

The Importance of Responsible Management of Natural Resources and Endemic Species to Promote Economic Growth and Preserve Cultural Identity through Enhanced Ecotourism on Montserrat.

Author's bio-data

Shawn Daniel is the current Project Scientist for Coral Cay Conservation (CCC), a UK based not for profit wildlife conservation NGO who has had a project based on Montserrat since June 2013 and work in partnership with the Royal Society for the Protection of Birds (RSPB) as well as the Montserrat Ministry of Agriculture, Housing, Land and Environment (MAHLE). CCC's Montserrat Ridge to Reef Conservation Project (MRRCP) aims to enhance economic development through improved natural resource management in Montserrat.

Shawn graduated with a First Class Honours Bachelor's Degree in Zoology from the University of Birmingham in the UK, and has worked on several overseas projects run by conservation NGOs. Aside from Montserrat, he has done fieldwork in the UK, East Africa, South East Asia and the USA. He is a certified PADI Divemaster and trained Reefcheck Eco Diver Trainer. He has extensive experience of surveying both marine and terrestrial biodiversity, as well as training volunteers in various survey methodologies.

As Project Scientist for CCC's Montserrat Project, he oversees the entire conservation programme including scientific training, surveying, community education and outreach, and liaises with project partners. He has been working on Montserrat since November 2013, and during this time has come to deeply appreciate the beauty of the island, its culture and the importance of its biodiversity, which he hopes to see preserved for future generations to appreciate as well.

Address and contact information:

Shawn Daniel, Project Scientist
Coral Cay Conservation Montserrat
The Taj Mahal, Old Towne
Montserrat, West Indies
Email: Montserrat@coralcay.org
Telephone: +1664 496 9653

Abstract

Montserrat, a little gem of an island in the Caribbean, is home to a number of plant and animal species found nowhere else on the planet, several of which are critically endangered. Since 1989, several natural disasters have drastically impacted the island and as a result Montserrat has experienced a severe decline in tourism based income, not to mention a reduction in habitat and numbers of many of its endemic species. In recent months, the last remaining wetland on Montserrat has also been destroyed which has led to further reductions in important wildlife habitat on the island.

Much of the biodiversity and natural resources found on Montserrat are strongly connected to and associated with Montserratian culture, such as the critically endangered Montserrat Oriole (*Icterus oberi*), which is found almost exclusively in the Centre Hills – itself the most important wildlife habitat on the island. If preserved carefully and utilised well, Montserrat's natural resources hold the potential to draw considerable tourism and, in turn, contribute to economic growth.

Careful and intelligent management of natural resources is a cornerstone for successful ecotourism. Although the level of endemic biodiversity on Montserrat is still quite high, recent catastrophic natural events have placed increased pressure on remaining pockets of suitable habitat such as the Centre Hills. It is critical that these areas, and their associated biodiversity, are preserved and managed correctly so that their full potential for ecotourism can be realised and an important part of the island's culture and identity is not lost.

Introduction

Montserrat, part of the Leeward Isles in the Lesser Antilles, is a small island with an area of approximately 102 km² located at 16° 45' 0" N, 062° 12' 0" W. The island, like most in the region, is volcanic in nature which is evident when studying its topography which shows three distinct volcanic ranges: the Silver Hills in the north, the Centre Hills, and the Soufrière and South Soufrière Hills at the southern end of the island. This third range is not only the youngest, but also the only active volcano range on the island.¹

Like the entire Caribbean region, Montserrat has had its share of natural disasters, and these have profoundly shaped the country's economic and social development especially in recent years. In 1989, Hurricane Hugo tore through Montserrat and devastated much of the island, causing widespread tree falls and near total defoliation not to mention significant damage to livelihoods, livestock, buildings and wildlife.²

Although Hugo was the last truly devastating hurricane to hit Montserrat, the Soufrière Hills volcano became active in July 1995. Since then there have been repeated eruption events that have had a substantial and prolonged impact on the country's economy, population and biodiversity. More than sixty percent of the country's forest ecosystem has been lost due to ash falls, lahars (mud flows) and pyroclastic flows as a result of volcanic activity. Numerous settlements in the south of the island, including the former capital Plymouth and forests in the South Soufrière Hills, have been destroyed and rendered uninhabitable for the remaining island community.^{3,4}

The country's economy used to rely heavily on revenue generated by tourism and agriculture, drawing an estimated 30,000 visitors each year which contributed twenty five percent to the country's Gross Domestic Product (GDP).⁵ By the end of the 1980s Plymouth was a thriving capital city, and Montserrat had garnered an international reputation as a paradise getaway for tourists. Associated Independent Recording (AIR) Studios, established in the 1970s by Sir George Martin, was an important recording studio for numerous popular artists and bands including (among others) Elton John, The Rolling Stones and Pink Floyd. The AIR studios building was destroyed by Hurricane Hugo and has never reopened.

Prior to the onset of the volcanic eruptions, the island's population was approximately 12,000. Following the evacuation of the southern two thirds of the island once eruptions began, this was reduced to 3,500 when many local citizens emigrated from Montserrat to places such as the United Kingdom, United States of America, and other Eastern Caribbean states.⁶ According to the Government of Montserrat's website, as of the most recent census in 2011, the country's population was just 4,922 individuals.⁷ The severity of the impact that these recent disastrous natural events have had on the island is not something which can be understated. Much of the initial damage to the country's tourism, agriculture, wildlife and of course, economy, has had long lasting effects that are still being felt today.

Tourism, development, and the environment

The words 'tourist' and 'tourism' often elicit varied interpretations depending on the context and purpose for which they are used. The United Nations World Tourism Organisation (UNWTO) has defined 'tourism' as being "The activities of persons travelling

to and staying in places outside their natural environment for not more than one consecutive year for leisure, business and other purposes".⁸ It is widely accepted that tourism has the potential to contribute significantly to a country's economy, and there are numerous examples of this being an important, sometimes vital, source of revenue. In 2013 international tourist receipts globally totalled US\$ 1.159 trillion, with US\$ 139.6 billion coming from tourist receipts from the USA alone.⁹

The relationship between tourism and development in developing countries, however, is a topic which is altogether more complex. Although tourism might bring in numerous benefits to the host country such as increased income and employment, it can very often lead to drawbacks such as increased pollution, destruction of the environment, and overexploitation of natural resources. What is clear is that the economic benefits of a thriving tourist industry may be outweighed by associated cons in other areas which are often not as apparent.¹⁰ For example, does constructing an expensive international airport on a small remote island to make it more accessible to tourists justify the allocation of funds to this project instead of another, such as construction of a new school or hospital? Or is the clearing of a large swathe of forest to build a wider road which would allow quicker journeys justifiable at the price of displacing and killing native fauna and flora which may be vitally important to the ecosystem? Questions such as those above must be addressed because tourism and the associated development it brings have a range of socioeconomic and environmental impacts that are very often difficult to predict. Assessment of potential issues concerning the type and level of tourism is essential if a host country is to avoid tourism in an area becoming problematic and undesirable.

In the early 1980s, environmental issues surrounding tourism came to prominence and numerous publications advocated the importance of 'green' issues and the concept of sustainable development. This was followed by a United Nations conference in the early 1990s which led to a Sustainable Development Commission being established whose job it was to monitor nations' progress towards sustainability. These initiatives and others like them resulted in the tourist industry focussing greater efforts on the concept of sustainable tourism.¹¹

Defining sustainable tourism is difficult, but it can be said to focus on green issues as well as resource management in such a way that "we can fulfil economic, social, and aesthetic needs, while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems".¹² Sustainable tourism nowadays also seems to include many forms of green tourism, including ecotourism.¹³

For the majority of the population, the word ecotourism brings to mind images of untouched, pristine landscapes off the beaten track, unspoiled by the invasive nature of civilisation and development. The International Ecotourism Society defines this as being "responsible travel to natural areas that conserves the environment and improves the welfare of local people".¹⁴ Consequently, successful ecotourism involves minimising impact on natural destinations while providing financial benefits which aid local communities and conservation of the natural world.¹⁵

Even though green issues and environmentally minded strategies have received much publicity and support from tourist organisations and governments in recent years, their successful implementation still faces difficulties. One of the most common problems is

that companies or governments may often market sustainable tourism or ecotourism, while exaggerating the 'green' nature of these products. Not only does this fail to achieve the imperative aims of sustainable and environmentally responsible tourism, but it can foster suspicion and scepticism among consumers in the future.¹⁶

Biogeography and endemism

Biogeography, the study of ecology, geography and history of life in a particular area, is a field which can help answer many imperative questions as to why an organism lives in a particular region, and how it came to be there in the first place.¹⁷ The evolution and ecology of an organism can provide insight into the environmental factors which might constrain its life, whereas the history and geography of the area where it lives can tell us about the spatial and chonal limitations that are present.

The theory of island biogeography (also known as insular biogeography) was first put forward in the 1960s by Robert Macarthur and Edward Wilson.¹⁸ Broadly speaking, the authors aimed to predict the species richness (number of different species) that might form on a newly created 'island' – either a conventional island cut off from a mainland by a body of water, or a non traditional island where an ecosystem might be considered to be isolated due to being surrounded by another, incompatible, habitat. This theory aimed to explain how and why isolated populations of species might be subject to different selection pressures and ergo follow different evolutionary paths.¹⁹

The Caribbean Islands are considered to be one of twenty five global 'hotspots' of biodiversity identified by the British environmentalist Norman Myers.²⁰ Due to the isolated nature of these islands and the broad range of biological and geographical profiles found on the numerous islands themselves, it is estimated that the region is home to approximately two percent of the entire planet's biodiversity; a staggering figure given their relatively small surface area of approximately 280,000 km².²¹

Isolated ecosystems, such as islands, often give rise to large numbers of 'endemic' species. This term is used to describe a species native to a particular country or area.²² The same fundamental principles of biogeography outlined above, particularly applied to islands, can help to explain the high proportion of endemism seen on islands such as the Galapagos, Madagascar, and of course, the Caribbean Islands.²³

Endemic and important biodiversity of Montserrat

Despite its relatively small area, Montserrat has a very high level of endemic fauna and flora, like many of the other islands in the Lesser Antilles. Terrestrial biodiversity on the island is particularly well studied, and the island boasts a number of globally threatened species. Three species of plant found on the island are endemic to Montserrat only (Montserrat Orchid (*Epidendrum montserratense*), Pribby (*Rondeletia buxifolia*), and *Xylosma serratum*), while a further seventy species are restricted to the Lesser Antilles. In addition to this, one bird species, one mammal sub – species, two reptile species and four reptile sub – species, are endemic to Montserrat.²⁴

The majority of the island's natural vegetation is tropical forest with five forest types present: dry forest, coastal littoral forest, mesic forest, wet forest and elfin woodland. The type of vegetation present at different parts of the island is determined mainly by the amount of rainfall.²⁵ Elfin woodland occupies a very small area and is found only in the highest points of the Centre Hills. There used to be areas of saline lagoons and mangroves in Fox's Bay in the south west of the island but these have since been destroyed by volcanic ash flows during the volcanic eruptions.²⁶ There is now virtually no remaining wetland on the island, with the last substantial area of mangrove wetland in the north of the island having been destroyed. Areas such as these were formerly important habitats for numerous water birds and wetland birds.

As per criteria defined by the International Union for the Conservation of Nature (IUCN), Montserrat is home to three critically endangered and three vulnerable terrestrial animal species and sub – species, as well as two critically endangered, two endangered, two vulnerable, and one suspected extinct terrestrial plant species.²⁷ A list of globally threatened terrestrial species found on Montserrat is provided in Table 1. Although perhaps not as well



Plate 1: View from the Elfin Woodland at the top of the Centre Hills.

studied, there is also a wide array of spectacular marine life in the waters around Montserrat. The island has approximately 40 km of coastline with numerous reefs easily accessible from the shore. The main coral reefs are patch reefs, with numerous reefs extending off the western and north western shores of the island. There are a number of colonies of Pillar Coral (*Dendrogyrus cylindrus*) and Elliptical Star Coral (*Dichocoenia stokesii*) – two vulnerable species, and several endangered Star Corals (*Montastraea spp.*) found on the island's reefs.^{28, 29} Less commonly seen but also present are Staghorn Coral (*Acropora*

cervicornis) and Elkhorn Coral (*Acropora palmata*) – both critically endangered, and found more around the north western reefs on the island.³⁰

Table 1: Globally Threatened terrestrial animals and plants endemic to Montserrat and/or the Lesser Antilles.^{31,32,33}

	Common Name	Scientific Name	Endemic to Montserrat/Region	IUCN Status
Birds	Montserrat Oriole	<i>Icterus oberi</i>	Montserrat	Critically Endangered
	Forest Thrush	<i>Turdus lherminieri</i>	Region	Vulnerable
Reptiles	Montserrat Galliwasp	<i>Diploglossus montisserrati</i>	Montserrat	Critically Endangered
Amphibians	Mountain Chicken	<i>Leptodactylus fallax</i>	Region	Critically Endangered
Mammals	Yellow – Shouldered Bat	<i>Sturnira thomasi vulcanensis</i>	Montserrat	Vulnerable
	White – Lined Bat	<i>Chiroderma improvisum</i>	Region	Vulnerable
Plants	Montserrat Orchid	<i>Epidendrum montserratense</i>	Montserrat	Critically Endangered
	Pribby	<i>Rondeletia buxifolia</i>	Montserrat	Critically Endangered
	N/A	<i>Xylosma serratum</i>	Montserrat	Suspected Extinct
	Red Cedar	<i>Cedrela odorata</i>	Region	Vulnerable
	Lignum Vitae	<i>Guaiacum officinale</i>	Region	Endangered
	Brazilian Mahogany	<i>Swietenia macrophylla</i>	Region	Vulnerable
	West Indian Mahogany	<i>Swietenia mahagoni</i>	Region	Endangered

With several sandy beaches along its coast as well as seagrass beds, mainly comprised of Midrib Seagrass (*Halophila baillonis*), just off its shores, Montserrat is also an important nesting ground and feeding habitat for sea turtles. Four species have been recorded on the island, including the vulnerable Leatherback Turtle (*Dermochelys coriacea*), the endangered Green Sea Turtle (*Chelonia mydas*) and Loggerhead Turtle (*Caretta caretta*), and the critically endangered Hawksbill Turtle (*Eretmochelys imbricata*).³⁴

In recent years a thorough assessment of the Centre Hills biodiversity found 1,241 species of invertebrates are present in the island's forests, of which approximately 120 are estimated to be endemic to Montserrat alone and only a few being found outside the Centre Hills.³⁵ Both of these figures are thought to be severe underestimates of the true numbers present on the island.³⁶

Threats to Montserrat's biodiversity and natural resources

Due to the recent and ongoing volcanic activity, more than sixty percent of the island's forest has been destroyed. This has led to significantly higher importance and pressure being placed on the remaining forested areas on the island.

The Centre Hills is without doubt the single most important remaining forested area on the island, with an area of approximately 1,400 ha.³⁷ Although the area receives statutory protection through legislation as a Forest Reserve, much of the Centre Hills forest actually lies outside this reserve boundary and receives no formal protection.³⁸ It is the last remaining stronghold for Montserrat's national bird, the critically endangered Montserrat Oriole (*Icterus oberi*). Most of this bird's population was destroyed when the volcanic eruption wiped out the forests in the South Soufrière Hills. Although a small number of orioles remain in the Soufrière Hills, the Centre Hills is home to the majority of the remaining population.

Though forest clearance for development and agriculture has not been a problem in recent years, this has been the case previously, resulting in habitat fragmentation near the edges of the forest. It is important to note that small – scale clearance of vegetation on the forest edges for housing and agriculture appears to be increasing.³⁹ In recent years, the forest around several bird census locations used by the UK Royal Society for the Protection of Birds (RSPB) and Montserrat government's Department of Environment has been completely cleared.^{40,41}

Recent studies have found that numbers of the Oriole may vary year on year depending on levels of rainfall and ash fall (given that the volcanic activity on the island is expected to continue for at least another twenty years).⁴² These birds have been found to produce more offspring in years with abundant pre – breeding season rainfall, and conversely have less breeding success in years with ash fall events. This is due to the increased invertebrate food source being available for the birds when there is more rain, and less food being available following ash fall. This can lead to knock – on effects on the rest of the food chain as well.

The Mountain Chicken (*Leptodactylus fallax*) is also critically endangered and found only on Montserrat and the neighbouring island of Dominica. On Montserrat, it is restricted to only a small section of the Centre Hills. Populations of this large frog have been hugely

impacted in recent years by overexploitation due to being hunted for food, and more recently, with the arrival of the *Batrachochytrium dendrobatidis* fungus on Montserrat in 2009. This fungal pathogen causes the disease Chytridiomycosis which can result in severe declines and even extinctions of amphibians.⁴³ The spread of this disease on Montserrat is facilitated by carrier species such as the Marine Toad (*Rhinella marina*) and Lesser Antillean Tree – Frog (*Eleutherodactylus johnstonei*) which are themselves unaffected by the fungus.

The critically endangered Montserrat Galliwasp (*Diploglossus montisserrati*), is an elusive lizard which has only been observed a handful of times, all of which have been in the same small area in the western fringes of the Centre Hills. It is thought that the entire range of this species may be as small as a few hectares.⁴⁴



Plate 2: A Mountain Chicken (*Leptodactylus fallax*) on Montserrat

One of the biggest threats to biodiversity on Montserrat is the presence of a high number of invasive animal and plant species. Invasive species are non – indigenous species which are introduced to an ecosystem outside their natural range and subsequently become problematic. Some of the worst invasive species in the Centre Hills are rats (*Rattus norvegicus* and *Rattus rattus*) which are a predatory threat to the Montserrat Oriole, Montserrat Galliwasp and Mountain Chicken. Feral livestock such as goats and pigs are also widespread across the island, and can cause extensive habitat destruction and degradation. Pigs can also be particularly problematic as they raid sea turtle nests for eggs, disrupt nests of Mountain Chickens, and destroy large patches of Heliconia (*Heliconia caribaea*), the national plant and favoured nesting plant for the Montserrat Oriole.⁴⁵

There are also numerous invasive plant species on the island which are capable of outcompeting and displacing native flora. The invasive Philippines Ground Orchid (*Spathoglottis plicata*) has been recorded in the already limited elfin woodland on Montserrat, and other invasives such as Guava (*Psidium guajava*) overlap significantly with the habitat for the endemic and critically endangered Pribby (*Rondeletia buxifolia*).⁴⁶

There are numerous threats to the island's marine life as well. The Lionfish (*Pterois spp.*) is an invasive fish of Indo – Pacific origin which was recorded in the Caribbean as early as 1985, and first sighted in Montserratian waters in 2011.^{47,48} Due to having a varied diet, Lionfish prey on more than seventy species which include numerous commercially and ecologically important native species such as snappers, parrotfish, cleaner shrimp and groupers. There are very few natural predators of Lionfish, which is one of the reasons why it is such a successful and problematic invasive species.

The last seventeen years of volcanic activity have had a considerable impact on the marine ecosystem of the island. Sedimentation levels are quite high in certain reefs around the island due to runoff from the volcanic activity, which buries coral offshore and sea turtle nests on the beaches. Coral reefs are also frequently stressed by sedimentation from erosion. Current construction work for the new town centre and port in the north of the island has led to significant runoff into the sea especially during stormy weather.⁴⁹ There are a number of diseases which afflict corals in the area (such as White Band Disease and Black Band Disease), placing further pressure on the reefs. Although fishing pressure on the island is comparatively low, certain fishing practices on the island can be harmful to the reef. Fish pots (wooden fishing frames) are often used by local fishermen. Occasionally these may be dropped directly on reefs, causing physical damage to coral. During rough weather, these may sometimes become detached from their marker buoys and/or become displaced from their original location, meaning that they continue to fish indiscriminately despite the trap no longer being checked and emptied. This is known as 'ghost fishing'.

Unfortunately, there are additional anthropogenic threats to the island's natural resources and biodiversity. Though not a major problem recently, there are still parts of the Centre Hills forest which have been cleared recently in favour of farming and agricultural activities. Mostly this has been restricted to edges of the forest which are outside the boundary of the forest reserve, but are still important habitats for the critically endangered Pribby and Montserrat Orchid. Destruction and fragmentation of such crucial habitat can be very dangerous, especially when there are already added stresses on the forest in the form of invasive species and potential volcanic ash fall.

Ecotourism and Montserrat's natural resources

With a wealth of natural beauty including scenic hills, teeming coral reefs, and colourful and charismatic birds, there is considerable scope for ecotourism activities on Montserrat. The Centre Hills is already very popular with visitors as there are a number of stunning hikes on offer which range in length and difficulty. Bird watchers and enthusiasts are particularly lucky in that several of these trails offer them the chance to see, among other species, the Montserrat Oriole which cannot be seen in the wild anywhere else in the world.

The Montserrat National Trust is the main conservation organisation on the island and boasts a botanical garden which includes exhibits of plants and herbs used as traditional medicines, as well as samples of the endemic Pribby and an orchid house including specimens of the Montserrat Orchid. It also hosts numerous exhibitions each year to showcase Montserrat's history, culture, flora and fauna. For example, a recent exhibition on the Mountain Chicken was held there in the summer of 2014, offering people a chance to learn more about this fascinating yet critically endangered frog.

Montserrat's black sand beaches are another very popular spot for tourists, with numerous quiet and picturesque beaches accessible on primarily the western but also the eastern shores. Woodlands Beach was recently placed on the list of one of the Caribbean's unrivalled beaches.⁵⁰ Rendezvous Beach, Montserrat's only white sand beach, is located on the north – western side of the island. With no road access to this beach it can only be reached via a scenic nature trail or by boat.

Aside from the beauty of these beaches, there are numerous opportunities and options to explore the waters just off shore by either snorkelling or scuba diving. One excellent example of an ecotourism attraction is an artificial reef constructed off shore at Woodlands Beach. The Montserrat Reef Project (MRP) was set up in 2010 and, with help from the Reef Ball Foundation, constructed and deployed more than 240 artificial reef structures known as 'reef balls' to form a new, man – made reef structure.⁵¹ The MRP transplanted numerous corals from the proposed new port development area to the artificial reef, including numerous globally threatened species of coral. The project continues its work to help mitigate further damage to Montserrat's marine ecosystem, and offers visitors guided snorkelling or scuba diving tours of the reef balls, as well as opportunities to assist with the project.⁵²

Cultural and economic importance of conservation on Montserrat

In addition to providing a habitat for so many animal and plant species, many of which are globally threatened, the Centre Hills provides a number of vital ecosystem services for the island. These include being the most important water catchment on Montserrat, acting as a buffer to provide protection from extreme weather events, as well as preventing soil erosion and flooding. These advantages are not restricted to the forest alone as prevention of flooding, erosion and sediment runoff has knock – on benefits to beaches and marine ecosystems. The Silver Hills is unfortunately a prime example of how serious a problem forest clearance can be. The early twentieth century saw large scale land clearance for agriculture, leading to flooding, soil erosion, and loss of topsoil due to poor water catchment.⁵³ The forest was left to regenerate, with the help of reforestation efforts, but is still dominated today by degraded, scrubby vegetation and is home to fewer forest birds, reptiles and amphibians than the Centre Hills.⁵⁴

As the largest remaining forested area on the island, the Centre Hills is a vital carbon sink for Montserrat. A recent study in 2007 estimated that the annual economic value of the benefits provided to Montserrat and its people by the Centre Hills was, on average, US\$ 1.4 million (values ranging between US\$ 0.9 million and US\$ 2 million).⁵⁵ Tourism alone comprises thirty two percent of this figure, followed by water resources which account for thirty percent.

However, these numbers do not take into account the economic benefits provided by the country's marine resources. Scuba diving and snorkelling are popular tourist activities which provide revenue for several small businesses on the island. Although Montserrat does not export any fish, approximately sixty full time fishermen make their living from fishing locally.⁵⁶ Furthermore, many of the ecosystem services provided by coral reefs such as shoreline protection, carbon sequestration, and fisheries services are nearly impossible to value in monetary terms.

Since the Soufrière Hills volcano became active, Montserrat's biodiversity has been under severe pressure. Flagship species such as the national bird, the Montserrat Oriole, have faced huge environmental stress and yet persevered, even if their future is far from secure. The relationship between the Oriole and the national plant, Heliconia, is quite poetic. Orioles tear strips off older Heliconia leaves and weave these into nests which are constructed underneath younger leaves. In addition to this, the Heliconia flowers are a good source of food for the birds, as their cup – like structure allows them to capture rainfall and insects. In this way, Heliconia plants are vital to the bird's life cycle which is why conservation of the Centre Hills' vegetation and forest is very important. Invasive animals and land clearance for agriculture are serious threats to much of the forest, including Heliconia. The Oriole and Heliconia are intrinsically linked, iconic images of Montserrat and its people, with the Montserrat National Trust's logo even sporting a regal male Oriole in its distinctive black and yellow plumage. In many ways, the Oriole itself is a symbol of the entire nation – still prevailing and flourishing despite tremendous adversity over the last seventeen years.



Plate 3: A female Montserrat Oriole (*Icterus oberi*)

Though several important terrestrial and marine habitats have already been lost (including forest in the Soufrière Hills, mangrove wetlands in the north and south of the island) or are earmarked for destruction (such as some of the coral reefs situated in the north of the island), Montserrat has the opportunity to ensure that future issues such as these can be either avoided completely or sufficiently mitigated. While it is no doubt necessary to rebuild the island's infrastructure given the events of the last two decades, it is truly vital that the country does not lose sight of the importance of preserving its remaining natural resources. Conducting thorough environmental impact assessments and implementing the resulting recommendations prior to commencing construction and development will go a long way towards safeguarding the island's ecosystems and natural resources. A positive step in this regard is current government plans to introduce new legislation to strengthen existing protection for the Centre Hills. The Conservation and Environmental Management Bill 2013 will, if approved by parliament, allow the Centre Hills to be designated as a National Park.

There are a number of conservation efforts already underway on island. The Mountain Chicken Project, set up in Montserrat in 2010, is a joint initiative by the Montserratian Department of Environment, Durrell Wildlife Conservation Trust and numerous other partners focusing on the conservation of this species and the impact of the afflicting Chytridiomycosis fungal disease. There has also been an ongoing project to control feral livestock on the island since 2009.⁵⁷ In addition, the Organisation of Eastern Caribbean States (OECS) recently appointed an Ocean Governance Unit to conduct a hydrographic scoping study to improve ocean governance for its member states. One of the ways the OECS plans to achieve better ocean governance and marine resource use is by assessing existing maritime spatial data and improving this through comprehensive surveying.⁵⁸ The collection of such data would be hugely beneficial to the Montserratian community, particularly its fisheries.

In 2013, Coral Cay Conservation (CCC, an international non – governmental organisation) set up a project on the island in partnership with the Department of Environment and the RSPB to help monitor birds, reptiles, amphibians and invasive plants, and carry out surveys of marine life. CCC also conducts outreach work with the local community to raise awareness of the importance of wider conservation issues as well as those specific Montserrat. The majority of their community work focuses on children, with regular sessions being taught at the public library as well as the local schools. CCC also offers young Montserratians the chance to volunteer for free with the organisation as part of a 'Local Scholars Programme' to build capacity and further raise awareness about the importance of conservation. The Organisation of Eastern Caribbean States (OECS) also recently appointed an Ocean Governance Unit to conduct a hydrographic scoping study to improve ocean governance for its member states. One of the ways the OECS plans to achieve better ocean governance and marine resource use is by assessing existing maritime spatial data and improving this through comprehensive surveying.⁵⁹ The collection of such data would be hugely beneficial to the Montserratian community, particularly its fisheries.

All of these initiatives are promising and provide significant hope that the country's wildlife, natural resources and culture can be managed sustainably and preserved for future generations, while ensuring that the redevelopment of the nation's infrastructure is not sacrificed. However, the most encouraging sign is that the island's residents themselves

seem to understand and support much of the conservation work being done. It is particularly essential that younger generations of Montserratians are educated about and encouraged to get more involved in conservation and environmental issues.

Montserrat's natural beauty, both on land and in the water is one of the island's most defining features, and a key reason for its popularity as a tourist getaway before Hurricane Hugo and the volcanic eruptions. The island is often advertised as "the way the Caribbean used to be", a trait which is becoming more unique as increased development of neighbouring islands continues. There is a danger of this image becoming obsolete if further developments for tourism do not take into account sustainability and environmental impacts. Fortunately, there is still plenty of time for the country as a whole to recognise and address these important issues. Doing so will help to ensure that development does not come at the cost of something irreplaceable – natural resources, environmental stability, and cultural identity.

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