



Institutionalized Mangrove Conservation at the Local Governance Level: The Case in the Camotes Islands, Cebu, Philippines

Ian Dale B. Rios¹, and Berenice T. Andriano^{2*}

¹ Cebu Normal University, Cebu City, 6000, Philippines

² Cebu Technological University, San Francisco Campus, Philippines

* Correspondence: berenice.andriano@ctu.edu.ph

Citation:

Rios, I.D.B.; Andriano, B.T. Institutionalized mangrove conservation at the local governance level: The case in the Camotes Islands, Cebu, Philippines. *ASEAN J. Sci. Tech. Report.* **2026**, *29*(8), e265023. <https://doi.org/10.55164/ajstr.v29i8.265023>

Article history:

Received: April 17, 2026

Revised: May 31, 2026

Accepted: June 21, 2026

Available online: July 11, 2026

Publisher's Note:

This article is published and distributed under the terms of the Thaksin University.

Abstract: Mangrove conservation in the Camotes Islands, Cebu, Philippines, is institutionalized through national and local policies that prioritize biophysical and ecological values. Yet non-compliance among local resource users persists, signaling a disconnect between top-down governance and the socioeconomic and cultural realities of affected communities. Using an ecological-anthropological lens, this study examines the sustainability and efficacy of these conservation programs and assesses how local political institutions regard the welfare of the communities they affect. A qualitative case study drew on semi-structured key informant interviews with seven (n = 8) informants — three barangay captains and four municipal environmental officers, one each from the four municipalities of the Camotes Islands, supplemented by informal interviews and field observations. Thematic analysis of the interview data yielded five key themes: (1) the unexamined conservation paradigm, (2) the lack of a human aspect, (3) top-down conservation schemes, (4) recognition of local values, and (5) prospects for an integrated approach. The findings show that conservation in the islands centers on the scientific value of biophysical preservation, with limited regard for local cultural and socioeconomic values. Top-down governance, unsteady political integrity, and unsustainable program design jointly weaken conservation on the ground, while local government actors emerge as crucial mediators of conflicting values. These results underscore the need for a holistic, integrated conservation policy that treats biophysical integrity and community welfare as a foundational whole.

Keywords: New ecological anthropology; mangrove conservation; key local government actors; biocentric policies; Camotes Islands

1. Introduction

The Camotes Islands are a Group of Islands best known for its tourist destinations that locally capitalize on its environmental and service-oriented human resources. Proclaimed a Mangrove Swamp Forest Reserve in 1981, it has established numerous environmental policies to strengthen coastal conservation. Yet, despite the institutionalization of conservation across the islands, a chasm of conflicting values persists between local government units (LGUs) and local people. This paper then explores the *chasm* gaping within the conservation landscape at the local government level in the Camotes Islands. According to Brightman and Lewis [1], the tension between conservation and

development stems from the concept of sustainability, which is “premised on a natural world separate from social and cultural life.” On one hand, the traditional welfare of communities within protected areas has been deemed incongruous “with the objectives and practice of biodiversity conservation.” On the other hand, biodiversity conservation has been identified “as a threat to human welfare” as it denies people’s rights to access to resources and undermines their livelihood [2]. However, in recent years, a paradigm shift has integrated the biophysical aspects of conservation with human welfare [1].

Inogwabini [3] argues that sustainable development is not only about the sustained existence of natural resources but also encompasses multiple social facets, including social justice. There is also “compelling evidence that both ecological sustainability and economic development reflect complex problems of managing for multiple values and outcomes, and that is in turn required systematic input from those who are directly dependent on the environment for their livelihoods” [4]. Further, while preserving global biodiversity is undoubtedly an indispensable goal, the new ecological anthropology [5] proposes the indispensability of equally evaluating policy and devising “socially sensitive and culturally appropriate strategies” to achieve biodiversity conservation. Furthermore, “to conserve ecologically valuable areas,” the concept of ecodevelopment [6] uses a strategy that “ensures that the negative impact of such conservation effort, on people living in and around these PAs, is minimized.” Employing these anthropological lenses magnifies the realities of institutionalized conservation policies by highlighting the chasm that separates the biophysical natural world from the social world in the Camotes Islands.

The study uses these anthropological conceptual frameworks to examine the sustainability, efficacy, and appropriateness of institutionalized mangrove conservation programs, policies, and management at the local government level in the Camotes Islands. It also explores how local political institutions view the socioeconomic welfare of communities that value and use mangroves as traditional social and economic resources. Specifically, this study documents the knowledge, perspectives, decision-making practices, and experiences of key local government actors in the context of implemented mangrove conservation programs, policies, and management strategies, as well as the challenges encountered on the ground.

2. Materials and Methods

2.1 Study Site

The Camotes Group of Islands off northeastern Cebu in Central Visayas, Philippines, is composed of three major islands – Pacijan, Poro, and Ponson; and comprises four municipalities of Cebu Province – San Francisco, Poro, Tudela, and Pilar (Figure 1). Although politically fragmented, the Camotes Islands are socioculturally, economically, and environmentally interwoven; other social institutions, such as health care, education, and kinship, are also interconnected. The Camotes Islands – simply called “Camotes” by locals, house a variety of natural heritage, including a diverse range of terrestrial and marine fauna, upland and subterranean karst landscapes, patches of wetlands and coastal ecosystems, and pockets of thick mangrove forests (Figure 2). Each municipality in the Camotes Islands harbors mangrove forest patches scattered along the coast between neighboring villages or concentrated in a single village or sub-village (Figure 3). Lillo et al. [7] have recorded a total of 42 mangrove species in the Camotes Islands, and “out of 42 species, 31 were categorized as true mangrove, and 11 were mangrove associates” [7]. The selection of villages or barangays for the study is systematically based on the density of mangrove cover per municipality and the regularity of activities and programs related to mangrove conservation. The barangays are Unidos in San Francisco, Teguis in Poro, Villahermosa in Tudela, and Lower Poblacion in Pilar. The selected sites are also within the management zone in the Camotes Islands Protected Landscape and Seascape (CIPLS), as delineated by the Department of Environment and Natural Resources (DENR).

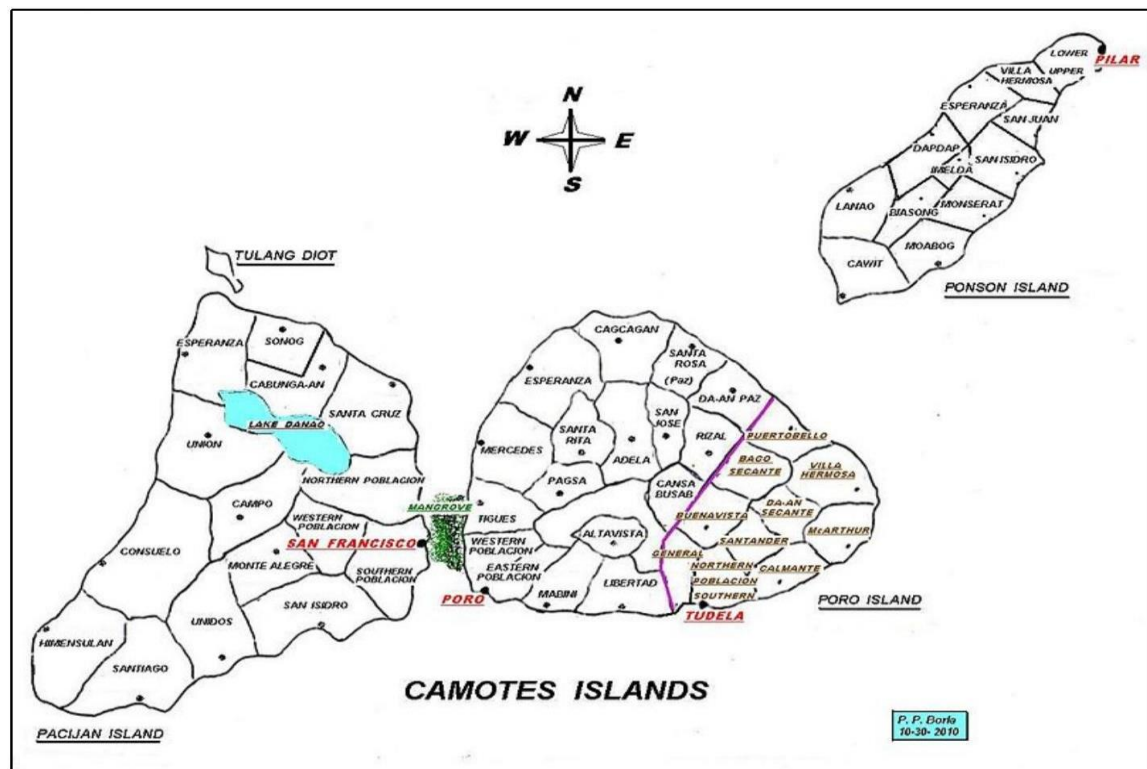


Figure 1. Study area: the Camotes Islands off northeastern Cebu, Central Visayas, Philippines, showing the four municipalities covered by this study. Source: Ppborla - Own work, CC BY-SA <https://commons.wikimedia.org/w/index.php?curid=1524735>

2.2 Qualitative Research Methods

Semi-structured and in-depth key informant interviews are the primary basis for this study. A total of seven (7) key informants were purposively selected, comprising four barangay captains — the village-level chief officials of Unidos (San Francisco), Teguis (Poro), and Villahermosa (Tudela); and Lower Poblacion (Pilar), and four municipal environmental officers, one per municipality. Appointed by municipal mayors, municipal environmental officers vary in bureaucratic designations: in Tudela, the Municipal Agriculture Officer; in Poro and San Francisco, the Municipal Environment and Natural Resources Officers; and in Pilar, the Municipal Planning and Development Officer. The barangay captains and municipal environmental officers hold focal political designations duly tasked to coordinate environment-related programs, policies, and decisions at the barangay and municipal levels, and to ensure that environmental policies are upheld and enforced. Contextualizing them as actors in the local social and political institutions is useful “in shaping a particular way of thinking about the environment and how the problems are addressed in practice” [8] (p. 11). Paying close attention to their perspectives, knowledge, decision-making practices, and experiences focuses on the people who are in the change process – the development actors [9] (pp. 32-33), which is necessary to understand the ideas, values, and management practices of the LGUs' conservation approach to environmental resources. Data collection was conducted from January 2022 to August 2022. Each interview lasted approximately 60 minutes and was conducted in Cebuano in Poroanon at the informant's home, municipal office or barangay hall. The seven informants comprised 6 males and 1 female officials, ranging in age from 52 to 63 years (mean = 57.63), with 6 to 35 years of service in their respective positions (mean = 13.25 years).

Informal interviews and field observations were also employed to collect data for this study. National laws, local ordinances, and coastal resource management plans were included in the data for the textual primary source analysis. Audio-recorded interviews were transcribed verbatim and analyzed using thematic analysis. Coding was performed independently by both authors, with the first author auditing the second's coding, combining a deductive frame derived from the study's anthropological lenses (institutionalized

conservation, top-down governance, local cultural values, livelihood access) with inductive open coding to capture emergent categories. [Twenty-one (21)] codes were consolidated into eight overarching themes: (1) On-the-ground challenges; (2) unexamined conservation paradigm; (3) lack of the human aspect; (4) top-down conservation schemes; (5) cultural and customary values of mangroves; (5) livelihood options; (6) prospects for integrated conservation; (7) towards an integrated conservation; and (8) hypothetical participatory governance. Inter-coder agreement was assessed on 86% of transcripts; discrepancies were resolved through discussion until consensus was reached [report Cohen's kappa or percent agreement, ($\kappa = 0.86$)]. To strengthen credibility, preliminary findings were returned to a subset of informants for member checking, and analytic decisions were documented in an audit trail. Regarding research ethical standards, written consent was obtained from each key informant before the interview, and informants were assured of confidentiality and the right to withdraw at any time.



Figure 2. Panoramic views of the dense mangrove forests in the municipalities of Tudela (top) and Poro (bottom) with the latter showing the Katunggan, also known as the Mangrove Highway. Images were captured using a DJI Phantom 4 Pro drone. Photo: Ritche U. Nuevo, February 2021.



Figure 3. Mangrove aerial roots beneath the sunset drama during low tide in Timarong, a sub-village in Poro. White beach sand used to be rich in Timarong, but illegal and covert sand extraction in the 1980s and 1990s caused the shoreline to recede significantly. According to native residents, fireflies used to be abundant in this area, where they had once harbored enchantingly in mangroves. Nowadays, one can barely see a single firefly. Photo: Ian Dale B. Rios, December 2018.

3. Results

3.1 Brief Historical Background

The period from the 1950s to the late 1980s reportedly saw local people exploit mangroves as a natural resource that met their needs: animal fodder, building materials, firewood, and even Christmas decorations. According to local government officials, this exploitation led to a decline in mangrove populations — a regional pattern documented elsewhere in Southeast Asia, where remote-sensing studies have tracked sustained mangrove area loss linked to coastal resource extraction [10]. As one municipal officer recalled, “*Sa mga tuig early 80’s sarang kadaghan gayud sa mga katunggan nga maoy gisaligan sa matag pamilya para sugnod, i-dapat sa paghimo ug balay, ang mga dahoon pagkaon sa ilang mga hayop: kanding ug baka. Aduna pay para himoon Christmas tree panahon sa pasko dalhun sa skwelahan ky project sa mga bata*” (“Mangroves were very much abundant during the early 1980s, when families relied on firewood for building houses; the [mangrove] leaves are used as animal fodder for their goats and cows. Moreover, during the Christmas season, their children reinvent them as Christmas trees and bring them to school as their project”). In 1981, the declaration of the Camotes Islands as part of the Mangrove Swamp Forest Reserve officially institutionalized the scientific ecological value of mangroves through the inception of national legislatures. Accordingly, mangrove conservation efforts increased during the 1980s, were strengthened through the NIPAS Act of 1992 in the 1990s, and were reinforced through the ENIPAS Act of 2018, which classified the Camotes Islands as the Camotes Islands Protected Landscape and Seascape. In the 1980s, San Francisco and Poro initiated mangrove reforestation efforts that are known locally today as *katunggan*, the thickly vegetated mangrove highway that connects the two municipalities. In the 1990s, mangroves received increased national and provincial recognition for protecting against strong winds and as sanctuaries for fish, and each municipality in the

Camotes Islands has responded to these institutionalized values by planting mangroves in its respective area, usually with the provision from the Bureau of Fisheries and Aquatic Resources (BFAR). By the mid-2000s, ordinances reinforced mangrove preservation efforts. The BFAR, with the help of non-government organizations (NGOs), provided increased protection and awareness of the importance of mangroves in coastal environments through programs and activities that included the protection of mangroves and aided the creation of coastal resource management (CRM) plans that include mangrove ecosystems. From 2010 onwards, LGUs established marine sanctuaries for fisherfolk, conducted seminars, and ran information and communication campaigns to the local communities, strengthening awareness of the importance of protecting coastal environments, including mangrove ecosystems. In summary, several national laws and ordinances have already recognized the importance of mangroves.

3.2 National Laws, Ordinances, and Programs

Ruzol et al. [11] have identified numerous mangrove-related policies in the Philippines. However, the case in this study shows that the NIPAS Act of 1992, ENIPAS Act of 2018, the Philippine Fisheries Code of 1998, and the Presidential Proclamation 2152 of 1981, are the national laws the LGUs are broadly adopting in establishing protected areas, implementing programs, enforcing policies, regulating resource exploitation, providing recreation and tourism, and prescribing fines and penalties related to the conservation of mangroves in the Camotes Islands. Additionally, while the integration of the human aspect in mangrove conservation, as stipulated in the aforementioned national laws, is recognized, it is not site-specific. Most importantly, the national laws are too stringent for local communities, leaving little to no room for compromise. As one municipal officer puts it, *"kung ang ordinansa nga imuhang gamiton kay national, case file gyud"* ('if you decide to enforce the national law, then you have to file a case'). To file a case against an ordinary local who has violated environmental laws may be too much for someone who is merely unaware of the national law. Fines prescribed under RA 7586, as amended by RA 11038, range from not less than PHP 200,000 to not more than PHP 1,000,000, or imprisonment of one year to six years, or both. Another municipal officer further explains, *'bug-at man gud ang national law kay og adunay violation, [...] kaso gyud dayon. Maayo man to sa diri sa municipal kay naa man gyud tay gitawag og kanang mga [...]'* 'compromise fines' ("The [penalty under the] national law is quite severe whenever a violation is committed. The good thing here at the municipal level is that we have what we call 'compromised fines'"). A municipal officer further describes the national justice system as *"hinay kaayo moligid"* ("rolls too slow"). Thus, when dealing with local violation cases, localized decision-making processes are more efficient and prompt; justice is served after sessions are conducted. Additionally, in municipal-level decisions, the violator either has a case filed against them or is imposed a community service. Situations such as these underscore the importance of local ordinances governing the conservation and rehabilitation of mangrove and seagrass ecosystems. However, even if laws and policies have already been established, there seems to be a lack of their implementation. Moreover, people can always find workarounds to circumvent existing environmental policies. That is the tendency when the law becomes outdated. A municipal officer thinks that the law must be updated. *'Atong pandayan sa lain nga balaod nga ikatapak ngadto'* ('Let's build another law to patch unto the older one'), he suggests. LGUs also have their own initiatives in local enforcement on coastal policies, such as the 'little fish warden' in Poro and the 'batang-ranger' in Tudela. These initiatives encourage youth to participate in conserving coastal resources. Research, too, is seen as an important element in creating local ordinances. However, only a few research groups provide them with copies of their research reports. In the Camotes Islands, ordinances on mangrove conservation primarily aim to preserve mangroves and prohibit cutting and collecting mangrove resources, while programs related to mangrove environments focus on rehabilitation and sustainable ecotourism with revenue-generating activities. Additionally, plantation and coastal clean-ups are the most typical government-led programs that concern mangrove conservation in the Camotes Islands. These regularly conducted activities are usually collaborative efforts among government agencies, academic institutions, and NGOs. Additionally, governmental organizations are important sectors that implement "sustainable" livelihood programs within mangrove ecosystems. However, despite the ordinances and programs, local people have always found ways to circumvent environmental policies. One baranggay captain says, *"Naay uban nga di mamati, musumbong ang tanod, akoy mubadlong. Naa puy uban nga gahi-gahi [...] ipakuha gyud naku'g pulis"* ("village watchmen have been

reporting that some people refuse to listen, so I will reproach them myself. There are also some who are very stubborn [...] I'm definitely having the police deal with them").

3.3 Implementation and Management Strategies

Local government actors perceive information and educational campaigns as essential strategies for conveying the ecological significance of mangroves and reducing environmental violations among the local population. Signboards, regular general assemblies, or monthly meetings that gather all purok (micro-geopolitical divisions) are also perceived as efficient strategies for educating local people. As one baranggay captain explains, "*daku gyud og impact ang genral assembly kay mao may atong pride pud nga sila maedokar*" ("The general assembly has a significant impact because educating them is also something we take pride in"). For instance, in *Baranggay Unidos* in San Francisco, apprehended violators would be called upon during a Baranggay Council session for reorientation, education, or counseling by the members of the village Council. The apprehended individual would then get a warning that the next violation would end in a penalty or a fine. In scenarios where all negotiations are exhausted and gets out of hand, matters are then escalated to the police force. Moreover, baranggay captains usually receive violent responses when enforcing environmental policies. A baranggay captain rationalizes, "*mangasuko baya sila kay di man sila sakto sa information*" ("They get angry because they are not well-informed"). While some people understand the importance of environmental policies, others do not. Certain instances even ended relationships unpleasantly between families when a *kumpari* (godfather of one's child) had been penalized due to an environmental violation. Another baranggay captain states about upholding integrity above all: "*Ma-taw namu'g sa dili, dakup gyud basta mamutol diri*" ("Regardless of your political affiliation, you will really get arrested if you cut (mangrove resources) here"). He also believes that being negatively labeled as "strict" has not adversely affected his political career, as he remains confident that his actions serve the best interests of the general public. Nevertheless, these existing strategies appear insufficient to address the persistent non-compliance of local resource users with environmental policies.

Furthermore, although appropriately trained, the municipal officers who are tasked with overseeing the management of coastal natural resources came from diverse backgrounds and do not necessarily hold advanced degrees or extensive training and specialization in coastal resource management, sociology, ecology, marine biology, or mass communication. These officers are not exclusively focused on coastal resource management and thus also need technical support from other agencies or institutions to help manage conservation initiatives and rehabilitate mangrove and seagrass ecosystems, especially in biophysical assessment, monitoring, and data analysis. Mangrove planting is by far the most common effort among the 4 municipalities of the Camotes Islands. However, it may not be as simple as it sounds. At the municipal level, mangrove planting is a delicate, technical human activity aimed at rehabilitating mangrove ecosystems, which essentially involves a combination of technical know-how, community participation, substantial funding from government agencies or units and NGOs, and political will.

3.3.1 The "Rooms to Maneuver" of the Baranggay or Village Captains. Baranggays are usually clustered in kinship, and people know each other in many ways. Kinship in the Camotes Islands can easily be traced in a single conversation. So, it is not surprising that barangay captains have an invaluable understanding of the realities of local communities and the livelihoods of most people; thus, they can understand the plight of some people who tend to violate environmental policies, including those related to coastal resources. However, as elected government officials, they should also enforce the policies – even if it ends up severing political and familial ties. As barangay captains, they are caught between protecting the environment and understanding the socio-economic situations of local communities, which can sometimes end up a political or a personal issue. Yet, there are situations in which they allow some people to get away with certain policies, especially toward some old folks who they know have few livelihood alternatives. A barangay captain recounts how he discourages his enforcers from apprehending elderly resource users, explaining, "*Pasagdi lang kay panud-an na nila*" ("Let them be as it means viand on their plates"). He further notes, "*Pero inig kita namo ako nang sultian nga kung mahimo ayaw na*" ("But when I come across them [the elderly resource users], I'll tell them never to do it again"). As government officials, they carefully balance the weight between firmness in enforcing environmental laws and keeping compassion.

3.4 On-the-Ground Challenges

Municipal and baranggay officials are fully aware of the institutionalized values of mangroves, that is, the scientific ecological morality that identifies mangrove forests as a vital defense against the impacts of storm surges, strong wind, and sea level rise. They also acknowledge the role of mangroves as habitats for biodiversity and as ecosystems that contribute to absorb carbon dioxide, and among others. However, they are equally aware that the local communities do not entirely share the same technobureaucratic values regarding mangrove ecosystems. It is common knowledge that local people value mangroves as a natural resource. As one baranggay captain explains that mangrove resources are used by the local community as *"sugnod ang uban, 'nya gamiton nila sa ilang katong mga ad gani sa baboy [...]. During kanang taas nga drought diba kanang wala nay makuha nga kumpay sa bukid [...]. Ang ilang gisaligan ato, labi nang katong pagting-init, pag tinghuwaw, kini man dinhi [mangrove forest]. [...] kuhaon na to kay ibaligya ang uban, ang uban igatong, himuon ad. Mao man ang reyalidad diha"* ("fuel, as well as for building pig pens [...]. When animal fodder can no longer be gathered in the hills during severe droughts [...], it is here [mangrove forest] where they depend on, especially during the dry season, during drought. [...] They will collect [mangrove resources] to sell some of it, to use as firewood, or to build pigpens. That is the reality here"). The conflict of values arises when these cultural and economic activities are identified as detrimental to mangrove preservation, as mandated by environmental policies, and are thus defined as "poaching" and technically illegal. Municipal and baranggay officials generally characterize this kind of poaching as a lack of understanding and education among the local population about the ecological significance of mangroves. One municipal officer remarks, *"Ang ilahang gitan-aw ang karon ra nga sitwasyon ang ilahang mga needs. Wa sila kahibaw kung unsa gyuy kanang gikahatag nga kaayohan gyud ba [...] sa mangrove"* ("The only thing they consider is the needs of their present situation. They do not realize the benefits that mangroves truly provide"). Another municipal officer similarly points out, that *"sa ako tan-aw murag wa man siguro [...] ang mga taw ka appreciate og unsa diay kahinungdanon ning atoang mangrove ba"* ("I think the people seem unable to really appreciate the importance of our mangroves"). On the other hand, a baranggay captain explains why the local people cannot see the value of mangrove reforestation, *"wa nay kanguhaag imbaw, kay natanoman na lagi, wa nay kapanginhasan"* ("because of the [mangrove] plantation, there's no more space for them to glean – to gather mangrove clam"). In Pilar for instance, some mangrove reforestation programs have disrupted the local fisherfolks because they blocked their traditional access paths to the sea. This agitated the affected fishing community. A municipal officer shares a funny but terrifying experience because of mangrove planting programs, *"anaon to sa sundang o, anaon sa sundang"* (gestures how a fisherfolk was wielding a utility bolo in an offensive stance against her).

Political integrity from higher municipal offices is also one of the difficult challenges municipal environmental officer face in implementing and managing environmental conservation. It harms the integrity of the local socio-political landscape, severing the relationship between local government actors, the implementers – and the local communities, the receiving end. Moreover, some people would not cooperate or abide by the policies simply because they follow the opposing political party. A municipal officer noted, *"Sauna naay kanang mamutol 'nya taw sa mayor, murag ibaliwala ra man"* ("There used to be people who cut (mangroves), but because they were associated with the mayor, their violations were simply dismissed"). A baranggay captain also shares the same sentiment, *"sa akun abat og naay madakpan, padrenohan [...] pulitiko, amo ra nga mabuhian"* ("from what I've observed, when someone is arrested, politicians act as their patrons, which results in their release"). However, the same socio-political phenomenon can become an opportunity when committed to using one's political will. A baranggay captain asserts that equally enforcing policies to everyone, regardless of political alliances, will produce long-term political benefits. Setting fair law enforcement to the general public is crucial in managing coastal conservation. A municipal officer explains that when the people see how you took action and apprehended your political followers, they will take your environmental programs and policies seriously. A baranggay captain shares his perspectives, *"usahay, dili kaayo motuman ang mga taw kung mismo ang magduma luag"* ("Sometimes, people are less likely to comply when the authorities themselves enforce the rules loosely").

Moreover, there are programs that are often highly dependent on particular political administrations. For instance, during the term of Hilario Davide III as the Provincial Governor, cash incentives were provided to the local environmental enforcers. However, when his term ended, the incentives were discontinued, and environmental enforcement eventually declined as well. Typically, incentives are provided during the initial stages of implementation but are later withdrawn due to unsustainable funding, shifting development

priorities, a lack of political will, or the decision of a new administration to discontinue programs initiated by its political predecessors. These factors often result in personnel shortages and declining morale among enforcers, who may become overwhelmed by persistent threats and intimidation from some local resource users, thereby eroding the integrity of conservation efforts. As one municipal officer explains, “*mahadlok sila basig kontrahan*” (“they [environmental enforcers or watchmen] are afraid they might make enemies”). Furthermore, some People’s Organizations (POs) were inadequately equipped with the human and technological resources needed to enforce environmental policies effectively. As a result, they were often overpowered by resource users who resisted environmental regulations, many of whom reportedly came from neighboring municipalities. Additionally, some of their projects depend heavily on external funding from national agencies, government bureaus, and NGOs. One municipal officer cited a People’s Organization that implemented a mangrove-based livelihood project endorsed by the LGU and funded by BFAR. According to the officer, the project turned out financially unsustainable: “*pananglitan og mag-repair, mangayo na pud – ana ba, morag dili siya self-sustaining. [...] Sigig pangayo*” (“for instance every time a repair is needed, they ask [for funds] again – instances like that, it is not self-sustaining [...] keeps on asking”). The officer further explained that many programs lack sustainability because project proposals are often developed without adequate contingency plans. Consequently, when natural hazards occur, the organizations are unable to recover or rebuild independently. Similarly, a barangay captain questioned the effectiveness of some People’s Organization projects, remarking, “*daghay kwarta niabot, ang pangutana og ni-click ba?*” (“Lots of money came, the question is – did it click?”). The sustainability of government-initiated livelihood programs has also been questioned. For example, a municipal officer described a mangrove-based crab farming project promoted by government agencies as a “sad story” because it yielded no harvest at all and, thus, is not sustainable at all. San Francisco once maintained a mangrove nursery that supplied seedlings to many barangays across the Camotes Islands, including the award-winning Barangay Villahermosa in Tudela, for their mangrove planting activities. However, the nursery was discontinued in 2018 because of insufficient funding.

Furthermore, an effective plantation is a delicate socio-political effort that requires technical know-how, community participation, substantial funding from government agencies or units, NGOs, and political will. Reportedly, mangrove planting in the Camotes Islands has had zero to low survival rates due to a lack of technical know-how. A municipal officer narrates, “*Giatakeg barnacles. [...] wa jud wa jud siya ni survive. [...] nangamatay, patay tanan*” (“attacked by barnacles [...] it [mangroves] did not survive. [...] it perished, all perished”). Another municipal officer recalls, “*sa akong experience about sa mangrove [planting] is ang iya ra gyong kanang survival ba is gamay ra gyud ang iyang rate*” (“in my experience about mangrove [planting] is that its survival rate is truly very marginal”). On many occasions, the planting of invasive mangrove species has outpaced the growth of native species. Such were an absolute waste of human and natural resources, as well as government and NGO funding.

4. Discussion

4.1 Unexamined Conservation Paradigm and Policies

The institutionalized mangrove conservation paradigm in the Camotes Islands is centered on the biophysical preservation and rehabilitation of natural resources, with little regard for the basic needs of local people who have traditionally relied on resources within PAs. It indicates how the prevailing paradigm considerably lacks the human dimension in the local context. It also illustrates what Kottak [4] describes as a “modern intervention philosophy that seeks to impose global ecological morality without due attention to cultural variation and autonomy.” Using the lens of new ecological anthropology and the concept of ecodevelopment, the prevailing paradigm in the Camotes Islands has done little to minimize the negative impacts of conservation on the affected local communities. Additionally, such approaches may be socioculturally inappropriate because it imprudently restricts local people's access to essential livelihood resources without ensuring reliable alternative sources of livelihood. Thus, this study reveals the chasm that creates an incongruous space between the aims of conservation and the welfare of the local people in the

Camotes Islands. This chasm is characterized by top-down approaches that overlook local values, knowledge, and needs, resulting in conservation initiatives that lack a meaningful human dimension.

4.2 Lack of the Human Aspect

History has shown that the ecological value of mangroves in the Camotes Islands has drawn the line between what is illegal and what is not, and between what benefits and harms environmental resources. It has reinforced coastal ecosystem preservation and rehabilitation. Accordingly, the policies concerning mangrove conservation focus solely on scientific ecological values, prioritizing the preservation of natural resources. Yet, despite the laws and ordinances, violations or non-compliance among the local people persist to this day. Other studies that focus on the local people's perspective have similar findings. In Banacon, Bohol, Philippines, there is a disjunction of perspectives and attitudes between the government and peasant communities [12], and in Palompon, Leyte, Philippines, mangrove areas are considered as a contested space due to the “contrasting viewpoints of the residents and the local government, specifically on the actors’ differentiated rights and claims on the resource” [13]. Moreover, in the case of Leganes Rehabilitation Mangrove Site in Iloilo, Philippines, Ruzol et al. [11] have argued that “technobureaucratic perspective on the participatory approach keeps itself distant from the complex temporal and political dynamics of participation in the field.” Further, based on the textual primary sources, no program in the Camotes Islands directly addresses the needs or concretely provides site-specific alternative livelihood for the local communities affected by mangrove preservation policies, let alone programs that include the affected locals in conservation management planning, although indicated in Section 9 of the ENIPAS Act of 2018, the adoption of socioeconomic research, site-specific policy development, and others. Conservation efforts are generally the preservation of mangroves that merely cut off people’s access to their basic needs without providing definite alternatives. Fines and penalties under national environmental laws are too high for local people. On the other hand, ordinances provide “room to maneuver” [9] to accommodate justifiable compromises and to prompt decisions. On-the-ground cases like these magnify the importance and efficiency of ordinances. Thus, to optimize efficacy, existing environmental policies in the Camotes Islands need substantial amendments to integrate the human dimension into mangrove conservation, with thorough regard for local social, economic, and cultural contexts. The Municipality of Poro, for instance, declares mangroves a cultural treasure, yet its significance is based on institutionalized scientific ecological values rather than local cultural values. Although the institutionalized value of mangroves, as reflected in national law, is an added value for pride to the locale, where would such pride be placed in the affected local communities when it also means the dissipation of their access to traditional resources? This study underlines the pivotal role that local and national political institutions play in conserving natural resources, as they can critically influence changes in existing local sociocultural institutions. Thus, it is crucial to reexamine conservation paradigms that insufficiently address human welfare concerns (Figure 4).

4.3 Top-Down Conservation Schemes

Key government actors have been crucial instruments in achieving the objectives of institutionalized mangrove conservation in the Camotes Islands. They serve as intermediaries between political institutions and local communities and, to a certain degree, have a sound understanding of the socioeconomic contexts on the ground. As government actors, they have also carefully balanced the weight between implementing programs and enforcing policies while keeping a small room to maneuver – an effort, but a marginal one, to close the incongruous chasm present in mangrove conservation. The barangay captains, in particular, are always caught in the crossfire between the two sides of the resource use conflict. They duly uphold mandated environmental policies and, at the same time, to some degree, slacken them to make room and accommodate the cultural and economic welfare of the local people. Additionally, despite the predominance of the top-down approach in the conservation framework, environmental governance at the local level does not rigorously apply the “fortress conservation” paradigm [2, 13] and what “transpires” on the ground is “a process of negotiation and compromise to define and implement a management strategy” [2]. It supports the view that the law is not a straitjacket but an enabling tool, in which actors should think strategically and multidimensionally [4]. The top-down framework in mangrove conservation has little regard for the existing

local socioeconomic institutions in the Camotes Islands. Moreover, according to Eversole [12], local social groups have their own structures, rules, and norms that shape their day-to-day lives, and these are the existing, invisible institutional arrangements people have used to manage situations at the margins to survive. Hence, “[i]gnoring these institutions is a typical recipe for development failure” [9]. For instance, the findings of this study indicate that mangrove planting programs with low to zero survival rates, together with crab-farming initiatives that produced no measurable yield, failed to account for local ecological and sociocultural contexts. These “sustainable” programs in mangrove ecosystems are not sustainable and do not fit into the existing local cultural and socioeconomic landscapes. These interventions are mere formulations from the top, without regard for local socioeconomic institutions. As Wiset et. al [14] point out, top-down approaches obstruct effective local participation and distort a sense of ownership and self-initiation; more so, “effective engagement will only occur when local people can influence and have some control and power to make meaningful decisions” [14]. Additionally, “experience has shown that traditional, top-down exclusionary approaches to a protected area (“fortress conservation” or fences and fines approach) are often not effective in reaching conservation objectives” [2]. Hence, the prevailing paradigm must be reexamined, and an inclusive framework reconsidered to account for the values local people hold for their natural environment.

4.4 Recognizing the Local Values for Mangroves

The local community’s values are deemed inimical to the scientific ecological values of mangroves. This power relation affects conservation efficacy and is a “problem with mainstream institutional development and strengthening programs,” where “they tend to start from a predetermined idea of what institutions should look like” [9]. Kottak [5] further points out that even “[w]ell-meaning conservation efforts can be as insensitive as development schemes that promote radical changes without involving local people in planning and carrying out policies that affect them.” A global framework that disregards the local contexts can not be sustained in the long run. But, paying attention to the bottom, the local contexts – allows us to recognize that people “already have established ways of working that they use to get things done” [9]. Institutional experts cannot simply enter into the conservation landscape and implement programs with a one-size-fits-all framework while perceiving the local economic needs as threats to their objectives. According to local government actors, the persistence of local people’s noncompliance with preservation policies is due to a lack of education. However, *such* non-compliance may also be understood as an everyday form of resistance [15] because people resist projects or programs “that require major changes in their daily lives, especially ones that interfere with subsistence pursuits” [5]. Amper similarly argues that hegemony over local communities can cause them “to lose interest in maintaining their mangroves” [12]. Therefore, it is essential to “ensure that the local people feel a sense of ownership” [6] over these protected mangrove areas. This can be achieved through inclusive conservation planning that recognizes and incorporates diverse value systems [5].

4.5 Towards an Integrated Conservation

In the Camotes Islands, the scientific ecological values of mangroves overshadow their local cultural and economic values. Although “there is no sound basis for deciding that one worldview offers a superior reference point for ‘reality’ than another,” and given the institutional power of science, the scientific method is always called upon “to judge other knowledge systems” [6]. On the other hand, recent studies indicate that the success of resource conservation lies in paying close attention to the social dimension [5, 6, 17] rather than focusing solely on pre-packaged, expert-led solutions [9]. One framework is ecodevelopment, which can be achieved through sound participation and the involvement of affected people [6]. Considering the local realities, this study underlines the urgency of reframing the prevailing institutionalized mangrove conservation in the Camotes Islands by integrating ecodevelopment strategies to step up conservation on the ground. Specifically, it should include sustainable alternative livelihood opportunities for the local people whose way of living is displaced. One cannot simply expect support of the local people for conservation initiatives when they diminish “their access to strategic and socially valued resources” [5]. As Singh [6] notes, “ecodevelopment planning is done at a village level, by the villagers, who are facilitated by a micro level planning team” composed of various representatives from government to non-governmental sectors [6]. Moreover, according to Wiset et al. [14], while promoted by the Philippine government, there is

meager participation among local communities in reforestation initiatives on the ground. Participatory governance must begin, but does not end, at the community level, grounded in a fundamental human reality [4]. Concerned government agencies and local units do not have to start from scratch but may build upon what already works [9] and may involve “envisioning techniques to facilitate stakeholders to discuss their visions of sustainable futures and their priorities for the protected area” which includes “their views on the trade-offs between ecological, social and economic criteria, and used information and measures that they had defined as important” [2]



Figure 4. An elderly local woman gathers *imbaw* (mangrove clams) for household consumption, and any excess is sold locally. She says that shell-gathering is a traditional livelihood that has been passed down through generations. Photo: Ian Dale B. Rios, January 2022.

Further, given the ecological services provided by mangrove ecosystems, this study urges the local policymaking bodies to sustain funding for conservation programs and ensure consistent political commitment to environmental and sociocultural development. Also necessary is the amendment of outmoded ordinances to foster ecologically and socially sound solutions to present-day resource use conflicts. Moreover, to nourish the local social, economic, and cultural heritage values of mangrove environments – ethnographic studies should be employed to obtain the native’s point of view of mangrove resources as it can identify local perceptions and values [13] and the local forms of conservation and reforestation initiatives [12]. In addition, exploring local forms of community participation is highly recommended in this study. Research has proven “that some traditions and practices are very supportive and could form a base for genuine participation in development initiatives” [18] (p. 110). To reiterate the importance of the various actors and stakeholders in the conservation landscape is foundational in this study and proposes further multidisciplinary studies on the local communities whose lifeways are affected the most by conservation. Considering the gaping *chasm* that amasses incongruity in the conservation landscape, reflexivity, inclusivity, and an integrated approach in conservation can foster participation among the local people and achieve the conservation goal that regards both nature and culture, a decent starting point to close the incongruous chasm between institutional conservation values and those of the local communities.



Figure 5. Mangrove environments are also spaces tightly intertwined with the basic needs of the local people.
Photo: Ian Dale B. Rios, January 2022.

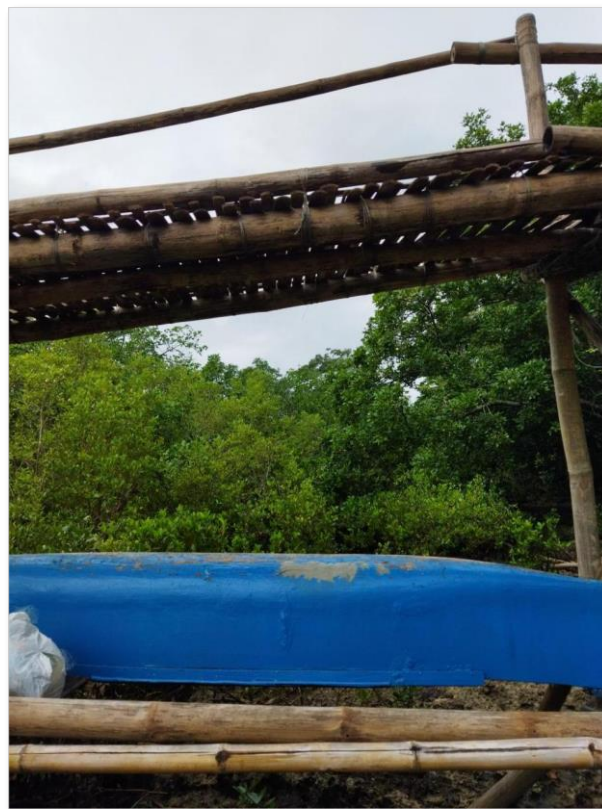


Figure 6. An upside-down wooden hull of a seacraft rests beneath an abandoned bamboo footbridge in a mangrove forest in Poro Island. Photo: Ian Dale B. Rios, January 2022.

5. Conclusions

Mangrove conservation in the Camotes Islands is regarded as a form of development in the context of ecological conservation because it involves economic and social changes among affected local communities that value mangroves as a livelihood resource. Despite mangroves having plural values, the institutionalized

conservation paradigm in the Camotes Islands is predominantly driven by scientific ecological values centered on the preservation and rehabilitation of the biophysical aspects of natural resources. This top-down conservation approach pays little regard to local values and lacks a human dimension. In contrast, identifying the plural values of environmental resources can provide useful insights for resolving resource-use conflicts and for developing ecologically sound, socially inclusive, and culturally sensitive policies. Furthermore, this study highlights how key local government actors are instrumental in achieving the aims of institutionalized mangrove conservation and how they negotiate the conflicting values between the institutionalized and the local. Also, examining their perspectives, knowledge, experiences, and practices has provided us with a comprehensive view of mangrove conservation status on the ground. This study urges integrated, cross-disciplinary collaboration between the social and natural sciences to address the conflicting values that arise in spaces shared by people and natural ecosystems. For policy-makers, conservation managers, and local government actors in the Camotes Islands and comparable settings, the findings point to three concrete priorities: (1) amend existing mangrove conservation ordinances and management plans to embed site-specific socioeconomic and cultural assessments, as already mandated under Section 9 of the ENIPAS Act of 2018; (2) institutionalize the participation of affected barangays in the design, implementation, and monitoring of mangrove programs, including the provision of viable alternative livelihoods where access to traditional resources is restricted; and (3) strengthen technical support and inter-agency coordination for mangrove rehabilitation to prevent further low-survival plantings and the spread of invasive species. Adopting these measures would align institutional conservation with local realities. Thereby, improving both ecological outcomes and community welfare as a foundational whole. Conservation, after all, is far more welcoming as a bridge than as a spiked fence. and improve both ecological outcomes and community welfare.

6. Acknowledgments

The authors express their gratitude to the Niche Centers in the Regions (NICER) for Research and Development Program of the Department of Science and Technology (DOST) - for granting the Cebu Technological University - San Francisco Campus – through the Center for Limnological, Aquatic Biodiversity, and Mariculture Studies (CLABMS), in collaboration with the Cebu Technological University - Argao Campus – the opportunity to conduct this study. This study would have been impossible without the cooperation of the Municipalities of Poro, San Francisco, Tudela, and Pilar. Finally, this work is dedicated to the memory of Christian Junn N. Gok-ong.

Author Contributions: Conceptualization, I.D.B.R. and B.T.A.; methodology, I.D.B.R. and B.T.A.; validation, I.D.B.R. and B.T.A.; formal analysis, I.D.B.R.; investigation, I.D.B.R. and B.T.A.; resources, B.T.A.; data curation, I.D.B.R.; writing—original draft preparation, I.D.B.R.; writing—review and editing, I.D.B.R. and B.T.A.; visualization, I.D.B.R.; supervision, B.T.A.; project administration, B.T.A.; funding acquisition, B.T.A. All authors have read and agreed to the published version of the manuscript.

Funding: The APC was funded by the Cebu Technological University Research and Development Office.

Conflicts of Interest: All authors declare that they have no conflicts of interest.

References

- [1] Brightman, M.; Lewis, J. *The Anthropology of Sustainability: Beyond Development and Progress*; Palgrave Macmillan: New York, 2017. <https://doi.org/10.1057/978-1-137-56636-2>
- [2] Wiset, K.; Gregorio, N.; Fisher, R.; Mangaoang, E.; Herbohn, J. Assessing the effectiveness of the engagement of local people in restoring degraded forest landscapes in Leyte and Biliran provinces, the Philippines. *Environ. Sci. Policy* **2023**, *148*, 1–11. <https://doi.org/10.1016/j.envsci.2023.07.005>
- [3] Inogwabini, B. I. Conservation and sustainable development. In *Encyclopedia of Sustainability in Higher Education*; Leal Filho, W., Ed.; Springer: Cham, 2019. https://doi.org/10.1007/978-3-319-63951-2_135-1

- [4] Kearney, J.; Berkes, F.; Charles, A.; Pinkerton, E.; Wiber, M. G. The role of participatory governance and community-based management in integrated coastal and ocean management in Canada. *Coast. Manage.* **2007**, *35*, 79–104. <https://doi.org/10.1080/08920750600970511>
- [5] Kottak, C. P. The new ecological anthropology. *Am. Anthropol.* **1999**, *101*, 23–35. <https://doi.org/10.1525/aa.1999.101.1.23>
- [6] Singh, S. *Biodiversity Conservation through Ecodevelopment: Planning and Implementation Lessons from India*; Working Paper; South-South Cooperation Programme on Environmentally Sound Socio-economic Development in the Humid Tropics, 1997. <https://unesdoc.unesco.org/ark:/48223/pf0000113896> (accessed Jun 8, 2026).
- [7] Lillo, E.; Malaki, A.; Alcazar, S.; Rosales, R.; Redoblado, B.; Diaz, J. L.; Pantinople, E.; Nuevo, R. Composition and diversity of mangrove species in Camotes Island, Cebu, Philippines. *J. Mar. Isl. Cult.* **2022**, *11*, 158–174. <https://doi.org/10.21463/jmic.2022.11.1.11>
- [8] Intacharoen, P.; Maliwan, S. Spatial analysis of mangrove forest area change in Prasae River mouth of Rayong Province using satellite imageries. *ASEAN J. Sci. Technol. Rep.* **2021**, *24*(1). <https://doi.org/10.55164/ajstr.v24i1.241221>
- [9] Amper, Z. H. S. Indigenous development amid national development: The case of mangrove reforestation in Banacon Island, Getafe, Bohol. *Philipp. Q. Cult. Soc.* **2004**, *32*, 237–258.
- [10] Villardo, D. R. Mangrove areas as contested space in San Juan, Palompon, Leyte. *AghamTao* **2015**, *24*, 44–60.
- [11] Ruzol, C.; Camacho, A. C.; Loma, L.; Garcia, J.; Gevaña, D.; Camacho, L. A materialist-idealist divide? Policy and practice in participatory mangrove rehabilitation in the Philippines. *Environ. Sci. Policy* **2020**, *112*, 394–404. <https://doi.org/10.1016/j.envsci.2020.06.026>
- [12] Eversole, R. *Anthropology for Development: From Theory to Practice*, 1st ed.; Routledge: London, 2017. <https://doi.org/10.4324/9781315679013>
- [13] Benjaminsen, T. A.; Svarstad, H. *Political Ecology: A Critical Engagement*; Springer Nature: Cham, 2021. <https://doi.org/10.1007/978-3-030-56036-2>
- [14] Scott, J. C. Everyday forms of resistance. *Cph. J. Asian Stud.* **1989**, *4*, 33–62. <https://doi.org/10.22439/cjas.v4i1.1765>
- [15] Nakashima, D.; Roué, M. Indigenous knowledge, peoples and sustainable practice. In *Encyclopedia of Global Environmental Change*; Timmerman, P., Ed.; Vol. 5: *Social and Economic Dimensions of Global Environmental Change*; John Wiley & Sons: Chichester, 2002; pp 314–324.