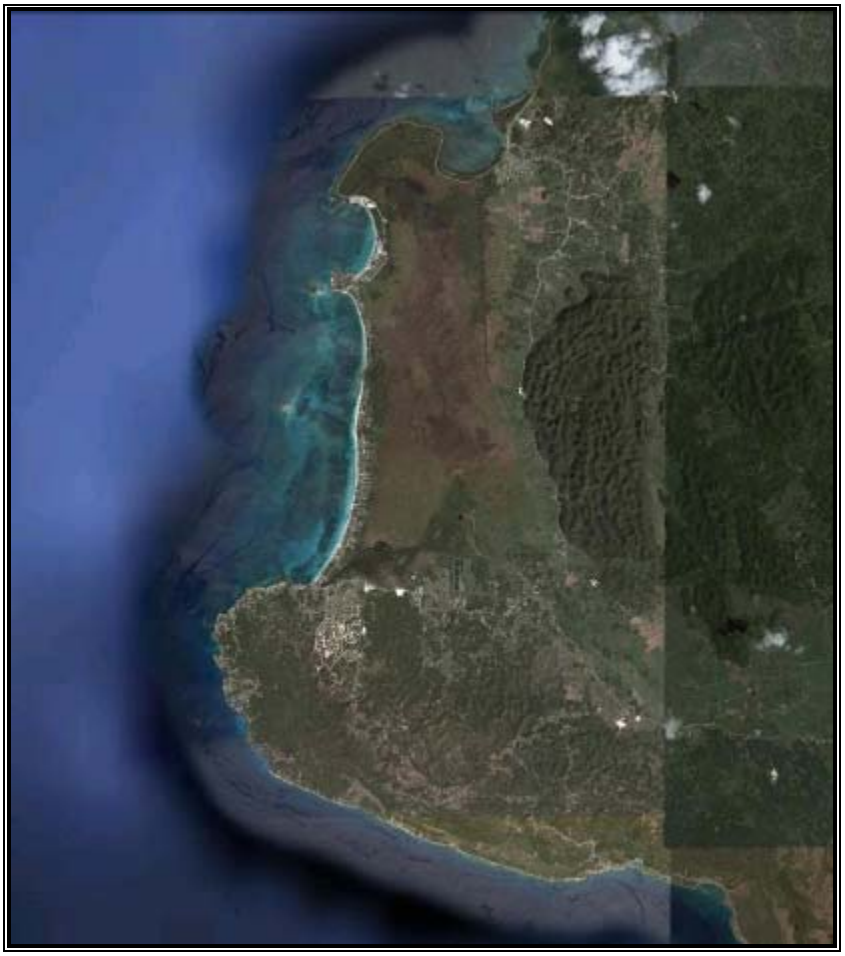
The Interim Negril Marine Park Zoning Plan 2013-2018



Prepared by

The Protected Areas Branch
National Environment and Planning Agency

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ACKNOWLEDGEMENTS

The Natural Resources Conservation Authority (NRCA), the National Environment and Planning Agency (NEPA), the Negril Area Environmental Protection Trust (NEPT) and the Negril Coral Reef Preservation Society (NCRPS) would like to recognize and thank the many people, communities and organizations whose assistance has made the completion of the 2013-2018 Zoning Plan for the Negril Marine Park a reality.

The Negril Community

Fishing interests and representatives from the following communities:

Little Bay
Negril West End
Sheffield
Orange Bay
Salmon Point
Green Island
March Town/Cave Valley

The Negril Fishermen's Cooperative
The Negril Water Sports Operators Association
The Negril Chamber of Commerce
Micro Small and Medium Enterprises (Negril Cluster)
Hoteliers of Negril West End
Hoteliers of Norman Manley Boulevard

Government of Jamaica

Port Authority of Jamaica
Maritime Authority of Jamaica
Ministry of Agriculture and Fisheries
Jamaica Hotel and Tourist Association
Jamaica Civil Aviation Authority
Ministry of Land, Water, Environment and Climate Change
Tourism Product Development Company Limited
Urban Development Corporation
National Land Agency
Negril Green Island Area Local Planning Authority
Westmoreland Parish Council
Hanover Parish Council
Ministry of Tourism
Social Development Commission (SDC)
Jamaica National Heritage Trust
The Jamaica Constabulary Force, Marine Division
Westmoreland Health Department

Institutions

University of the West Indies

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LIST OF ACRONYMS

ERZ	Environmental Replenishment Zone
IPED	Integrated Planning and Environment Division
JCAA	Jamaica Civil Aviation Authority
NCRPS	Negril Coral Reef Preservation Society
NEPA	National Environment and Planning Agency
NEPT	Negril area Environmental Protection Trust
NMP	Negril Marine Park
NRCA	Natural Resources Conservation Authority
PAB	Protected Areas Branch
SDC	Social Development Commission
SPZ	Special Purpose Zone

EXECUTIVE SUMMARY

Background

The Negril Marine Park was legally established under the Negril Marine Park Order by the Government of Jamaica in 1998. It was officially designated on March 4, 1998 and covers an area of approximately 160 km^2. The coastal boundary is approximately 33km and extends from Davis Cove, Hanover in the north to St. John's Point, Westmoreland in the south.

Under European Union funding, a zoning plan for the NMP was developed in 1998 by the NCRPS through a series of consultations with governmental and non-governmental entities, users, and members of the community. In 2008 however, the decision was taken by the Natural Resources Conservation Authority to undertake the revision of this zoning plan towards its finalization and gazetting. The end result of this process is a five year (2013-2018) zoning plan which seeks to realize the objectives of ensuring the sustainable use of the natural resources, promoting the safety of users and compliance with applicable laws and regulations within the Marine Park.

The Plan was compiled by staff of the Protected Areas Branch with input from the Ecosystems Management Branch and the Map Registry and Data Management Unit of the National Environment and Planning Agency.

The Purpose of and Basis for Zoning

Zoning as a Management Tool

Zoning in marine parks is a management tool that has been commonly used in many jurisdictions to protect sensitive marine resources from overuse and to separate conflicting human activities in these areas. It is a system by which specific geographic areas within a protected area are classified based on preservation requirements, as well as the sites ability to accommodate various types of activities. The zoning plan defines the "limits of acceptable use" and the types of developments and activities that can and/or cannot occur in each zone. It rationalizes and regulates the use of the protected area and its resources, defining where activities can be undertaken and how to achieve the area's management objectives.

The Objectives of Zoning the Negril Marine Park

The primary objectives of the user zones are to, over the five year period, ensure sustainable use of the natural resources, to ensure the safety of users and compliance with applicable laws and regulations within the Marine Park. Specific outcomes include:

- The protection of spawning areas and nursery grounds
- Reduced damage to important habitats

- Provision of refuge for protected species, such as turtles
- A boost of species numbers, which helps the food web as a whole
- Increase the abundance of fish
- Increased resilience of the reef against threats such as bleaching, climate change and water pollution.

The Legislative Basis for Zoning the Negril Marine Park

Section 22 of the Natural Resources Conservation (Marine Parks) (Amendment) Regulations, 2003 (Appendix 4) is the main piece of legislation which provides the basis for the zoning of the Negril Marine Park by the Natural Resources Conservation Authority. It makes reference to the purposes for which zones may be established, the demarcation of zones, the process involved in the formulation of a zoning plan with specific reference to input from stakeholders through consultation and the method of disseminating the plan.

The Methodology for Zoning

The following are the methods used in determining the zones presented in the plan for the period 2013-2018:

Primary Methods and Sources

- Resource Assessments
    - Marine Assessments
    - Coral reef assessments
    - GIS and Remote sensing
- Aeronautical survey
- Socio-economic Assessments
- Stakeholder consultations and focus group meetings

Secondary Methods and Sources

A series of secondary sources were consulted in the preparation of this work. Chief among them is the Negril Marine Park Zoning Plan (1998). The Plan contained a proposed zoning schema with descriptions of the proposed zones and demarcation methods, as well as a composite map detailing same. Other categories of publications consulted include:

- Published research on the Negril Area
- Internet publications
- Journal articles

The 2013-2018 Zoning Regime and Guide to Activities

The Zoning Plan provides the framework for the management of uses within the Negril Marine Park over a five-year period (2013-2018). It outlines the proposed activities for various sections of the Park to ensure that socio-economic values are preserved and the resources in the park receive adequate levels of protection.

The Negril Marine Park consists of three major zones. These are:

1. Conservation Zone
2. Recreation Zone
3. Multiple-use Zone

There are also six Sub-zones and two Special Purpose Zones (making a total of nine different zoning distinctions (Figure ES-1).

1. Conservation Zone

This zone encompasses the Orange Bay Fish Sanctuary gazetted in 2009, and the Environmental Replenishment Zones (ERZs). Five Environmental Replenishment Zones have been identified within the Negril Marine Park. These are: The Green Island and Haughton Cove ERZ, the Orange Bay ERZ (located within the Orange Bay Fish Sanctuary), the Bloody Bay ERZ, the Homer's Cove ERZ and the Little Bay ERZ. These are 'No Fishing' areas and the goal is to provide for the protection and conservation of fish habitats within the marine park and to provide an environment that facilitates the protection and/or restoration of ecologically significant or sensitive habitats thereby increasing the resilience of coastal ecosystems.

2. Recreation Zone

This zone includes all areas used for recreational actives and includes all recreational beaches and their respective swim areas, dive and snorkel sites. It is divided into the following four Sub-zones to facilitate particular uses:

1. Swimming Sub-zone
2. Non-motorized Craft Sub-zone
3. Motorized Craft Sub-zone
4. Diving Sub-zone

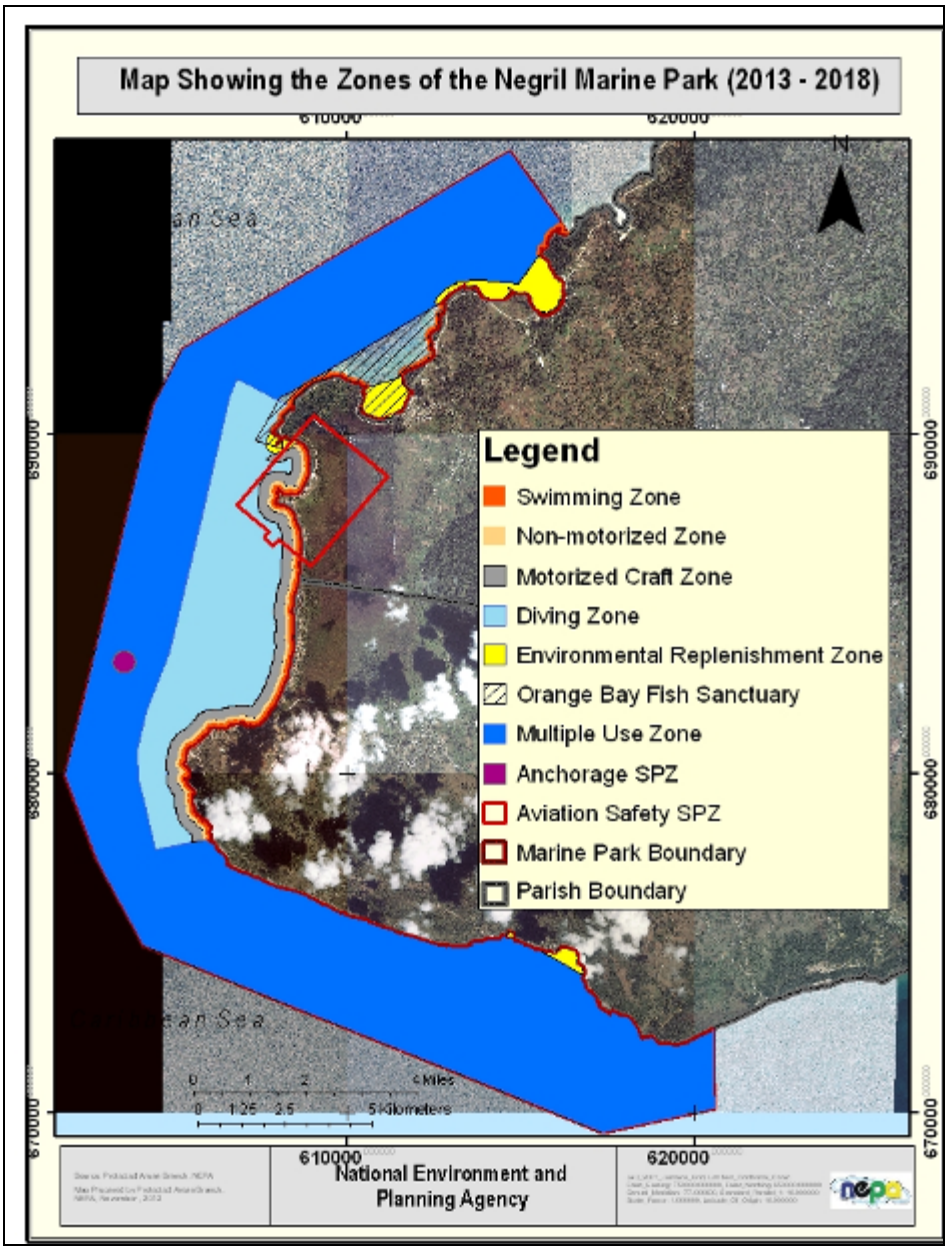
3. Multiple-use Zone

This zone includes all the areas outside the boundaries of the conservation zones and recreational zone. Unlike the Conservation and Recreation Zones, the Multiple-use zone has no further functional subdivisions, but will allow for a range of specialized uses such as fishing as well as recreational boating. It complements other marine park zones and by nature provides an integrated approach to the management of the Marine Park.

4. Special Purpose Zones

Special Purpose Zones (SPZs), in essence, cater for specific user and management activities which may not readily be categorized under the main zoning schema of the Marine Park. The Park contains two Special Purpose Zones for two such activities, namely: an Aircraft Safety SPZ, and an Anchorage SPZ. They provide for the regulation of these specific activities to ensure safety and to reduce the incidence of conflicting uses.

Figure ES-1: Image showing the Zones of the Negril Marine Park (2013-2018)



Source: Protected Areas Branch, NEPA 2012

1.0 INTRODUCTION

1.1 Background

Negril is primarily known as a major tourist and recreation destination and is marked by a high density of tourist facilities which cater to both short and long stay visitors. Negril covers an area of 408 km^2 and includes part of the parishes of Westmoreland and Hanover in western Jamaica.

Of critical importance to these visitors are the myriad of ecosystems services and related benefits provided by the Negril Marine Park (NMP) (Figure 1). The NMP is a fundamental component of the wider Negril Environmental Protection Area which encapsulates a diverse and rich collection of Jamaica's natural and cultural resource that are threatened with destruction and degradation and that require special protection and conservation measures (Natural Resources Conservation Authority (NRCA) et al., 1997).

The NMP was legally established under the Negril Marine Park Order by the Government of Jamaica in 1998 (Appendix 3). It was officially designated on March 4, 1998 and covers an area of approximately 160 km^2. The coastal boundary is approximately 33km and extends from the Davis Cove in the Parish of Hanover (in the north) to St. John's Point in Westmoreland (in the south). The boundaries of the Park begin at high water mark on shore to approximately two miles (3.2 km) out to sea. Delegation for the management of the NMP was granted to the Negril Coral Reef Preservation Society (NCRPS) in 2002 through a co-management agreement and a management plan for the area was submitted to the NRCA.

Natural resources within the park include coral reefs, sea grass beds, mangrove communities and a variety of commercially important fisheries resources and other organisms. It was hoped that the establishment of the park area would enable the conservation and protection of the natural coastal and marine resources in a manner that allows supports their health and integrity while still allowing for sustainable economic and social development (Thacker and Hanson, 2003 in Roach, 2007).

Under European Union funding, a zoning plan for the NMP was developed by the NCRPS through a series of consultations with governmental and non-governmental entities, users, and members of the community which initially began during the period January 1996 to January 1997. Maps for the proposed zones were created by the National Environment and Planning Agency (NEPA) with the support of NCRPS in 2003. In 2008 however, the decision was taken by the Natural Resources Conservation Authority to undertake the revision of this zoning plan towards its finalization and gazetting. To this end consultation meetings began in January 2008 with the aim to re-introduce the Plan of 1998, and to formulate recommendations for its amendment.

A series of stakeholder consultation and focus group meetings were convened throughout the months of January and March 2009 by the Protected Areas Branch (PAB) of NEPA to further discuss and amend proposals for a new zoning arrangement. Stakeholder surveys were also conducted during that year.

In 2010, the Ecosystems Management Branch of NEPA completed assessments of the marine environment and attempted to uncover the socio-economic profile of the major users of the park and then formulated recommendations with respect to zoning the Park.

The plan presented in this document therefore represents the outcome of this process and represents the zoning arrangement for the Park for the period 2013-2018. It is however evident that the success of any zoning or management initiative for the NMP will be hinged upon the provision of supporting legislation and an effective enforcement framework, the engagement of all stakeholders and a sound public education strategy. These are the only means of ensuring that the zoning initiatives developed are indeed holistic in their approach, and that the ideals of sustainable development and the visions of all stakeholders do not simply become rhetoric.

Figure 1: Satellite Image showing the Boundaries of the Negril Marine Park

Source: Protected Areas Branch, NEPA 2012

1.2 The Purpose of and Basis for Zoning

1.2.1 Zoning as a Management Tool

Zoning is a system by which specific geographic areas within a protected area are classified based on preservation requirements, as well as the sites ability to accommodate various types of activities. Zoning provides guidance regarding the activities that are allowed or prohibited in an area with respect to natural resources management; cultural resources management; human use and benefit; visitor use and experience; access; facilities and park development; maintenance and operations. In so doing, the limits of acceptable use and development in the park are therefore established (Young and Young, 1993).

Zoning in marine parks is a management tool that has been commonly used in many jurisdictions to protect sensitive marine resources from overuse and to separate conflicting human activities in these areas. It inherently requires the evaluation of multiple resource attributes according to multiple objectives and must integrate at its helm the objectives of sustainability. It should therefore adopt a holistic approach and should ultimately reflect the intended use as well as the level of management and development permitted.

In general terms, zoning divides an area into logical units to apply consistent management strategies for conservation and recreational values. The zoning plan defines the "limits of acceptable use" and the types of developments and activities that can and/or cannot occur in each zone. It rationalizes and regulates the use of the protected area and its resources, defining where activities can be undertaken and how to achieve the area's management objectives. Biological values, socio-economic characteristics, stakeholder knowledge and concerns, threats and feasibility of implementation will need to be factored in the preparation of the draft zoning plan.

The principal objectives of a zoning plan are usually:

- To ensure the conservation of the protected area in perpetuity;
- To provide protection for critical or representative habitats, ecosystems and ecological processes;
- To separate conflicting human uses;
- To protect the natural and/or cultural values of the protected area while allowing a range of reasonable human uses;
- To reserve suitable areas for particular human uses, while minimizing the effects of those uses on the protected area; and
- To preserve some areas of the protected area in their natural state undisturbed by humans except for the purposes of scientific research, monitoring or education.

1.2.3 The Legislative Basis for Zoning the Negril Marine Park

Section 22 of the Natural Resources Conservation (Marine Parks) (Amendment) Regulations, 2003 (Appendix 4) is the main piece of legislation which provides the basis for the zoning of the Negril Marine Park by the Natural Resources Conservation Authority. It makes reference to the purposes for which zones may be established, the demarcation of zones, the process involved in the formulation of a zoning plan with specific reference to input from stakeholders through consultation and the method of disseminating the plan. Section 22 of the Regulations states:

"(1) The Authority may, in consultation with the marine park manager, zone areas for the following purposes:-

(a) fishing;
(b) fish sanctuary;
(c) swimming;
(d) snorkeling;
(e) scuba diving;
(f) anchoring of conveyances or vessels and moorings;
(g) use of motorized craft;
(h) use of non-motorized craft;
(i) environmental restoration or "No Use";
(j) scientific research;
(k) harbour as designated by the Port Authority;
(l) no wake as designated by the Port Authority;

(2) The Authority may, in consultation with the marine park manager, create additional zones for the orderly management of the marine park.

(3) The Authority or the marine park manager, shall place in the marine park conspicuous signs, buoys or other materials to designate the assigned zones.

(4) The Authority:-

(a) may consult with such Government departments and private individuals as it thinks fit prior to the formulation of the zone plan;
(b) shall publish in the Gazette and a daily newspaper in circulation in Jamaica, once every three years, the zone plan for each marine park." (NRCA, 2003)

1.2.3 Objectives of Zoning the Negril Marine Park

The primary objectives of the user zones are to, over the five year period, ensure sustainable use of the natural resources, to ensure the safety of users and compliance with applicable laws and regulations within the Marine Park. The Park is heavily used by fishermen, other boaters, recreational users (divers and swimmers) and water sports operators. The proposed zoning will enhance enforcement of the Marine Park Regulations and generally support improved control of the resource users within the park.

It is anticipated that once an effective zoning plan is implemented then the outcomes would include:

- The protection of spawning areas and nursery grounds
- Reduced damage to important habitats
- Provision of refuge for protected species, such as turtles
- A boost of species numbers, which helps the food web as a whole
- Increase the abundance of fish
- Increased resilience of the reef against threats such as bleaching, climate change and water pollution.

2.0 DESCRIPTION OF THE NATURAL ENVIRONMENT

The Negril Marine Park is characterized by an assemblage of interconnected coastal ecosystems which provides ecosystems services that are vital to the socioeconomic survival of the human settlements and communities that are adjacent to the park. A general description of the primary habitats and a general assessment of the representative reefs located within that park are presented in this section along with a generalized snap shot of the existing socioeconomic situations and environment perceptions of key users of the park.

2.1 Coastal Habitats

The coastal habitats of Negril are characterized by many ecosystems and ecotypes ranging from coral reefs to wetland areas. The most notable feature within the park is the long expanses of sandy beaches found at Long Bay (7 km) and Bloody Bay (2 km). These beaches are prime sea turtle nesting areas and are protected by a narrow and shallow coastal shelf consisting of shallow coral reef and seagrass beds. The Great Morass, a low lying wetland which is landward of the beach system and terminates at the foot of the Fish River Hill is also a prominent feature of the area and is an extremely important habitat for local and migratory avifauna and other keystone species found in wetlands. Figure 2 illustrates the main habitats found within the boundaries of the park.

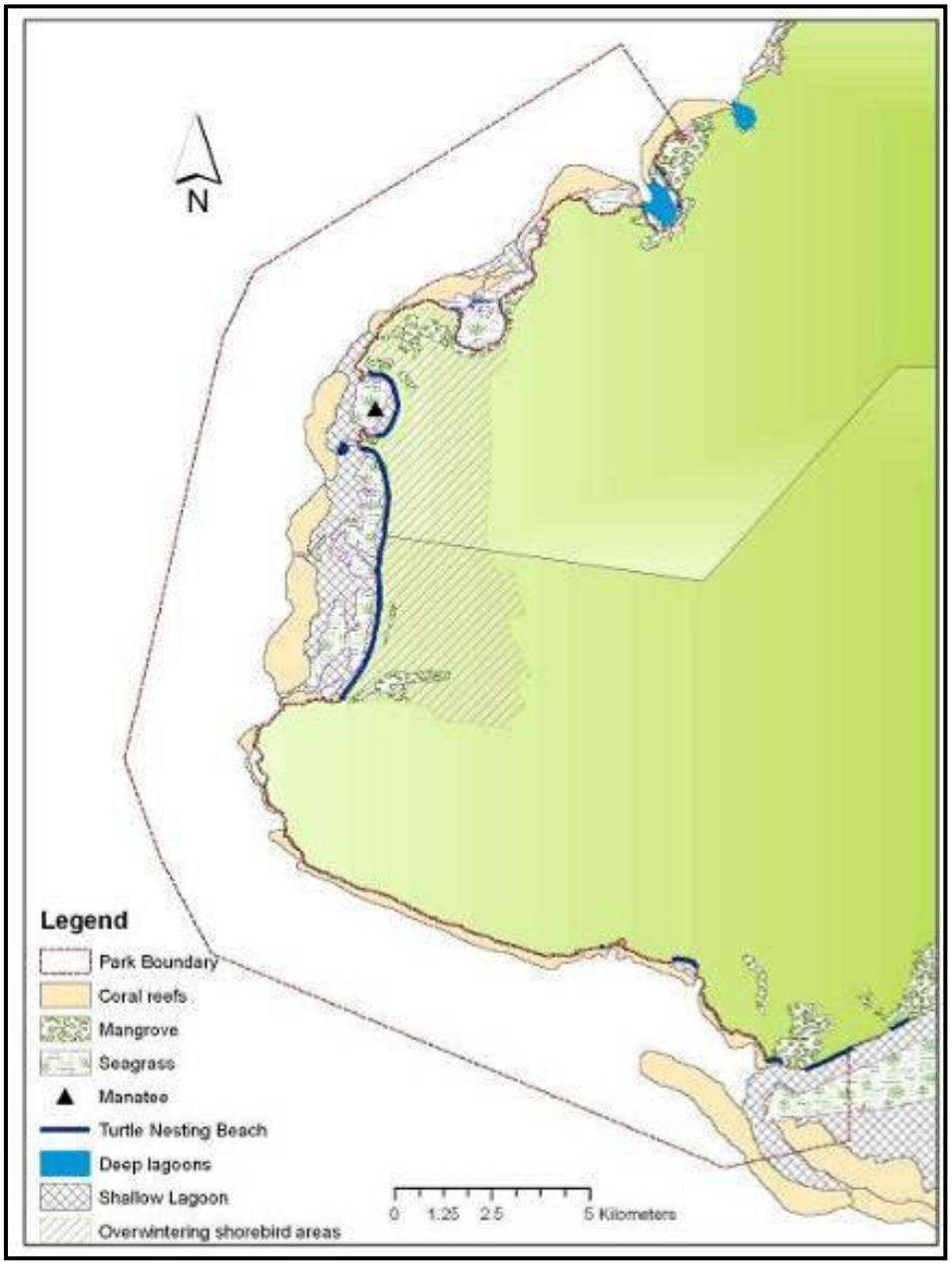
This narrow island shelf includes benthic communities and habitats dominated by unconsolidated material (sand, silt, mud) such as in coastal lagoon areas, sand channels and sand bottom areas. These areas are highly productive and play critical roles in vital ecological functions as they are important to the connectivity and species dispersal between coral reefs, seagrass beds and terrestrial wetland habitats.

Just off shore the beaches are protected by vast expanses of seagrass beds which play a critical role in the mitigation of beach erosion (RiVamp, 2010). These seagrass beds are sometimes found interspersed with coral reef patches in the near shore areas. The seagrass beds later gives way to a shallow fringing coral reef system found 2 – 3 km offshore with a depth range of depth range of 20 – 50 m.

As one travels north or south of Long Bay & Bloody Bay the fringing reef systems get closer to shore and the long expanse of beaches give way to limestone cliffs. There are two main bays along the coast to the north of Bloody Bay. These bays, Orange Bay and Green Island, both characterized by coastal lagoons with fringing wetland areas to the rear of these systems. The lagoon Green Island is much deeper that other areas within the park.

To the south of Long Bay the coastline is characterized by the raised limestone cliffs of the Negril Hills and Orange Hill. The shelf is much closer to shore and in these areas and in general the beach areas are must smaller and are usually just pocket beaches such as those found in Homer's Cove and Little Bay.

Figure 2: Map showing the Key Habitats in the Negril Marine Park



Source: Ecosystems Management Branch, NEPA 2011

2.2 Marine Ecosystems

The marine environment within the Negril Marine Park is characterized by fringing fore reefs, reef flats and seagrass beds. Analysis of the Reef Check data collected from the long-term monitoring sites indicates that the reefs which are assessed annually are in stable condition. An analysis of the data collected from assessments conducted in 2008 indicated that hard coral mean percentage was between 11% at Ireland Pen and 22% at Little Bay (NEPA, 2010). Overall, current percentages were similar to values obtained from previous assessments as coverage ranged from 14% (Ireland Pen) to 18% (Bloody Bay). The overall percentage calculated in 2008 was 12.2% compared to 15.5% in 2009 and 16.4% in 2010.

Assessments of the numbers of commercially important fish such as snapper, grunts and groupers revealed that the most abundant of the group were the grunts with densities ranging from 0.25 fish/100m^2 to 21.75 fish/100m^2. The highest densities were recorded at Ireland Pen.

In addition to the routinely monitored sites within the park an additional site called Arches was assessed using the video monitoring method of reef assessment. This site was one of the most popular sites among dive operators within the park and was selected to provide a comparative baseline for future assessment of heavily dive areas. This assessment revealed a hard coral percentage cover of 6.3% and fish densities of 3.8 fish/100m^2 and 3.6 fish/100m^2 for parrot and grunts respectively.

3.0 METHODOLOGY FOR ZONING

3.1 Primary Sources

3.1.1 Resource Assessments

Marine assessments within the park were conducted via survey dives at four long-term monitoring sites over the period November 10-13, 2010. Additional surveys were conducted on moorings, snorkel and dive sites frequently used by water-sport operators. The locations of all existing marker and mooring buoys were also GPS referenced. The goals of the survey were to assess the sea floor to:

(1) Characterize substrate type and benthic habitat distribution
(2) Ground-truth existing habitat maps of the area
(3) Assess the proposed zonation of the Negril Marine Park

Coral Reef Surveys

Coral reef surveys were conducted in select areas in order to provide accurate and reliable information on the conditions of reef with this area. These surveys assessed critical reef health indicators which included: 1) Coral Cover (a measure of the percentage of the reef surface covered by live stony corals); 2) Fleshy Macro algal cover (a measure of the amount of nutrient indicating algae or `seaweed' on the reef) and 3) Reef Fish and Invertebrate abundance (a measure of key, herbivorous and commercially important fish species and invertebrates). These indicators provide a practical and quantitative measure of a reef health and aids in the interpretation into a tangible and easily understandable format.

Reef assessments were conducted at five selected sites. These sites were assessed using the Reef Check Methodology or by the analysis of underwater photographic images. Reef check is the simplest method of the two and utilizes the skill of trained volunteers. Ideally, each team consists of six members who collect the data which is then quality checked by a scientist. The main datasets collected using this method includes benthic cover and the presence of indicator fish and invertebrate species.

Data collected using the photographic method is analyzed using a visual basic programme Coral Point Count with Excel extensions (CPCe) to estimate the community statistics of the sea floor from still images or frame-grabbed vide (Kohler and Gill, 2006). This utilizes the random point count method in which random points are generated and distributed on a still image and the species or substrate underlying these points is identified. The programme then automatically generates analyzed spreadsheets in Microsoft Excel based upon the supplied species/substrate codes.

GIS and Remote Sensing

The data points collected from the field trips were processed and analysed using in GIS software. Key habitats within and adjacent to the Park namely mangroves, coral reefs, coastal vegetation and other important area were digitised where necessary from the IKONOS images, Google Earth

and 1:50,000 metric maps in order to serve as baseline data. Data mining and transformation of existing geo-spatial datasets was also used to augment the available data in order to acquire baseline information. Historic Reef Check data dating from 2002 were also incorporated in the analyses.

3.1.2 Aeronautical Study

The Jamaica Civil Aviation Authority (JCAA) was asked to give guidance in the establishment of a safety zone for aircraft operating in the air traffic circuit of the Marine Park. The study included an investigation into aircraft operations, parasailing operations, catamaran operations, interviews and feedback from stakeholders. Stakeholders included in the process were: pilots, airline operators, marine sports (parasailors) and tour operators, hotel managers, NEPA, Norman Manley International Airport Limited/ the Airports Authority of Jamaica and the JCAA.

The Aerodrome reference Code 1B and elements of the aeronautical surfaces to be kept free from obstacles were also used by the JCAA for the purpose of establishing the Aviation Safety Zone.

3.1.3 Socioeconomic Assessments

Socioeconomic monitoring assesses the contribution that a healthy ecosystem makes to the economic and social welfare of both adjacent (nearby, regional) communities. Coastal ecosystems play a significant role in the economic viability of the communities in Negril, previous studies show that tourism and fishing were the major economic activities in the park (Pena, Blackman, Hanson, McConney, & Miller, 2005).

The fishing community and water sport operators are beneficiaries of the ecosystem services provided by the marine park. A rapid socioeconomic assessment was conducted within the study area and represents a sample from the fishing communities and water sports operators who utilize the park. The assessment was not comprehensive; however, the intent was to provide a snap shot of the current socioeconomic situation. The variables selected for this assessment were chosen from the list of variables in the *Socioeconomic Monitoring Guidelines for Coastal Managers* in the Caribbean (Bunce and Pomeroy, 2003).

The principal objectives of the rapid socio-economic assessment were to:

1. Identify and understand the socioeconomic conditions that exist within the NMP.

2. To assess environmental awareness, knowledge and attitudes of the targeted users.

3. To identify threats, problems and opportunities for coastal resource management.

4. To establish a baseline for monitoring socioeconomic impact of proposed development activities and changes in stakeholder perceptions.

A questionnaire was developed and administered to a total of 20 respondents from the two user groups selected for the survey. Interviews were conducted in an informal setting in an effort to enrich the results obtained by ensuring that responses could be obtained from a wide cross-section of respondents irrespective of educational competence. The results of the survey was then coded in specifically designed software (SurveyPro 3.0) and analysed.

3.1.4 Stakeholder Consultations and Focus Group Meetings

Stakeholder consultations were hosted by NCRPS during the 1996 to 1997 period (detailed in the Participation Statement contained in Appendix 6). Due to the concern that the information from that period would have been dated, a new round of stakeholder consultations commenced in January 2008 with the aim to review the existing proposed zones in the context of the changes which have occurred in the environment since the publication of the initial draft zoning document, and to formulate recommendations for its amendment.

A series of stakeholder meetings were also convened throughout the months of January and March 2009. The primary objectives of these meetings were to:

- Re-introduce to initial stakeholders the Negril Marine Park Zoning Plan as produced in 2003 and present the same to the new group of stakeholders.
- Discuss and amend the proposals for zoning the marine protected area presented in the plan produced in 2003 based on legislative considerations as well as physical, environmental and social changes occurring in the community since the period of initial discussions in 1999.

An initial meeting with the wider group of stakeholders was held on 29 January 2009 which was followed by focus group meetings on 19 March with hotel interests and water sports operators, as well as with fishermen. During and subsequent to this period, informal consultations were also held with various stakeholder groups. The final round of final stakeholder consultations towards the completion of the Plan took place between December 2011 and January 2013.

3.2 Secondary Sources

A series of secondary sources were consulted in the preparation of this work. Chief among them is the Negril Marine Park Zoning Plan (1998). The Plan contained a proposed zoning schema with descriptions of the proposed zones and demarcation methods, as well as a composite map detailing same. Other categories of publications consulted include:

- Published research on the Negril Area
- Internet publications
- Journal articles

4.0 THE 2013-2018 ZONING REGIME AND GUIDE TO ACTIVITIES

This chapter presents the objectives, rationale, boundary descriptions and a list of approved and prohibited activities for each zone in the zoning regime for the period 2013-2018[1].

4.1 Overview

The Negril Marine Park consists of three major zones. These are:

1. Conservation Zone
2. Recreation Zone
3. Multiple-use Zone

There are also six Sub-zones and two Special Purpose Zones (making a total of nine different zoning distinctions. These are outlined in Table 1 and Figure 3. Detailed descriptions of each of these zoning designations are provided in subsequent sections.

Table 1: Zoning Designations in the Negril Marine Park (2013-2018)

Conservation Zone	*Recreation Zone*	*Multiple-use Zone*	*Special Purpose Zones (SPZs)*
1. Orange Bay Fish Sanctuary	1. Swimming Sub-zone	(No sub-zones. This zone will allow for a range of activities as described in user guide)	1. Aircraft Safety SPZ
2. Environmental Replenishment Zones	2. Non-motorized Craft Sub-zone		2. Anchorage SPZ
	3. Motorized Craft Sub-zone		
	4. Diving Sub-zone		

[1] Wherever an activity is not explicitly stated, approval will be subject to the Marine Park Manager in consultation with the National Environment and Planning Agency. Additionally, the National Environment and Planning Agency and any entity officially responsible for the management of the Negril Marine Park reserves the right at any time to temporarily suspend or waive the stipulations presented in this plan with respect to any approved or prohibited activity in any case of emergency and for the purposes of undertaking any activity related to the Management of the Park.

Figure 3: Map showing the Zones of the Negril Marine Park (2013-2018)

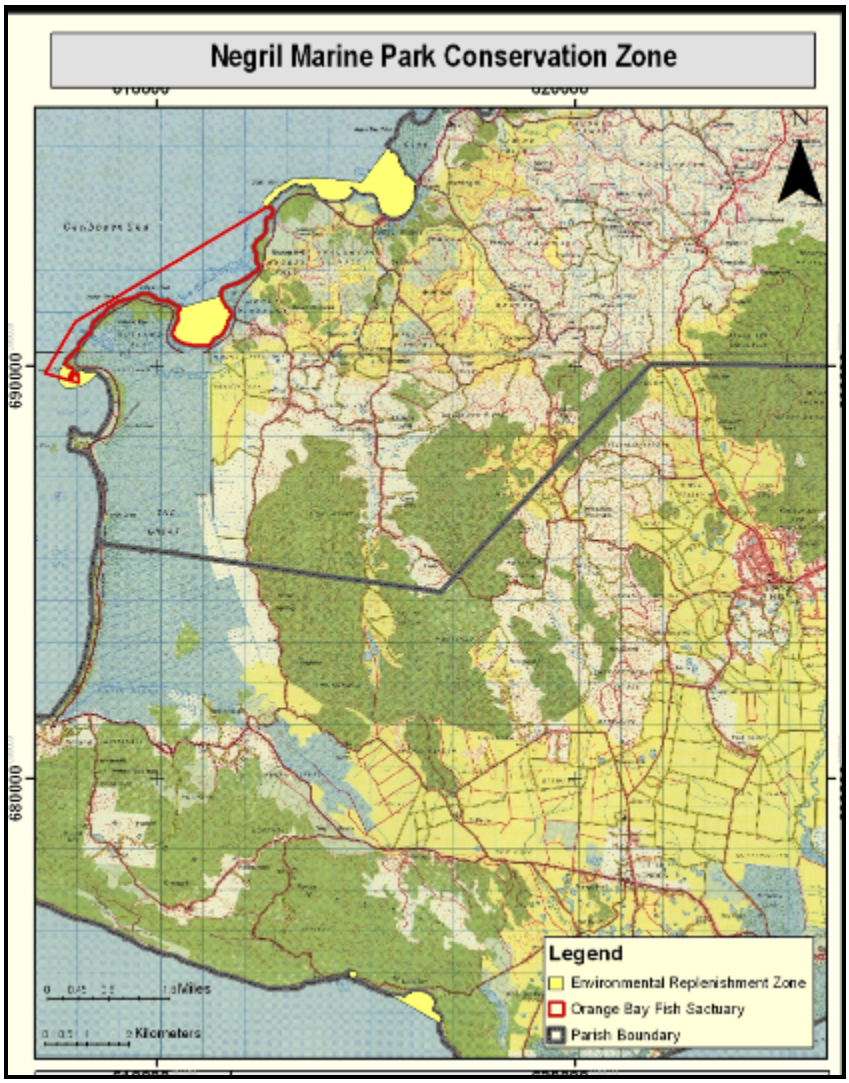
Source: Protected Areas Branch, NEPA 2012

4.2 Conservation Zone

This zone encompasses the Orange Bay Fish Sanctuary gazetted in 2009, and the Environmental Replenishment Zones (ERZs). Five Environmental Replenishment Zones have been identified within the Negril Marine Park. These are: The Green Island and Haughton Cove ERZ, the Orange Bay ERZ (located within the Orange Bay Fish Sanctuary), the Bloody Bay ERZ, the Homer's Cove ERZ and the Little Bay ERZ.

Sections 4.2.3.1 through 4.2.3.7 provide the boundary description of each designation within the Conservation Zone. It is anticipated that the effective management in these zones will gradually increase fish populations and that there will be a 'spill over' effect to adjacent marine areas as excess fish from these reserves will migrate into these areas where fishing is allowed.

Figure 4: Map of the Negril Marine Park showing the Boundaries of the Conservation Zone



Source: Map Registry and Data Management Unit, NEPA 2012

4.2.1 Objectives

The objectives of the Conservation Zone are:

1. To provide an environment that facilitates the protection and/or restoration of ecologically significant or sensitive habitats
2. To improve economic opportunities for fishers as the catch per unit effort for fishermen should increase within the areas surrounding the reserves
3. To increase opportunities for eco-tourism, allowing visitors and citizens to view our tropical fish species in their natural environment
4. To provide environments for further research
5. To increase resilience of the coastal ecosystems to the effects damaging events.

4.2.2 Rationale/Justification

The sites within the conservation zone were selected based on the following criteria:

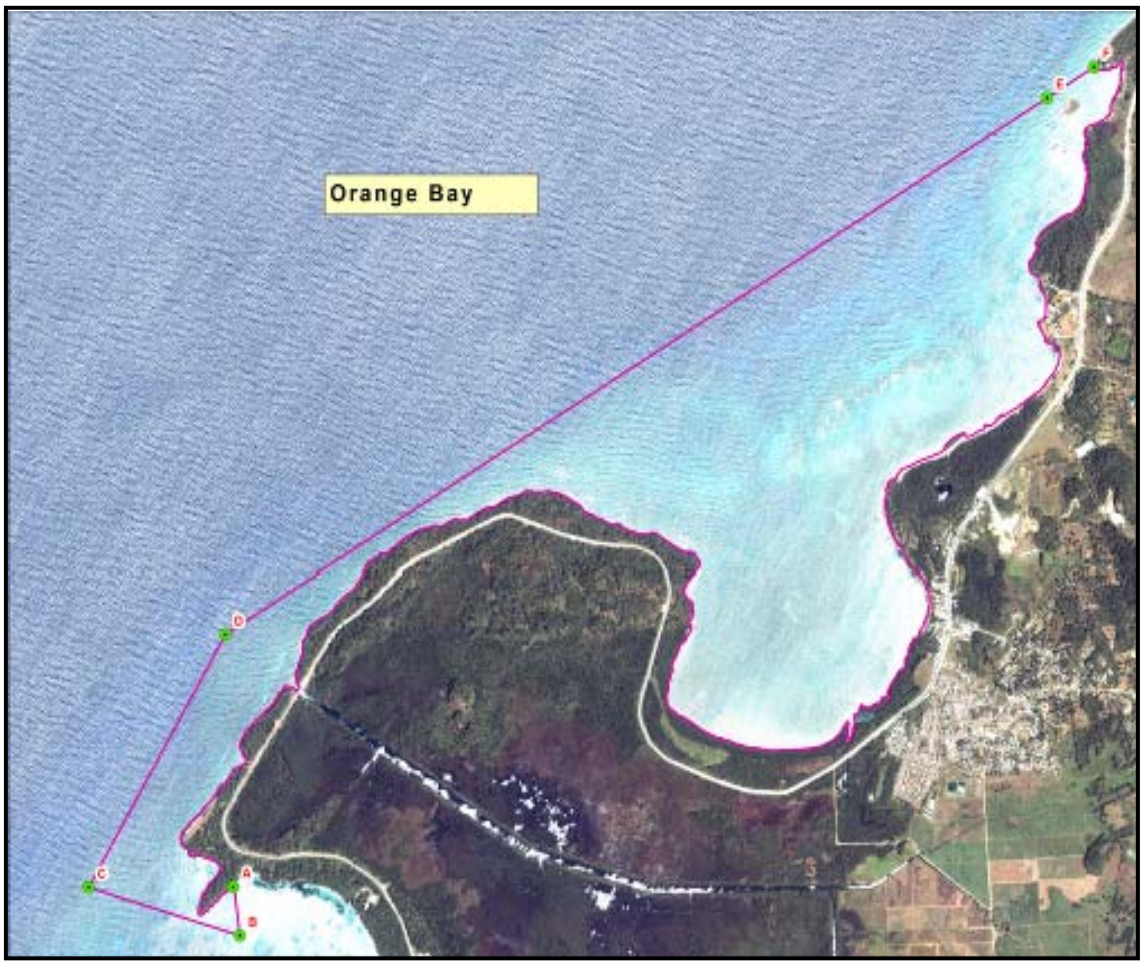
1. Ecological characteristics: presence of seagrass beds, a reef system, and/or shallow waters abutting mangrove stands.
2. The potential impacts that point-source pollutants may have on these sites.
3. The level of connectivity with adjacent ecosystems that allows for the free movement and dispersal of species.

4.2.3 Boundary Descriptions and Activities Guide

Boundary Description of the Orange Bay Fish Sanctuary

1. The boundary begins at point *A*; a land-based mark at Little Bloody Bay, at coordinates 18° 21' 18.206" N; 78° 20' 32.636"W.
2. From point *A*, the boundary runs to point *B*, on Little Bloody Bay Cay, a land-based mark at coordinates 18° 21' 10.411"N; 78° 20' 31.500"W.
3. From point *B*, the boundary runs to point *C*, a water-based mark to include sections of the Gallery Reef system, at coordinates 18° 21' 17.887"N; 78° 20' 58.822"W.
4. From point *C*, the boundary then runs to point *D*, a water-based mark at Frenchmans Hole, west of Salt Creek, at coordinates 18° 21" 58.643"N; 78° 20' 34.523"W.
5. From *D*, the boundary runs through *E* , a water based mark at coordinates 18° 23' 25.265"N; 78° 18' 7.232"W.
6. From *E*, the boundary continues to *F*, a land-based mark at Rhodes Hall at coordinates 18° 23' 30.362"N; 78° 17' 58.945 W".
7. From *F*, the bounday follows the contours of coastline including the beach, back to point *A*.

Figure 5: Image showing the Boundaries of the Orange Bay Fish Sanctuary



Source: Fisheries Division, 2010

Approved and Prohibited Activities for the Orange Bay Fish Sanctuary

No fishing (except as a management intervention) or motorized water sports activities will be permitted in these areas. Recreational activities such as swimming and snorkeling will be allowed subject to carrying capacity and based on patterns of traditional community usage. No entry to the Orange Bay Fish Sanctuary by motorized craft will be allowed except for the purposes of channeling, in a manner generally perpendicular to the shoreline at a speed not exceeding 3 knots; and with permission for monitoring or research.

Box 1: User Activities for the Orange Bay Fish Sanctuary

ORANGE BAY FISH SANCTUARY

Allowed

✓Conservation activities (e.g. mangrove replanting)
✓Research/educational activities
✓Non-motorized craft
✓Swimming/snorkeling

Not Allowed

❑ Fishing/bait collection
❑ Motorized craft (except for management purposes)
❑ Removal of natural resources
❑ Recreational activities (scuba diving, motorized activities)
❑ Anchoring
❑Coastal modifications, construction or maintenance of any encroachment which falls under beach licensing regime

Boundary Description of the Green Island and Haughton Cove Environmental Replenishment Zone

1. The boundary begins at point *A*; a land-based mark at coordinates 18°24'18.33"N; 78°16'21.33"W.
2. From point *A*, the boundary runs in a straight line to point *B*, a water-based mark at coordinates 18°23'50.94"N; 78°16'42.43"W.
3. From *B* the boundary runs in a straight line to point *C*, a water-based mark at coordinates 18°23'53.99"N; 78°17'19.82"W
4. From *C* the boundary runs in a straight line to point *D*, a water-based mark a water-based mark 150 metres seaward of the shoreline at coordinates 18°23'52.49"N; 78°17'40.40"W.
5. From point *D*, the boundary runs parallel to to shoreline to point *E*, a water-based mark at coordinates 18°23'33.19"N ;78°18'4.31"W.
6. From *E* the boundary runs in a straight line to point *F* a land-based mark at coordinartes 18°23'29.97"N; 78°17'58.99"W
7. From *F*, the boundary follows the contours of the shoreline back to point *A.*

Figure 6: Image showing the Boundaries of the Green Island and Haughton Cove Environmental Replenishment Zone

Source: Protected Areas Branch, NEPA 2012

Boundary Description of the Orange Bay Environmental Replenishment Zone

1. The boundary begins at point *A*; a land-based mark at coordinates 18°22'20.40"N; 78°18'35.87"W.
2. From point *A*, the boundary runs in a straight line to point *B*, a land-based mark at coordinates 18°22'10.74"N; 78°19'9.19"W
3. From *B*, the boundary follows the contours of the shoreline back to point *A*.

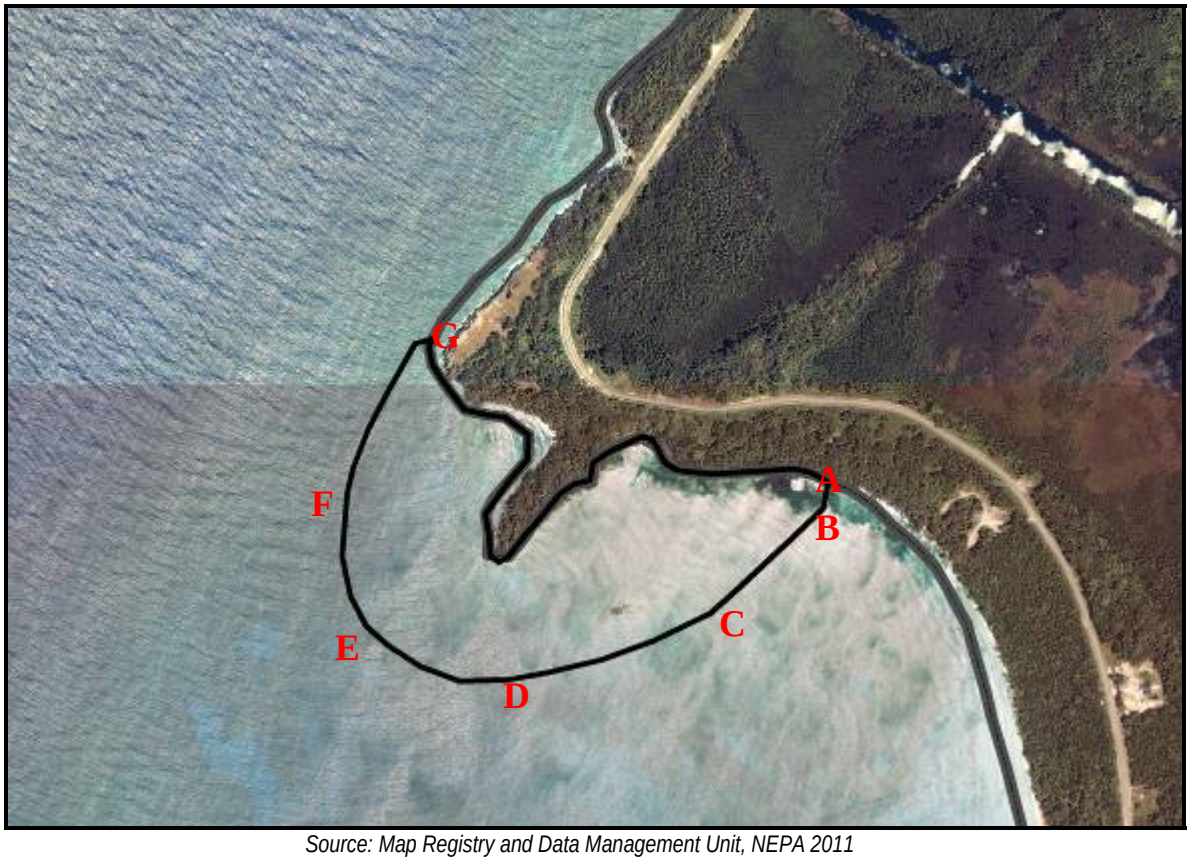
Figure 7: Image showing the Boundaries of the Orange Bay Environmental Replenishment Zone

Source: Protected Areas Branch, NEPA 2012

Boundary Description of the Bloody Bay Environmental Replenishment Zone

1. The boundary begins at point *A*; a land-based mark at coordinates 18°21'18.65"N; 78°20'17.66"W.
2. From point *A*, the boundary runs to point *B*, a water-based mark at coordinates 18°21'16.84"N 78°20'18.05"W.
3. From point *B*, the boundary runs to point *C*, a water-based mark at coordinates 18°21'10.59"N 78°20'24.93"W.
4. From *C* the boundary runs to point *D* a water-based mark at coordinartes 18°21'6.35"N 78°20'40.69"W.
5. From *D*, the boundary runs to point *E* a water-based mark at coordinates18°21'9.68"N 78°20'46.88"W.
6. From *E*, the boundary runs to point *F* a water-based mark at coordinates18°21'15.17"N 78°20'48.41"W.
7. From *F*, the boundary runs to point *G* a land-based mark at coordinates 18°21'26.95"N 78°20'41.82"W.
8. From *G*, the boundary follows the contours of the shoreline back to point *A.*

Figure 8: Image showing the Boundaries of the Bloody Bay Environmental Replenishment Zone



Source: Map Registry and Data Management Unit, NEPA 2011

Boundary Description of the Homer's Cove Environmental Replenishment Zone

1. The boundary begins at point *A*; a land-based mark at coordinates 18°13'22.91"N; 78°16'43.78"W.
2. From point *A*, the boundary runs in a straight line to point *B*, a land-based mark at coordinates 18°13'23.19"N, 78°16'47.87"W.
3. From *B*, the boundary follows the contours of the shoreline back to point *A.*

Figure 9: Image showing the Boundaries of the Homer's Cove Environmental Replenishment Zone

Source: Map Registry and Data Management Unit, NEPA 2011

Boundary Description of the Little Bay Environmental Replenishment Zone

1. The boundary begins at point *A*; a land-based mark at coordinates 18°12'47.62"N; 78°15'34.61"W.
2. From point *A*, the boundary runs in a straight line to point *B*, a land-based mark at coordinates 18°13'10.14"N; 78°16'14.93"W
3. From *B*, the boundary follows the contours of the shoreline back to point *A.*

Figure 10: Image showing the Boundaries of the Little Bay Environmental Replenishment Zone

Source: Map Registry and Data Management Unit, NEPA 2011

Approved and Prohibited Activities for the Environmental Replenishment Zones

No fishing (except as a management intervention) or motorized water sports activities will be permitted in these areas. Recreational activities such as swimming and snorkelling will be allowed subject to carrying capacity and based on patterns of traditional community usage. No entry to the Environmental Replenishment Zone by motorized craft will be allowed except for the purposes of channelling, in a manner generally perpendicular to the shoreline at a speed not exceeding 3 knots; and with permission for monitoring or research.

Box 2: User Activities for the Environmental Replenishment Zones

ENVIRONMENTAL REPLENISHMENT ZONE

Allowed

✓Conservation activities (e.g. mangrove replanting)
✓Research/educational activities
✓Non-motorized craft
✓Swimming/snorkeling

Not Allowed

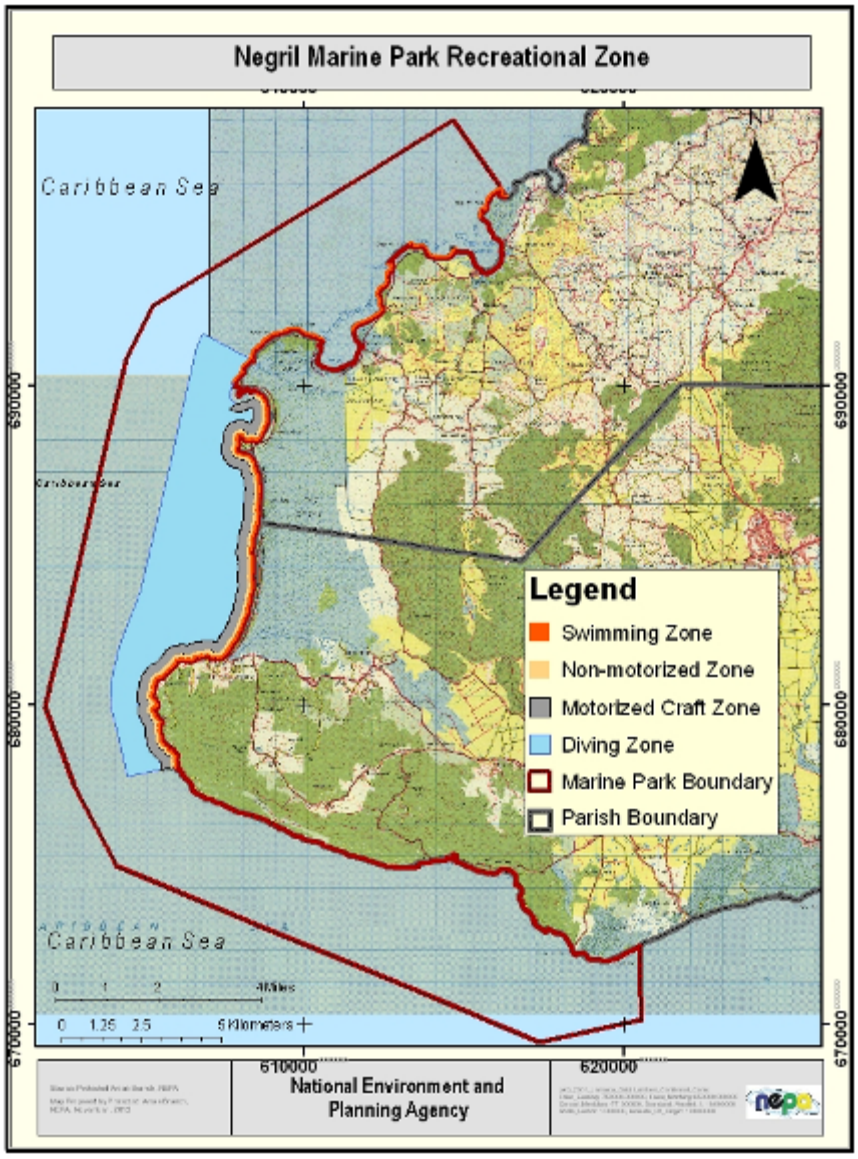
❑ Fishing/bait collection
❑ Motorized craft (except for management purposes)
❑ Removal of natural resources
❑ Recreational activities (scuba diving, motorized activities)
❑ Anchoring
❑Coastal modifications, construction or maintenance of any encroachment which falls under beach licensing regime

4.3 Recreation Zone

This zone includes all areas used for recreational actives and includes all recreational beaches and their respective swim areas, dive and snorkel sites. It is divided into the following four Sub-zones:

1. Swimming Sub-zone
2. Non-motorized Craft Sub-zone
3. Motorized Craft Sub-zone
4. Diving Sub-zone

Figure 11: Map of the Negril Marine Park showing the Sub-zones of the Recreation Zone



Source: Protected Areas Branch, NEPA 2012

4.3.1 Objectives

The objectives of the Recreation Zone are:

1. To allow for safe and sustainable beach use.
2. To provide opportunities for public appreciation and enjoyment of the marine park and the resources therein.
3. To provide access to dive sites for the purpose of studying, observing or photographing of marine life.

4.3.2 Rationale/Justification

These sites were selected based on the following criteria:

1. Ecological characteristics: presence of a reef system, and/or dive sites; also areas of shallow clear waters adjoining the beach areas.
2. The areas easily accessible to the public with limited or no conflict with motorized craft.
3. Current and traditional usage of area for recreational activities.

4.3.3 Boundary Descriptions and Activities Guide

Boundary Description of the Swimming Sub-Zone

The Swimming Sub-Zone extends from Bloody Bay in the north to the West End Cliffs in the south. Swimming sub-zones are also located at Samuels Bay, a section just south of South West Point and a small beach area of Little Bay. This includes all beaches public or privately owned with the park boundary. This area extends from the shoreline to a distance of distance of 91.4m (300 ft) seaward. Some properties also have demarcated smaller swimming areas, the extents of which are determined by the beach licence(s) applicable to the property's beach.

Figure 12: Image of the Negril Marine Park showing the Swimming Sub-zone

Source: Protected Areas Branch, NEPA 2012

Approved and Prohibited Activities for the Swimming Sub-Zone

Swimming and snorkeling will be permitted between the line of buoys and the beach. No motorized craft, other mechanized craft or fishing activity will be permitted within the swimming sub-zone except for the purpose of ingress and egress in a manner generally perpendicular to the shoreline and outside of the smaller swim areas demarcated by each property. Inbound and outbound vessel speeds should not exceed 3 knots.

Box 3: User Activities for the Swimming Sub-zone

SWIMMING SUB-ZONE

Allowed

✓ Recreational activities (swimming, snorkeling)

✓ Research/educational activities

Not Allowed

❑ Fishing

❑ Motorized craft (except for purposes of ingress and egress in which case vessels must operate perpendicular to the shoreline)

❑ Non-motorized craft (except for purposes of ingress and egress in which case vessels must operate perpendicular to the shoreline)

❑ Anchoring

Boundary Description of the Non-Motorized Craft Sub-Zone

This is a buffer zone approximately 91.4m (300 ft) seaward of the designated Swimming Sub-zone marker buoys and is contiguous with this zone.

Figure 13: Image of the Negril Marine Park showing the Non-Motorized Craft Sub-Zone

Source: Protected Areas Branch, NEPA 2012

Approved and Prohibited Activities for the Non-Motorized Craft Sub-Zone

In this area no motorized vessel (including every description of a watercraft inclusive of jet skis) will be permitted to use this zone for general operation. Permission for entry into this zone by motorized craft will be allowed solely for the purpose of ingress and egress in a manner generally perpendicular to the shoreline. Inbound and outbound vessel speeds should not exceed 3 knots. No fishing or swimming will be permitted within this zone (i.e. between the swim zone buoys and the line of non-motorized float balls.

Box 4: User Activities for the Non-Motorized Craft Sub-zone

NON-MOTORIZED CRAFT SUB-ZONE

Allowed

- ✓ Recreational activities (non-motorized craft less than 12 feet in length)
- ✓ Research/educational activities

Not Allowed

- ❑ Fishing
- ❑ Swimming
- ❑ Motorized craft
- ❑ Non-Motorized craft exceeding 12 feet in length
- ❑ Anchoring

Boundary Description of the Motorized Craft Sub-Zone

The zone for motorized craft runs parallel to and just outside of the non-motorized zone. The width of the zone is 243.8 – 304.8 m (800 - 1000 ft).

Figure 14: Image of the Negril Marine Park showing the Motorized Craft Sub-Zone

Source: Protected Areas Branch, NEPA 2012

Approved and Prohibited Activities for the Motorized Craft Sub-Zone

No anchoring or non-motorized activity or crafts (with the exception of vessels larger than 12 feet) will be permitted in this zone. Due to safety concerns to the fisher, no spear fishing will be permitted in this zone. Jet skis are only permitted to enter this zone for the purpose of exiting the Jet ski Special Purpose Zone to go ashore, and this must be done in a manner perpendicular to the shoreline and at a speed not exceeding 3 knots upon entering the Non-Motorized Craft Sub-Zone.

Box 5: User Activities for the Motorized Craft Sub-zone

MOTORIZED CRAFT SUB-ZONE

Allowed

- ✓ Motorized craft (except jet skis)
- ✓ Non-Motorized craft exceeding 12 feet in length
- ✓ Fishing (with the exception of spear fishing)
- ✓ Research/educational activities

Not Allowed

- ❑ Spear Fishing (due to safety concern to the fisher)
- ❑ Jet Skis
- ❑ Recreational activities (swimming, snorkeling, diving)
- ❑ Non-motorized craft less than 12 feet in length
- ❑ Anchoring

Boundary Description of the Diving Sub-Zone

The Diving Sub-Zone extends seaward from the motorized craft zone and includes Negril's fringing coral reefs. The zone includes all areas used as dive sites, snorkel sites and glass bottom boat tour sites.

1. The boundary begins at point *A*; a water-based mark at coordinates 18°14'52.07"N; 78°21'58.56"W.
2. From point *A*, the boundary runs in a straight line to point *B*, a water-based mark at coordinates 18°14'44.90"N; 78°22'33.46"W.
3. From point *B*, the boundary runs in a straight line to point *C*, a water-based mark at coordinates 18°16'20.10"N; 78°22'53.21"W.
4. From *C* the boundary runs in a straight line to point *D* a water-based mark at coordinartes 18°16'57.09"N; 78°22'44.22"W.
5. From *D*, the boundary runs in a straight line to point *E* a water-based mark at coordinates18°17'55.33"N; 78°22'21.36"W.
6. From *E*, the boundary runs in a straight line to point *F* a water-based mark at coordinates18°22'16.85"N 78°21'18.09"W.
7. From *F*, the boundary runs in a straight line to point *G* a water-based mark abuting the Swimming Sub-zone at coordinates 18°21'52.10"N 78°20'28.13"W.
8. From *G*, the boundary follows the contours of the outermost boundaries of the Swimming Sub-zone and the Bloody Bay Environmental Replenishment Zone to point *H* a water-based mark at the northern-most tip of the Motorized Craft Zone at coordinates 18°21'0.72"N; 78°20'47.58"W.
9. From *H*, the boundary follows the contours of the outermost limits of the Motorized Craft Zone back to point *A*.

Figure 15: Image showing the Boundaries of the Diving Sub-Zone

Source: Protected Areas Branch, NEPA 2012

Approved and Prohibited Activities for the Dive Sub-Zone

The Diving Sub-Zone will allow for recreational activities associated with diving and snorkeling at specific dive sites (Appendix 2). Motorized craft involved in diving and snorkeling are permitted to enter these sites, all other motorized craft traversing the area are however required to steer clear of these areas when in use[2]. Due to safety concerns to the fisher, no spear fishing will be permitted in this zone. No jet ski is allowed to enter the Dive Sub-Zone.

Box 6: User Activities for the Diving Sub-Zone

DIVE SUB-ZONE

Allowed

- ✓ Recreational activities (swimming, snorkeling, scuba diving)
- ✓ Motorized craft
- ✓ Fishing(with the exception of spear fishing)
- ✓ Research/educational activities

Not Allowed

- ❑ Spear Fishing (due to safety concern to the fisher)
- ❑ Non-motorized craft
- ❑ Jet skis
- ❑ Anchoring
- ❑ Parasailing

[2] Dive teams will be required to indicate their presence in an area through the use of dive flags or other appropriate devices as determined by the Marine Park Manager

4.4 Multiple-use Zone

This zone includes all the areas outside the boundaries of the conservation zones and recreational zone. Unlike the Conservation and Recreation Zones, the Multiple-use zone has no further functional subdivisions, but will allow for a range of specialized uses such as fishing as well as recreational boating. It complements other marine park zones and by nature provides an integrated approach to the management of the Marine Park.

4.4.1 Objectives

The objective of the Multiple-use Zone is:

- To provide an area which facilitates a wide range of both commercial and recreational activities

4.4.2 Rationale/Justification

These sites were selected based on the following criteria:

1. The need for an area which could accommodate user activities for which there are no special zones identified.
2. Distance from non- homogenous activities in nearshore areas thereby increasing safety and reducing the likelihood of user conflicts.
3. The depth of water which facilitates some specialized recreational and commercial activities such as deep sea fishing.

4.4.3 Boundary Description and Activities Guide

Boundary Description of the Multiple-use Zone

The Multiple-use Zone is the most extensive of all the proposed zones. This area abuts the coastline and the outermost limits of other zones such as the Environmental Restoration Zones and the Diving Zones. The seaward-most limit of the Multiple-use Zone is the actual boundary of the Marine Park.

Figure 16: Map of the Negril Marine Park showing the Boundaries of the Multiple-use Zone

Source: Map Registry and Data Management Unit, NEPA 2012

Approved and Prohibited Activities for the Multiple-use Zone

This zone will allow for a range of activities including fishing as well as recreational activities. Anchorage however will only be permitted in the special zone demarcated for this use[3].

Box 7: User Activities for the Multiple-Use Zone

MULTIPLE-USE ZONE

Allowed

- ✓ Fishing
- ✓ Research/educational activities
- ✓ Recreation
- ✓ Anchorage (in Special Purpose Zone only)

[3] The prohibition of activities in this zone is subject to the Marine Park Manager upon consultation of the Natural Resources Conservation (Marine Parks) (Amendment) Regulations, 2003 and the Fishing Industry Regulations, 1976.

4.5 Special Purpose Zones

Special Purpose Zones (SPZs), in essence, cater for specific user and management activities which are considered to be special uses, some of which would otherwise be prohibited within the Marine Park. The Park contains two Special Purpose Zones, namely: an Aircraft Safety Special Purpose Zone, and an Anchorage Special Purpose Zone.

4.5.1 Aviation Safety Special Purpose Zone

The Aviation Safety Special Purpose Zone is an aerial zone specially designed with restrictions on activities which may impact aviation safety. The seaward limits of the zone spans sections of northern Long Bay, Rutland Point and Bloody Bay. Within this zone, two specific zones have been created to protect aircraft operations:

- Parasailing Restriction Zone (highlighted in yellow on Figure 17).
- Parasailing Exclusion Zone where (highlighted in red on Figure 17).

4.5.1.1 Objective

The objective of the Aviation Safety SPZ is:

- To provide a safety zone for aircraft operating in the traffic circuit of the Negril Aerodrome with respect to the operation of parasails and catamarans.

4.5.1.2 Rationale/Justification

- Parasailing and Catamaran activities which may impact aviation and concerns expressed by the aviation public were factors in determining the dimensions and restrictions on activities in the vicinity of the aerodrome.

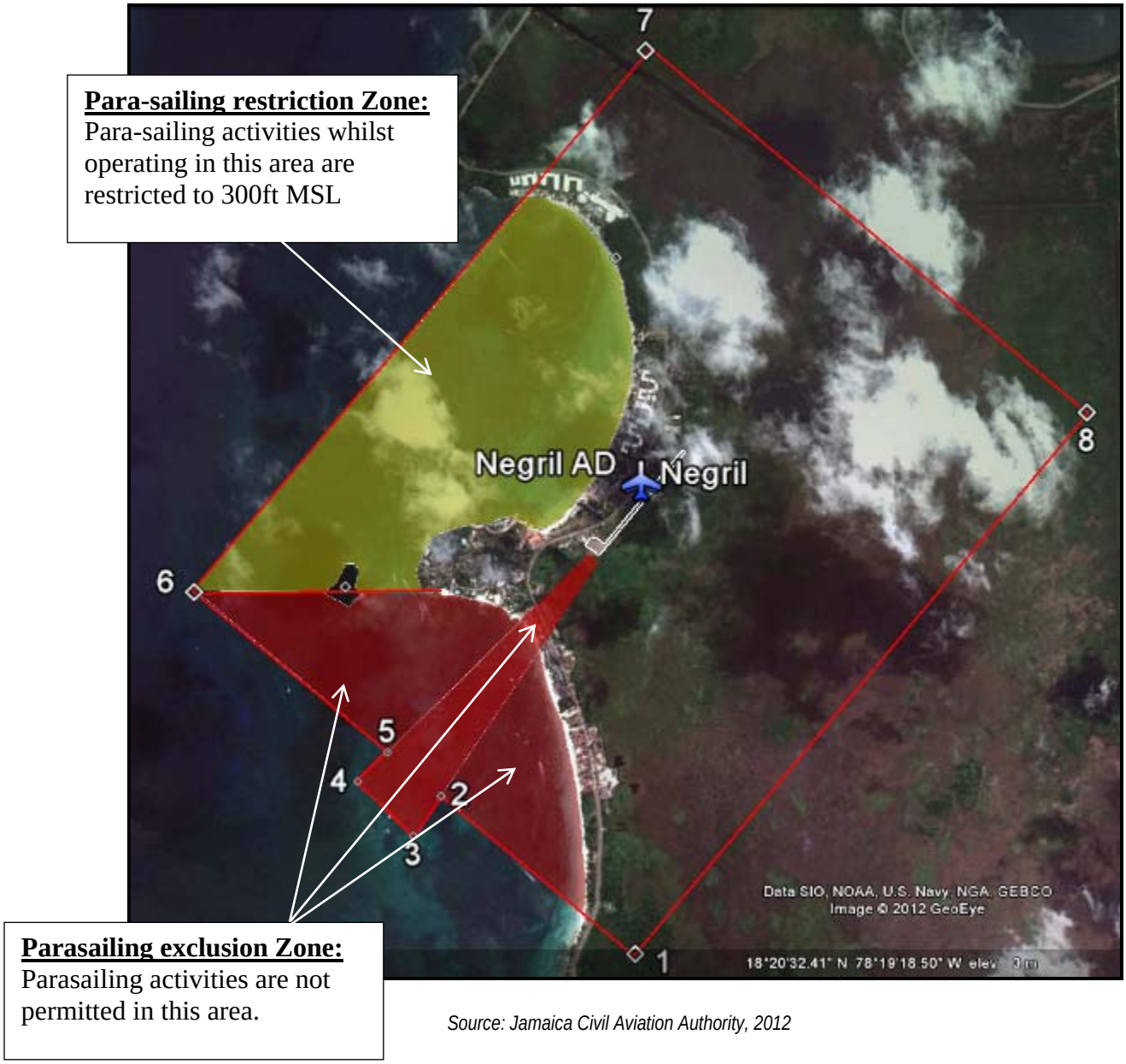
4.5.1.3 Boundary Description and Activities Guide

The lateral limits of this area are bound by lines joining successively the following points:

1) 18°19'18.72"N 78°20'3.21"W	to	2) 18°19'43.72"N 78°20'35.45"W	to
3) 18°19'37.37"N 78°20'39.99"W	to	4) 18°19'45.97"N 78°20'49.21"W	to
5) 18°19'50.63"N 78°20'44.34"W	to	6) 18°20'16.00"N 78°21'16.37"W	to
7) 18°21'42.48"N 78°20'2.15"W	to	8) 18°20'45.20"N 78°18'48.97"W	to
1) 18°19'18.72"N 78°20'3.21"W			

Appendix 5 provides an additional description of the dimensions of this zone.

Figure 17: Image showing the Boundaries of the Aviation Safety SPZ with Parasailing Restriction and Exclusion Zones Highlighted



Source: Jamaica Civil Aviation Authority, 2012

Approved and Prohibited Activities for the Aviation Safety Special Purpose Zone[4]

The Traffic Circuit has been divided into restricted and prohibited areas based on the type of activity and which leg of the circuit, the activity will take place. Parasail operators will be required to conduct their activities outside of the limits of the approach and more specifically, above Booby Cay, and prohibited from operating within the Parasailing Exclusion Zone highlighted in red (Figure 17). They are also permitted to conduct their activities to the north and south of the area highlighted in red (Figure 17). However, if they are operating within the Parasailing Restriction Zone, highlighted in yellow (Figure 17) activities are restricted to 300ft mean seal level and below. No parasailing activities are permitted in the Approach Path to the runway at the Negril Aerodrome. The length of the rope used to conduct parasailing activities in the yellow area will be restricted to five hundred feet (500ft). This will facilitate safety for both the parasailors and the pilots who operate in this vicinity (Jamaica Civil Aviation Authority, 2012).

Additionally, only catamarans and other vessels with mast heights less than or equal to 72ft will be permitted to operate in these zones[5].

Box 8: User Activities for the Parasailing Restriction Zone

PARASAILING RESTRICTION ZONE

Allowed

✓ Parasailing (activities are however restricted to 300 ft. mean sea level or below)

✓ Vessels (with mast heights not exceeding 72 ft.)

[4] Any activities utilizing the airspace within the areas designated that have not been included in this document; and any construction or proposed construction in the vicinity of the Aerodrome must be evaluated by the Obstacle Evaluation and Procedures Development unit of the Jamaica Civil Aviation Authority before proceeding.

[5] Catamarans with mast height less than or equal to 72ft do not impact the approach path to Runway 05, but will be considered an obstacle if the Runway is extended in the future.

Box 9: User Activities for the Parasailing Exclusion Zone

PARASAILING EXCLUSION ZONE

Allowed

✓ Vessels (with mast heights not exceeding 72 ft.)

Not Allowed

❑ Parasailing

4.5.2 Anchorage Special Purpose Zone

This area is a small circular zone located within the Multiple Use Zone towards the west central boundary of the Park.

4.5.2.1 Objective

The objective of the Anchorage SPZ is:

- To provide an area for the anchorage of vessels in the Negril Harbour consistent with that officially recognised by the Port Authority of Jamaica.

4.5.2.2 Rationale/Justification

Section 24 of the Harbours Act (1874) permits the Harbour Master to regulate the locality, position, and method of mooring the vessels within any of Jamaica's Harbours. The area designated as the Anchorage Zone was therefore so selected in accordance with the zone used by the Port Authority of Jamaica as the official anchorage area for the Negril Harbour.

4.5.2.3 Boundary Description and Activities Guide

The boundary of the anchorage zone forms a circle with a radius of 2 cables (0.2 Miles) from a centre located at coordinates 18º 17.75´ N; 78º 23.1´ W

Figure 18: Map showing the location of the Anchorage SPZ

Source: Protected AreasBranch, NEPA 2011

Approved and Prohibited Activities for the Anchorage Special Purpose Zone[6]

In addition to anchoring, this zone will allow for fishing as well as recreational activities such as boating and the use of non-motorized craft. Recreational activities such as swimming, scuba diving, snorkeling, parasailing and the use of jet skis in this area are strictly prohibited.

Box 10: User Activities for the Anchorage SPZ

ANCHORAGE SPZ

Allowed

- ✓ Anchoring
- ✓ Recreational activities (boating; motorized/non-motorized crafts)
- ✓ Research/educational
- ✓ Fishing

Not Allowed

- ❑ Recreational activities (scuba diving; swimming; jet skis; parasailing; snorkeling)

[6] All activities within this zone are subject to the permission of the Harbour Master.

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Appendices

Appendix 1: Categories of Stakeholders involved in the Development of the Negril Marine Park Zoning Plan (2013-2018)

Stakeholder Categories	Stakeholders
Business	1. Hoteliers • Negril West End • Norman Manley Boulevard 2. Micro, Small and Medium Enterprises 3. Jamaica Hotel and Tourist Association 4. Negril Water Sports Operators Association 5. Negril Chamber of Commerce
NGOs	6. Negril Coral Reef Preservation Society 7. Negril Area Environmental Protection Trust
Community	8. Negril Fishermen's Cooperative 9. Beach Users • Locals • Visitors 10. Fishing Interests from the following communities a) Little Bay b) Negril West End c) Sheffield d) Orange Bay e) Salmon Point f) Green Island g) March Town/Cave Valley
Government	11. National Environment and Planning Agency 12. Ministry of Housing, Environment, Water and Local Government 13. Tourism Product Development Company 14. Port Authority of Jamaica 15. Maritime Authority 16. Fisheries Division 17. Urban Development Corporation 18. National Land Agency 19. Negril Green Island Area Local Planning Authority 20. Westmoreland Parish Council 21. Hanover Parish Council 22. Ministry of Tourism 23. Jamaica National Heritage Trust 24. The Marine Police 25. Westmoreland Health Department 26. Social Development Commission 27. Civil Aviation Authority 28. Airports Authority of Jamaica
Institutions	29. University of the West Indies

Appendix 2: Location of Dive and Snorkel Moorings in the Negril Marine Park

Dive Mooring	Latitude	Longitude
Snapper Drop	18°17.464 N	78°21.875 W
Turtle Drop	18°17.604 N	78°22.003 W
Throne room	18°17.747 N	78°21.748 W
Treasure	18°17.778 N	78°21.731 W
Coral gardens	18°17.789 N	78°21.665 W
White Sands	18°18.123 N	78°21.635 W
Chinese	18°18.009 N	78°21.689 W
Spadefish	18°17.780 N	78°21.922 W
Howard Clapman	18°18.784 N	78°21.267 W
Caribbean Charter Co.	18°18.759 N	78°21.248 W
John Vosika	18°18.736 N	78°21.231 W
Aqua Moon	18°19.132 N	78°21.066 W
Randy Kay	18°19.137 N	78°21.083 W
Snorkel 1	18°19.129 N	78°21.098 W
Snorkel 2	18°19.122 N	78°21.112 W
Shark's Reef	18°19.021 N	78°21.652 W
Sand's Club	18°19.165 N	78°21.660 W
Joe Stennet	18°19.634 N	78°20.746 W
Bailey-Bok	18°19.655 N	78°20.741 W
Peace and Love	18°19.672 N	78°20.757 W
Snorkel 3	18°19.657 N	78°20.758 W
Snorkel 4	18°19.677 N	78°20.772 W
Middleshoal Bottom	18°19.647 N	78°20.941 W
Middleshoal Top	18°19.744 N	78°20.908 W
Kingfish Point	18°20.118 N	78°21.604 W
The Arches	18°20.308 N	78°21.349 W
Shallow Plane	18°20.238 N	78°21.336 W
Deep Plane	18°20.751 N	78°21.491 W
Gallery	18°20.523 N	78°21.341 W
Booby Cay 1	18°20.217 N	78°20.952 W
Margaret Grosh	18°20.168 N	78°20.916 W
Booby Cay 2	18°20.145 N	78°20.901 W
Booby Cay 3	18°20.127 N	78°20.869 W

Resort Divers	18°20.129 N	78°20.843 W
Booby Cay 4	18°20.137 N	78°20.803 W
Surprise	18°20.740 N	78°21.203 W
Pickled Parrot 1	18°15.962 N	78°22.082 W
Pickled Parrot 2	18°15.981 N	78°22.070 W
Pickled Parrot 3	18°15.994 N	78°22.048 W
Rick's Café 1	18°15.205 N	78°21.853 W
Rick's Café 2	18°15.212 N	78°21.830 W
Rick's Café 3	18°15.238 N	78°21.843 W
Unnamed 1	18°19.125 N	78°21.038 W
Unnamed 2	18°19.107 N	78°21.043 W
Unnamed 3	18°19.710 N	78°20.809 W
Unnamed 4	18°19.676 N	78°20.813 W
Unnamed 5	18°20.396 N	78°20.879 W
Unnamed 6	18°17.573 N	78°20.569 W

Appendix 3: The Natural Resources Conservation (Negril Marine Park) (Declaration) Order, 1998

THE

JAMAICA GAZETTE

SUPPLEMENT

PROCLAMATIONS, RULES AND REGULATIONS

33

Vol. CXXI THURSDAY, MARCH 5, 1998 No. 12

No. 17

THE NATURAL RESOURCES CONSERVATION AUTHORITY ACT

THE NATURAL RESOURCES CONSERVATION (NEGRIL MARINE PARK) (DECLARATION) ORDER, 1998

In exercise of the powers conferred upon the Minister by section 5 of the Natural Resources Conservation Authority Act, and on the recommendation of the Natural Resources Conservation Authority after consultation with the Jamaica National Heritage Trust, the following Order is hereby made:—

1. This Order may be cited as the Natural Resources Conservation (Negril Marine Park) (Declaration) Order, 1998.

2. The area set out in Part I of the Schedule to this Order which is delineated on the map set out in Part II thereof, is hereby declared to be a Marine Park and shall constitute and be known as the Negril Marine Park.

SCHEDULE (Paragraph 2)

PART I—*Area of the Negril Marine Park*

Commencing at the mouth of the Davis River in the north along the high-water mark of the shoreline to the mouth of the New Savannah River in the south, then to a point 3.2 kilometres with geographical coordinates latitude 18° 26' 08" N longitude 78° 16' 31" W (marked as Point 1 on the map); then due south (seaward) of the mouth of the New Savanna River to a point 3.2 kilometres with geographical coordinates latitude 18° 25' 37" N longitude 78° 17' 58" W (marked as Point 2 on the map); then due south from Salmon Point (also called South-West Point on topographic maps), to a point 3.2 kilometres with geographical coordinates latitude 18° 25' 04" N longitude 78° 19' 13" W (marked as Point 3 on the map); then due south-west from Salmon Point (also called South-West Point on topographic maps), to a point 3.2 kilometres with geographical coordinates latitude 18° 23' 29" N longitude 78° 21' 37" W (marked as Point 4 on the map); then due south-west from Sunset Point, to a point 3.2 kilometres with geographical coordinates latitude 18° 22' 41" N longitude 78° 22' 17" W (marked as Point 5 on the map); then due west from West Point at the Negril Lighthouse to a point 3.2 kilometres with geographical coordinates latitude 18° 21' 16" N longitude 78° 22' 53" W (marked as Point 6 on the map); then due west from South Negril Point to a point 3.2 kilometres with geographical coordinates latitude 18° 16' 13" N longitude 78° 24' 16" W (marked as Point 7 on the map); then due west from North Negril Point, to a point 3.2 kilometres with geographical coordinates latitude 18° 14' 45" N longitude 78° 23' 54" W (marked as Point 8 on the map); then due north-west from North Negril Point, to a point 3.2 kilometres with geographical coordinates latitude 18° 12' 58" N longitude 78° 22' 58" W (marked as Point 9 on the map); then due north-west from Orange Point, off Ireland Pen, to a point 3.2 kilometres with geographical coordinates latitude 18° 10' 12" N longitude 78° 16' 12" W (marked as Point 10 on the map); then due north-west from South-West Point of Green Island to a point 3.2 kilometres with geographical coordinates latitude 18° 09' 37" N longitude 78° 14' 43" W (marked as Point 11 on the map); then due north-west of Negro Bay Point to a point 3.2 kilometres with geographical coordinates latitude 18° 09' 49" N longitude 78° 13' 29" W (marked as Point 12 on the map); then due north-west of Davis Cove, then back to the starting point.

PART II

Dated this 4th day of March, 1998.

EASTON DOUGLAS,
Minister of Environment and Housing.

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Appendix 4: Section 22 of The Natural Resources Conservation (Marine Parks) (Amendment) Regulations, 2003

19. The principal Regulations is amended by deleting regulation 22 and substituting therefor the following:—

"Zones. 22.—(1) The Authority may, in consultation with the marine park manager, zone areas for the following purposes:—

(a) fishing;
(b) fish sanctuary;
(c) swimming;
(d) snorkelling;
(e) scuba diving;
(f) anchoring of conveyances or vessels and moorings;
(g) use of motorized craft;
(h) use of non-motorized craft;
(i) environmental restoration or "No Use";
(j) scientific research;
(k) harbour as designated by the Port Authority;
(l) no wake as designated by the Port Authority.

(2) The Authority may, in consultation with the marine park manager, create additional zones for the orderly management of the marine park.

(3) The Authority or the marine park manager, shall place in the marine park conspicuous signs, buoys or other materials to designate the assigned zones.

(4) The Authority:—

(a) may consult with such Government departments and private individuals as it thinks fit prior to the formulation of the zone plan;

(b) shall publish in the *Gazette* and a daily newspaper in circulation in Jamaica, once every three years, the zone plan for each marine park.

(5) A person who uses an area zoned for a particular purpose, in any manner contrary to that assigned to that zone; commits an offence and is liable on summary conviction before a Resident Magistrate to a fine not exceeding ten thousand dollars or to imprisonment for a term not exceeding three months.".

20. The principal Regulations is amended by inserting immediately after regulation 22, the following as 22A:—

Appendix 5: Dimensions of the Traffic Circuit of the Negril Aerodrome

Dimensions of Traffic Circuit

Source: Jamaica Civil Aviation Authority, 2012

Community Participation in the Creation of the Negril Marine Park

prepared by
Katy Thacker

Introduction

The Negril Marine Park (NMP) and Environmental Protection Area (EPA) are the first areas in Jamaica to be legally established under the Natural Resources Conservation Authority Act (NRCA Act) in a movement that was started by the people of the community. Residents recognized long ago that the pristine natural resources needed to be preserved in order to protect the tourism product and backbone of the economy.

In 1990 a small group of local citizens, fishermen and watersports operators joined together to form the Negril Coral Reef Preservation Society (NCRPS). The organization's main focus was to protect the marine environment and establish a national marine park along the West End, Long Bay, and Bloody Bay. In 1993, the Negril Area Environmental Protection Trust (NEPT) was formed to act as a coordinating agency and local environmental management council for a Marine Park and Environmental Protection Area. By this time, scientific recommendations were that the conservation areas include land and sea boundaries extending from Salmon Point to Davis Cove. The idea was that in order to protect the marine resources, it would be essential to regulate activities on land, as they heavily impact the sea. In other words, the people felt that without strict regulations on the development and use of the land, it would be useless to create a Marine Park.

The creation of NEPT involved an unprecedented involvement of members of the community. Over 100 meetings were held with grass roots representatives from within what is now designated as the Negril Environmental Protection Area. This includes community members, representatives from government and non-governmental organizations, farmers, and fishermen.

Participation in the concept and design of the Negril EPA and Marine Park involved much more than just meetings. Community members were asked to outline the problems within their various areas, the environmental threats, and their suggestions for solutions. There were consultations with fishermen and farmers, field trips to various areas, and scientific guidance and input was provided during the entire process. When the EPA and Marine Park were legally established, the Minister of Environment and representatives from government were satisfied and pleased that adequate community input had been

received. However, they also recognized the fact that future support from the community was important in order to ensure that management efforts would be effective.

Zoning Proposal for the Negril Marine Park

In December 1995, the NCRPS received funds from the European Union (EU) to establish a management structure for a marine park in Negril. With funding now available to hire staff for the Park, four rangers, a scientific officer, and other administrative staff were hired. One of the priority tasks was to design a zoning plan for use of the marine resources within the proposed Marine Park boundaries. In order to complete that task, the scientific officer, project manager and rangers planned a series of consultations with local fishermen and watersports operators in order to get their feedback into how the zoning should be designed. These consultations involved meetings in the communities as well as informal discussions with fishermen and watersports operators. From January 1996 until January 1997, over 50 meetings were held to specifically discuss this topic. Meetings were held in Hope Wharf, Salmon Point, Little Bay, Negril, Orange Bay and Green Island. The rangers attended all of the meetings, and Courtney Black (Ranger) chaired most of them. Among those in attendance was Thomas J. Goreau, then scientific advisor to the NCRPS, the marine park project manager, and other staff. Chantelle Carvalho (Black) took minutes to the meetings, which are on record in the NCRPS office.

Dr. Goreau and the rangers spent time in the field snorkeling and diving the reefs in the area, and talking informally to fishermen and watersports operators. Plans for development of the area, as well as zoning plans established by the Port Authority and Natural Resources Conservation Authority were also taken into consideration. The following outlines the zoning plan that was proposed based on all of these consultations, existing regulations, scientific guidance, and traditional use.

St. John's Point to the Lighthouse

Effluent from the Cabarita River severely compromises water quality and clarity from St. John's Point to Little Bay. This is of great concern to all the local citizens in those areas, including fishermen, who depend entirely on fishing resources for their livelihoods. Because of the lack of water clarity, much of the area is not suitable for recreational purposes. In Little Bay and Homer's Cove (traditionally called Brighton Beach) locals and few tourists use the shallow areas for swimming, bathing, and snorkeling. Fishermen set traps along the reef edges in this section and a good amount of spearfishing is also done. It was decided that the area from the Lighthouse to Salmon Point be designated a fishing zone and no recreational activities are to be conducted in this area, with two exceptions. In Homer's Cove and Little Bay, swimming, bathing and snorkeling is allowed.

Both areas have fairly healthy seagrass beds and reefs. The fishermen and other locals agreed that in Homer's Cove and Little Bay, from a depth of 30 feet to the shoreline,

there should be no fishing at all. The 30 foot depth is just outside of the reef in both areas, and has been marked off by buoys to officially designate "no fishing" or "replenishment" zones. The fishermen in these areas agreed to "self police" the area, and cooperate fully with marine park staff in the protection of the area. One well-respected elderly local fisherman is on the Board of Directors of the NCRPS, and keeps the society informed of fishing activities in the area.

Spearfishing and trap fishing in shallow reef areas is recognized as a threat to the reefs and fish stocks. It was decided at the time the zoning plan was first proposed that the issue of the legality of spearfishing in a marine park would not be addressed until government legally designated the area. At that time, spearfishing would then be illegal within the marine park, according to law, and the issue would be addressed. Since the time the original zoning plan was proposed, the Negril Marine Park has been officially declared, however, spearfishing is still a problem. Of greater concern, however, is the issue of dynamite fishing, which is a chronic problem in the area. Several reports have been made and meetings held with fishermen in the Hope Wharf area, which is just outside the boundaries of the Marine Park, in an attempt to stop dynamite fishing. In addition, the rangers have performed joint patrols with the Marine Police in order to prosecute offenders. This has been somewhat successful, however, the problem of dynamite fishing still exists.

Lighthouse to South Negril River

The fishing beaches and landing spots in this area are very small, and consist mainly of beaches close to the South Negril River. There is one small fishing beach near Tenby's hotel, and two on either side of the Yacht Club. Primarily well-established older fishermen, who do primarily trap fishing in deep water, use one fishing beach at the Yacht Club. Meetings with these fishermen consisted of mostly informal conversations and discussions. Some of these fishermen include Cyril Connel, who is also a hotelier, Prince Nunes, Georgine Forrest, and others.

This area contains the famous Negril "West End", which is an area of hotels along a strip of land near the sea by the West End Road. Tourists and locals alike have traditionally used the area for cliff diving, swimming, snorkeling and scuba diving. Spearfishermen consist of young people from the area who spear fish for sport and sustenance. It is difficult to get spearfishermen to attend meetings, perhaps because they know that in general, tourists as well as other fishermen frown upon spearfishing. Attempts to meet with these individuals to discuss the zoning were largely futile. Decisions regarding the zoning were based upon discussions held with fishermen in other areas, especially the Yacht Club, traditional use, and scientific guidance.

It was decided that the area from the Lighthouse to the South Negril River be designated as a recreational area from the depth of approximately 40-60 feet to the shoreline. The

area contains not only a fringing reef along the west end, but two reef "edges" much like what is found in Long Bay. Since tourists jump off the cliffs and swim along the shoreline, it was recommended that a swim lane be established all along the West End from the river to the lighthouse, much like the one in Long Bay. Scuba diving is permitted, and fishing is not allowed from the first reef "edge" to the shoreline. Beyond the first edge, fishermen can set traps and perform other fishing activities, as long as the traps do not negatively impact the deep reef sections in that area.

Long Bay

Scientific recommendations for zoning Long Bay were made in 1960 by the late Thomas F. Goreau. He examined the reefs in Long Bay, Bloody Bay and Samuels Bay and felt that the reefs and seagrass beds were some of the most healthy he had seen in Jamaica. He recommended that those areas be established as Marine Parks as a matter of great urgency. Unfortunately, this was not done, and as tourism expanded in Long Bay, the area was taken over by recreational activities. This displaced the local fishermen, and by the 1980's they had no fishing beaches or landing spots left on Long Bay. They were forced to land their catches and seek protection at the mouth of the South Negril River. This created a conflict that has never been completely resolved.

The Port Authority declared Long Bay a Harbour in 1992 and the Port Captain, the late Captain Patrick Prawl, devised a zoning plan for watersports activities. This was in response to the rapid growth of tourism and the ever-increasing concern about the safety of tourists using the area. Prawl designated a swim lane, 300 feet from shore, to be demarcated with buoys. He also indicated an area to be marked for anchoring of large boats directly west and seaward of the South Negril River. He devised a plan for safe operating of jet skis, which included demarcated circular areas in Long Bay only, and limited the number of parasail platforms in the Bay. At the time, parasail platforms were used to launch tourists for parasailing activities. This is no longer an issue because of design changes in boats used for the purpose of parasailing. He included in his zoning plan a "no-fly" zone for parasailing near the airstrip on the north end of Long Bay.

In 1995 the NEPT and NCRPS installed the swim lane that Prawl ordered in Long Bay with funding from the Tourist Product Development Corporation (TPDCO) and US AID. It is worthy noting that the NRCA also requires hotels to demarcate an additional swim lane, within the Port Authority's swim lane, in order to secure a tourist license. In 1998, TPDCO provided funds for the NCRPS to install eleven entry lanes along Long Bay beach to be used by operators as an additional safety measure for swimmers. Funding has not yet been identified to demarcate the remainder of the Port Authority's zoning plan in Long Bay.

Discussions with fishermen and locals and scientific guidance indicate that the sea grass beds in Long Bay have been severely negatively impacted over the past 30-40 years. This is a result of nutrient run off from the land, as well as turbulence and pollution caused by boats, jet skis, and other watercraft. The North end of Long Bay used to be a

fish nursery, and sea grass beds there were especially lush and healthy. Hotels along the North end of Long Bay have been known to dig up, dynamite, and otherwise destroy the seagrass beds in order to accommodate tourism. Their reasoning has been that tourists dislike the seagrass, as it contains sea urchins and other "nuisance" marine life. If zoning of Long Bay could have been done prior to the development of tourism, the entire northern section of Long Bay would have been designated a fish sanctuary and no recreational activities would be permitted. This would have provided better protection of the coral reefs, seagrass beds and fisheries for all of the Negril Marine Park. In addition, protection and preservation of the seagrass beds could have prevented severe erosion problems that now exist in that area. Now hotels have to bring in sand, as without the seagrass beds and reefs, the beaches are unprotected and have literally washed away.

Unfortunately, at the time that the marine park-zoning plan was being implemented, traditional use of the area had already expanded to include hotels and watersports activities from large all-inclusive hotels. So, despite the fact that the local fishing community and scientific guidance recognized the north end of Long Bay as a fish nursery and fragile area to be protected, it was too late. Jet skis, sailboats, powerboats of various kinds, swimming, skiing, and other activities were already taking place. Therefore, Long Bay is zoned primarily as a result of traditional use and zoning designed by the Port Authority. As stated previously, this has caused a conflict between watersports operators and fishermen, and is now a conflict within the Marine Park that has not been resolved.

Booby Cay

At the time that the Marine Park zoning plan was being developed, watersports operators and hoteliers in the area used Booby Cay entirely for recreational purposes. Now the island has been cleared of all activities by the UDC, which owns it. The fact that it is no longer a recreational nightmare is good, however, efforts need to be made to ensure the integrity and pristine nature of this little island. There is no fresh water supply, which should limit development completely. Thomas J. Goreau said that "the headland of Rutland Point, lying between Bloody Bay and Long Bay, and the nearby island of Booby Cay, are both made up- of a limestone formation similar to Ireland Pen, with which they may line up as part of an arc. A few large trees remain on both, but most of the original forest is gone. Coral reefs in both areas are in both areas are in poor condition, badly damaged by trampling by tourists, Hurricane Gilbert, and severe algae overgrowth. Only in a few spots can young corals be found, for example half a dozen young elkhorn corals at one stretch along the Rutland Point headland. These areas need to be identified and protected from human physical contact as special reef restoration zones." (Goreau, T.J., 1994) Booby Cay should be developed as a ranger station for the Marine Park and EPA, with a lookout tower. A small Ecotourism activity could be arranged here with small numbers of tourists guided on a walking path through the island and a trip to the lookout tower. Here one could see the entire Great Morass, and be provided with information about the Negril EPA.

Shallow water and very shallow patchy reefs surround Booby Cay. These should be protected from further degradation by allowing snorkeling here only by educated guides. All of the area surrounding Booby Cay lies in Long Bay, so therefore it lies in a no fishing zone.

Bloody Bay & Little Bloody Bay to North Negril Point

During planning workshops held for the development of the Negril EPA, the Urban Development Corporation (UDC) showed the NEPT planning team plans for the development of Bloody Bay and other UDC lands. At the time, the UDC representatives were able to indicate to the planning team what could be done with the lands in Bloody Bay and Little Bloody Bay. This included other lands that they owned within the then proposed EPA, such as land along the coast and up to Orange Bay. Participants at those workshops were made to understand that the plans presented by the UDC were only indications of what could be done with the resources, not necessarily what would be done. At the time, it was also recognized by all involved that the UDC had powers of its own, and was not accountable to any other agency under the law, except in the case of the Beach Control Act, under the NRCA. One of the many recommendations coming out of multiple workshops and planning sessions was that the UDC become accountable to the government, just like all other agencies, and that the law that applies to the public at large, should also apply to the UDC. This is discussed in the NEPT Environmental Protection Plan.

Scientific consultations and assessments indicate that Bloody Bay and Little Bloody Bay are still one of the most pristine areas remaining in the Negril EPA. Seagrass beds although much less healthy than in previous times, are still relatively lush, especially on the North End of Bloody Bay where the water is very shallow. This area has become a safe haven for boats over the years as the sandbar that has formed in front of the South Negril River prevents watersports operators and others from storing their boats in the South Negril River. There is no marina in the area, so operators shelter their boats from high winds and rough seas on the north end of Bloody Bay. This practice has been done for years, and after the Marine Park zoning plan was developed, the Park rangers have installed moorings in those areas so that boat anchors do not damage the seagrass beds. The storage of boats in this area is not acceptable to the Park staff and scientific advisors, however, until Marine Park regulations are adequately enforced, the boats seemingly will be allowed to remain.

Just offshore from Little Bay in shallow water (10-30 feet), there is a coral reef. Unlike most areas within the park, this area is quite unusual, as it contains many small, juvenile corals. Ocean currents traditionally move from north to south along the north coast of the Marine Park and from south to North on the South coast. For this reason, scientific recommendations are that the north end of Bloody Bay, around the rock that is protruding out of the water and continuing on to cover the entire Little Bloody Bay be designated as a special reef restoration zone and fish nursery. When water quality is improved in the

Long Bay area, the ocean currents will carry coral planula to Long Bay via ocean currents. These planulae will settle in Long Bay and reseed the area so that new corals can grow on old, damaged substrate. Because this is such a fragile and special area, scientific recommendations are that buoys as outlined above mark off the entire area. No swimming, snorkeling, fishing, or any kind of recreational activity can be performed in these areas. This is a replenishment zone and one of two areas designated as such with the Negril Marine Park. Scientific advisors indicate that snorkeling can be done under close supervision just outside the zone in Little Bloody Bay, but in order to protect this fragile and unique area, no activities should take place within the buoyed off areas.

The water is extremely shallow on the north end of Bloody Bay, and the sand is very fine meaning that ones' feet sink quickly in it. The only way it could become a swimming area is if the seagrass was removed, the area dredged, and new sand was brought in. This is not recommended. In addition, this area is unique because it contains the only salt-water mangroves in Bloody Bay. The presence of these mangroves, in addition to the lush seagrass and budding coral reefs, makes the area a prime nursery ground. Thomas J. Goreau recommends protection of the entire area and outlines his protection recommendations as follows: "In sharp contrast to the developed southern shore of Bloody Bay, the undeveloped northern shore is in good condition. The mangroves and seagrasses are healthy, and sand-producing algae are not overgrown by weedy algae. Of special importance is the small bay at the northern edge of Bloody Bay, Little Bloody Bay. Little Bloody Bay is a famed local beauty spot, which many think should be protected in natural condition because of its clear sheltered water and lovely forest behind, free of any signs of human activity except some garbage dumping. This beach is enclosed where the two separate parallel ridges making up the Ireland Pen formation suddenly end, plunging into the sea. The bottom of Little Bloody Bay is still free of the nuisance weedy algae across the bas, and large numbers of young corals have settled since Hurricane Gilbert and are growing well. Especially lush are the areas right around the tips of the two headlands, where many young elkhorn corals, *Acropora palmata*, are re-establishing the great elkhorn forests which used to line the shores, protecting beaches and providing a rich home for schools of large fish. These recovering reefs need special protection if they are to spread and reseed the rest of Bloody Bay with healthy coral reef ecosystems. It is therefore recommended that Little Bloody Bay, the surrounding headlands, and the adjacent beach and mangroves of Bloody Bay, down as far as the end of the sewage line and development near the middle of the bay, should be declared a natural protected area, linked to the Ireland Pen forest, managed as an ecological restoration area, a fish nursery, and public bathing beach. All development, which should be limited to the area served by the new sewage line, should be required to enter all their sewage into it, and the existing, inadequately-functioning sewage plant should be shut down. The recovery of the ecosystem in the bay should be monitored in terms of nutrients, corals, seagrasses, sand-producing algae, and weedy algae. The future of this beautiful area, which provides some of the best snorkeling remaining in Negril, depends on whether strong environmental protection measures can be given precedence over the desire to destroy it for commercial gain for a few outside investors. Only this part of Bloody Bay still shows what all of Long Bay used to look like." (Goreau, 1994)

There are no major fish landing spots on Bloody Bay except for one small beach on the North end, within the boundaries of the replenishment area. Discussions about Bloody Bay and Little Bloody Bay were held with fishermen from other areas, however. This included fishermen from Green Island, Orange Bay, Negril, and Little Bay. The zoning plan for the Negril Marine Park was also discussed with fishermen from Lucea, Hope Wharf and Savanna la mar, because many of the fishermen from those areas, especially spearfishermen, are itinerant, and work in the entire western section of Jamaica. Priority was given to fishermen from within the boundaries of the EPA in terms of making decisions about the area, however. Fishermen told the scientific advisor and rangers that all of Bloody Bay is a fish nursery, but the increase in watersports activities and decline in water quality has negatively impacted the fisheries. Fishermen like to fish for baitfish at what is now called The Point Village beach and Hedonism beach. In both cases, there was no beach when the hotel was originally being built, and developers created beaches on the hotel properties by dynamiting, the creation of illegal groins, and bringing in sand from areas such as Little Bloody Bay. There is still a large hole in the sand where sand mining used to take place in Little Bloody Bay up until as late as the 1990's. Before the creation of those beaches, the shoreline consisted of a rocky outcropping with a fringing reef and seagrass. Fishermen will tell you that this and all of Bloody Bay was an excellent fish nursery then, and coral reef scientists documented the presence of healthy coral reefs and seagrass beds. Now when the fishermen try to catch bait fish at Rutland Point, where The Point Village, Hedonism II and Grand Lido is located, the security guards from those hotel properties throw stones at them and chase them away. The North End of Bloody Bay and Little Bloody Bay is a small portion of what was originally part of a unique and pristine area. It is extremely important to preserve a portion of what is left of Bloody Bay in order to preserve the natural beauty of Negril as well as the health and beauty of the coral reefs, fisheries and other marine life, as well as water quality and clarity. This will not only ensure the continuation of the quality of the resource base, but also protect tourism, which is the backbone of the economy.

Scientific assessments in the Bloody Bay area do not recommend that the area be zoned for recreational use or fishing. "Water sport activities that generate a wake, such as fast boats, water skiing, parasailing, or jet skis, should not be allowed in Bloody Bay as they will cause a turbidity problem by resuspending fine grained sediments. The reduced water transparency which would be caused would further reduce its quality as a bathing beach and the health of its corals and seagrass beds." (Goreau, 1992) Therefore, it is proposed that Bloody Bay be declared a no recreational activity, no fishing area, and only swimming and bathing allowed. However, there are already large all-inclusive hotels along the Bay with watersports activities included as part of their package. Therefore, if the Bay cannot be zones as proposed, it is recommended that a swim lane be installed along the shoreline to protect the safety of swimmers, as was done in Long Bay.

North Negril Point to Ireland Point

This includes the area where the North Negril River, or what is locally called "Salt Creek" drains into the sea. The mouth of the North Negril canal contains mangroves and the river itself is a breeding ground for fish and birds. The prevalence of North winds prevents recreational activities from being popular in this area, which is a unique headland bordered by a fringing reef in the sea. Of all recreational activities, some scuba diving is done here, but most operators prefer a more sheltered area or bay. Fishermen state that fishing is good here because of the presence of the river, so it is proposed that the entire area be designated a fishing zone. Again, this is with the realization that spearfishing will not be allowed within the marine park at all when regulations and the zoning plan is accepted and enforced.

Ireland Point to South West Point

This includes Orange Bay and Samuels Bay, so a high degree of input from fishermen in Orange Bay and Green Island was received in zoning this area. Orange Bay has one of the largest fishing beaches in the Marine Park and the fishermen there are very active and involved in anything that has to do with fishing. They have always been very responsive and interested in the development of the Marine Park and attendance at meetings was always good. They stated that Orange Bay, which is lined with mangroves, is a fish nursery, and in fact, they feel that it was a better nursery before the canalization of the Great Morass in 1960. At that time, the Orange River drained into Orange Bay, and the older fishermen said that there was a better stock of fish then. The fishermen there would like to see that canal recreated so that the fish stock will improve.

Cooperation amongst the fishermen in Orange Bay is quite high and they have a method for solving their own conflicts amongst themselves, especially when they meet on a regular basis. For example, before the Marine Park was officially declared, they decided to protect Orange Bay by making it a fish nursery. They have been self-policing the area since 1995, and recently the Bay was marked off by buoys to officially designate the area as a fish sanctuary. Occasionally, fishermen come into the Bay with nets, but the fishermen confront them or seek assistance from the Marine Park rangers in stopping fishing within the Bay.

No formal fishing surveys have been done in the area, but marine park staff recognize the need for a study to be done in order to determine whether the zoning has been as beneficial as possible. It was recognized by scientists at the time of these meetings and discussions that it would be better to extend the no fishing zone out to deep water, but the fishermen only agreed to cooperate in a phased manner. First they would buoy off the Bay and perhaps later extend the no fishing zone to deep water. This seemed an adequate compromise at the time, when there is little or no enforcement capability from the rangers, police, or fisheries. Fishing is allowed here beyond the marked off fish nursery at this time. No recreational activity is allowed in the fishing zones.

Samuels Bay and Half Moon Bay, up to Southwest Point is an area zoned in a similar fashion to Long Bay. Swimming, snorkeling and diving are permitted to the first edge of the reef (60-70 feet), and scuba diving is permitted on the deep edge (70-125 ft) also. No fishing is permitted from the first "edge" (60-70 ft) to the shoreline. Fishing is permitted outside the first edge as long as traps are not dropped directly on the reef and other negative impacts from fishing are absent. Presently, enforcement is needed here, especially in stopping spearfishing. The reef area is easily accessible from land and spearfishers from all over the island frequent this spot. Again, this area was zoned recreational primarily because of traditional use, as there is a dive shop in Orange Bay and hoteliers from Long Bay bring their boats to this area for diving and snorkeling.

Southwest Point

Dr. Goreau first identified this as a coral reef replenishment zone in 1994. The water quality is relatively good, and there is a large number of small, budding corals. Like the North end of Bloody Bay and Little Bloody Bay, this area is a source for reseeding other areas of the Marine Park, once water quality is restored. Ocean currents running north to south will carry coral planula that settle on suitable substrate in Long Bay and other areas that have been negatively impacted. Once the marine park regulations are enforced and the zoning plan is accepted, this area is critically important to the restoration of the marine park. No activities of any kind are permitted here, including fishing and recreational activities.

Southwest Point to Davis Cove

This area contains the Green Island Harbour, Negro Bay, and Davis Cove. Green Island Harbour is the largest of the three bays, and is a major fishing beach within the Negril Marine Park. Two rivers that drain major agricultural lands empty into the Green Island Harbour, so water quality is poor and algae overgrowth is very high. Negro Bay is not as large and mangroves line the shoreline here making it a prime fish nursery area. Davis Cove is the northernmost boundary of the marine park, and although the boundary line for the NMP and EPA is in the center of the Bay, Marine Park staff considers the entire bay as part of the Marine Park in terms of management issues.

Green Island is the largest fishing beach and meetings there included fishermen from Lucea, Davis Cove, Orange Bay and Green Island. The fishermen know that Green Island Harbour is a fish nursery, so they agreed to self police the area and the bay was marked by buoys. As in Little Bay and Homer's Cove, the buoys are placed in approximately 30 feet of water, just outside of the shallow reef. The fish nursery extends from the buoys to the shoreline. Negro Bay and Davis Cove should also be marked off by buoys when funding permits, however, there may be some further discussion of extending the no fishing zone further out to sea. This decision will require further stakeholder input and scientific guidance.

Oysters have been farmed in Green Island for many years and attempts have been made to cultivate *Euchuema cottonii* (Irish moss) there, with little success. Gracilaria grows there naturally in great abundance due to the high levels of nutrients fertilizing this and other marine plants. Negro Bay and Davis Cove are not as eutrophic as Green Island, and no watersports activities presently take place in those areas, although all inclusive large dive boats from Negril are seen diving in the Green Island area from time to time. It is recommended that no recreational activities be allowed from the Southwest Point to Davis Cove. No fishing is allowed in Green Island Harbour Negro Bay and Davis Cove, and the rest of the area is a fishing zone. This is with the understanding that there may be more no fishing areas in the future seaward of Negro Bay and Davis Cove.

Communities and Groups Involved in Zoning the Negril Marine Park

Over 100 meetings were held throughout the EPA as part of the development of NEPT and creation of the NMP and EPA. Meetings were held in Salmon Point, Little Bay, Orange Hill, Spring Garden, Sheffield, Negril West End, Negril Beach, Orange Bay, Green Island, Rock Spring, Marchtown/CaveValley. Special meetings with fishermen were held in Hope Wharf, Savannah la mar, Salmon Point, Little Bay, Negril, Orange Bay, Green Island, Lucea. When the draft plan was first done in color, it was inserted into the NCRPS newsletter and circulated to approximately 4,000 people and businesses for comment. It was also specifically mailed to government agencies such as the Port Authority, Towne Planning, NRCA, Fisheries, Ministry of Environment, Prime Minister's office, and others. It was presented to local organizations such as the Negril Chamber of Commerce, JHTA, and West End Association. Presentations were made at local fishermen workshops held on World Environment Day in 1998 and 1999.

In addition, stakeholder involvement has been harnessed by the NCRPS since 1991 when it began staging annual reef protection workshops at Swept Away Resort. Fishermen, farmers government representatives, community residents, representatives from other environmental non governmental organizations on the island attended and participated. All of these workshops and meetings, as well as informal discussions with fishermen, watersports operators, hoteliers, and community members were important input into the zoning plan for the NMP.

Summary

Community participation, especially that from the fishing community, as well as scientific input was very strong in the development of the Negril Marine Park. Complete coral reef and fishery studies were not done in each area or proposed zone of the Park due to financial constraints, but this will still be done when funding permits. It is obvious that most of the area was zoned on the basis of traditional use without the displacement of recreational and tourist activities. Truly, those were the least inconvenienced. Fishing was restricted, and although enforcement of the zoning has not been fully effective in the case of fishing, it has not been effective in the case of tourism and other recreational

activities in general. More serious and effective enforcement methods are needed. Because of the respect of traditional use and the known effect that restriction would have on tourism, not many sacrifices have been made. Perhaps too many leniencies have been allowed as the resource has suffered greatly and now we are at risk of losing the pristine quality that tourism is based upon and fishing depends. Now, more than ever, it is important to preserve a certain percentage of what is left within the boundaries of the Marine Park in its natural state, including mangroves, wetlands, seagrass beds and other nursery grounds for marine life as well as important habitats for flora and fauna.

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