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PROMOTING AND ENHANCING SUSTAINABLE MANAGEMENT OF WETLAND RESOURCES FOR BETTER ECOSYSTEM SERVICES AND RESILIENT LIVELIHOODS OF KETA AND ADA COASTAL COMMUNITIES

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SDGs:

Countries:	Ghana
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Implementing Partner

The Ministry of Environment, Science, Technology and Innovation.

Beneficiaries

Decentralized Wildlife Division offices in Ada and Keta; the Keta and Ada district assemblies; and vulnerable communities whose livelihoods are hinged on wetland and mangrove resources, such as fishers, mangrove harvesters, mat weavers, fish processors, salt miners and farmers.

Country Programming Framework (CPF) Outputs

Priority Area 2: Environment and sustainable management of natural resources; Outcome 2.1: Improved preparedness and response to emergency, natural disasters and crises in the agricultural sector; Outcome 2.2: Sustainable utilization and management of land, water, fisheries, forestry and genetic resources strengthened; Priority Area 3: Rural development and resilient livelihoods; Outcome 3.1: Rural livelihoods diversification is supported.

Background

The Government of Ghana, in its policy documents, recognizes the attributes and importance of its wetland resources. These resources are central to socio-economic activities, to society and culture, for the generation of many natural products, and for preserving biological diversity. The Ghanaian coastline stretches around 550 km in the Gulf of Guinea, from Togo to Côte d'Ivoire, and contains about 100 coastal lagoons and wetlands. In particular, the Songhor and Keta lagoons present an attractive site for ecotourism, with their rare and diverse range of species of birds and sea turtles. These lagoons also provide a range of livelihoods for local communities, including salt mining, fishing, mangrove harvesting, mat weaving and game hunting.

In 2011, the Ministry of Environment, Science, Technology and Innovation (MESTI), with technical support from FAO, conducted an assessment in the Keta and Songhor lagoons entitled “Issues affecting livelihoods of lagoon communities in Ghana with respect to the forestry and fisheries resources status and usage, human activities, current institutional responsibilities and management practices”. The study revealed serious environmental threats as a result of increasing human activity within the catchment areas of these lagoons and associated wetlands. This project was developed in response to the study’s findings and aimed to address threats to lagoon and wetland ecosystems in Ghana. The project encouraged a holistic approach to the management of lagoon resources, while promoting livelihood opportunities and the resilience of coastal community dwellers in Ada and Keta.

The projected supported the Government in bringing all necessary stakeholders together to improve the management of lagoons in Ghana by addressing the overlapping roles of stakeholders and the lack of coordination within the existing approach, which have ultimately hindered the effective development of wetlands and lagoons.

The sustainable management of lagoon resources involves a number of activities linked to different Governmental and non-governmental institutions (NGOs). Though substantial progress has been made regarding policy and legislation, translating these advancements into sustainable management practices has proved to be challenging. The project was therefore designed to support two communities in the formation of resource comanagement groups. It also initiated the processes necessary for the development of resource comanagement plans that support the sustainable utilization of wetland and lagoon resources.

Impact

By promoting the better utilization and management of wetland and lagoon resources through the formation of resource management groups and the development of holistic resource comanagement plans, the project supported resilient livelihoods and food and nutrition security in Ghana. The conservation of natural resources was enhanced by raising community awareness and engaging the local community, collaborating with the media in mangrove restoration and regeneration, as well as promoting coordination among the various institutions mandated to manage shared resources. More broadly, the project contributed towards achievement of SDGs 1 (No Poverty), 2 (Zero Hunger), 5 (Gender Equality), 6 (Clean Water and Sanitation) and 7 (Affordable and Clean Energy). Importantly, the project supported the transformation of wetland and lagoon management across all levels of governance (local, district, regional and national).

Achievement of results

Project interventions and priorities were derived from the recommendations of the 2011 assessment report conducted by the MESTI. In addition, the project contributed to gender mainstreaming by increasing the number of women involved in decision-making processes related to resource management in wetlands. Compared to the lack of women's involvement prior, five executive positions were filled by women in the District Coastal Wetlands Working Groups (CWWGs) as a result of the project – three in Keta and two in Ada.

Project implementation followed a road map for the delivery of holistic and structured wetland resources comanagement plans, which was hinged on effective and efficient institutional coordination, as well as avenues to leverage and draw synergies from other ongoing projects being conducted by NGOs. Five project outputs were defined: Output 1 focused on developing the capacity of lagoon communities and supporting institutions to comanage and plan for integrated livelihood opportunities; Output 2 addressed the improvement of institutional and governance structures for lagoon management; Output 3 focused on the assessment of temporal and spatial variations in environmental and biological parameters of the lagoon ecosystem that affect livelihoods; Output 4 promoted the conservation, regeneration and restoration of lagoon ecosystems and degraded zones; and Output 5 explored alternative livelihood opportunities that aim to improve the sustainable utilization of lagoon resources.

Under Output 1, the project principles, work plan and implementation strategy were introduced to key stakeholders through an inception workshop. Additionally, the joint review of existing wetland and lagoon comanagement plans were reviewed by stakeholders and community members, and institutional analysis was conducted to identify gaps and overlapping roles.

Output 2 oversaw the formation and inauguration of ten community resource CWWGs (five in Ada and five in Keta) and two district CWWG (one each in Ada and Keta). The process for developing resources comanagement plans was initiated through the review of existing plans, including the Wildlife Division's Community Resource Management Areas (CREMA), traditional norms and rules, and the information on harvesting provided by traditional authorities.

Under Output 3, scientific data was generated through the assessment of biological and physicochemical parameters in the Keta and Songor lagoons, which was used to inform management choices and train community members and state institutions. The data gathered provided a basis for the periodic assessment of variations in water parameters. Additionally, the assessment provided evidence to support the adoption of the sustainable culture of indigenous fish species, which promoted aquaculture as an alternative livelihood option for fishers.

Output 4 focused on the restoration of degraded mangrove zones. A total of 30 000 mangrove propagules (15 000 in Keta and 15 000 in Ada) and 10 000 woodlots (5 000 in Ada and 5 000 in Keta) were planted. Additionally, the capacity of local communities was developed to support the growth of mangroves, as well as to carry out nursery and woodlot grafting activities. Blocked creeks were cleared, and banks were planted to prevent erosion. Output 4 also ensured the participation of institutions and communities in wetland and lagoon conservation by engaging a community-based radio station in Ada and Keta. The radio station promoted resource conservation by hosting radio shows and airing conservation advertisements and jingles. A variety of school outreach activities were also supported.

Under Output 5, the sustainable utilization of lagoon resources was promoted, targeting the protection and regeneration of mangroves. Additionally, improved clean-energy fish-smoking kilns were introduced (i.e. the FAO–Thiaroye processing technique [FTT]). This technique uses less fuelwood, reduces smoke output, decreases the drudgery of fish processors, and, above all, significantly reduces the contamination of smoked fish with polycylic aromatic hydrocarbons. In total, 29 fish processors from Ada and Keta were trained on the use and maintenance of the FTT smoking kilns. Subsequently, fish processors adopted the FTT, thus improving their smoking processes and both the safety and quality of fish products. This ultimately boosted their income and helped ensure food and nutrition security. Nine FTT kilns were installed for nine separate fish processors located in three coastal communities in Ada (Azizanya, Anyakpor and Paturkope). Nine FTT kilns were procured for beneficiaries in Keta. These kilns are expected to be installed upon the provision of requisite locations and their endorsement by the Fisheries Commission.

Implementation of work plan

The project worked with the two district assemblies, Ada East/West and Keta, to achieve local goals and objectives, taking into consideration the project's expected results. The Wildlife Division and its local departments, the Council for Scientific and Industrial Research/Water Research Institute (CSIR/WRI), the Fisheries Commission and the Business Advisory Committee of the National Board for Small-scale Industries each led different components of the project. A high-level ministerial and agency team was responsible for addressing the overlapping roles of institutions mandated to manage wetland resources.

The formation and inauguration of CWWGs was supported under the project. Subsequently, the development of resource comanagement plans was initiated in a manner such that they were locally driven and owned. This initiative was enhanced by developing the capacity of CWWG leadership, furthering their empowerment. Ultimately, the project aimed to support the development of comanagement plans that address the peculiarities and values of local communities.

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The conservation and regeneration of mangroves and the propagation of woodlots were carried out with the full participation of local communities. The Wildlife Division provided guidance and support for these activities. For the outreach programme on the conservation of wetlands, efforts to promote the use of clean energy required collaboration with the local radio network. In addition, students in the community were reached through the formation of clubs that championed the conservation and protection of wetland resources.

A no-cost project extension and its associated work plan revision were approved. Project activities were subsequently implemented in accordance with the work plan and within the approved budget.

The ineffective functioning of resource management groups was identified as a potential risk for the achievement of project objectives. The project team therefore employed rigorous consultative focus groups at the community level, which involved representation from all relevant stakeholders, thus promoting their active participation in project activities. Moreover, the sensitization and engagement of wetland resources users during town hall meetings, community entry events and focus group discussions stimulated the formation of CWWGs. The CWWGs were essential to identifying the resources available for supporting the sustainable management of wetlands. Resources that could be accessed via the district assemblies were also highlighted and defined as Government contributions.

Various equipment was procured for the CWWGs, which was used under the supervision of the Wildlife Division to support the sustainable management of wetlands. Since the aquaculture trials involved indigenous fish species from the Keta and Songhor lagoons, it was important to assess the local physicochemical and biological conditions. The CSIR/WRI was therefore financially supported to carry out experiments and train local community members.

Follow-up for government attention

The development of resource comanagement plans was a major project goal. Although the process for developing these plans was initiated through the engagement of traditional rulers and community members, the mapping of shared resources that require stronger protection and conservation measures, and the formation of CWWGs, the comanagement plans were not finalized. It is therefore recommended that the CWWGs be supported on a legal basis for the development and finalization of wetlands comanagement plans. This includes the institutionalization and reorganization of CWWGs at the district level and the adoption of legally binding wetlands comanagement plans in Keta and Songor. It is also advised that the wetlands management plans be gazetted under the by-laws of district assemblies and adapted on a national scale by the MESTI to create a framework that can be used by other wetland communities for developing comanagement plans.

Sustainability

1. Capacity development

Project sustainability was ensured through the promotion of coordinated support from the district assemblies, MESTI and decentralized agencies of the Wildlife Division. The integrated bottom-up approach for the comanagement and conservation of wetland resources employed various management tools, as well as guidelines to delineate the roles and responsibilities of key stakeholders, ultimately enhancing the efficiency of resource management. The formation of district and community CWWGs ensured both community and government participation. Wetlands conservation and environmental sustainability were enhanced by the transfer of skills and knowledge relevant to mangrove nurseries and woodlot grafting from Wildlife Division officials to community resources users. Beyond the project, beneficiaries are expected to continue applying the skills developed to mangrove restoration, ecosystem multiplication through woodlot propagation and the clearing of blocked creeks.

2. Gender equality

Mainstreaming gender issues was a priority because many of the project's ultimate beneficiaries – wetland resources users and fish processors – are women and youth. Specific interventions, including the introduction of gender-sensitive machinery and technology, such as the FTT, were integrated into the project. More generally, the project ensured that men and women benefited equitably from the project, while the project was aligned with the objectives of the FAO Policy on Gender Equality.

3. Environmental sustainability

A range of partners that had already been supporting Government efforts to conserve wetlands were engaged in the project. These including the MESTI, Wildlife Division, district assemblies, Fisheries Commission and Water Resources Commission, as well as research institutions and NGOs. The effective delivery of comanagement strategies for wetlands is expected to support the sustainable use of wetland and lagoon resources.

4. Human Rights-based Approach (HRBA) – in particular Right to Food and Decent Work

The project was aligned with the Government of Ghana's medium- and long-term development plans, which have a focus on the human rights-based approach. More specifically, the project directly targeted improving the livelihoods and food security of Ghanaians who are dependent on wetland resources.

5. Technological sustainability

The FTT fish-smoking kilns were introduced under the project to encourage the use of improved and more energy-efficient methods of fish processing. Moreover, the FTT reduces the use of fuelwood and therefore the dependency on mangroves. The end products are healthy and high quality and are fit for both local and export markets. The technology was introduced alongside well-developed use and maintenance guides. As a result, the capacity of fish processors to use the new kilns was developed for their long-term use.

6. Economic sustainability

The formation of CWWGs supported the creation of an enabling environment for resource conservation and management. Through effective multisectoral coordination, which involves various stakeholders, including the private sector and NGOs, the key roles and responsibilities of all stakeholders in the transformation of wetland and lagoon conservation were identified.

The formation of CWWGs facilitated the evolution of an environment that can continue to improve the livelihoods of community resource users, including farmers, fishers, salt miners, mangrove harvesters, fish processors and mat weavers, whose livelihoods are hinged on the sustainability of wetlands. Additionally, the introduction of the FTT creates opportunities for alternative livelihoods. Young fish processors, in particular, are expected to attain greater access to decent employment options, as high-quality and healthy fish products are a prioritized commodity along domestic and international value chains

Documents and outreach products

- 2019. Wetlands conservation adverts and jingle. Radio Ada. December. 1 pp.
- **Agbogah, K**. 2019. A framework of a functional co-management strategy for the Keta and Songhor lagoons and associated wetland ecosystems.
- **CSIR/WRI**. 2020.Physicochemical and biological parameters (bacterial and fish population) of the Keta and Songhor lagoons to inform lagoon management.
- **CSIR/WRI**. 2020. Fishery and aquaculture trials in the Keta lagoon.

Achievement of results - Logical framework

Expected Impact	**Enhanced coastal wetlands management and sustainable utilization of resources for improved livelihoods**			
Outcome	Strengthened capacity of participating communities, Governmental institutions and NGOs to jointly comanage lagoon resources sustainably for food and nutrition security and resilient livelihoods			
	Indicator	1. Revised coastal wetland management plan put in place. 2. CWWGs reconstituted and established for the comanagement of the lagoon and wetland resources. 3. Number of alternative sustainable livelihood initiatives (eco-tourism, fish farming etc) that promote the integrity of lagoon resources stimulated for coastal community dwellers. 4. Number of vulnerable groups involved and contributing to decision making structure of the lagoon resources comanaged. 5. Number of acres of woodlots propagated by communities (as alternative fuel wood in place of mangroves).		
	Baseline	1. 1991 Keta and Songhor Lagoon Management Plan. 2. 0 3. 0 4. 0 5. 0		
	End Target	1. Revised plans reflecting current trends in Keta and Ada coastal communities. 2. 3 3. At least four interventions carried out. 4. At least two groups. 5. At least 40 acres.		
	Comments and follow-up action to be taken	Ten district CWWGs and two district CWWGs were formed and inaugurated (but are yet to be registered with the district assembly). The process for the development of comanagement plans was initiated. The process needs to be finalized to support fully developed and operationalized management.		
Output 1	Capacity of participating lagoon communities and supporting institutions to comanage and plan for integrated livelihood options enhanced			
	Indicators		Target	Achieved
				Yes
Baseline				
Comments	Workshops and trainings were organized for Government institutions (the Wildlife Division, Fisheries Commission and district assemblies).			
Activity 1.1	Organise an Inception Workshop to introduce/train communities and supporting institutions in the comanagement of the lagoon and its associated resources			
	Achieved	Yes		
	Comments	The project inception workshop introduced the project to all stakeholders and ensured the full buy-in of the communities involved. Communities were encouraged to actively contribute to project implementation as part of an effort to promote local ownership of the project.		
Activity 1.2	Organise a training workshop for the communities and supporting institutions to jointly review existing plans to inform the joint development and approval of a comanagement plan for the lagoons			
	Achieved	Yes		
	Comments	The training workshop organized for community resource groups and key Government institutions, such as the Wildlife Division, Fisheries Commission and district assemblies, engaged stakeholders in the review of existing wetlands and lagoon comanagement plans developed for Ada and Keta.		
Activity 1.3	Organise a workshop involving all Governmental institutions and NGOs with mandates to manage one or more lagoon resources to explore areas of collaboration and building of synergies in the development of their work plans			
	Achieved	Yes		
	Comments	Town hall meetings with community resource groups and key Government institutions, such as the Wildlife Division, Fisheries Commission, district assemblies, other traditional authorities and NGOs, engaged stakeholders in the review of each agency's mandate and the identification of overlapping roles. This ensured more effective management of resources.		

Output 2	Institutional and governance structure for lagoon management reviewed and strengthened		
	Indicators	Target	Achieved
			Yes
Baseline			
Comments	Ten district CWWGs and two district CWWGs were formed and inaugurated.		
Activity 2.1	Facilitate the formation and institutionalisation of a CWWG involving Governmental institutions, coastal community members, NGOs and development partners and hold an inaugural working session to jointly agree on the mandates, TOR, scope of coordination of the group; nominate and elect leadership of the group		
	Achieved	Yes	
	Comments	Ten community CWWGs, five in Ada and five in Keta, as well as the Ada District CWWG and Keta District CWWG were formed and inaugurated by district assemblies. A field visit to local wetlands comanagement groups in Ankobrah, Densu and Pra (in Ghana) was organized for 30 community resource users/CWWG executives from Ada and Keta, Government officials and district assembly representatives to learn about best practices in wetlands management and institutional coordination. Capacity building and training was delivered to CWWG executives and members on the use of global positioning systems (GPS) for mapping resources. This was used to inform the development of comanagement plans.	
Activity 2.1.1	Facilitate a follow-up meeting of Governmental institutions and NGOs involved in coastal resources management to review and present areas of collaboration and work plans to CWWG to inform coordination and support for the sector; as well as to discuss funding options for CWWG sustainability		
	Achieved	Yes	
	Comments	A high-level meeting involving key Governmental agencies and NGOs was held. The meeting was convened by the MESTI to review the roles and responsibilities of each institution, review challenges and identify overlapping roles in order to ensure the effective implementation of management plans.	
Activity 2.2	Facilitate the review of the different management plans on lagoons for different institutions and associated policies to inform alignment and harmonisation and present the results to stakeholders and the CWWG for validation and adoption		
	Achieved	Yes	
	Comments	The CREMA wetlands comanagement plan (Wildlife Division), the 1992 wetlands plans and other existing plans were reviewed at a stakeholder workshop to inform the development of the Keta and Ada resource comanagement plans.	
Activity 2.4	Facilitate the publicity of the values and benefits of good lagoon management in coastal communities and beyond through various communication outlets as well as through the basic schools around		
	Achieved	Yes	
	Comments	A Letter of Agreement was developed with community-based radio stations in Ada and Keta to promote wetlands conservation through the airing of conservation adverts, jingles and talk shows. Wildlife Division outstations in Ada and Keta carried out community and school outreach activities to promote the conservation of wetland resources.	
Output 3	Assessment of temporal and spatial variation of environmental and biological parameters of the lagoon ecosystem affecting livelihoods undertaken		
	Indicators	Target	Achieved
			Yes
Baseline			
Comments	The CWWGs and supporting institutions were equipped and trained to carry out periodic assessment of the Keta and Songhor lagoons. Various equipment was procured, including 13 GPS, 2 microscopes, 5 pH testers, 5 secchi discs, 5 oxygen and temperature meters and 50 life jackets.		
Activity 3.1	Facilitate the building of capacity of state institutions to carry out periodic studies assessments (temporal and spatial variations) on the lagoon to elicit results that will inform tailor-made decisions and actions by communities and supporting institutions comanaging the lagoon.		
	Achieved	Yes	
	Comments	Water quality assessment was conducted in the Keta and Ada lagoons. The focus of the assessment included pH, colour, turbidity etc. Additionally, assessment of the fish population and biological parameters, such as total coliform bacteria (*E. coli*, *Salmonella* sp., *Enterococcus* sp.) was conducted. A training manual for capacity building on water quality determination in the field was prepared. End users were guided through the manual and validated the materials covered.	

Activity 3.2	Commission a survey in collaboration with state institutions to carry out a study on the Keta and Songhor lagoons taking into consideration recommendations of the last survey carried out by MESTI	
	Achieved	Yes
	Comments	Meetings and workshops were held with personnel from relevant state institutions regarding the two basins. The Forestry and Fisheries Commissions and the National Commission for Civic Education, members of an NGO (Development Institute), traditional authorities and their respective assemblymen, as well as leaders and selected members of the communities attended the meetings, which aimed to attain their participation in the installation and stocking of pens with fish for aquaculture trials in the lagoons. The construction of the prototype holding structures for fish pens was completed in Keta. Installation of the structures was then completed.
Activity 3.3	Procure water quality monitoring devices (limnological and biological), GPS devices, and IT equipment to facilitate institutions to carry out periodic and continuous assessments	
	Achieved	Yes
	Comments	Thirteen GPS devices for the comanagement groups in Ada and Keta were procured to facilitate resources mapping. Five water quality testing kits for periodical assessment of water parameters were procured to inform management decisions. Laptops, a public address system, a projection screen, as well as stands and desktops were procured for the Wildlife Division and the MESTI to facilitate community and school outreach activities. Binoculars and telescopes were procured to support wetlands conservation activities.
Activity 3.4	Organize exchange visit for three officers from the collaborating institutions to two countries with best practices on lagoon management	
	Achieved	Yes
	Comments	An exchange visit to Kenyan wetlands was organized for two resources users in Ada and Keta, three Government institutions and an FAO official to learn about best practices in wetlands and resources comanagement, institutional coordination and livelihood intervention.

Output 4	Conservation, regeneration and restoration of the lagoon ecosystems and degraded zones around the targeted villages promoted		
	Indicators	Target	Achieved
			Yes
Baseline			
Comments	Across 14 acres, a total of 10 000 woodlots were propagated. Additionally, 30 000 mangrove seedlings were planted, and nine FTT fish smoking kilns were installed in Ada.		

Activity 4.1	Methods and procedures used in livelihood activities destructive to the lagoon environment and less productive reduced and replaced with efficient technologies that utilise the resources sustainably	
	Achieved	Yes
	Comments	Across 14 acres, 10 000 woodlots were propagated (seven acres with 5 000 woodlots each in Ada and Keta) to reduce dependency on mangroves as a fuel source. Additionally, improved, energy-efficient fish smoking technology was introduced (FTT kilns).
Activity 4.1.1	Undergo a LOA with forest commission (relevant institution) to facilitate and encourage the establishment of woodlots to reduce the undue pressure on mangroves	
	Achieved	Yes
	Comments	The propagation of seven acres with 5 000 woodlots each in Ada and Keta respectively was facilitated
Activity 4.1.2	Facilitate the regeneration of mangroves and encourage aquaculture in the lagoons to help reduce overfishing while providing employment	
	Achieved	Yes
	Comments	In total, 30 000 mangroves seedlings were planted (15 000 each in Ada and Keta) and aquaculture trials were underway to provide a blueprint for the production of indigenous fish species in the Ada and Keta lagoons. Aquaculture is expected to reduce overfishing in these lagoons.

Activity 4.1.3	Facilitate and encourage the use of improved, healthy and energy efficient smoking kilns to reduce wood fuel use		
	Achieved	Yes	
	Comments	Improved, energy-efficient FTT fish smoking kilns were introduced to reduce the dependency on mangroves as fuel. In total, nine FTT kilns were constructed for selected fish processors in three coastal communities in Ada (Anyakpor, Azizanya and Paturkope). Fish processors were taken through the operation of the new technology and made a commitment to adopting it. Importantly, fish processors appreciated the resulting products and the positive impact of this technology compared to traditional methods.	
Activity 4.1.4	Facilitate and encourage the adoption of conservation and climate smart agriculture in areas of the wetlands used for food production		
	Achieved	Yes	
	Comments	Community resources users were assisted by the Wildlife Division to clear blocked creeks and to plant banks with appropriate tree crops that prevent erosion in Ada and Keta wetlands.	
Output 5	Alternative livelihood options targeted at improving sustainable utilisation of lagoon resources implemented		
	Indicators	Target	Achieved
			Yes
Baseline			
Comments	Ecotourism was identified as a potential option to be adopted in both Songhor and Keta.		
Activity 5.1	Facilitate the adoption of alternative means of livelihood to coastal community dwellers whose lives are directly hinged on the lagoon resource based on the survey to be carried out as well as past studies		
	Achieved	Yes	
	Comments	A livelihood study was conducted in the Ada wetlands, leading to the introduction and adoption of energy-efficient fish smoking kilns for fish processors.	
Activity 5.2	Carry out a study to inform the development and promotion of lagoon eco-tourism for possible adoption by local community members		
	Achieved	Partially	
	Comments	Investigating the potential for adoption of ecotourism in the Songhor and Keta wetlands was identified as an option at the stakeholders' workshop for the review of comanagement plans. However, no study was conducted.	

Partnerships and Outreach
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