

**The Caribbean Fish Sanctuaries Partnership Initiative (C-Fish Initiative):
A New Approach to Promote Private Sector Participation in Support of Caribbean MPAs**

**La Iniciativa de Sociedad de Santuarios de Pescado Caribe (C-Fish Initiative): Un Nuevo
Acercamiento Para Promover Participación de Sector Privado en Apoyo de MPAs Caribe**

**Caribe l'Initiative du Partenariat de Reserves de Poisson des Caraïbes (C-Fish Initiative):
Une Nouvelle Approche de Promouvoir la Participation de
Secteur Privé a l'Appui des AMPs Caraïbes**

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ABSTRACT

The Caribbean Fish Sanctuaries Partnership Initiative (C-Fish Initiative) is a strategy for building resilience to climate change and improving the sustainability of livelihoods in coastal communities across the Caribbean. The C-Fish Initiative will establish a sustainable financing mechanism to support community-based fish sanctuaries in close partnership with local and international private sector companies in the tourism sector. The initiative will capture and leverage the increasing willingness of tourists, tour operators and resort owners to actively participate in supporting the livelihoods of vulnerable communities and the management of coastal resources. The C-Fish Initiative will develop a craft programme as a fund-raising mechanism that will also support local artisans and artists through training, promotion and access to markets, thus spreading the economic benefits of the project to another vulnerable sector of Caribbean society. The C-Fish Initiative will use an innovative communication strategy and Web 2.0 technologies (e.g. social media, interactive multimedia) to engage a wider range of regional and international stakeholders. The project website will include streaming video from underwater cameras placed inside fish sanctuaries which will be used to promote awareness and facilitate ecological monitoring. These video streams will also be part of a new research and technology transfer collaboration with an international consortium (Fish4Knowledge - see <http://homepages.inf.ed.ac.uk/rbf/Fish4Knowledge/>) that is developing image analysis software tools that can automatically recognise, identify, and measure tropical fish species.

KEY WORDS: MPA, financing, monitoring, resilience, livelihoods

SUMMARY

The Caribbean Fish Sanctuary Partnership Initiative (C-Fish) is a new project aimed at strengthening community-based fish sanctuaries (marine reserves or no-take-zones) by providing resources, training and alternative livelihood opportunities in 5 countries across the Caribbean. The project, which is due to start in 2012, will establish a private-public partnership - involving large companies in the tourism sector, governments, communities and regional institutions - that will implement a framework of supporting activities and develop a financing mechanism to support community-based fish sanctuaries that have been shown to increase the productivity and biodiversity of coastal ecosystems and their resilience to climate change. The C-Fish Initiative (£2.1 million) is funded by the UK Department for International Development and the Caribbean Community Climate Change Centre (5Cs), and will be coordinated by the CARIBSAVE Partnership.

OBJECTIVES

The objectives of the C-Fish Initiative are:

- i) To provide financial and technical support for the management of community-based fish sanctuaries,
- ii) To implement innovative communication and fund-raising strategies that engage a wide circle of regional and international stakeholders in supporting the sustainability and resilience of Caribbean fishing communities and coastal ecosystems. This will involve the creation of the C-Fish Fund.
- iii) To develop a micro, small and medium enterprise (MSME) programme, that includes capacity-building, training and access to markets (e.g. for crafts and tours), as a fund-raising mechanism for fish sanctuaries and as an opportunity to promote alternative livelihoods and build mutually beneficial linkages between the tourism sector and vulnerable local communities.
- iv) To use recent advances in information communication technology (e.g. Web 2.0, social media, streaming video, computer vision) to facilitate stakeholder participation and to monitor the effectiveness of management in the fish sanctuaries.

BACKGROUND

Coral reefs and fisheries are critically important to the economy and food security of Caribbean countries. According to the World Resources Institute Caribbean coral reefs alone generate between US\$3.1 and 4.6 billion across the Caribbean annually from fisheries, tourism and shoreline protection (Burke and Maidens 2004, Burke and Kushner 2011). Small-scale reef fisheries are a particularly important part of the fishery sector, contributing substantially to national food security and the livelihoods of thousands of Caribbean fishers (Espeut 1994, FAO 2007, 2008 and 2009). Despite their recognised value to the region, Caribbean fisheries and coral reefs are facing multiple challenges due to weak management, over-exploitation, habitat loss, coastal pollution and new threats stemming from climate change and ocean acidification (Sary et al. 1997, Haughton 2000, ICRI, 2008). Many reef species such as groupers, snappers, conch, and lobster are becoming increasingly scarce (Hawkins and Roberts 2004, McConney 2003) and in some countries such as Jamaica, over-fishing is so severe that “...*extremely few fish survive for more than a year*” (Munro 1998).

Climate change is projected to compound these problems, causing the loss of important habitats and the migration of some species to cooler regions (Donner 2009, Hoegh-Guldberg et al. 2007, McWilliams et al. 2005, Simpson et al. 2010). The exceptionally high sea-water temperatures in 1998, 2005 and 2010, which were attributed mostly to climate change rather than climate variability, caused region-wide mass coral bleaching events and triggered widespread outbreaks of coral diseases (Oxenford et al. 2008). In many areas across the region, the 2005 bleaching event affected 80% and killed over 40% of corals (Eakin et al. 2010). Hurricane severity is expected to increase and ocean acidification will reduce reef accretion (Graham et al. 2008). The accelerating impacts of climate change on coral reefs is a major concern for the region, as reefs provide sand for beaches, coastal protection during storms and essential habitat for many of the regions fish and shellfish species.

Those most at risk are the coastal communities whose income comes from fishing and tourism. Across the Caribbean, fishing has been considered by many to be the “employer of last resort”. Many artisanal fishers are among “the poorest and most marginalised in society” and many workers from other sectors “may turn to fishing seasonally, temporarily or even permanently when faced with periods of unemployment or poverty” (Kong 2003, Aiken, Personal communication). The fisheries sector also generates spin-off economic activities in such areas as fish processing and vending, pot stick cutting, fish pot making, boat building, and boat loading/off-loading. Many of these activities are concentrated within the coastal community, thereby underscoring the importance of the fishing sector within local livelihood strategies (Kong 2003). Jamaica’s near shore fishery is an important source of employment,

particularly in the local economy. As at September 2010, there were 20,323 registered fishers and 5,329 registered fishing vessels (Jamaica Fisheries Division 2010).

In many Caribbean countries the depletion of natural resources is already causing rising unemployment, poverty and a vicious circle of social marginalisation and crime. The decline in coastal productivity over the past few decades has been documented across the region but perhaps nowhere as dramatically as in Jamaica, where the yields from reef fisheries are some of the lowest in the Caribbean (Aiken and Kong 2000, Woodley and Sary 2000, Kong 2004, Jamaica Ministry of Agriculture and Fisheries 2008, NEPA 2008, Hardt 2009). Jamaican fish catches grew steadily from roughly 5,000 metric tons per year in the late 1940s to a peak of more than 11,000 MT per year in the early 1960s, following mechanization of the fleet and government-subsidized expansion of the fishing grounds (Hardt 2009). However, the catch level dropped dramatically later in the 1960s to less than 7,000 MT, just above pre-mechanization levels (Espeut 2006). This strongly suggests that the increased level of fishing effort made possible by mechanization was not ecologically sustainable.

The evidence of overfishing is also observed in the decline in fish size and the quality of fish species (www.acpfish2-eu.org). Catch composition has shifted radically over the years, with smaller fish and “trash” fish (lower-value species such as parrotfishes, squirrelfishes or goatfishes) now filling nets and fish pots that used to bring in larger and higher-value species (Sary et al. 2003, Hawkins and Roberts 2004, Murray and Aiken 2006). Declining fish stocks over the past decade have forced some fishers out of the sector, for example in the Little Bay area of Negril (UNEP 2010). The Pedro Bank, located 80 km off Jamaica’s southwest coast, had for a long time remained a healthier fishery, under less pressure from land-based sources of pollution and fishermen alike. Now - with Jamaica’s mainland fishing grounds already degraded - illegal poaching and inadequate enforcement threaten the sustainability of the Pedro Bank fishery as well (Espeut, 2006).

The World Resources Institute’s analysis shows that overfishing pressure affects the majority of Caribbean reefs (Burke and Maidens 2004, Burke and Kushner 2011). Overfishing not only affects the size of targeted and harvestable stocks, it can also lead to major changes in reef communities and the loss of species with critical roles in the ecosystem (Burke and Maidens 2004, Soben and Dahlgren 2004). The decrease in the numbers of Parrotfish, essential for removing algae and maintaining the health of coral reefs, is thought to be a major contributing factor to the widespread coral loss across the region (Mumby et al. 2007). Coral cover on nine reefs on Jamaica’s north coast fell from 52% in the late 1970s to 3 % in the late 1990s, and the fleshy macroalgae on the same reefs increased from 4% to 92% (NEPA 2009).

While fisheries and coral reefs are in decline, the human population of the wider Caribbean is expected to rise by more than 50% to 768 million by the year 2050 (UN Department of Economic and Social Affairs 2004). Thus, the demand for reef-based services is likely to increase considerably during the next few decades, adding yet more pressure on these already vulnerable ecosystems. Improving the management of fisheries and coral reefs is critically important for the economic, social, and environmental future of the Caribbean region.

FISH SANCTUARY NETWORKS – A NEW HOPE FOR CARIBBEAN REEF FISHERIES?

The Wider Caribbean region has approximately 220 MPAs but only a few (15) of these are effectively managed - the overwhelming majority being simply “paper parks” where regulations are not enforced and not supported by the local communities who were not consulted in their creation (Burke and Maidens 2004). The main reasons for this failure of management are:

- i) A lack of awareness of the potential economic benefits of MPAs,
- ii) Policies that do not promote community co-management and the engagement of stakeholders, particularly the private sector, and
- iii) A chronic shortage of funding.

Policy-makers across the Caribbean are however starting to take notice of the potential social, environmental, and economic benefits that MPAs can offer and the importance of including communities in the planning and management process. The recent decision by the Government of Jamaica to establish a new network of 10 fish sanctuaries is example of this growing realisation of the critical importance of co-management. In a departure from earlier practice, where management authority resided solely with the Fisheries Division of Jamaica, the newly-declared sanctuaries are to be managed in conjunction with local non-governmental organisations (NGOs, CBOs, Fishermen’s Associations) and private sector stakeholders.

The lack of funding for MPA management however remains a major challenge. This was highlighted by the *Financial Needs Assessment* that was conducted for the Sustainable Financing Plan for Jamaica’s System of Protected Areas 2010 – 2020. This assessment is based on the financing needs for the Bogue Lagoon and Bowden Inner Pen Fish Sanctuaries. The estimated annual financial need for these sanctuaries is US\$267,535 for the basic scenario and US\$357,742 for the ideal scenario (Galindo 2009). The Fisheries Division has undertaken to provide an annual subvention of J\$3 million (US\$35,356) for the management of each sanctuary, equivalent to only 13% of the estimated cost of management. While other funding opportunities are planned these will not be sufficient to provide adequate resources for effective management.

An estimated 3,000 fishers are expected to benefit from the newly established Jamaican fish sanctuaries (Cummings 2009). The socio-economic profile of the communities adjacent to the fish sanctuaries is varied. According to the Planning Institute of Jamaica’s *Mapping Poverty Indicators*, which uses data from 2001 - 2002, poverty in coastal communities in Jamaica, using the consumption-based approach, ranges from 0 to 32.9%, except in the parishes of Manchester and St. Thomas where poverty levels in the coastal zone are as high as 45.2 and 68.3%, respectively (Jamaica Fisheries Division 2010). In the communities adjacent to the newly-declared fish sanctuaries, poverty ranges from 4.8% in Downtown Montego Bay to 30.1 in Discovery Bay, St. Ann.

THE C-FISH INITIATIVE

The C-Fish Initiative is an integral part of the Implementation Plan (IP) for the CARICOM “*Regional Framework for Achieving Development Resilient to Climate Change*”. The IP defines the region’s strategic approach for coping with climate change and will be coordinated by the Caribbean Community Climate Change Centre (5Cs). As such, the C-Fish Initiative will be overseen by 5Cs, who will ensure that the project integrates with other regional activities aimed at strengthening natural coastal defences, coral reefs and fisheries management. In particular, 5Cs will provide guidance and recommendations for maximizing synergies between other complimentary activities and preventing duplication of effort. Many of these activities are listed in Strategic Element 1 and 2 of the IP:

- i) Mainstreaming climate change adaptation strategies into the sustainable development agendas of CARICOM states, and
- ii) Promote the implementation of specific adaptation measures to address key vulnerabilities in the region.

Engaging the private sector is listed as a key role for 5Cs in the IP. 5Cs will work with The CARIBSAVE Partnership to ensure that the C-Fish Initiative becomes a model for how the private sector can engage with communities and governments to address the threats from climate change by strengthening the resilience of natural assets and the sustainability of livelihoods.

The C-Fish Initiative was developed out of the *CARIBSAVE Climate Change Risk Atlas (CCCRA)* that examined the vulnerability of Caribbean communities and ecosystems to the accelerating impacts of climate change in 15 CARICOM countries. The CCCRA highlighted the increasing vulnerability of coastal communities dependent on fisheries and tourism, and the scientific case for supporting networks of fish sanctuaries as an adaptation strategy that provides tangible social, economic and environmental benefits. The CCCRA identified an opportunity for developing a public-private partnership in the tourism, fisheries and craft sectors that would provide lasting benefits to communities, businesses and the

management of natural resources across the Caribbean. The C-Fish Initiative has the support of Virgin Holidays and the Travel Foundation, who commissioned a detailed feasibility study (Brown and Day 2011) and pilot projects in Jamaica. Several large companies in the tourism sector, including Sandals Resorts International, Island Outpost, Royal Caribbean Cruises International, resort owners in St Lucia, as well as regional institutions (UNEP, IUCN, GCFI), have also endorsed the initiative and have offered to assist in developing the operational mechanisms of the fund-raising component of this initiative.

The C-Fish Initiative will focus on four main areas of activity:

- i) To build the capacity of the organisations mandated to manage fish sanctuaries (NGOs, CBOs, Fishermen's Associations),
- ii) To promote alternative livelihoods and the development of a new financing mechanism for fish sanctuaries,
- iii) To improve communication, education and public awareness of the benefits of fish sanctuaries, and
- iv) To develop new tools and technologies for monitoring fish populations using underwater video.

The C-Fish Initiative will establish a sustainable financing mechanism (The C-Fish Fund) to support community-based fish sanctuaries. This fund will capture and leverage the increasing willingness of tourists, tour operators and resort owners to actively participate in supporting the livelihoods of vulnerable communities and the management of coastal resources. The C-Fish Fund will develop and promote a craft programme for local artisans and artists through training, promotion and access to markets. The sale of these crafts in resorts, hotels, and gift shops operated by the project partners, will be promoted to tourists as a way of supporting local communities and the management of fish sanctuaries.

The C-Fish Initiative will develop an interactive website to engage a wider range of regional and international stakeholders. The project website will include streaming video from underwater cameras placed inside fish sanctuaries which will be used to promote awareness and facilitate ecological monitoring. These video streams will also be part of a new research and technology transfer collaboration with an international research consortium that is developing tools and software for monitoring fish populations using video (Fish4Knowledge).

The private sector partners will provide in-kind support for the execution of this 4-year project, after which it is envisaged the C-Fish Initiative will become self-financing. The implementation of the C-Fish Initiative will be phased, starting in Jamaica and St Lucia in Year 1, then expanded to include St Vincent and the Grenadines in Year 2, Grenada in Year 3, and Dominica in Year 4.

The C-Fish will be managed to ensure coordination with other regional activities that support MPAs, such as

those undertaken under the Caribbean Challenge, UNEP-CEP, CaMPAM, GCFI, CERMES, etc.

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