in recent years, generating an important source of economic income [48,49]. In Mexico, the CONANP estimates that federal PAs attract around 5.5 million visitors annually, generating 3 million U.S. dollars only by entrance fees [50]. As a consequence, the CONANP has facilitated credits to local communities to develop ecotourism initiatives, as a way to achieve local sustainable development inside PAs [50,51].

The discourse surrounding the ecotourism model suggests this activity represents the best option for the economic improvement in PAs [52]. However, examples around the globe have shown that ecotourism is not always successful in achieving equitable socioeconomic benefits, conservation, or both [53–55]. Although the actors perceived tourism as the most important activity to promote local development, they also believe it had not been translated into a better quality of life yet. Indeed, the increased purchase power has allowed access to different material goods (such as stereos, televisions, and cars), or the establishment of small convenience stores, but it has also resulted in the reduction of local self-sufficiency. As expressed by some actors, this situation has forced some locals to buy the products they previously produced, such as maize for subsistence, or sabal palm for construction.

According to most interviews, generating a local economy based on cash-income has not alleviated the basic local needs such as access to resources, education, health, or gender equity, and therefore the establishment of the PA has not yet aided the local development or poverty reduction. As illustrated by the response of an NGO representative, although tourism was perceived as the most viable option to promote social development and create employment opportunities, so far increased income had only led to alcoholism within the communities. In her words, “local people do not know how to manage money yet, this is a new concept, [and] it has only been reflected in an increase in alcoholism”. In fact, different groups indicated high marginalization, and lack of education and job opportunities have made people more vulnerable to the economic incentive. This situation has also been described in other parts

of the Yucatan Peninsula, where the current cash-oriented projects and regional “modernization” is in conflict with social dynamics, human-nature relationships and local ecological knowledge [56,57]. Part of the problem is that these projects are largely dependent on external support and not on local incentives that will build human capacity [45,49]. In this sense, OMYK is consistent with conventional conservation approaches where the participation of locals in the implementation and management of conservation programs is restricted [14,58], even though most group categories suggested that the PA should represent the interests of all parties involved, in particular local communities.

In many ways, the clash between regional “modernization” and traditional management of natural resources has to do with the implementation as recipes of management schemes (*i.e.*, PAs) and management tools (*i.e.*, ecotourism) [37]. As we described previously, the debate on conserving biodiversity while carrying out Yucatec Maya practices, including milpa agriculture, has been recurrent. The perception of milpa failure as a livelihood strategy is not exclusive of OMYK; regionally, this idea has been driven by the perceived opportunities derived from the massive tourism expansion in Cancun [59]. However, as Frazier [60] argues, conservation guidelines in the Yucatan Peninsula often tend to be based more on political than conservation grounds. To our understanding, the banning of traditional milpa agriculture in PAs seems to be based more on this conceptualization of “modernization” than on conservation grounds. In addition, limiting the use of fire has had major impacts on households with agricultural based incomes, who indicated that conducting milpa without burning, as suggested by the CONANP (*i.e.*, “green milpa”), was nearly impossible in the region. For them, the restriction on resource-use could develop into a negative attitude towards the PA, as it has been documented elsewhere [27].

Although the prevailing perception indicates that milpa is the greatest threat to local forest conservation, based on previous studies in OMYK it can be argued that traditional productive and extractive activities are environmentally safe. García-Frapolli *et al.* [35] suggested that the rate at which milpa agriculture is carried out, the way in which it is implemented, and the small proportion of land devoted to this practice (approximately 3% of the PA), does not jeopardize the mature forest in the area. In fact, traditional Yucatec Maya agriculture has been recognized as a practice that promotes biodiversity and allows the recovery of the forest since it creates a mosaic of vegetation in different successional stages [56,61]. In addition, milpas are not just important subsistence agricultural systems, but one of the most important symbols for Yucatec Mayas. As explained by Dalle and de Blois [62], milpas in the Yucatan Peninsula provide crops of cultural significance, as well as medicinal, edible, ritual, fuel, and forage resources that are harvested from a diversity of wild plant species. Maize, the main milpa crop, is identified as a sacred crop and an integral element of the Yucatec Mayan identity; abandoning milpa agriculture would have important cultural implications [60,63].

## 5. Conclusions

Based on our results, we found four main findings relevant for the site conservation: 1) Stakeholders have a collective vision about the main goals to be achieved in the PA; 2) most groups agreed that conserving biodiversity and improving the local quality of life were the most important goals; 3) tourism seems to be the most viable economic activity to achieve the goals; 4) milpa agriculture is recognized as being important for local wellbeing, but perceived as the main

local conservation threat. This last point is particularly relevant since local studies on land-use change have not concluded this.

We approached this study from a conservation ground to identify the priorities different stakeholders envisioned for the PA. Following compilation of our data, however, it was clear that respondents were not only discussing issues strictly related to conservation, but challenges that local residents faced to achieve social development. The dual perception on the priorities expressed, reflects the contrasting visions on how to reach forest conservation while promoting development projects, a common problem in conservation agendas where priorities on what to conserve, or whose interests should be represented, do not always align with local welfare goals [64–66].

The debate on how to best manage PAs will continue, but successful conservation will hardly be achieved without first addressing the welfare of the people living and managing resources inside PAs. As shown by this study, the challenge is to find the appropriate strategies to translate cash-oriented activities into creating human capacity building, strengthening local institutions, and reinforcing the conservation consciousness.

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## Conflict of Interest

The authors declare no conflict of interest.

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