

# COCKSCOMB BASIN WILDLIFE SANCTUARY

## PUBLIC USE PLAN



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## EXECUTIVE SUMMARY

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Cockscomb Basin Wildlife Sanctuary (CBWS) is a cornerstone of Belize’s present National Protected Areas System, encompassing 122,260 acres (49,477 ha) of the east-facing slopes of the Maya Mountains Massif – a landscape of ridge crests, rolling hills and river flood plains, cloaked primarily in tropical broadleaf evergreen forest. CBWS was established following research work in the area in the 1980’s, which highlighted its value for jaguars (Rabinowitz, 1983). The area has continued to be a focal point for research into this species to this day. As the foremost of Belize’s terrestrial national protected areas, it is one of six highest priority protected areas in the National Protected Areas System, based on environmental values, biodiversity status, socio-economic values, and key climate change resilience factors (Walker et al., 2012). It is also a valuable asset for tourism stakeholders in the area, as well as important for the local and national economy. Day to day management of the area is the responsibility of the Belize Audubon Society (BAS) through a co-management agreement with the Forest Department.

The Cockscomb Range, a well-known national landmark within Belize, lies within the contiguous Victoria Peak Natural Monument (VPNM). This series of peaks forms the northern-most wall of the Cockscomb Basins, and dominates the landscape. The highest point is Victoria Peak, at 3,675 feet (1,120m), flanked on both sides by lower peaks – Mount Allan and Mount Escott to the west, and Mount Holland, Jerningham Peak and The Molar to the east. The 4,847 acres of the Natural Monument are also managed by BAS as part of a single management unit with the Cockscomb Basin Wildlife Sanctuary.

Cockscomb is well positioned to offer visitors a tropical forest “jungle” experience, with opportunities for seeing abundant, diverse wildlife, accessible scenic vistas of unbroken forest canopy, well maintained trails rich in palms and scattered trees of giant proportions, lianas, epiphytes, buttress roots and the fleeting glimpses of a broad assortment of birds, jungle streams and inviting crystal clear waterfalls – all the natural components for breath-taking jungle experiences. Jungle streams and waterfalls figure highly in visitor expectations, often providing a focus for walks through the forest - this appeal of water features has been recognized in the planning and routing of the present trail system around the HQ, which offers

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### COCKSCOMB BASIN WILDLIFE SANCTUARY VICTORIA PEAK NATURAL MONUMENT

#### SUMMARY OF KEY CHARACTERISTICS

- Large tract of undisturbed forest
- Watershed protection and water security
- Ecosystem representation
- Protection of riparian vegetation

#### SUMMARY OF RESILIENCE FEATURES

- Large, intact forest cover and
- Protective ridges on all sides – particularly the east (seaward)-facing side, provide a level of protection from increased storm intensity,
- Maintenance of water catchment functions
- Altitudinal connectivity for forest ecosystems

*National Protected Areas System  
Rationalization Report (Walker et al., 2012)*

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stream crossings, river views and views of scenic waterfalls. These features figure less prominently on the longer trails to Outlier and Victoria Peak – trails focused more on the stunning vistas and wilderness values of the Cockscomb Basins.

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### Potential Economic Benefits

Protected areas:

- Provide employment
- Can initiate regional development
- Support regional marketing

### Potential Social Benefits

Protected areas provide a basis for:

- Recreation
- Health and well-being
- Environmental education
- Cultural and spiritual values
- Pride in community or even identity on regional level.

Tourism is a key, logical financial sustainability mechanisms for Belize Audubon Society, towards meeting the costs for management of Cockscomb Basin Wildlife Sanctuary, and is also important in the economic benefits it can provide for the local communities that lie in the CBWS landscape. It provides employment for local guides, customers for local businesses, and has played an important part in the development of Maya Centre. Whilst it has less of an impact on the other CBWS stakeholder communities, it still opens opportunities for them to be engaged in the tourism industry, and increases their awareness of tourism linked to conservation as a potential income generating activity within their communities.

The social benefits of CBWS as a recreational resource for local communities are not, however, reaching their potential, with the exception of environmental education activities. While communities are seeing the benefits from tourism, they also see CBWS as being established and managed largely for international visitors, and local visitation is very low.

This report was developed following a series of workshops and meetings with the CBWS staff, tourism stakeholders of CBWS / VPNM and community leaders of key CBWS communities. It has also been guided by Belize Audubon Society, as the site-management agency, and has taken into consideration traditional capacity building for community tour guides, as well as the emerging issues such as cruise-associated tourism. The first section discusses the planning process, the stages of assessment leading to the recommendations, and the national frameworks and local context and under which the plan is being developed. It also presents the vision for the Wildlife Sanctuary, and defines the goals and objectives for tourism in the area.

Section Two discusses the past and proposed zoning for tourism within the protected area, simplifying the original zones and allowing for the development of a separate cruise-visitor site. The types of visitors using the protected area, their reasons for visiting and their expectations are then analysed in Section Three, and visitor experience is assessed in Section Four.

Limits of Acceptable Change planning is developed in Section Five, with an assessment of recreational conditions, resource conditions and concerns and Limits of Acceptable Change criteria for Zones 2 and 3.

Recommended activities and indicators are presented in Section Seven, in an Implementation Framework that also provides a basis for monitoring and evaluation.

### Key Recommendations

A number of key recommendations have been identified during the planning process to improve visitor management and are being integrated into the CBWS / VPNM Management Plan (2019 – 2023)

1. Realignment of Visitor Management Zones to better reflect current use
2. Investigating the potential for a co-management agreement with Forest Department for a portion of Mango Creek Forest Reserve 1 to secure the protection of two key, well established tourism sites (Tiger Fern and Ben's Bluff scenic overlooks)
3. Improve visitor monitoring and fee collection through the establishment of a manned gate at the White House
4. Ensure the predicted increase in cruise-visitor tourism is carefully managed to avoid conflict with the values of Cockscomb Basin Wildlife Sanctuary whilst still providing improved financial sustainability for the area, in recognition that cruise-visitor tourism has the potential to significantly impact the very values for which Cockscomb has been established.
5. Explore options for establishing cruise-visitor dedicated trails and activities outside of the current scope of tourism activities, adjacent to the White House.
6. Invest in engagement of tour guides as stewards of CBWS, through capacity building, improved communication and greater involvement in tourism management decisions.
7. Engage and strengthen partnerships with the larger hotels and resorts in the landscape that use CBWS as a destination site
8. Address safety concerns, with requirement for a guide for all activities beyond Zone 2 – including Victoria Peak, Outlier and mountain biking to 12km.
9. Conduct an annual health and safety review of all trails and activities in the protected area to identify and address any issues, with input from key tour guides.

## INTRODUCTION

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### WHY A VISITOR USE PLAN?

Belize Audubon Society, as the site manager for one of Belize's most stunning and biodiversity-rich terrestrial protected areas, strives to ensure that management strategies maximise visitor experience whilst maintaining the natural conditions required for biodiversity and ecosystem service protection.

Managing visitor access and use for recreational benefits and resource protection is inherently complex requiring analysis of visitors, how they use the protected area, their experiences, their impacts on resources, and the underlying causes of those impacts. Recognizing the dynamic nature of visitor use, the vulnerabilities of natural resources, and the need to be responsive to changing conditions, proactive planning for visitor use is essential. The outputs improve BAS's ability to encourage access and improve effectiveness of visitor hosting and management at Cockscomb whilst maintaining the values, vision and management goals and objectives of the protected area. It looks at ways in which visitor impacts on the natural resources can be limited and managed, at how visitor satisfaction can be increased, and how to ensure financial benefits can support not just management of Cockscomb and tourism stakeholders, but also trickle down to local communities, with improved entrepreneurial and employment opportunities, and socio-economic benefits.

The Plan identifies tourism stakeholder and community capacity building needs for the support of tourism at Cockscomb, and the promotion of private sector and community enterprise. It also identifies indicators, essential for effective implementation and monitoring of strategies.

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*Visitor use management is the proactive and adaptive process for managing characteristics of visitor use and the natural and managerial setting using a variety of strategies and tools to achieve and maintain desired resource conditions and visitor experiences.*

*Visitor use refers to human presence in an area for recreational purposes, including education, interpretation, inspiration, and physical and mental health.*

*Interagency Visitor Use  
Management Council, 2016*

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*Cockscomb can be a model for how to incorporate sustainable tourism within the area and balance this with conservation management.*

*Arvin Coc, CBWS Workshop, 2017*

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## The Planning Process

This Public Use Plan has been developed based on a series of meetings, workshops and interviews with Belize Audubon Society, and participation of tour guides and local community leaders. The planning process ensures that planned tourism is compatible with the conservation goals, objectives and management plan for the two protected areas, and is based on the following principles:

Tourism at Cockscomb Basin Wildlife Sanctuary should be:

- Proactive and planned, to ensure maintenance of protected area values and objectives
- Planned within the capacity of sustainable use of natural resources available within and around the protected areas and with respect to environmental limits (e.g. water use and availability, disposal of sewage and liquid and solid wastes)
- Conducted by suitably experienced and competent tour guides
- Acceptable to local communities, with their participation in the planning process
- A partnership, with engagement of community and private sector, collaborating in support of biodiversity conservation
- Providing realistic and equitable benefits to local communities and other stakeholders
- Developed cautiously, with avoidance of development that is driven by demand rather than conservation priorities, or that exceeds predicted market demand
- Effectively managed through zoning to provide diverse recreational opportunities and to meet visitor expectations
- Effectively managed to ensure visitor behaviour impacts to the natural and social environment are within acceptable limits
- Informed by an effective Limits of Acceptable Change framework, with action being taken to correct any adverse impacts on protected area management and conservation goals
- Planned with an awareness of the changing climate change and associated impacts

The Visitor Use Management Framework, based on the Visitor Use Management Framework developed by the Interagency Visitor Use Management Council (USA Govt., 2016), has been used to guide the development of the Public Use Plan (Table 1),

## THE VISITOR USE MANAGEMENT FRAMEWORK FOR CBWS/VPNM

WHY	WHAT	HOW	DO
BUILD THE FOUNDATION	DEFINE VISITOR USE MANAGEMENT DIRECTION	IDENTIFY MANAGEMENT STRATEGIES	IMPLEMENT, MONITOR, EVALUATE, ADJUST
1. Define purpose of and need for Plan	5. Define required visitor conditions for CBWS / VPNM	8. Compare and document differences between existing and desired conditions, and links to visitor use characteristics	12. Implement management actions
2. Review plan context, legislation, regulations, and management direction	6. Define appropriate visitor activities, facilities and services	9. Identify visitor use management strategies and actions to achieve desired conditions	13. Conduct and document ongoing monitoring, and evaluate the effectiveness of management actions in achieving desired conditions
3. Assess and summarise existing information and current conditions	7. Select indicators and establish thresholds	10. Identify additional strategies to manage use levels, where necessary,	14. Adjust management actions if needed to achieve desired conditions and document rationale
4. Plan and implement the participatory process for development of the Plan		11. Develop a monitoring strategy based on LoAC indicators	
<b>Outcome:</b> There is an understanding of why the plan is needed and the approach to be taken	<b>Outcome:</b> The conditions to be achieved and maintained have been described, and condition indicators identified to facilitate tracking over time	<b>Outcome:</b> Strategies to manage visitor use to achieve or maintain desired conditions have been developed	<b>Outcome:</b> Management strategies and actions are implemented, and adjusted where needed based on monitoring and evaluation

**TABLE 1: THE VISITOR USE MANAGEMENT FRAMEWORK FOR CBWS / VPNM (Interagency Visitor Use Management Council)**



## PROTECTED AREA VISION AND TOURISM OBJECTIVES

Public use planning and implementation has to contribute towards achieving the vision for Cockscomb Basin Wildlife Sanctuary:

*“To maintain biodiversity, ecosystems, cultural resources and watershed areas within a functional conservation area, as an integral part of the National Protected Areas System, providing benefits to Belize”*

## CBWS / VPNM VISITOR MANAGEMENT OBJECTIVES AND MANAGEMENT TARGETS (REVISED, 2017)

### **Objective 1: CBWS provides a visitor destination that is appreciated and valued by the tourism sector and visitors for its wildlife and wilderness**

- By 2022, CBWS has the infrastructure to effectively support internationally-respected tourism that maintains its wilderness values
- Between 2018 and 2022, CBWS maintains its visitor safety record through pro-active accident prevention
- Between 2018 and 2022, CBWS maintains its environmental sustainability through effective planning of tourism activities
- By 2022, BAS has improved the financial sustainability of CBWS by at least 20% from the 2017 baseline of Bz\$316,355

### **Objective 2: Improved local support for conservation / environmental stewardship in local communities and stakeholders**

- By 2022, 75% or more of the local tour guides using Cockscomb support the vision and objectives of the protected area from the 2017 baseline of approximately 50%
- By 2022, 90% or more of the local tour guides using Cockscomb are active partners in maintaining the values of the protected area

### **Objective 3: Sound research informing public perceptions and management decisions**

- By 2022, BAS is implementing a PRUP limits of acceptable change monitoring programme that provides data for informed management decisions
- By 2022, BAS is effectively communicating information on the status of the resources and environmental services to its tourism stakeholders

**Objective 4: Contribution towards the environmental services provided by conservation areas – clean air, clean water, socio-economic benefit and climate change amelioration**

- By 2022, BAS has assessed the financial value of Cockscomb tourism and contribution to the local economy
- By 2022, less than 3-4% of the environmental services of Cockscomb have been affected by tourism impacts

**Objective 5: Provision of a resource that is valued by visitors**

- By 2022, 90% or more of the tour guides using Cockscomb are active partners, ensuring Cockscomb provides high visitor satisfaction
- By 2022, 90% or more of visitors to Cockscomb consider the protected area meets their expectations

## 1. CONTEXT

### COCKSCOMB BASIN WILDLIFE SANCTUARY / VICTORIA PEAK NATURAL MONUMENT

A cornerstone of Belize’s present National Protected Areas System, Cockscomb Basin Wildlife Sanctuary encompasses 122,260 acres (49,477 ha) of the east-facing slopes of the Maya Mountains Massif – a landscape of ridge crests, rolling hills and river flood plains, cloaked primarily in tropical broadleaf evergreen forest. It was established following research work in the area in the 1980’s, which highlighted its value for jaguars (Rabinowitz, 1983). The area has continued to be a focal point for research into this species to this day. As the foremost of Belize’s terrestrial national protected areas, it is one of six of the highest priority protected areas in the National Protected Areas System, based on environmental values, biodiversity status, socio-economic values, and key climate change resilience factors (Walker et al., 2012). It is also a valuable asset for the tourism stakeholders within the area, as well as for the local and national economy. Day to day management of the area is the responsibility of the Belize Audubon Society (BAS) through a co-management agreement with the Forest Department.

The Cockscomb Range, a well-known national landmark within Belize, lies within the contiguous Victoria Peak Natural Monument, forming the northern-most wall of the Cockscomb Basins, and dominating the landscape. The highest point is Victoria Peak, a challenging climb at 3,675 feet (1,120m). The 4,847 acres of the Natural Monument are also managed by BAS as part of a single management unit with the Cockscomb Basin Wildlife Sanctuary.

Between them, the Wildlife Sanctuary and the Natural Monument protect an estimated 17 ecosystems (15 terrestrial and 2 aquatic) over a broad altitudinal range, from lowland broadleaf forest to sub-montane elfin woodland. At least 16 globally threatened species (Endangered and Vulnerable (IUCN, 2018) are reported from the area (Table 2).

THREATENED SPECIES	
<b>Endangered</b>	
Yucatan Black Howler Monkey	<i>Alouatta pigra</i>
Central American Black-handed Spider Monkey	<i>Ateles geoffroyi</i> *
Sanderson’s Rain Frog	<i>Craugastor sandersoni</i>
Baird’s Tapir	<i>Tapirus bairdi</i>
Bromeliad Treefrog	<i>Bromelohyla bromeliacia</i>
<b>Vulnerable</b>	
Agami Heron	<i>Agamia agami</i>
Spanish Cedar	<i>Cedrela odorata</i>
Xate Macho	<i>Chamaedorea oblongata</i>
Limestone Rainfrog	<i>Craugastor psephosypharus</i>
Great Curassow	<i>Crax rubra</i>
Cerulean Warbler	<i>Dendroica cerulea</i>
Keel-billed Motmot	<i>Electron carinatum</i>
Leprus Chirping Frog	<i>Eleutherodactylus leprus</i>
Mountain Palmeto	<i>Schippia concolor</i>
Big-leaf Mahogany	<i>Swietenia macrophylla</i>
White-lipped Peccary	<i>Tayassu pecari</i>

**Note:** *A. geoffroyi yucatanensis*, the subspecies in Belize, is now considered genetically identical to *A. g. vellerosus*, a Critically Endangered sub-species (Moralez-Jiminez et al., 2015).

**TABLE 2: THREATENED SPECIES OF CBWS / VPNM (IUCN, 2018)**

This large expanse of forested uplands and valleys is a critical part of the Maya Mountains Massif, one of the last remaining large, intact blocks of forest within the Mesoamerican region. CBWS, as part of the Massif, is considered essential for the survival of wide-ranging species that need large blocks of contiguous forest to maintain viable populations, and a critical stronghold for many species of national and international concern, including the endangered Baird’s tapir, Yucatan black howler and spider monkeys, and the regionally important population of scarlet macaws. Cockscomb Basin Wildlife Sanctuary also plays an important role in the maintenance of game species in the area – both mammals and birds – replenishing the areas outside the protected area, where hunting is permitted. The forested slopes provide water security and reduce the risk of flash floods for the agricultural areas and communities of the coastal plain, as well as maintaining the water quality of the upper headwaters of rivers flowing to the Caribbean Sea, essential for the health of the Belize Barrier Reef.

Visitation is an important aspect of protected area management at Cockscomb – both in providing a destination that is valued by visitors seeking a wilderness experience, and in ensuring that visitor impacts on the natural resources are limited to an acceptable level. Much of the Wildlife Sanctuary is inaccessible to visitation, with trails limited to a portion of the East Basin, with only one trail extending westwards to Victoria Peak.

### WHY COCKSCOMB?

What is it about Cockscomb Basin Wildlife Sanctuary that draws people to Belize from all over the world? What is it that pulls them back again and again? Tour guides highlight a number of qualities that visitors are expecting from Cockscomb Basin Wildlife Sanctuary - including wildlife, nature, quiet, peace solitude and tranquillity. It also provides opportunities for fun and adventure, and for learning.

There is something at Cockscomb for everyone interested in exploring the natural environment. The scenic beauty of the waterfalls and open vistas from the tops of Tiger Fern and Ben’s Bluff provide relatively easy goals for tourists wanting natural hiking to scenic vistas, whilst the more adventurous seek the longer, harder hikes to the summit of Victoria Peak or Outlier. Those more interested in fun in a natural environment choose the river tubing, which provide opportunities for wildlife sightings whilst enjoying the float down the river. The well-maintained trail system suits different levels of fitness and interest, incorporating fourteen trails ranging from ‘Easy’ to ‘Strenuous’ (Figure 1).

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#### *Qualities that bring visitors to Cockscomb Basin Wildlife Sanctuary*

*Forest*

*Wildlife*

*Nature*

*Birds*

*Quiet*

*Peace*

*Solitude*

*Tranquillity*

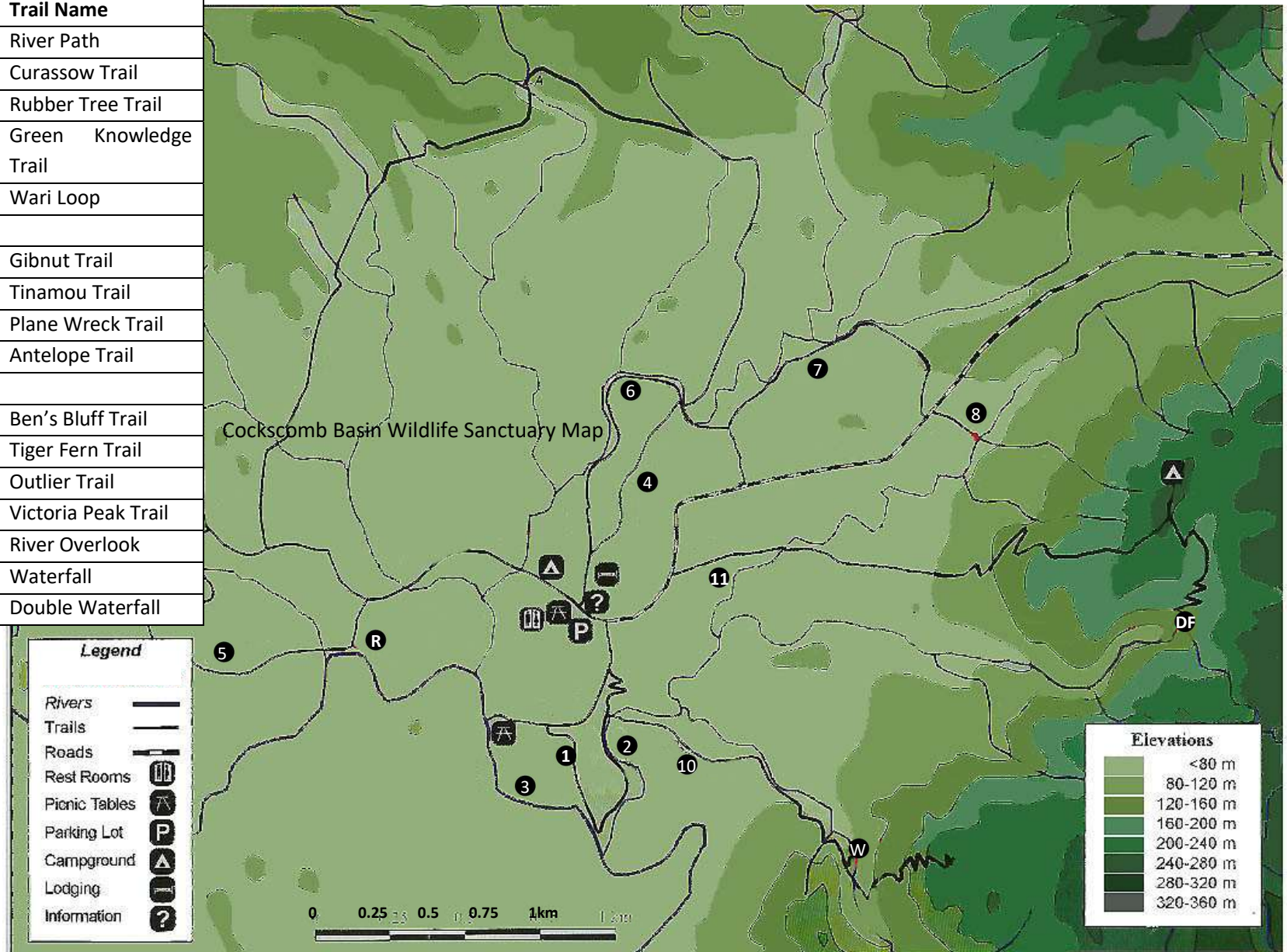
*Adventure*

*Fun*

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*CBWS Tour Guide Workshop, 2017*

No.	Trail Name
1	River Path
2	Curassow Trail
3	Rubber Tree Trail
4	Green Knowledge Trail
5	Wari Loop
6	Gibnut Trail
7	Tinamou Trail
8	Plane Wreck Trail
9	Antelope Trail
10	Ben's Bluff Trail
11	Tiger Fern Trail
12	Outlier Trail
13	Victoria Peak Trail
R	River Overlook
W	Waterfall
DF	Double Waterfall



The majority of visitors, however, use the well-established trails within a 3 km radius of the Headquarters, from the short River Path to the scenic overviews and waterfalls of Ben’s Bluff and Tiger Fern trails. These provide access to tall tropical forests with opportunities for seeing wildlife – or, at the least, signs of wildlife. For birders and naturalists, the ability to stay overnight at the Cockscomb headquarters site, with options for an early start in the mornings improves the chances of wildlife sightings, and for many even the sounds of howler monkeys calling and sights of jaguar and tapir footprints is sufficient for creating lasting memories of a biodiversity rich forest.

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There are more than 20 miles of maintained hiking trails, which range from an easy hour-long stroll along the river to a four-day Victoria Peak expedition.

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River tubing down the South Stann Creek is the most popular recreational activity, and more recently, dry-season mountain biking to 12km on the Victoria Peak trail has been added to the list of activities. Whilst most trails can be walked without a guide, one is required for groups climbing Victoria Peak and are recommended for Outlier, both for general safety, and for specific safety concerns with the steepness of some of the higher stretches requiring use of ropes. Licensed guides are available in Maya Centre, though most groups arrive with their own guide, supplied by a resort or tour company based in the coastal communities.

## POLICY AND LEGAL FRAMEWORK

Cockscomb Basin Wildlife Sanctuary and Victoria Peak Natural Monument are both designated as non-extractive protected areas under the **National Protected Areas System Act** (Forest Department, 2015), with activities being limited to education, research and tourism (Table 3). Legislative authority for both is held by the Forest Department (Ministry of Forestry, Fisheries and Sustainable Development), with a co-management agreement with the Belize Audubon Society (BAS), the NGO co-management partner, which is responsible for day-to-day management of the two protected areas as a single unit.

CBWS PROTECTED AREAS CATEGORIES		
CATEGORY	PURPOSE	ACTIVITIES PERMITTED
<b>Wildlife Sanctuary (1)</b> Cockscomb Basin Wildlife Sanctuary	To protect nationally significant species, biotic communities or physical features.	Research, education, tourism
<b>Natural Monument</b> Victoria Peak Natural Monument	To protect and preserve natural features of national significance.	Research, education, tourism

**TABLE 3: CBWS PROTECTED AREA CATEGORIES**

Management is guided by a five-year management plan, which identifies a series of conservation and public use strategies towards the protected area goal of *‘maintaining biodiversity, cultural resources and watershed areas within a functional conservation area, as an integral part of the National Protected Areas System’*.

In addition to the NPAS Act, three further laws contribute to the conservation framework of Belize, protecting terrestrial ecosystems, ecosystem services and biodiversity. The Forest Department is the administrative agency for the **Forest Act (1927, revised 2017)** and the **Wildlife Protection Act (1981)**. These provide the framework for the protection of the environment and natural resource management and prevent the over-exploitation of wildlife in Belize, particularly threatened species, with the regulation of hunting and commercial extraction. The **Fisheries Act (1948)**, under the administration of the Fisheries Department, provides regulations for freshwater fisheries. The Wildlife Protection and Fisheries Acts are scheduled for revision and significant strengthening in 2017 / 2018.

The **National Institute of Culture and Heritage (NICH)** is the statutory body responsible for the Archaeological Reserves and cultural heritage of Belize, and integrates the protection of the environment. Several small archaeological sites are known to be located in Cockscomb Basin Wildlife Sanctuary, and are protected under the **NICH Act**, though, being in more remote areas of the protected area, these have not been developed for tourism.

Belize has established the **National Integrated Water Resource Act (2010)** and created the Water Authority to implement the Act. This is focused on the protection and regulation of water catchment areas, aquifers, and surface water, with the responsibility of controlling water quality and quantity. Management of the water resource is considered of increasing importance following recent droughts, which have had significant effects on the agricultural sector. The issues of large scale removal of forest and the impacts on rainfall are now being considered in national planning, with a recognition of the importance of large, intact, forested watersheds such as the Cockscomb basins in maintaining water security for both communities and agriculture. The Act allows for intervention if there are concerns of impacts on water supply in the watersheds, even if these are within the National Protected Areas System. Water quality is also a consideration in public use planning, with the increasing use of the river for river tubing.

The **National Energy Policy Framework** addresses barriers to options for energy efficiency, sustainability and resilience over the next 30 years. It is supported by the Sustainable Energy Action Plan, a tool focused on achieving Belize's renewable energy while also meeting the Government's economic social and environmental goals. One of the options highlighted within the plan is for investigation into the potential for installation of a hydroelectricity generation station on the Swasey Branch River, with potential implications for Cockscomb Basin Wildlife Sanctuary.

The **National Sustainable Tourism Master Plan (NSTMP; 2010)** is focused primarily on the economic growth of the tourism sector, and provides guidelines for tourism development in different areas of Belize. Despite the recognition of the importance of the environment for tourism development, however, there is limited integration of environmental safeguards in the NSTMP, and focus on investment in inland protected areas such as Cockscomb is limited.

Tourism legislation in Belize falls under the mandate of the Ministry of Tourism, and is focused on regulations that maintain standards for the tourism sector. The most relevant acts are the **Belize Tourism Board (Tour Guide) Regulations, Belize Tourism Board (Tour Operator) Regulations, the Belize Hotels and Tourist Accommodation Act (2000, revised), and the Belize Hotels and Tourist Accommodation Act Subsidiary Laws (2003, revised)**, which supplement the Act, specifying minimum requirements for tour guides and tour operators, and for different types of visitor accommodation. Management policies for Cockscomb Basin Wildlife Sanctuary take into account these requirements in management of the accommodation, and in regulation of guides using the protected area.

## **SOCIO-ECONOMIC CONTEXT**

Seven key stakeholder communities have been identified within the immediate Cockscomb landscape on the southern coastal plain (Table 4), with Maya Centre and Maya Mopan most closely linked to the protected area and its ecosystem services. The southern coastal plain supports significant agricultural areas – cattle, coconut, citrus, shrimp and banana. However, with the recent closure of shrimp and banana farms, fewer job opportunities, lower incomes and the effects of recent natural disasters, the tourism industry has become one of the leading employers in the area.



TOURISM STAKEHOLDER COMMUNITIES OF CBWS				
COMMUNITY	LOCATION (UTM) DISTANCE (KM)	POPULATION (APPROX.)	POPULATION COMPONENTS	COMMENTS
Placencia	E16 03653894 N18 26544 (35km)	1,200	Predominantly Creole	Tourism centre with resorts, hotels and tour operators that use Cockscomb as a key inland destination. Majority of day tours originate in Placencia or Hopkins, through hotels and tour operators located in these communities.
Hopkins	E16 0363200 N 18 1864680 (20km)	1,027	Garifuna	
Maya Centre	E16 0354030 N18 57500 (6.5 km)	386	Mopan Maya	Migrants from San Antonio (originally from Guatemala). Benefit from the presence of CBWS, so supportive of protected area. Tour guiding, local crafts, and hospitality services, as well as milpa farming, citrus. Some employment in CBWS, and in agricultural industries
Maya Mopan	E16 0337600 N 42500 (5.5km)	632	Mopan Maya	Migrants from San Antonio and San Jose in Toledo. Some employment by CBWS and in tourism industry in coastal resorts. Have established a cocoa farming project and honey cooperative. Some hunting and fishing in the Juan Branch area. Primarily milpa farmers with some rice and citrus, and some employment on plantations and shrimp farms.
Red Bank	E16 0336000 N18 38000 (9km)	1,201	Ketchi and Mopan Maya, as well as Central American immigrant workers	Community tourism initiatives focused on scarlet macaws have been tried and not succeeded, as a result of internal community conflict. First settled about 20 years ago by Mopan Maya, who were then joined by Ketchi Maya originating from Guatemala, being relocated by the GoB from Chiquibul. The village is not cohesive, with in-fighting between ethnic groups. Predominantly milpa farming with some citrus. Some hunting and fishing in the Sale-Si-Puede area, for home consumption. Possible encroachment of CBWS with illegal milpas.
San Roman / Santa Rosa	E16 0354500 N18 60000 (7km) E16 0343000 N18 41800 (9km)	894	Immigrant workers, some resident Maya	Interested in community-based tourism. Primarily a settlement of plantation workers - supplement this with subsistence milpa farming. Hunting and fishing for domestic consumption and commercially within Cockscomb, particularly in the Juan Branch area.

**TABLE 4: TOURISM STAKEHOLDER COMMUNITIES OF CBWS**

In 2016, 26.9% of visitors to Belize participated in jungle trekking, and 7.2% specifically identified birding as their reason for visiting the country. However, of the 298,157 overnight visitors to Belize in 2016, only 12.4% visited Stann Creek and 12.8% Placencia, and fewer than 4% visited Cockscomb Basin Wildlife Sanctuary, suggesting scope for increasing the marketing profile of the protected area. The general trend has been for increasing tourism over the years (BTB, 2016), but for financial sustainability of the protected areas, it is important that the number of visitors continues to increase, if this can be managed without impacting the ecosystem services of the protected area, the resources that attract the visitors, or resulting in a decline of visitor satisfaction.

## TOURISM STAKEHOLDERS

Increasing visitation has had a positive impact on the socio-economic landscape around the protected area, providing benefits to local communities and other tourism stakeholders through improving opportunities for jobs in the tourism sector and markets for local crafts. This is reflected in consultations with the tourism sector in central / southern Belize, who see Cockscomb as an important tourism destination (tourism sector consultations, Maya Centre, Placencia, Hopkins and Dangriga, 2017). For Maya Centre in particular, at the gateway to the protected area, tourism is important for supporting the local economy (community consultations, Maya Centre, 2017). Dangriga, Hopkins and Placencia, whilst further away, also benefit from the attraction of Cockscomb, offering visitors a chance to experience the tropical forest and its rich wildlife in addition to the rich marine life of the Belize reef. The protected area also provides an educational service for schools in the landscape, across Belize and abroad (Tourism stakeholder consultations, Dangriga, Hopkins and Placencia, 2017).

Tourism stakeholders range from the local tour guides in Maya Center to the high-end tourism resorts in Hopkins and Placencia, and provide the link between visitors and CBWS. Cockscomb provides an important inland destination for tours, bringing visitors to the area and contributing to support of the tourism sector. Stann Creek has 237 licensed tour guides (112 of these based in Placencia), working through 81 tour operators, a number that expands annually (BTB, 2016), providing guiding services for terrestrial and marine tours for overnight visitors, and cruise-visitor tours based from Harvest Caye. Whilst not all these tour guide use Cockscomb Basin Wildlife Sanctuary, it is critical that those that use it regularly are fully engaged in ensuring best tourism practices, and become active stewards of CBWS, working in partnership with BAS to ensure the protected area continues to be a high value tourism destination.

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Listen to the local tourism stakeholders – make sure that they are consulted about visitor management decisions. We want CBWS to continue to be successful, safe, and in five years, to see what BAS and the tour guides have been able to achieve together...

*Tour Guide, CBWS Workshop, 2017*

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Over 240 hotels and resorts are registered in the area, and are also important stakeholders - providing accommodation for visitors, and marketing CBWS tours on hotel websites. Desk staff in hotels responsible for booking tours can recommend or advise against tours to CBWS, and may base those decisions on their

personal experiences, providing information that leads to visitor expectations that need to be addressed. Ensuring that engagement of hotel managers and desk staff is almost as important as engagement of tour guides. Providing these frontline staff with an experience of what CBWS has to offer can improve visitor take-up of tours, and align visitor expectations to the wilderness reality of Cockscomb.

The Belize Tourism Industry Association regional chapters in Dangriga, Hopkins and Placencia are also important, acting as a hub of information for hotels and visitors. Tour guides also have a significant influence, both on visitor behaviour and visitor satisfaction. They are responsible for the quantity, quality and accuracy of information provided to visitors. By establishing closer links and ongoing communication with the tourism sector, protected area staff can better understand the realities of tourist demands and more effectively meet the requirements of tourism companies. The two-way flow of information from these relationships can also encourage a greater understanding of conservation priorities amongst tourism companies.

It is important to ensure that all these stakeholders are adequately engaged and informed...and beyond that, that they take on the role of joint stewardship of the Wildlife Sanctuary, considering themselves as partners, rather than just clients. Belize Audubon Society, as the manager of Cockscomb, is also a key tourism stakeholder, with tourism being critical for the financial sustainability required for effective conservation management of the protected area. It also provides the vehicle for raising awareness of visitors and raising the profile of the protected area at the local and national level, improving recognition of the value of the site to the local and national economies. The trickle-down benefits of tourism benefits to the local communities is also critical, providing alternative income opportunities adjacent to the protected area, helping to reduce unsustainable exploitation of natural resources and promoting conservation stewardship.

A tourism stakeholder Analysis has been completed for Cockscomb Basin Wildlife Sanctuary, identifying the impact of tourism and on tourism (both positive and negative) and recommendations for strengthening (Table 5).

**TABLE 5: TOURISM STAKEHOLDER ANALYSIS FOR COCKSCOMB BASIN WILDLIFE SANCTUARY**

STAKEHOLDER	TOURISM IMPACTS	RECOMMENDATIONS
<p><b>Community Stakeholders</b> Maya Centre</p>	<p><b>POSITIVE</b></p> <ul style="list-style-type: none"> <li>▪ Improved employment opportunities and social benefits in the community as a result of CBWS tourism</li> <li>▪ Pool of local guides with experience of guiding in CBWS</li> <li>▪ Pool of experienced speciality guides trained for climbing Victoria Peak</li> <li>▪ Location in Maya Centre provides opportunistic guiding opportunities</li> <li>▪ Local business establishment based on CBWS tourism – hotels, taxis, restaurants, tour guides</li> <li>▪ Increased customers for local attractions (e.g. craft shop, Che'il Chocolate Tour, Maya Center Mayan Museum, butterfly farm, Nu'uk Che'il Cottages Medicinal Plant Trail)</li> <li>▪ Opportunities for services directly related to CBWS tourism – laundry, catering</li> <li>▪ Opportunities for women to sell local crafts through the Maya Center Women's Cooperative Crafts Store</li> <li>▪ Local employment as CBWS rangers</li> <li>▪ CBWS park fee sharing agreement with women of Maya Center</li> <li>▪ Support the conservation goals of CBWS / VPNM</li> <li>▪ Understand the natural capital and ecosystem services provided by CBWS</li> <li>▪ Generally demonstrate tourism best practices, good stewardship and understanding of natural resources around the Maya Center community</li> <li>▪ Benefit from community capacity building – training in business and financial management</li> </ul> <p><b>NEGATIVE</b></p> <ul style="list-style-type: none"> <li>▪ Changes in culture and cultural values within the community</li> </ul>	<ul style="list-style-type: none"> <li>▪ Maintain good communication and collaborative partnership with the community</li> <li>▪ Provide community leaders with a guided day of activities in CBWS to show them why people visit CBWS</li> <li>▪ Increase tourism sector participation in and communication about management decisions for tourism at CBWS</li> <li>▪ Continue to build capacity within the community for business start-up, business management, and financial management related to strengthening tourism product</li> <li>▪ Invest in viable tourism entrepreneur start up initiatives, or add value to tourism businesses in the community that are succeeding</li> <li>▪ Continue support for Women’s group in Maya Centre</li> <li>▪ Improve entrance fee capture at Maya Centre</li> <li>▪ Continue to engage the youths in conservation through the schools, building youth stewardship</li> <li>▪ Increase opportunities and incentives for community visitation to Cockscomb</li> <li>▪ Provide opportunities for sales of community products / crafts at stalls / concession stands at proposed Zone 1 (2) cruise visitor tourism site</li> </ul>

## TOURISM STAKEHOLDER ANALYSIS FOR COCKSCOMB BASIN WILDLIFE SANCTUARY

STAKEHOLDER	TOURISM IMPACTS	RECOMMENDATIONS
<p><b>Community Stakeholders</b>                      Maya Mopan                      Red Bank                      Santa Rosa                      San Roman</p>	<p><b>POSITIVE</b></p> <ul style="list-style-type: none"> <li>▪ Improved employment opportunities as a result of CBWS tourism – though perceived as lower potential than in Maya Centre</li> <li>▪ Local guides with experience of guiding in CBWS and around their communities (Maya Mopan / Red Bank)</li> <li>▪ Some experienced speciality guides trained for climbing Victoria Peak</li> <li>▪ Local employment as CBWS rangers, through preferential hiring policy of CBWS</li> <li>▪ Understand the natural capital and ecosystem services provided by CBWS</li> <li>▪ Opportunities for women to sell local crafts through the Maya Center Women's Cooperative Crafts Store</li> <li>▪ Potential for tourism opportunities in Red Bank linked to scarlet macaws</li> </ul> <p><b>NEGATIVE</b></p> <ul style="list-style-type: none"> <li>▪ Distance from CBWS entrance reduces opportunistic guiding opportunities</li> <li>▪ Tour operations / guesthouses are not in the highest tourism activity areas, so have reduced capacity to attract tourists</li> <li>▪ Communities see that Maya Center benefits more from tourism than they do – results in limited willingness to recognise and support CBWS</li> <li>▪ Negative perceptions can lead to conflict with BAS</li> <li>▪ Conflict within the communities when community tourism developments start to attract tourism – can lead to failure</li> </ul>	<ul style="list-style-type: none"> <li>▪ Continue building and improving communication and collaboration with the communities</li> <li>▪ Provide community leaders with a guided day of activities in CBWS to show them why people visit CBWS</li> <li>▪ Build capacity of Maya Mopan for guided research expedition groups and as research assistants in Juan Branch / Mexican Branch area</li> <li>▪ Engage hunters as expedition trackers towards income diversification and improved understanding of role of CBWS as replenishment area</li> <li>▪ Increase community support in Red Bank for developing scarlet macaw / bird tourism, based on lessons learnt</li> <li>▪ Increase tourism sector participation in and communication about management decisions for tourism at CBWS</li> <li>▪ Continue to build capacity within the community for business start-up, business management, and financial management linked to tourism</li> <li>▪ Develop a workable framework for requests for investment in small scale tourism initiatives in the communities that addresses community buy-in, land tenure-ship etc.</li> <li>▪ Assist entrepreneurs in location of micro-loans for support of viable tourism start up initiatives, or add value to tourism businesses that are already succeeding in the communities</li> <li>▪ Continue to engage the youths in conservation through the schools, building youth stewardship</li> <li>▪ Increase opportunities and incentives for community visitation to Cockscomb</li> <li>▪ Provide opportunities for sales of community products / crafts at stalls / concession stands associated with potential cruise visitor tourism site</li> </ul>

**TOURISM STAKEHOLDER ANALYSIS FOR COCKSCOMB BASIN WILDLIFE SANCTUARY**

STAKEHOLDER	TOURISM IMPACTS	RECOMMENDATIONS
<p><b>Tour Guides</b> Local tour guides, and tour guides from Dangriga, Hopkins, and Placencia</p>	<p><b>POSITIVE</b></p> <ul style="list-style-type: none"> <li>▪ Benefit from having CBWS / VPNM as a major venue for wilderness / nature based tourism</li> <li>▪ Employment in terrestrial-based tourism initiatives and related tourism sector businesses</li> <li>▪ Income from using CBWS / VPNM as a tourism destination</li> <li>▪ Support the conservation goals of CBWS / VPNM</li> <li>▪ Understand the natural capital and ecosystem services provided by CBWS</li> <li>▪ Provide interpretation for visitors, facilitating overall visitor appreciation</li> <li>▪ If well trained, assist with visitor management within the protected area, and encourage visitors to contribute towards conservation in Belize</li> </ul> <p><b>NEGATIVE</b></p> <ul style="list-style-type: none"> <li>▪ If poorly trained, can result in poor visitor management, reduced visitor safety and increased impact on natural resources</li> </ul>	<ul style="list-style-type: none"> <li>▪ Maintain and improve communication with tour guides, involving them in decision making process when changes impact tour guides / visitors, and keeping them updated on management changes</li> <li>▪ Continue to engage CBWS tour guides through workshops and site-specific trainings</li> <li>▪ Create an environment of greater ownership and stewardship of CBWS by tour guides through encouraging them) to introduce their families to CBWS (potentially through incentives – e.g. overnight accommodation and food</li> </ul>
<p><b>Hotels / Resorts</b></p>	<p><b>POSITIVE</b></p> <ul style="list-style-type: none"> <li>▪ Benefit from having CBWS / VPNM as a major venue for wilderness / nature based tourism</li> <li>▪ Can influence the decision of visitors towards visiting CBWS / VPNM</li> <li>▪ Provide accommodation for tourists wanting to visit CBWS but seeking less basic accommodation</li> <li>▪ Can promote CBWS on websites and in literature, marketing the protected area for BAS</li> </ul> <p><b>NEGATIVE</b></p> <ul style="list-style-type: none"> <li>▪ If road is considered too rough, and resulting in increased vehicle maintenance costs, may actively deter visitors from CBWS tours in preference for a destination with better accessibility</li> </ul>	<ul style="list-style-type: none"> <li>▪ Improve communication with key hotels and resorts (e.g. Hamanasi)</li> <li>▪ Identify key frontline hotel / resort staff for engagement through familiarization visits to CBWS, to improve promotion of CBWS as a day tour, and to ensure hotels and resorts can align visitor expectations with reality</li> <li>▪ Ensure hotels have accurate information to be able to market CBWS as a destination</li> <li>▪ Identify potential areas for collaboration to strengthen partnership with hotels</li> </ul>

**TOURISM STAKEHOLDER ANALYSIS FOR COCKSCOMB BASIN WILDLIFE SANCTUARY**

STAKEHOLDER	TOURISM IMPACTS	RECOMMENDATIONS
<b>Local / National Tour Operators</b>	<p><b>POSITIVE</b></p> <ul style="list-style-type: none"> <li>▪ Benefit from having CBWS / VPNM as a major venue for land-based tourism</li> <li>▪ Income from using CBWS / VPNM as a tourism destination</li> <li>▪ Provide marketing at a national level, and send visitors to CBWS / VPNM, increasing sustainability</li> <li>▪ Support the conservation goals of CBWS / VPNM</li> </ul> <p><b>NEGATIVE</b></p> <ul style="list-style-type: none"> <li>▪ Increase the potential for exceeding the carrying capacity of the protected area</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ensure tour operators have accurate information to be able to market CBWS as a destination</li> <li>▪ Maintain and improve communication with tour operators, keeping them updated on management changes that may impact tour guides / visitors</li> <li>▪ Market CBWS more effectively to tour operators</li> <li>▪ Identify key frontline tour operator staff for engagement through familiarization visits to CBWS, to improve promotion of CBWS as a day tour, and to ensure hotels and resorts can align visitor expectations with reality</li> </ul>
<b>Cruise Tourism</b>	<p><b>POSITIVE</b></p> <ul style="list-style-type: none"> <li>▪ Benefit from having CBWS / VPNM as a major venue for land-based tourism</li> <li>▪ Income from using CBWS / VPNM as a tourism destination</li> <li>▪ Provide a larger market, increasing financial sustainability</li> </ul> <p><b>NEGATIVE</b></p> <ul style="list-style-type: none"> <li>▪ Increase the potential for exceeding the carrying capacity of the protected area, and increase impacts on access road</li> <li>▪ Cruise companies don't necessarily support the conservation goals of CBWS / VPNM</li> <li>▪ Visitor profile is less suited to the CBWS experience – will require new infrastructure to manage visitor expectations and maintain visitor satisfaction</li> <li>▪ Increased number of buses in area may detract from wilderness feel for other visitors</li> <li>▪ Expected to bring own tour guides, so will not increase local tour guide employment</li> </ul>	<ul style="list-style-type: none"> <li>▪ Identify key frontline cruise-tour operator staff for engagement through familiarization visits to CBWS, to improve promotion of CBWS as a day tour, and to ensure alignment of visitor expectations with reality</li> <li>▪ Ensure guides have accurate information on CBWS, its purpose, biodiversity and ecosystem services</li> <li>▪ Maintain and improve communication with tour guides, involving them in decision making process when changes impact cruise-visitor tours, and keeping them updated on management changes</li> </ul>

**TOURISM STAKEHOLDER ANALYSIS FOR COCKSCOMB BASIN WILDLIFE SANCTUARY**

STAKEHOLDER	TOURISM IMPACTS	RECOMMENDATIONS
<p><b>Belize Tourism Industry Association</b>                      Dangriga Chapter                      Hopkins Chapter                      Placencia Chapter</p>	<ul style="list-style-type: none"> <li>▪ Benefit from having CBWS as a tourism venue, attracting visitors to the area, benefitting the local tourism industries in Dangriga, Hopkins and Placencia</li> <li>▪</li> </ul>	<ul style="list-style-type: none"> <li>▪ Improve communication with BTIA chapters, and engage BTIA staff through familiarization visits to CBWS</li> <li>▪ Ensure BTIA offices / welcome centers have accurate information on CBWS, its purpose, biodiversity and ecosystem services</li> </ul>

**TABLE 5: TOURISM STAKEHOLDER ANALYSIS FOR COCKSCOMB BASIN WILDLIFE SANCTUARY**



### 3. VISITOR MANAGEMENT ZONES

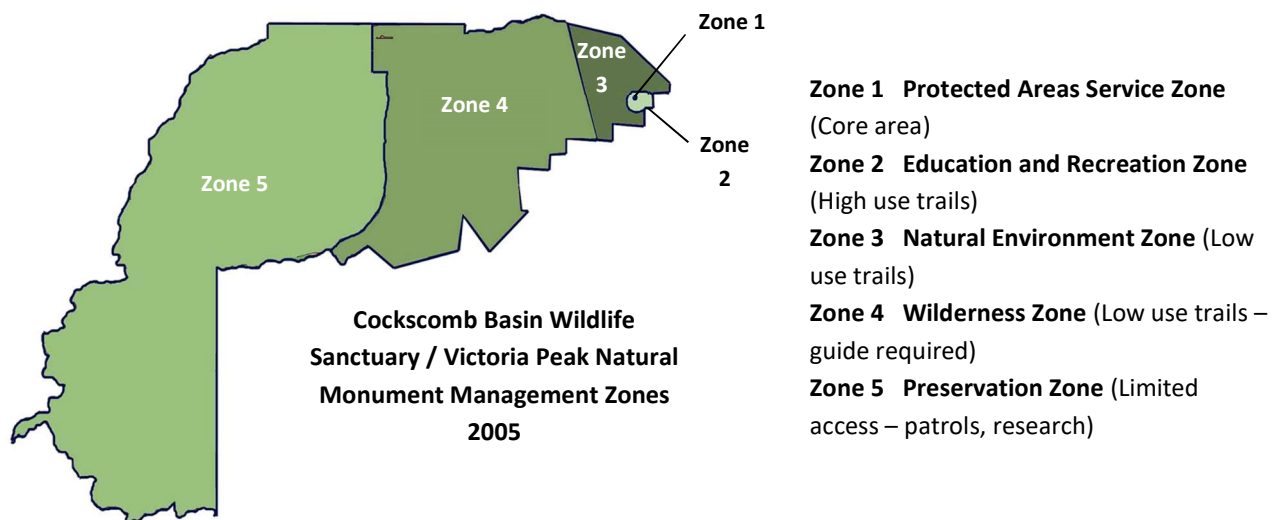
#### ZONING OF COCKSCOMB BASIN WILDLIFE SANCTUARY

Effective protected area management is a constant challenge – the need for effective management of the natural resources, the need to ensure community engagement and benefit, and the need to identify financial sustainability mechanisms through tourism to support management activities, but to also ensure that visitor activities are environmentally sustainable, both in the short and long term. Zoning is used as a tool for managing tourism activities in the Cockscomb Basin Wildlife Sanctuary, ensuring that visitor expectations are met as far as possible whilst also minimizing environmental impacts.

As well as maintaining the facilities and trails, visitor management is also directed at ensuring the needs of individual visitors and small groups looking for opportunities for wildlife experiences and solitude can also be met, and that the wilderness quality of Cockscomb is not lost, whilst also catering for the larger, noisier groups that use the Wildlife Sanctuary for more active, recreational pursuits, particularly school parties, river tubing, and large tourism groups. This has resulted in a need to review and revise the zones to reflect use in 2017.

#### 2005 CONTEXT

Management zones were first defined for Cockscomb Basin Wildlife Sanctuary in 2005 (Figure 2), as part of the original management plan (BAS, 2005). Five management zones were identified, based on visitor use at that time



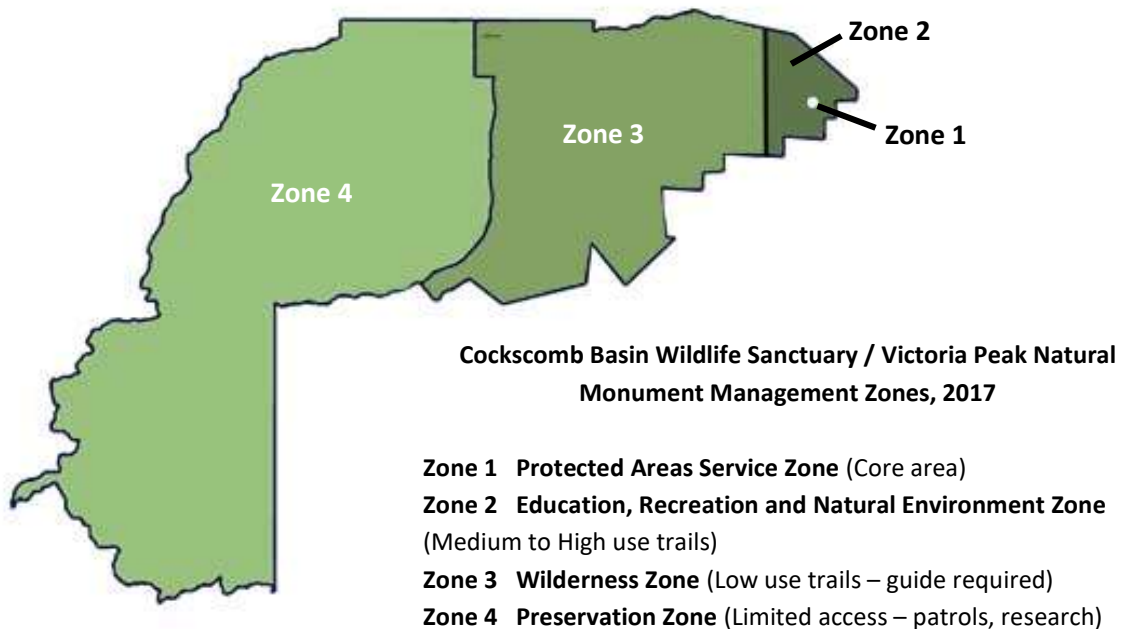
**FIGURE 2: COCKSCOMB BASIN WILDLIFE SANCTUARY / VICTORIA PEAK NATURAL MONUMENT MANAGEMENT ZONES, 2005**

## JUSTIFICATION FOR ZONE AMENDMENT

Since the establishment of the five zones more than 12 years ago, Cockscomb has evolved, with visitor use increasing, and a need to re-evaluate the zoning system to address a number of current and future challenges:

- maintaining the biodiversity and ecosystem services for which Cockscomb was first established
- maintaining wilderness conditions – the essence of Cockscomb – for independent travelers and naturalists
- ensuring the potential for wildlife sightings whilst minimizing impact on the protected area’s wildlife
- ensuring satisfaction of both visitors and the increasing number of tour guides using the current trail system
- the need to cater for the increasing popularity of river tubing in the protected area whilst preserving environmental integrity
- the need to address the increasing pressure for access for large-scale cruise ship tourism originating from Harvest Caye / Independence.

As a result, the zoning has been amended, with many of the trails in the original Zone Three now merged with those of Zone Two to form a larger Zone Two (Figure 3; Tables 6 and 7).

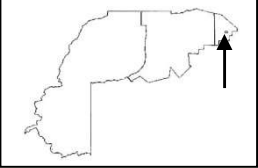
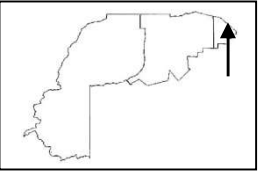
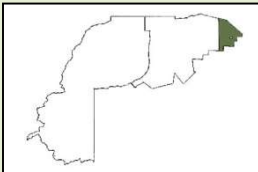
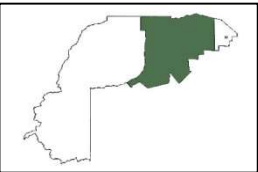
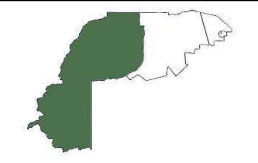


**FIGURE 3: COCKSCOMB BASIN WILDLIFE SANCTUARY / VICTORIA PEAK NATURAL MONUMENT MANAGEMENT ZONES, 2017**

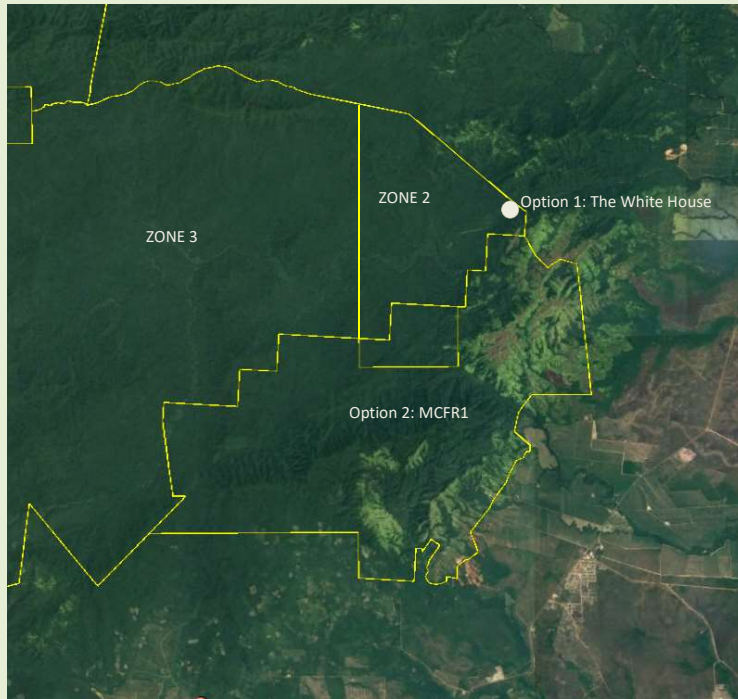
**TABLE 6: AMENDMENTS TO EXISTING CBWS MANAGEMENT ZONES**

<b>Action</b>	<b>Justification</b>
<i>Expand Zone 1: Protected Areas Service Zone</i>	<p>Zone 1 covers the administrative and visitor arrival and welcome area, with car parking, the Visitors Centre, visitor and staff accommodation, visitor facilities and the protected area office.</p> <p>A Concept Master Plan is being developed to upgrade the Zone 1 facilities, which requires the expansion of the Zone 1 area to accommodate a larger car park, expanded on-site accommodation, and relocation / construction of staff and research facilities. This is taken into account in the amended Zone 1, with expansion of the footprint to encompass these upgrades.</p>
<i>Merge Zones 2 and 3 as Zone 2, and realignment of the Zone western boundary. Remove Outlier from Zone 2.</i>	<p>Zones 2 and 3 contain the high use trails that radiate out from the Protected Areas Zone. These were originally divided into high use and low use zones, but increased activity and visitation, and increasing use of low-use trails by tour guides to avoid meeting other groups has led to both zones requiring similar management of trail conditions and visitor traffic. The increased river-tubing has also resulted in high use of trails in both zones, contradicting the original zoning. The two zones have therefore been merged, and the western boundary aligned north-south for ease of management. All trails except those requiring guides are now within the amended Zone 2. Victoria Peak and Outlier, in Zone 3, will both require a guide and an additional climbing fee to better manage trail maintenance and safety (this is already a requirement for Victoria Peak).</p>
<i>Identification of an area for development of a cruise ship forest destination</i>	<p>There is increased cruise ship demand for visitation to CBWS with the establishment of the Harvest Caye port. However, integration into the current tourism footprint is not recommended. It is suggested that an additional Zone 1 (Zone 1 (2)) be created adjacent to the White House but out of sight of existing non-cruise traffic to the protected area.</p>

**TABLE 6: RECOMMENDED AMENDMENTS TO EXISTING CBWS MANAGEMENT ZONES**

TABLE 7: CBWS ZONES		OBJECTIVES
<p><b>Zone One</b></p> 	<p><b>Protected Areas Services Zone (1)</b> Core area with car / coach parking, administration, Visitors Centre, and accommodation facilities</p>	<ul style="list-style-type: none"> <li>▪ To provide administration and support facilities for CBWS</li> <li>▪ To provide an access point, visitor information and protected area interpretation</li> <li>▪ To provide accommodation for visitors</li> <li>▪ To provide research facilities</li> <li>▪ To maintain user impacts within pre-defined acceptable limits</li> </ul>
	<p><b>Protected Areas Services Zone (2)</b> Core area with car / coach parking and Visitors Centre for cruise ship visitation, and accommodation (the White House) for protected area staff manning the entrance gate.</p>	<ul style="list-style-type: none"> <li>▪ To provide an access point, visitor information and protected area interpretation</li> <li>▪ To maintain user impacts within pre-defined acceptable limits</li> <li>▪ To provide accommodation for rangers manning the gated entrance point where the access road crosses the protected area boundary</li> </ul>
<p><b>Zone Two</b></p> 	<p><b>Education, Recreation and Natural Environment Zone</b> Medium to Heavy use trails leading from Zone One (1) and (2), designed for high visitation and education activities</p>	<ul style="list-style-type: none"> <li>▪ To provide access to large numbers of visitors whilst minimizing impact through landscape alteration</li> <li>▪ To increase protected area and wildlife interpretation opportunities for visitors</li> <li>▪ To maintain user impacts within pre-defined acceptable limits</li> <li>▪ To provide opportunities for established uses and activities within a natural environment</li> <li>▪ To provide opportunities for solitude</li> <li>▪ To maintain biodiversity and watershed functionality with minimal human impact</li> <li>▪ To maintain user impacts within pre-defined acceptable limits</li> </ul>
<p><b>Zone Three</b></p> 	<p><b>Wilderness Zone</b> The wilderness area of Cockscomb – East Basin. Access requires a guide.</p>	<ul style="list-style-type: none"> <li>▪ To maintain biodiversity and watershed functionality with minimal human impact</li> <li>▪ To provide an access route to Victoria Peak Natural Monument and Outlier whilst minimising user impact</li> <li>▪ To include an altitudinal gradient and representation of as many ecosystems as possible within the design of the zone</li> <li>▪ Presence of required guide assists in minimizing impacts and provides safety backup</li> </ul>
<p><b>Zone Four</b></p> 	<p><b>Preservation Zone</b> The western part of the sanctuary – West Basin and the Maya Mountain extension</p>	<ul style="list-style-type: none"> <li>▪ To maintain biodiversity and watershed functionality with minimal human impact</li> <li>▪ To include an altitudinal gradient and representation of as many ecosystems as possible within the design of the zone</li> <li>▪ To provide areas within the Wildlife Sanctuary that are preserved in an entirely natural state</li> <li>▪ To protect areas of particularly fragile habitat and threatened or rare species</li> </ul>

## PROPOSED CTZ (CRUISE TOURISM ZONE) OPTIONS



### **Cruise Tourism Zone – Option 1: The White House**

Establishing a site adjacent to the White House. The coach park, associated visitor facilities and trail system can be established adjacent to the White House, set back in the forest to reduce visual impact for other users of CBWS. This is already in Zone 1 (2) and Zone 2 so would not require any further rezoning.

### **Cruise Tourism Zone – Option 2: Mango Creek Forest Reserve 1**

Mango Creek Forest Reserve 1 has been realigned to protect the southern buffer of Cockscomb Basin Wildlife Sanctuary and the two key scenic view and waterfall sites of Tiger Fern and Ben's Bluff trails, considered a core part of Cockscomb Basin's appeal. There may be an opportunity for opening a co-management or concession agreement for a portion of the Forest Reserve, with identification of other sites that may be able to provide the resource opportunities identified for a CTZ site. The South Stann Creek river system, for example, flows through the Forest Reserve, south of Snook Eddy and the private lands, and is accessible from the Snook Eddy road.

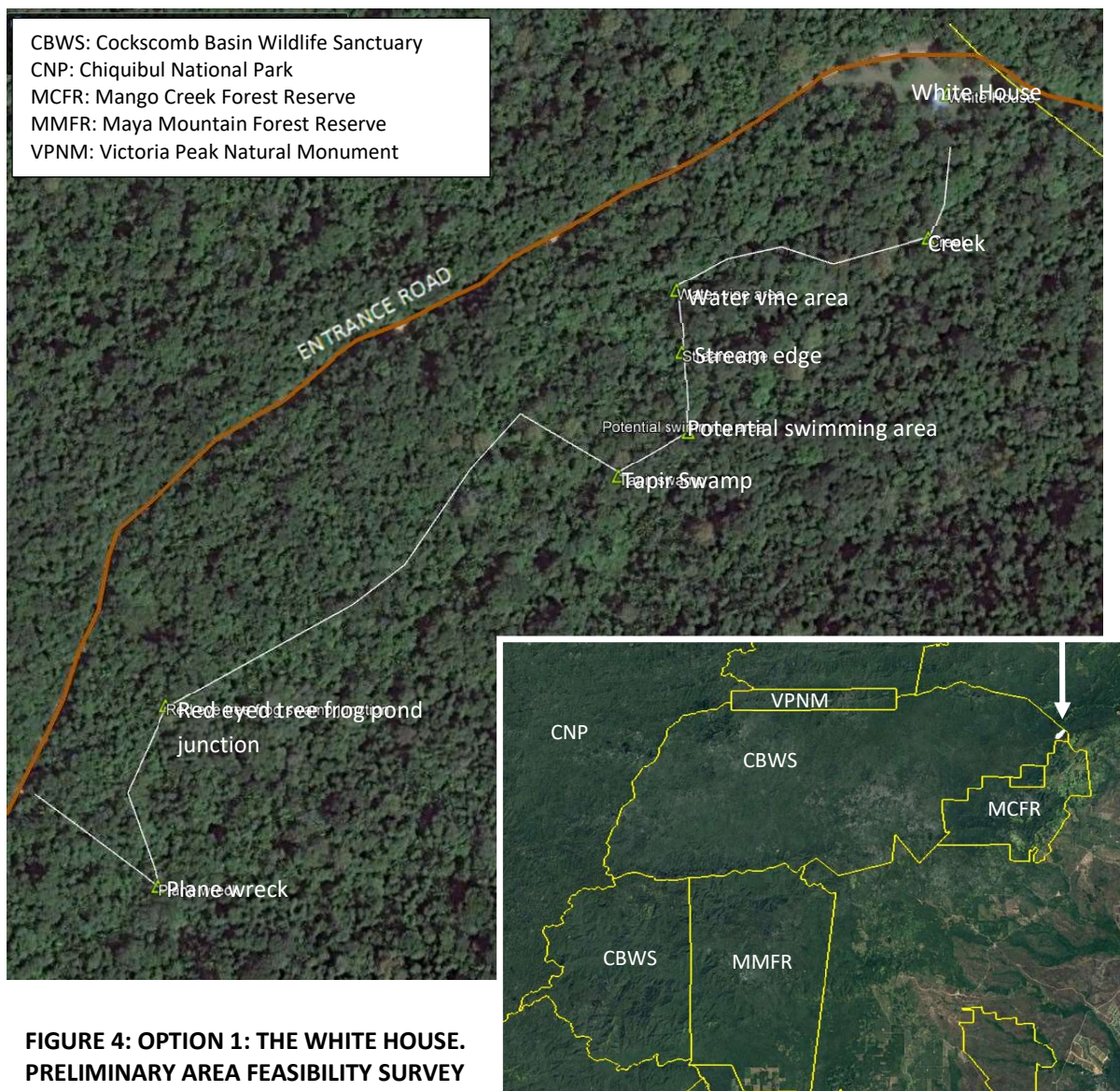
**TABLE 8: POTENTIAL LOCATIONS FOR CRUISE TOURISM ZONE OPTIONS**

ANALYSIS OF CTZ OPTIONS		
Proposed Site	Pros	Cons
<b>Option 1: White House</b>	<ul style="list-style-type: none"> <li>▪ There is maintained road access to the White House</li> <li>▪ The White House will be staffed once the entrance gate has been installed, with the establishment of Zone 1 (2)</li> <li>▪ The White House area is over 2km from the CBWS Zone 1, reducing and potential impact on other CBWS users</li> <li>▪ It would provide easy access for staff associated with management of CTZ</li> <li>▪ Logistics are better for medical evacuations</li> <li>▪ Creeks in the area could form the focus for scenic forest paths with interpretive information</li> <li>▪ Increased presence in the White House area will reduce illegal incursions</li> <li>▪ The White House is within the current CBWS management footprint</li> </ul>	<ul style="list-style-type: none"> <li>▪ There is no known access to water features – rivers, waterfalls etc. or overview points. Activities would need to focus on the forest</li> <li>▪ The level of coach traffic may impact road quality</li> <li>▪ The level of coach traffic may impact the wilderness feel of CBWS for other visitors (though the coach park could be hidden from view in the forest)</li> <li>▪ Construction of the facilities required for hosting CT visitors would potentially disrupt road access during the construction period</li> <li>▪ Increased presence in the area may result in a shift in wildlife out of the protected area, into the adjacent private land</li> </ul>
<b>Option 2: MCFR 1</b>	<ul style="list-style-type: none"> <li>▪ There is maintained road access to the South Stann Creek, south of Snook Eddy</li> <li>▪ There are other areas of the MCFR1 that may provide good recreational opportunities for cruise ship visitors</li> </ul>	<ul style="list-style-type: none"> <li>▪ Mango Creek Forest Reserve 1 is currently outside of the management footprint of Belize Audubon Society and would require a co-management agreement or management concession</li> <li>▪ The access road passes through private property</li> <li>▪ There may be conflicting concessions already existing for use of the area, under the Sustainable Forest Management programme</li> <li>▪ No potential site has been identified or assessed for suitability. BAS currently has no facilities in the area and would need to develop a trail system from scratch that meets cruise ship visitor recreational expectations</li> <li>▪ Daily logistics for moving staff and resources would be expensive</li> <li>▪ Even if the South Stann Creek provides a navigable waterway for river-tubing, there would be less of a wilderness feel in the Forest Reserve along the river course</li> </ul>

**TABLE 9: ASSESSMENT OF PROS AND CONS FOR TWO CTZ LOCATION OPTIONS**

**Recommendation:** The recommended option is the establishment of a second Zone 1 by the White House to encompass both the projected increased use of the White House by the rangers following the installation of the entrance gate, and the development of cruise visitor facilities in the same area (Figure 4).

A Decision Support Tool has been used to analyse the impacts of the preferred Option 1: Establishing the cruise visitor trail in the White House area at the entrance to CBWS. The area is adjacent to the CBWS entrance, with good forest structure and waterbodies. The presence of the White House provides an existing base for staff support of cruise visitation. The total area impacted would be approximately 0.06% of the total CBWS area, and would reduce the impacts of large-scale tourism on the traditional CBWS trails and Headquarters, and on visitor satisfaction for those visitors seeking the remoteness, tranquillity and wildlife CBWS is known for.



**FIGURE 4: OPTION 1: THE WHITE HOUSE. PRELIMINARY AREA FEASIBILITY SURVEY FOR CRUISE VISITATION**

## DECISION SUPPORT TOOL: WHITE HOUSE TRAIL

### Questions

### Rationale

#### Project: Establishing a Cruise Visitor Trail at the White House (Zone 2)

<b>1</b> What is the likelihood that the situation involves sensitive, rare, or irreplaceable natural resources?	The trail is planned for Zone 2, for education, recreation and natural environment. The area of impact is approximately 1.1km, with a trail system that would support large groups with relatively low mobility (wider trails, less basic infrastructure such as bridges, some modification to the natural environment, but retaining the natural qualities. The ecosystem and species are considered to be well represented in other areas of CBWS, and resource conditions and potential impacts are generally understood, as the ecosystems are similar to those being utilized for other trails elsewhere in CBWS. Only an exploratory survey has been conducted in the area so far to assess for suitability and route.
<b>2</b> What is the likelihood that the situation involves sensitive, rare, or irreplaceable cultural resources?	Surveys show that the plane wreck, which may be used as a trail destination or entry point, is the only key historical resource that may be impacted, and is not considered at risk. There are no other sensitive, rare, or irreplaceable cultural resources in the area.
<b>3</b> What is the likelihood of imminent and significant changes to the natural or cultural resources?	<p>The trail will be in Zone 2, which currently has very limited modification of the natural resources with the exception of the White House clearing and the road. The trail will have a small footprint, and will be designed to minimize impacts on natural resources. However, there may be increased activity around the White House, impacting visitor experience for those entering CBWS and reducing the perception of remoteness.</p> <p>A second Zone 1 would be created, requiring forest clearance to accommodate visitor facilities and tour buses - ideally, these would be screened from the road by leaving a forest margin, to reduce visual impacts for other arriving visitors.</p> <p>An initial survey suggests there are natural areas of interest used by wildlife (such as the Tapir Swamp), which can be included within the trail system, as group visitation will be limited to a short timeframe during the day. The red eyed tree frog pond, however, may be more vulnerable to large scale visitation impacts unless there is carefully installed infrastructure to manage impacts – but even this may change the nature and quality of the pond as a breeding site for amphibians. It is therefore recommended that this feature is not included in the White House trail.</p>
<b>4</b> What is the likelihood of imminent and significant changes to visitor experience?	The trail will enhance cruise visitor experience, providing a highly accessible, modified trail with professional, informative signage and infrastructure that will introduce large groups to the forest ecosystem. There is concern by tour guides and regular visitors of the impact large-scale cruise-based visitation may have on the qualities of the protected area. However, placing the facilities in an area outside of the main CBWS headquarters should alleviate many of these concerns – especially if it is feasible to largely hide the facilities and parking area from the road by leaving a margin of trees, minimizing visual impacts, and maintaining the qualities of solitude for which CBWS is treasured.



## DECISION SUPPORT TOOL: WHITE HOUSE TRAIL

Rating Questions	Rationale
<b>Project: Establishing a Cruise Visitor Trail at the White House (Zone 2)</b>	
<b>5</b> How will the issue affect other aspects of land management in the area or surrounding areas?	This trail will need significant maintenance to maintain visitor satisfaction for the cruise ship visitors, placing additional work on the CBWS staff. Placing this trail away from the main CBWS trails will reduce the impacts on visitor satisfaction for those visitors seeking the quiet solitude that CBWS has to offer. Noise impacts from buses and large groups should be monitored at key viewpoints – e.g. Tiger Fern and Ben’s Bluff.
<b>6</b> What is the geographic extent of the issue’s impacts? Scales of impacts include: national, regional, state, local/county, and site or project.	This trail has a small footprint (approximately 28 ha) within the larger CBWS area of 49,477 ha (0.06%), but has the potential to significantly increase the protected area manager’s ability to improve financial sustainability, and provide a model for financial sustainability
<b>7</b> What is the relative interest of stakeholders affected by the action? Stakeholders may include: local communities, general public, special interest groups, recreational visitors, commercial users, and others.	There is interest from the cruise ship industry in using CBWS as a destination, and from Maya Centre and the other stakeholder communities in ways in which this can provide further benefits to the communities (through stalls selling crafts and other local products). Other users and tour guides may take a more negative view of the introduction of cruise visitation, though careful management and separation from the main Headquarters and trail system, and adequate communication with tour guides, may help to mitigate much of this. The introduction of cruise visitation will require upgrading of the road – this will address some of the negative visitor comments on road condition – especially if the improved road conditions extend to the main CBWS facilities.
<b>8</b> Is the impact temporary (low) or long lasting (high)?	The trail will be established as a permanent addition to the Zone 2 facilities, and require ongoing maintenance

**TABLE 10: DECISION SUPPORT TOOL: ASSESSMENT OF WWHITE HOUSE AREA AS POTENTIAL CRUISE-VISITATION AREA**

### 3. VISITORS

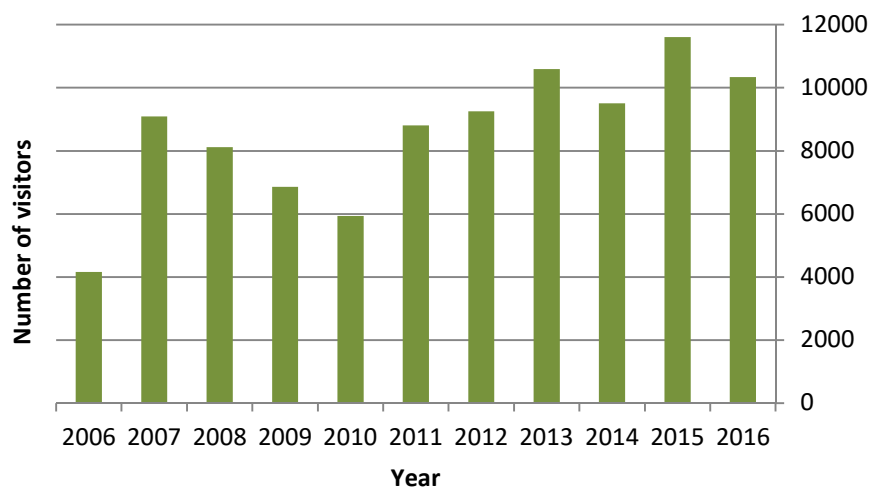
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Cockscomb is well positioned to offer visitors a tropical forest “jungle” experience, with opportunities for seeing abundant, diverse wildlife, accessible scenic vistas of unbroken forest canopy, well maintained trails rich in palms and scattered trees of giant proportions, lianas, epiphytes, buttress roots and the fleeting glimpses of a broad assortment of birds; jungle streams and inviting crystal clear waterfalls – all the natural components for breath-taking jungle experiences. Jungle streams and waterfalls figure highly in visitor expectations, often providing a focus for walks through the forest - this appeal of streams and waterfalls has been recognized in the planning and routing of the present trail system around the HQ, which offer stream crossings or views of scenic waterfalls. However, these features figure less prominently on the longer trails to Outlier and Victoria Peak – trails focused more on the stunning vistas and wilderness values of the Cockscomb Basins.

From its start as a re-furbished logging camp, the facilities have been developed over time to meet the required role of resource protection and provision of an important natural-resource based tourism destination, through the renovation of the old logging buildings and construction of new facilities. The majority of the protected area infrastructure is located in a centralized area at the Headquarters site, the Protected Area Service Zone, with the exception of the White House at the entrance to the Wildlife Sanctuary. There are opportunities for overnight stays, with a central campsite located at the Headquarters site and a number of smaller designated basic camping facilities scattered through the Sanctuary (at Tiger Fern, Outlier, and at 12km and 19km on the Victoria Peak trail, and on the Outlier trail). It is recognised, however, that the current tourism structure doesn’t optimise financial sustainability.

#### VISITOR PROFILES

Over the years, visitation has increased, from just over 4,000 in 2006 to over 10,340 in 2016 (Figure 5). The tourism base is primarily international visitors from the USA, Canada and Europe accessing the area through day tours from nearby coastal resorts, or as individual travellers, staying either in Cockscomb or in Maya Centre.



**FIGURE 5: VISITATION TO COCKSCOMB BASIN WILDLIFE SANCTUARY (BAS, 2017; BTB TRAVEL AND TOURISM STATISTICS DIGEST, 2015)**

Trends in tourism numbers over the years are affected by the state of the global economy

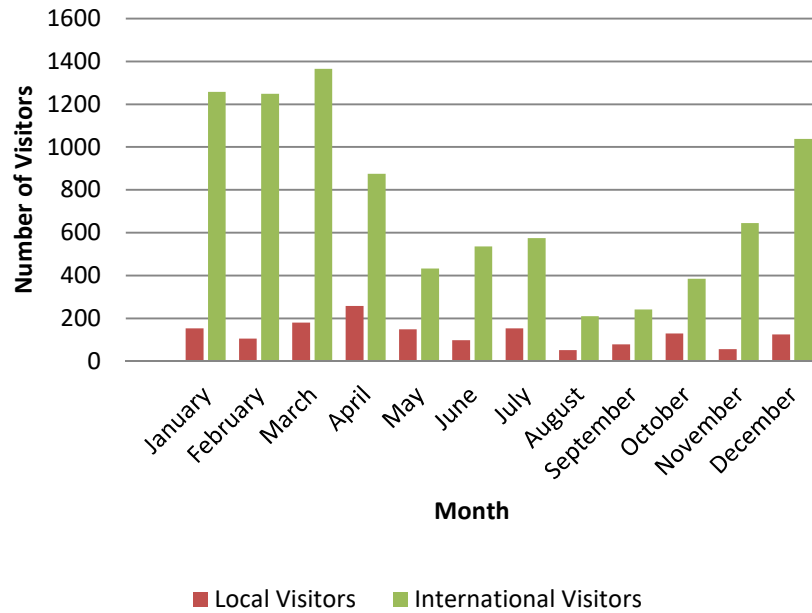
and impacts from natural disasters. Visitation is also seasonal, with peak numbers between January and March, and lowest visitation in August and September (Figure 6).

Recreational use by local communities is very limited, and visitation by Belizean nationals accounts for only 14% of total visitor numbers—very few people in the local communities see Cockscomb Basin Wildlife Sanctuary as a resource for their use. The majority of visitors are non-Belizean, participating in organized tours or excursions,

most often based from coastal communities or resorts (Placencia, Hopkins, Dangriga). The highest demand activity for such groups is river-tubing down the South Stann Creek, with other popular activities including walking some of the shorter trails (particularly Ben’s Bluff, to the waterfall), and bird watching around the Headquarters and nearby trails. These groups are generally day visitors, typically in the Wildlife Sanctuary for only 2 to 4 hours.

Independent visitors, generally with rental vehicles, are a steady but relatively small portion of the visitor cross-section – but account for a high percentage of the overnight visitors using accommodation facilities in Zone 1. Many of these are interested in natural history, sometimes with a focus on birds, as Cockscomb becomes increasingly well known for its avifauna. Low budget backpackers account for only a tiny fraction of the total visitors to CBWS - the absence of public transport to the site, and the relatively high cost of private taxis from Maya Centre puts a visit to CBWS beyond the budget of many backpackers.

Small-scale cruise ship tourism groups (<20 people per group) are accessing the area on a regular basis, with a primary focus on fun and river-tubing. There is significant interest for increased use of Cockscomb Basin Wildlife Sanctuary from cruise visitor tours originating from the Harvest Caye cruise ship terminal, with the potential to improve financial sustainability of the protected area. However, it is recognised that the very qualities for which CBWS is renowned – the wildlife, sense of peace, solitude and wilderness among them – would be at risk, and the level of tourism impact would increase significantly, over-stressing the trail system and reducing visitor satisfaction.



**FIGURE 6: VISITATION TO COCKSCOMB BASIN WILDLIFE SANCTUARY PER MONTH, 2016 (BAS, 2017)**

A Visitor Profile assessment identifies seventeen visitor types, their reasons for visiting Cockscomb and the relative visitor flow (Table 11). The majority are considered “low flow” - small groups, and small numbers of groups, all drawn by the scenic values and wildlife of the area. Catering for Birdwatching Groups is an area that BAS is focusing on increasing – current number are low, with only 7 to 8 groups visiting in 2016. The recent surge of interest in bird tourism and increased marketing targeted at this visitor profile, however, should result in an increase in this sector in the future.

Two medium-flow profiles are identified as increasing. 15 Extreme Adventure Groups (a total of 174 people in groups ranging from 2 to 10) visited Cockscomb for the purpose of climbing Victoria Peak in 2016 (BAS data, 2016), with 60% of these being Belizean. The second sector is that of the Student Group, either Belizean or International students, visiting Cockscomb to learn about the natural resources of the area. In 2016, Cockscomb hosted 18 groups of international students, with between 18 and 20 students per group – approximately 342 students in total.

A third medium-flow group are cruise-ship visitors originating from pocket cruise ships. The establishment of Harvest Caye, near Placencia, as a cruise ship terminal has led to increasing interest in use of Cockscomb for larger cruise-ship groups, with the need to plan for the increased numbers and resource needs.

The highest flow groups are the School Groups – Cockscomb Basin is an important day trip activity for many schools, providing an opportunity to introduce younger students to the forest and wildlife, and engage them in good stewardship of the environment. In 2016, 25 school groups visited Cockscomb, with individual groups of up to 180 students.

The Visitor Profile has then been used to assess acceptable visitor conditions, and level of visitor impact, leading to recommendations on the Zone(s) most suitable for the different visitor types (Table 12)

**TABLE 11: VISITOR PROFILES**

<b>VISITOR TYPE</b>	<b>PRIMARY REASON(S) FOR VISITING</b>	<b>SECONDARY REASON FOR VISIT</b>	<b>VISITOR FLOW</b>
<b>Nature Lovers</b>	Wildlife and scenic values	Wilderness area	Low
<b>Researchers</b>	Scientific research, specific species / groups of species	Scenic values and wildlife	Low. 1 or 2 individual researchers or small groups a year
<b>Birders / Birdwatching groups</b>	Birds, looking for specific birds – “e-birding”	Scenic values and other wildlife	Low – increasing. 7 – 8 groups a year. Increasing number of local birders
<b>Night Hikes</b>	Wildlife		Low but increasing
<b>Families</b>	Wildlife, learning experience, fun	Scenic values and wildlife	Low - small number of groups each year
<b>Local Visitors</b>	Scenic values, waterfalls	Wildlife	Low
<b>Mountain Biking</b>	Fun / sport	Scenic values and wildlife	Low
<b>Kayaking</b>	Fun / sport	Scenic values and wildlife	Low
<b>School Groups Overnight</b>	Learning experience	Scenic values and wildlife	Low 7-10 groups a year– smaller groups –spend the night
<b>Extreme Adventure Groups</b>	Victoria Peak (Wilderness, challenging)	Adventure, scenic values	Medium (seasonal) 2016: 15 groups (174 people) 60% Belizean and 40% international. 2018: 10 groups (128 people)
<b>Hikers and Campers</b>	Overnight camping trips – Tiger Fern, Ben’s Bluff, Outlier, 12k – usually eco-tourists	Scenic values and wildlife, adventure	Medium
<b>University Groups / International Students</b>	Wildlife, learning experience	Scenic values and wildlife	Medium 2016: 18 groups of international students (18-20 people) –increasing
<b>Recreational Student Groups</b>	Fun, recreation	Scenic values and wildlife	Medium 2016: Fewer than 15 groups
<b>Cruise Ship Visitors</b>	Fun	Scenic values and wildlife	Medium
<b>General Interest Tours</b>	Scenic values and wildlife	Wilderness Area	High
<b>River tubing</b>	Fun	Scenic values and wildlife	High
<b>School groups Day trip</b>	Learning experience	Fun	High (2016: 25 groups with up to 180 students per group)

**TABLE 12: VISITOR REQUIREMENTS AND LEVEL OF IMPACT**

<b>VISITOR TYPES</b>	<b>ACCEPTABLE VISITOR CONDITIONS</b>	<b>LEVEL OF IMPACT</b>	<b>RECOMMENDED ZONE</b>
<b>Nature Lovers</b>	Pristine conditions where possible, Limited contact with other visitors on trails	Very Low. Very environmentally conscious	Zone 2 / Zone 3
<b>Researchers</b>	Pristine conditions where possible (depending on research interest). Limited contact with other visitors. Presence of specific species / ecosystems	Very Low – Low (dependent on research field)	Zone 3
<b>Birders / Birdwatching groups</b>	Well maintained trails. Limited contact with other visitors on trails	Low. Very environmentally conscious	Zone 2
<b>Night Hikes</b>	Limited contact with other visitors on trails	Low	Zone 2
<b>Families</b>	Well maintained trails, clean (low mud), safe, educational	Low	Zone 2
<b>Local Visitors</b>	Well maintained trails	Low	Zone 2
<b>Mountain Biking</b>	Well maintained trail	Low to Medium – depending on state of trail	Zone 2 / Zone 3
<b>Kayaking</b>	Well maintained trails, easy access to river, clear river route, clean, safe	Low	Zone 2 / Zone 3
<b>School Groups Overnight</b>	Well maintained trails, low mud, easy access to river, safe, educational	High -noise, littering - not as environmentally conscious	Zone 2
<b>Extreme Adventure Individuals</b>	Pristine conditions where possible, limited contact with other visitor groups and challenging trails	Low	Zone 3
<b>Hikers and Camping</b>	Rugged, long trails in the natural environment, safe, clean campsites	Low	Zone 2 / Zone 3
<b>University Groups / International Students</b>	Safe, easy access to tropical forest	Low	Zone 2
<b>Recreational Student Groups</b>	Well maintained trails, clear river route, clean (low mud), safe	Medium -noise, littering, smoking, drinking - not as environmentally conscious	Zone 2
<b>General Interest Tours</b>	Well maintained trails, clean (low mud), safe	Low to Medium	Zone 2
<b>Inner tubing</b>	Well maintained trails, easy access to river, clear river route, clean (low mud), safe	High – noise, littering, not as environmentally conscious	Zone 2
<b>Cruise ship visitors</b>	Well maintained trails, low mud, safe	Medium – High depending on size of groups	Zone 2
<b>School groups Day trip</b>	Well maintained trails, clean (low mud), easy access to river, safe, educational	Medium -noise, littering - not as environmentally conscious	Zone 2

## 4. VISITOR EXPERIENCE

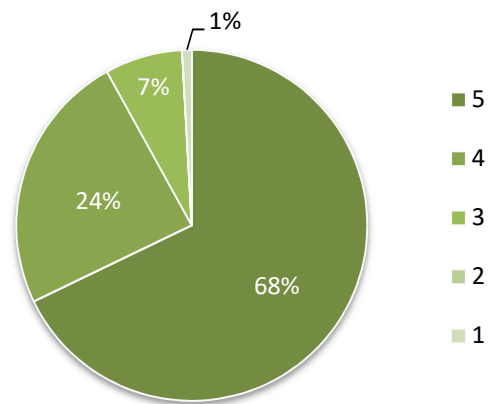
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### REVIEW OF VISITOR EXPERIENCE

Cockscomb Basin Wildlife Sanctuary is considered to be one of Belize’s foremost terrestrial protected areas – a wilderness area protected for its wildlife – particularly for the jaguar population that uses the area. Visitors come with varying expectations – some come for the natural environment - seeing wildlife, experiencing tropical forest, and birding. Others arrive expecting fun and adventure – tubing down the South Stann Creek River, climbing to see scenic vistas – the broad expanse of tropical forest in Cockscomb East Basin, with Victoria Peak and the Cockscomb Range in the distance, as well as swimming in waterfall pools surrounded by verdant tropical vegetation.

A review of 112 trip advisor reports by visitors to Cockscomb Basin Wildlife Sanctuary from January 2015 to April 2017 demonstrated that visitor experience is generally very high – 92% rated their experience as 4 out of 5 or above, with 68% rating their experience as a 5 (Figure 7). Only 1 report highlighted a bad experience, rating as 1, and there were no reports rating as 2.

The majority of visitors do a combination of trails and activities, depending on their reasons for visiting, levels of fitness, and the time they have available. River tubing a section of the Stann Creek River and climbing the Tiger Fern trail, with its scenic vistas and waterfall pool, sometimes with a visit to the Plane Wreck if there is time, are the most common combination, particularly for larger tour groups from the coastal tourism lodges. The order in which these are done can be varied, as can arrival times, reducing the chances of encountering other groups doing the same activities. For smaller groups with a higher level of fitness, Ben’s Bluff, a second, more strenuous trail that also features a waterfall, is also used, reducing the pressure on any one trail, and the chances of encountering other people.



**FIGURE 7: VISITOR EXPERIENCE RATINGS FOR CBWS ON A SCALE OF 1 (VERY POOR) TO 5 (VERY GOOD), DRAWN FROM TRIP ADVISOR DATA, JANUARY 2015 – APRIL 2017**

### ACCESS

Cockscomb Basin Wildlife Sanctuary is approximately 20 miles south of Dangriga, accessed from the Southern Highway by an unpaved road that winds its way for 6 miles (10 km) westwards into the Cockscomb Basin. The junction with the southern highway is at Maya Centre, the gateway to the Wildlife Sanctuary. Here, the Maya Center Women’s Group Gift Shop provides the interface between the local

community, the Wildlife Sanctuary and the visitors, selling entrance tickets as well as local and cultural souvenirs.

The unpaved road from Maya Centre to the CBWS Headquarters is generally all-year access for high-ground vehicles, unless impacted by extreme storm events. Many visitors access the area as part of tour groups, arriving in tour buses from the coastal tourism lodges in Dangriga, Hopkins and Placencia. Travelling times are appropriate for day tours, and there are opportunities for refreshment, meal stops and possibly short visits to sites of interest on the way or in Maya Centre. Others hire vehicles whilst in Belize and include Cockscomb in their travel itinerary, basing themselves either at the Reserve Headquarters or in one of the coastal towns.

Access to the Wildlife Sanctuary is less easy without private transport, and the costs involved can be a disincentive for back-packing travellers. However, it isn't impossible. Buses that travel between Dangriga Town and Punta Gorda Town will stop at Maya Center, if requested. Visitors can then hike into the park (roughly 2 hours), or charter a local taxi from the village. Taxis are also available from Dangriga, Hopkins and Placencia, through the rates are higher with the increased distance, and vehicle safety and roadworthiness may not meet international visitor expectations / standards.

A gateway marks the point at which the road crosses into the Wildlife Sanctuary, adjacent to the White House (Proposed Zone 1 (2)), the outlying accommodation facility. The access road ends at the CBWS Headquarters (Zone 1 (1)).

### ENTRANCE FEES

All visitors are required to pay the Cockscomb Basin Wildlife Sanctuary entrance fee of Bz\$2.50 for Belizeans and Bz\$10.00 for non-national visitors. This can be paid either at the Maya Center Women's Group Gift Shop or at the Wildlife Sanctuary office in the CBWS Service Zone. Despite recent strengthening of the ticketing system, some visitors still enter and leave the protected area without paying. Installing a gated ticket booth at the point where the road crosses into the Wildlife Sanctuary, near the White House, is currently being considered to address this, as is the need for a mechanism to facilitate ticket payment for early visitors (birders) and night tours.

### COCKSCOMB BASIN WILDLIFE SANCTUARY




#### Plan Your Visit

Hours of Operation:  
8:00am-4:30pm

#### Entrance Fee

Nationals: BZ \$2.50  
Non-nationals: BZ \$10.00

#### Main Attractions

-  Wildlife Viewing
-  Waterfalls
-  Hiking
-  River Tubing
-  Birding
-  Camp Grounds
-  Swimming
-  Lodging

### VICTORIA PEAK NATURAL MONUMENT

#### Plan Your Visit

Hours of Operation:  
8:00am-4:30pm

#### Entrance Fee

Nationals: BZ \$10.00  
Non-nationals: BZ \$10.00

#### Opening Time

Feb 1 - May 31

#### Main Attractions

-  Mountaineering
-  Camp Grounds
-  Nature Trails
-  Wildlife Viewing



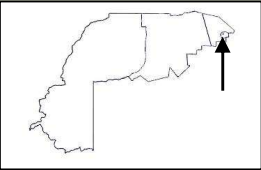
For those intending to climb Victoria Peak, there is an additional Bz\$10 entrance fee for access to Victoria Peak Natural Monument for both Belizean and non-national visitors. They are also required to have at least one professional guide, the majority originating from Maya Center.

Camping Fees: Additional fees are required for staying in the camping areas (Bz\$10 per person (Belizean) / Bz\$20 (non-Belizean) for staying at the main camp in the Service Zone, and Bz\$20 per person staying at each of the three designated camping areas in Zone 3).

River tubing fees: There is a Bz\$5 activity fee per person for river tubing, and additional fees of Bz\$5 for tube rental and Bz\$5 for life jacket rental for those not arriving with their own guides.

## **RECOMMENDATIONS**

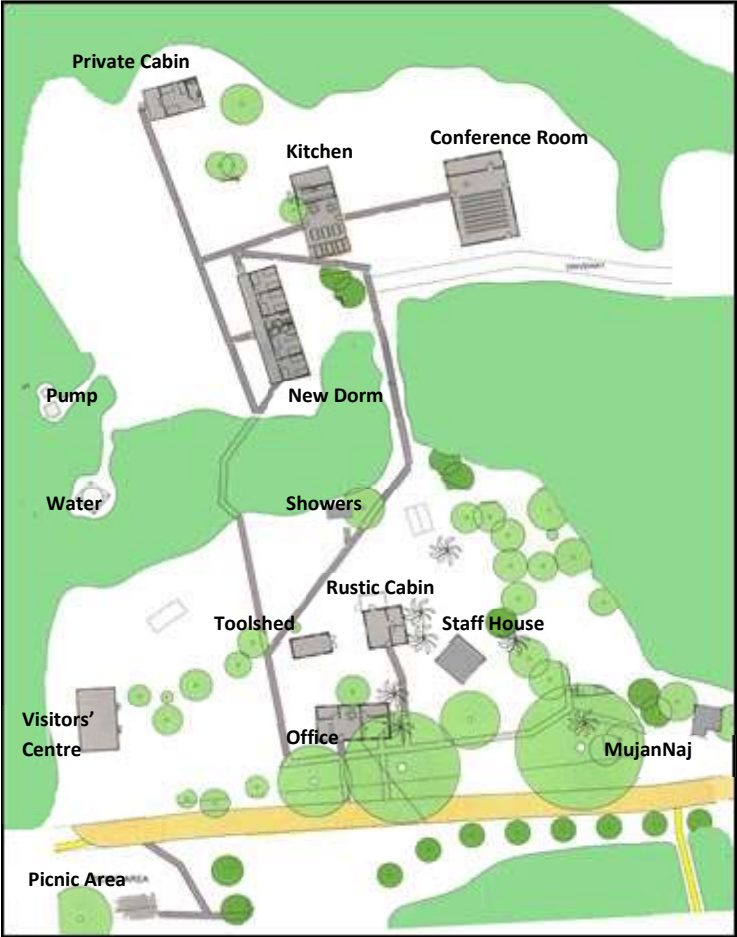
- The river tubing fee should be increased to \$15, regardless of whether guests have tubes or not.
- Tubing equipment (tubes, life jackets etc.) should be upgraded to professional quality and available for rent for Bz\$10 per person (standardised with St. Herman's Blue Hole National Park), allowing for maintenance and repair of the tubes.

CBWS SERVICE ZONE (ZONE ONE)		OBJECTIVES
<p><b>Zone One</b></p> 	<p><b>CBWS Services Zone</b> Core area with car parking, administration, Visitors Centre, and accommodation facilities</p>	<ul style="list-style-type: none"> <li>▪ To provide administration and support facilities for CBWS</li> <li>▪ To provide an access point, visitor information and protected area interpretation</li> <li>▪ To provide accommodation for visitors</li> <li>▪ To provide research facilities</li> <li>▪ To maintain user impacts within pre-defined acceptable limits</li> <li>▪ Introduce visitors to birds through the Bird corner</li> </ul>

The CBWS Service Area (Zone 1) provides the facilities for administration and operation of the Wildlife Sanctuary. From its start as a logging camp, the facilities of the Headquarters site have developed to fulfil the requirements dictated by the roles of resource protection and financial sustainability through tourism, through the renovation of the old logging buildings, and construction of new facilities (Figure 8).

The office provides the first point of contact with the protected area staff, and has rated highly with visitors. The “Meet-and-Greet” activities are well conducted, and staff play a critical role in recommending trail / activities to guests based on their interests, level of fitness and current use.

The zone is highly modified, with cement pathways for visitor management, and basic support infrastructure. The majority of the buildings are located in a centralized area at the Headquarters site (with the exception of the White House at the entrance of the Sanctuary, and an abandoned ranger outpost building at Juan Branch). A car park is situated near the picnic area, as is an emergency helicopter landing site.



**FIGURE 8: THE CBWS HEADQUARTERS AND FACILITIES (2017)**  
(ADAPTED FROM JANUS FOUNDATION BELIZE, ALEX LAASNER, 2003)

The HQ site can accommodate a maximum of 47 visitors in rooms, and more at the campsite, and an additional 6 at the White House, by the entrance gate. Overnight visitors have access to bathroom facilities and a shared kitchen. Electricity is generated on-site by solar panels, and water is pumped from a well and stored in a header tank for supplying those buildings requiring water. The staff house can accommodate 4 staff members - whilst not all of the staff are resident, at least two are present each night.

Accommodation is basic, and is one of two areas that results in the limited number of reports of visitor dissatisfaction (along with biting insects). Based on visitor expectations, overnight visitors tend to fall into two categories – those (the majority) that were aware that facilities would be basic and accepting it as part of the experience, and those that felt that accommodation was too basic for the fees being charged.

A Visitor’s Centre provides interpretation for visitors and school groups, and a Conference Room strengthens the ability of CBWS to be able to support national and international student groups engaged in project work. An original building from the logging camp once provided accommodation for researchers, but this has recently been demolished and needs to be replaced for continued support of research and facilitation of the use of CBWS by university groups.

A single trail lies within Zone 1 – the Royal Flycatcher Trail. This highly modified trail has been designed for easy access, and to introduce people to birding in Belize. It’s location, in the regenerating vegetation adjacent to the campsite, results in the presence of a high diversity and concentration of forest edge bird species.

## RECOMMENDATIONS

- Install a gate house and gate at the entrance to the protected area to improve monitoring of visitors and fee collection
- Establish a second Zone 1 at the White House, extending into the adjacent forest, to accommodate facilities for cruise tourism visitation.

### THINGS THAT MAKE A DIFFERENCE

*“The staff were very passionate about the reserve”*

*“Once you arrive, check in at the office and get information about the trails. The park ranger was helpful in pointing us to the best trail for our desired experience (a nice hike and a waterfall).”*

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### Zone 1

#### Overnight Accommodations:

- Dorm building w/4 rooms (30 people)
- Rustic cabin w/3 rooms (7 people)
- Private cabin w/1 room (6 people)
- Mujan Naj (4 people)
- Staff house
- Camp Site

#### Outside Zone 1

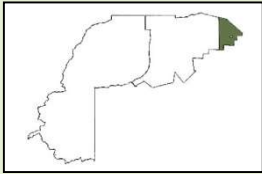
- White House (6 people)
- Juan Branch

#### Support Facilities

- Main office/front desk
  - Visitor Center (~20 people)
  - Dining Room and Kitchen (25 people)
  - Toilet and shower blocks (x2)
  - Conference facility
-

## NATURAL ENVIRONMENT, EDUCATION AND RECREATION ZONE (ZONE 2)

## OBJECTIVES



### Education and Recreation Zone

Heavy use trails leading from Zone One, designed for visitation and education activities.

Four trail systems:

- River Path
- Curassow Trail / Rubber Tree Trail
- Ben's Bluff
- Trail to River Overlook

- To provide access to large numbers of visitors whilst minimizing impact through landscape alteration
- To increase protected area and wildlife interpretation opportunities for visitors
- To maintain user impacts within pre-defined acceptable limits
- To maintain water quality of the South Stann Creek River

The **Natural Environment, Education and Recreation Zone (Zone 2)** provides visitor access to heavy use, easy trails from the Headquarters, providing an opportunity for all visitors to experience the tropical forest. In some cases, such as the River Path, trails are wide, accommodating large groups, with some modification of the natural environment – such as steps, bridges, and low boardwalks crossing muddy areas. Impacts and the modifications for dealing with these are apparent to most users, with moderate loss of vegetation and soil on major travel routes, campsites and popular scenic viewpoints, and moderate to low opportunities for isolation and solitude. Impacts persist from year to year, and active management is necessary to maintain conditions at a level that will satisfy visitor expectations.

### THINGS THAT MAKE A DIFFERENCE

*"It was a three-part tour. The first was a botanical jungle walk and he pointed out the various plants and their medicinal uses. Along the way he identified birds and wild life. We returned to the visitor center for lunch which he provided. We then changed into our swimsuits, grabbed an inner tube and hiked to the river. The float was fantastic and he makes it a point not to have us around other rafters so you would enjoy the jungle experience. Once out of the river we hiked to the waterfall."*

**River Path:** A 700m one-way route to a river overlook point, a popular bathing location and the focus of the heaviest visitation – the river tubing groups and school parties. It is wide, passing through a shady, regenerating forest structure, and has seasonal problems of mud through heavy use and poor drainage that have been largely addressed through management activities.

**River Tubing:** The activities available in this zone also include river tubing on the South Stann Creek River, enjoyed by an estimated 80% of visitors to the CBWS area (CBWS staff, 2017) - approximately 9,300 visitors a year (an average of around 775 a month). This is leading to concerns for the need to monitor water quality and river integrity. These concerns are exacerbated by the recent introduction of a second inner tubing venture further up-river by a commercial tourism operation. Use of the river for tubing isn't constant throughout the year – in January, 2017, for example, 442 people went tubing on the river. The demand for tubing in March, April and May is even higher, but numbers then decrease over the rest of

the year. Access to the river is from the **River Overlook Trail**, a branch off the first part of the Victoria Peak Trail, with the exit point being along the River Path. Both these trails have to stand up to heavy traffic, with the majority of users passing along them. Safety in the water is a concern, as visitors are unwilling to wear life jackets and are not currently required to have guides. This can be addressed through strengthening policies and procedures, and ensuring effective implementation.

## RECOMMENDATIONS

- Improved signage in the river to indicate route and exit
- Installation of a standardised green, yellow and red water level to be used to indicate safe and dangerous river levels, backed by written protocol and regulations as to when the river is closed to tubing groups
- All tour guides guiding the river tubing should have valid licenses and ensure their groups wear life jackets
- Fees should be increased for river tubing, with a fee for use of the river, and a fee for hiring tubes

**Curassow / Rubber Tree Trail:** A short, easy, circular trail accessed from the River Path, providing a shaded walk through forest with scenic views of one of the many streams in Cockscomb. It has been recommended that this trail system be targeted at children and families, and should encourage exploration of the forest using all senses, ensuring that following the trail is fun as well as a learning experience for both children and adults. It should be self-guided and interactive – consider including interactive interpretation, fun swing bridges, stepping stones etc. to engage children and youths, and encourage repeat visitation by Belize families.

**Tiger Fern and Ben's Bluff Trails:** These are similar in terms of topography and the opportunity to experience altitudinal changes in ecosystems. Both trails climbing to view points on adjacent hilltops that allow visitors to view the intact forest of the Cockscomb Basins (West and East), and the Cockscomb Ridge, with the iconic Victoria Peak in the background. Both cross streams, and both have waterfalls with pools for swimming. **Tiger Fern**, with its double waterfall, is considered the easier of the two, with a number of benches along the way to provide resting points for less active visitors, and a campsite at the view point. It is good for student groups and for hikers wanting to be active, and provides a satisfying goal of reaching the view point, though as this is the more popular of the two, the chances of solitude decreases. Ben's

**Ben's Bluff** is considered a more strenuous recreational trail, and suited to more active visitors. The trail leaves Curassow Trail, crossing the creek, and climbs through broadleaf forest up the nearest ridge, with a side branch to the waterfall. It then crosses the creek above the waterfall, and continues on to the top of the ridge, through the pine ridge vegetation to an open area of tiger fern. This provides opportunities to look over the scenic vista of East Basin. The waterfall is less impressive than Tiger Fern's, but there are greater opportunities for solitude

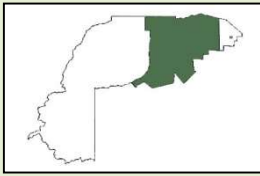
**The Gibnut / Green Knowledge (1-2-3) Trail:** This trail was designed for school groups and self-interpretation, and is considered the most versatile by the tour guides – an easy natural history trail with good canopy cover and scenic views of the river. It is used by many of the guides for both small and large groups.

**Wari Loop:** An easy trail that can be hiked in one hour, but generally takes 2-3 hours or half a day depending on the level of visitor interest. The trail has a number of different ecosystems, including the stunning Kaway Swamp, though may not be used by all guides all year round as it is seasonally flooded. The chances of seeing wildlife on this trail are considered to be higher, increasing its appeal to birders, and it use as a preferred night trail for some guides.

**Tinamou Trail:** A good general purpose trail – relatively flat, designed originally to showcase the mahogany trials that took place in the area. As a more open trail with greater visibility into the forest, birders and natural history hikers can sometimes see the bigger birds, curassow and tinamou, and even the occasional larger mammal.

## CBWS WILDERNESS ZONE (ZONE THREE)

## OBJECTIVES



### Wilderness Zone

The wilderness area of Cockscomb – East Basin. Access requires a guide.

- To maintain biodiversity and watershed functionality with minimal human impact
- To provide an access route to Victoria Peak Natural Monument and Outlier whilst minimising user impact
- To include an altitudinal gradient and representation of as many ecosystems as possible within the design of the zone
- Presence of required guide assists in minimizing impacts and provides safety backup

The Wilderness Zone (Zone Three) provides access to Victoria Peak and Outlier. Both these trails are for adventurous hikers and originate from the same old logging track that heads west into the Cockscomb Basins. Chances of seeing wildlife increase with distance from Zone Two as the level of visitor usage is much lower, and the higher elevation forests, particularly the moss and epiphyte covered elfin forest, provide visitors with a rare chance to see some of Belize's least accessible ecosystems. Four visitor types use these trails – adventurers, naturalists, mountain bikers and researchers. Researchers, particularly those associated with the jaguar camera trap surveys, use the Victoria Peak trail to access Cockscomb West Basin, with research trails branching off this main route.

**Victoria Peak Trail to 12km:** Some guides use the Victoria Peak trail for two-day hikes to 12km for small groups wanting longer hikes and a greater chance of wildlife encounters. Hiking to the 12km camp site and staying overnight significantly increases opportunities for seeing wildlife – the probability of seeing scarlet macaws, peccary, jaguar, tapir and spider monkeys is considered to increase with distance from Zone Two. The Victoria Peak trail is accessible by all-terrain vehicle to the camp site at 12km, important for safety backup for those people climbing the Peak, and useful for improving accessibility for research groups.

The trail is also used for mountain bike riders, though there are some concerns that this conflicts with the requirement for a guide beyond Zone Two, and with the solitude and unrushed quiet sought by naturalist hikers. Mountain bike use, however, is minimal. Guides identify the quality of bikes being offered as not as appropriate for the task as serious mountain bikers would demand. A similar concern is also voiced by some guides over the use of all-terrain vehicles - the noise, disturbance to wildlife and impacts on the track are cited as factors that reduce visitor satisfaction (Tour guide consultations, 2017).

**Victoria Peak:** As the second-highest point in the country (3,675 feet), Victoria Peak is considered an important part of Belize's national and cultural landscape. Whilst one of the lowest of Central America summits, it is also considered one of the hardest mountains to hike/climb in the region (Girma / Moon Guide, 2015). The trail to the peak was established in the early 1990's, and used by a small number of groups of hikers interested in reaching the summit (174 individuals in 2016). The climb generally takes three to four days (two days there, one to two days back), depending on the fitness of the group, and two very basic camp sites have been established to provide overnight facilities (one at 12km, the other at

19km). Safety concerns in 2001 led to the requirement for groups to be accompanied by at least one trained guide, and in 2004, it was decided to restrict access to the dry season (February 1<sup>st</sup> to May 30<sup>th</sup> May), as wet conditions reduce trail safety. Currently, all visitors planning on climbing Victoria Peak are required to have at least one guide, responsible for their safety and for minimising their impact on the environment. They are also required to sign a liability waiver indemnifying BAS. BAS has now developed a training programme for guides and recent recommendation call for a minimum of two guides per group (Swain et al., 2017).

A number of recommendations for improving communication, safety and infrastructure improvements have been identified during the assessment (Swain et al., 2017) and are incorporated into this report. These include the installation of rope anchors and expansion bolts in key locations (including the “catwalk”), identified as areas of high risk (Swain et al., 2017).

**Outlier:** Lower than Victoria Peak, Outlier also provides stunning views, but can be climbed in a day. Despite being in Zone 3, there is currently no requirement for a guide, though following a review of safety concerns, this is being amended.

## RECOMMENDATIONS

- The per person fee for climbing Victoria Peak should be increased to at least US\$50 for non-Belizeans to reduce pressure on the trail and upper elevation ecosystems
- Increase the ATV use fee to US\$200 to prevent misuse of BAS equipment for non-injury situations (it is currently US\$50)
- Outlier should be marketed as an achievement, with an associated per person climbing fee
- All site-certified guides should be trained in minimizing impacts in the upper elevation elfin forest for guiding both Victoria Peak and Outlier
- As with Victoria Peak, group size for Outlier should also be limited to ten (inclusive of guides), and a site-certified guide and a second assistant or apprentice guide should be a standard requirement

Five sections on Victoria Peak now have fixed ropes (lines) and one 19.5km section of trail has fixed anchors. It is recommended that (Swain et al., 2017):

- At the beginning of each Victoria Peak season, the fixed anchors, trees used as anchors and fixed lines on the peak should be inspected. If the anchors or ropes looked weakened, they should be replaced or re-rigged.
- The two glue-in anchors were placed in April 2017 at the 19.5km point on the trail should be assessed to confirm that the epoxy set well and that the anchors are solid. Fixed lines should be installed along this section of trail to provide a hand line to lessen the likelihood of someone sliding down the slope below the trail and going off the cliff. These anchors and hand lines should be checked at the start of each dry season.
- All guides should be required to carry at least one adjustable climbing harness for clients, and locking carabineers to belay clients and rappel, as well as one harness or sling for the guides themselves.



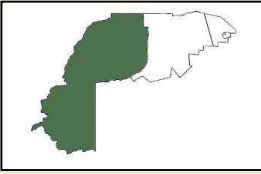
- Ensure the helipads are cleared and useable before the trail is opened in the dry season

Guide recommendations have also been provided (Swain et al., 2017):

- Each group should have a minimum of one trained guide certified for Victoria Peak, and one assistant or apprentice guide
- Group size should be limited to 10, inclusive of the two guides
- Collaborate with BTB to develop a site-specific permit for “Site Level” guides (Maya Centre residents) and licensed Belizean tour guides to lead trips up Victoria Peak, based on attending a site specific course that should include belaying/rigging, a review of emergency procedures and of management requirements
- Guides and BAS staff should be required to attend a refresher training prior to the start of each Victoria Peak season, and submit an emergency plan.
- Guides should be required to have current basic first aid training certification and, if available, basic rescue training, to include patient packing and transport to a helipad or the ATV trail
- BAS should have appropriate rescue equipment available at the Headquarters in case of emergencies
- All guides should be required to carry a fully charged Smart phone with \$20 of calling credits or a satellite phone, for use in case of emergencies.
- All guide should be supplied with a list of numbers to be used in emergency situations
- All guides should be required to carry an appropriate first aid kit

## CBWS PRESERVATION ZONE (ZONE FOUR)

## OBJECTIVES



### Preservation Zone

The western part of the sanctuary – West Basin and the Maya Mountain extension

- To maintain biodiversity and watershed functionality with minimal human impact
- To include an altitudinal gradient and representation of as many ecosystems as possible within the design of the zone
- To provide areas within the Wildlife Sanctuary that are preserved in an entirely natural state
- To protect areas of particularly fragile habitat and threatened or rare species

The Preservation Zone is not open to visitation, with the exception of BAS staff and researchers, but logistically, access is difficult.

**Juan Branch:** The more remote and rugged Juan Branch / Mare's Nest Branch / Salesipuede areas have a more dramatic combination of tropical forest, river views and waterfalls, but the logistics of access put this out of reach of virtually all visitors. The area is accessed from Maya Mopan along an old logging track. Whilst it is not open for tourism, it is accessed for research.

**Trio Branch and Richardson Peak:** The southern area of Cockscomb lies adjacent to Bladen Nature Reserve and the Maya Mountain Forest Reserve. Access is limited by the rugged terrain and is confined to BAS staff and researchers.

## 5. LIMITS OF ACCEPTABLE CHANGE

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Carrying capacity is based on the need to for protection of natural resources on the one hand and with the fulfilment of visitor expectations to ensure visitor satisfaction on the other. Carrying capacities are generally expressed and understood as limits or standards that have been set and should not to be exceeded to protect the natural and cultural characteristics of the area open to visitation, and balance use and protection, based on scientific and/or experiential pre-defined characteristics.

### Purpose of data gathering through visitor monitoring

- Definition of management hot spots
- Collection of data-supported arguments for restrictions, zone changes, changes in regulations
- Effective management of visitor flows for better protection of sensitive areas and better quality of experience
- Better integration of visitor monitoring into planning processes for improved visitor management)

### RESOURCE CONDITIONS AND STANDARDS

A broad range of acceptable conditions have been defined for each management zone (Table 13). These range from the highly modified in Zone 1, where the support infrastructure, car park and residential areas are located, to an unmodified / pristine environment in Zone 4, the Preservation Zone.

### CURRENT RESOURCE STATUS AND VALUES

Within each management zone, trails were assessed for their current resource value – the primary characteristics, trail usage and compatibility with key visitor types (Table 14).

RECREATIONAL CONDITIONS				
Least Pristine			Most Pristine	
Management Zone	Zone 1	Zone 2	Zone 3	Zone 4
<b>Resource Setting (General description)</b>	Highly modified environment with Protected areas services	Unmodified natural environment	Unmodified natural environment	Unmodified natural environment
<b>Ecological Conditions</b>	User impacts are high, but managed	Moderately affected by the actions of users	Minimally affected by the actions of users	Not measurably affected by the actions of users
<b>Prevalence and duration of impact</b>	Permanent loss of natural vegetation. Impacts managed through hardened paths, landscaping	Moderate loss of vegetation where camping occurs and along travel routes. Impacts in some areas persist from year to year	Minor loss of vegetation where camping occurs and along travel routes. Most impacts recover on an annual basis	Temporary loss of vegetation where camping occurs and along some travel routes. Typically recovers on an annual basis
<b>Visibility of impacts</b>	Apparent to all visitors, but meeting visitor expectations	Apparent to a moderate number of visitors	Apparent to only a low number of visitors	No visitation (except research)
<b>Social Setting (General description)</b>	Very limited opportunities for isolation and solitude	Moderate opportunities for isolation and solitude	High opportunity for isolation and solitude	Only open to research
<b>General level of encounters</b>	High – but meeting visitor expectations	Moderate	Low	Very infrequent
<b>Intergroup contacts while travelling</b>	Not applicable	Moderately frequent	Low	Very few
<b>Intergroup contacts at campsite</b>	Moderate – central campsite is within Zone 1, but use is seldom to maximum capacity	Relatively low	Seasonally Low to Medium	Non-existent

**TABLE 13: RESOURCE CONDITIONS(MODIFIED FROM STANKEY ET AL., 1984)**

<b>CURRENT RESOURCE STATUS AND VALUES</b>			
<b>TRAIL</b>	<b>PRIMARY CHARACTERISTICS</b>	<b>TRAIL USE</b>	<b>VISITOR TYPE</b>
<b>ZONE 1: PROTECTED AREAS SERVICE ZONE</b>			
<b>Bird Corner</b>	High concentration of edge species birds. Located primarily in the Protected Areas Service Zone	Short, very accessible trail to introduce people to birds. Modified with addition of bird bathing areas, flowers, birds, mist netting areas, some hardening of trail	All visitors
<b>ZONE 2: NATURAL ENVIRONMENT, EDUCATION AND RECREATION ZONE</b>			
<b>River Path</b> 1.4km	Regenerating secondary forest vegetation providing a forested relatively flat walk with a wide trail to the more open vegetation of the flood plain, and the South Stann Creek river. Opportunities for swimming	The easiest trail. Very accessible. Heavy use by large, general interest groups (eg. cruise ship tourism) and the return route for both river-tubing and Curassow and Rubber Tree loop - so has high volume of visitors, including school groups	All visitors
<b>Trail to River Overlook</b>	Forest trail forming the link between the Wari Loop and Victoria Peak trails. Provides access to the South Stann Creek River. Scenic vista.	Easy trail - heavy use by river-tubing groups, also the first part of majority of Zone 3 / Zone 4 trails	All visitors
<b>South Stann Creek River Float</b> 1km	A fun float down the river through undisturbed habitat, with opportunities for wildlife sightings. Access is from the River Overlook on the Wari Loop Trail, then returning along the River Path.	80% of visitors do the river float, primarily for fun in a natural environment. One tour guide includes night river-tubing in his itinerary.	All visitors
<b>Curassow / Rubber Tree Trail</b> 2.2km	A circular loop passing through forest vegetation, with access to views of the river and a tributary. It originates from and ends back at the River Path.	Easy trail. Moderate use, small to medium sized groups (eg. birders), educational, small to large school groups, families, very interactive interpretive trail, natural with minimal infrastructure	All visitors

**TABLE 14: RESOURCE VALUES (MODIFIED FROM STANKEY ET AL., 1984)**

## CURRENT RESOURCE STATUS AND VALUES

### ZONE 2: NATURAL ENVIRONMENT, EDUCATION AND RECREATION ZONE

TRAIL	PRIMARY CHARACTERISTICS	TRAIL USE	VISITOR TYPE
<b>Gibnut / Green Knowledge Trail (1-2-3 Trail)</b>	Regenerating forest, with the attraction of passing alongside a stream, providing scenic views of the slow-moving water. The Green Knowledge Trail provides a short loop back to the Headquarters, or visitors can opt for the longer route, linking with the Tinamou Loop, and then to the Access Road.	A short, easy, wide trail with interpretive signs that originates at the Headquarters and forms a loop back to the Headquarters – can keep students at a set pace	School groups, nature lovers, families, more elderly people
<b>Tiger Fern Trail</b>	Altitudinal changes in vegetation, waterfall and scenic vistas of East Basin. Opportunities for swimming (double fall, larger pool than Ben's Bluff – better for larger groups)	A fun hike – a semi-adventurous trail. Less rigorous than Ben's Bluff, additional benches makes it accessible for less fit people	Larger groups, student groups, active hikers, families
<b>Ben's Bluff Trail</b>	Altitudinal changes in vegetation, waterfall and scenic vistas of Cockscomb East Basin. Opportunities for swimming.	Medium use adventure, small to medium sized groups, natural (minimal infrastructure), scenic view point.	Student groups, active hikers, fitter visitors
<b>Tinamou Loop</b>	A loop trail from the Access Road that passes through more open, regenerating forest and follows a tributary of the South Stann Creek. Less undergrowth than some other trails, so more chances of seeing wildlife	A good birding trail, relatively flat. Low to moderate use – small groups	Self-guided family groups, birders
<b>Wari Loop</b>	A variety of different ecosystem types (swamp forest, grasses, primary forest). Relatively good chances of seeing wildlife – better than some of the other trails	An easy trail – takes about 2-3 hours or half day depending on the type of visitors If visitors are just wanting a jungle hike, it can be completed in one hour	Birders, less fit visitors, more elderly visitors, families
<b>Antelope Trail</b>	Opportunities for longer hikes with increased solitude through unbroken forest.	A long trail, less frequently used.	Hikers, nature lovers
<b>Plane Wreck Trail</b>	Plane wreck, easy access to forest. "Indiana Jones" experience	Easy trail to plane wreck	Average visitors
<b>Ignacio's Bike trail 12km (Zone 2)</b>	A wider trail (the first 12 km of the Victoria Peak trail) through more mature forest, providing opportunities for mountain biking in the dry season. Increased opportunities for wildlife sightings	Multi-use trail originating in Zone 1 and ending at the 12 km campsite. A wider trail allowing ATV access for emergencies and maintenance	Mountain bikers, fit hikers, nature /wilderness lovers, adventure seekers

**TABLE 14: RESOURCE VALUES (MODIFIED FROM THE USDA FOREST SERVICE CLASSIFICATION (STANKEY ET AL., 1985))**

<b>CURRENT RESOURCE STATUS AND VALUES</b>			
<b>ZONE 3: WILDERNESS ZONE</b>			
<b>Trail</b>	<b>Primary characteristics</b>	<b>Trail Use</b>	<b>Visitor Type</b>
<b>Outlier</b>	Altitudinal changes in vegetation, scenic vistas, upper-elevation species (plants, birds, butterflies)	Adventurers hike to peak –can be done in one day, but two is better (campsite). Used as preparation for Victoria Peak. Requires a guide	Fit wilderness lovers, hikers, researchers (upper elevation specialists)
<b>Victoria Peak</b>	Altitudinal changes in vegetation, scenic vistas, upper-elevation species (plants, birds, butterflies), good chances of seeing wildlife – peccary, scarlet macaws	Extreme adventure hike to peak – requires a guide from 12 km onward. (Note: First 12 km is open to hikers and bikers without a guide)	Very fit wilderness lovers, extreme adventure seekers, researchers (upper elevation specialists)
<b>Ignacio’s Bike Trail</b> 12km (Zone 3)	A wider trail (the first 12 km of the Victoria Peak trail) through more mature forest, providing opportunities for mountain biking in the dry season. Increased opportunities for wildlife sightings	Multi-use trail originating in Zone 1 and ending at the 12 km campsite. A wider trail allowing ATV access for emergencies and maintenance	Mountain bikers, fit hikers, nature /wilderness lovers, adventure seekers

**TABLE 14: RESOURCE VALUES (MODIFIED FROM THE USDA FOREST SERVICE CLASSIFICATION (STANKEY ET AL., 1985))**

## RESOURCE CONDITIONS AND CONCERNS

Tour guides and visitors generally have a high level of satisfaction with the state of trails in Cockscomb. An assessment of current trail conditions was conducted in consultation with CBWS staff and tour guides, from site inspections and from an assessment of the Victoria Peak trail to provide a series of recommendations for improving visitor satisfaction during their hikes (Table 15).

RESOURCE CONDITIONS AND CONCERNS		
Trail	Trail conditions	Recommendations
<b>ZONE 1: PROTECTED AREAS SERVICE ZONE</b>		
<b>Bird Corner</b>	<ul style="list-style-type: none"> <li>▪ Relatively new trail</li> </ul>	<ul style="list-style-type: none"> <li>▪ Improve promotion with local guides and training in best use</li> </ul>
<b>ZONE 2: RECREATION AND EDUCATION ZONE</b>		
Trail	Trail Conditions	Recommendations
<b>River Path</b>	<ul style="list-style-type: none"> <li>▪ Widening and compaction of trail</li> <li>▪ Areas of poor drainage with mud in wet season</li> </ul>	<ul style="list-style-type: none"> <li>▪ Continue ongoing trail maintenance</li> </ul>
<b>Curassow / Rubber Tree Trail</b>	<ul style="list-style-type: none"> <li>▪ Widening and compaction of trail</li> <li>▪ Areas of poor drainage with mud in wet season</li> </ul>	<ul style="list-style-type: none"> <li>▪ Continue ongoing trail maintenance</li> </ul>
<b>Trail to River Overlook</b>	<ul style="list-style-type: none"> <li>▪ Widening and compaction of trail</li> <li>▪ Areas of poor drainage with mud in wet season</li> <li>▪ Stream flow over trail in wet season</li> <li>▪ Visitor impacts at River Overlook, at inner tube entry point</li> </ul>	<ul style="list-style-type: none"> <li>▪ Continue ongoing trail maintenance to provide trail conditions suitable for river-tubing clients (minimise muddy areas)</li> <li>▪ Ensure the trail to the river is adequately signposted and river-tubing regulations well posted</li> <li>▪ Ensure adequate maintenance of river entry point</li> </ul>
<b>South Stann Creek River Float River Float</b>	<ul style="list-style-type: none"> <li>▪ Fallen branches in river</li> <li>▪ Increasing use of the river for tubing</li> </ul>	<ul style="list-style-type: none"> <li>▪ Keep river clear of fallen trees</li> <li>▪ Improve signage on route, to reassure visitors</li> <li>▪ Ensure signage at end of float is clear, with count-down to exit point</li> <li>▪ Ensure groups are managed to avoid contact</li> <li>▪ Install a standardised green, yellow and red water level to indicate safe and dangerous river levels, backed by written protocols and regulations as to when the river is closed to tubing groups</li> </ul>
<b>Gibnut / Green Knowledge (1-2-3) Trail</b>	<ul style="list-style-type: none"> <li>▪ Poor drainage, some widening of path</li> <li>▪ Out-dated interpretive information</li> </ul>	<ul style="list-style-type: none"> <li>▪ Continue ongoing trail maintenance to provide trail conditions suitable for river-tubing clients (minimise muddy areas)</li> <li>▪ Review and revise interpretive trail information and signage</li> <li>▪ Review and revise self-guided leaflet</li> </ul>

TABLE 15: RESOURCE CONDITIONS AND CONCERNS



RESOURCE CONDITIONS AND CONCERNS		
ZONE 2: RECREATION AND EDUCATION ZONE		
Trail	Trail Conditions	Recommendations
<b>Tiger Fern</b>	<ul style="list-style-type: none"> <li>▪ Widening and compaction of trail,</li> <li>▪ Areas of poor drainage with mud in wet season</li> <li>▪ Stream flows over trail in wet season</li> <li>▪ Exposed tree roots,</li> <li>▪ Short cuts developing in upper areas, no bridge in upper stream area, safety issues - slippage in steep areas, climb down from ridge to waterfall</li> <li>▪ Increased fire risk at camp site -</li> <li>▪ Tourism impacts at waterfall including to water quality</li> </ul>	<ul style="list-style-type: none"> <li>▪ Improved signage to lookout point</li> <li>▪ improve steps from top of cliff down to first waterfall</li> <li>▪ Improve signage warning of slippery rocks at base of lower waterfall</li> <li>▪ Investigate potential for making entry to the swimming pool easier for more elderly people, reducing slipperiness</li> <li>▪ Investigate potential for relocating the lookout point to more intact forested vegetation</li> <li>▪ Ensure signs at campsite warn of fire risk and best practices</li> </ul>
<b>Ben's Bluff</b>	<ul style="list-style-type: none"> <li>▪ Widening and compaction of trail</li> <li>▪ Areas of poor drainage with mud in wet season</li> <li>▪ Stream crossing can be very slippery</li> </ul>	<ul style="list-style-type: none"> <li>▪ Continue ongoing trail maintenance to meet acceptable standards</li> <li>▪ Provide a safe, natural-looking stream crossing</li> <li>▪ Improve signage</li> <li>▪ Increase trail safety above the waterfall, and between the waterfall and the view point</li> </ul>
<b>Tinamou Trail</b>	<ul style="list-style-type: none"> <li>▪ Widening and compaction of trail</li> <li>▪ Areas of poor drainage with mud in wet season</li> </ul>	<ul style="list-style-type: none"> <li>▪ Continue ongoing trail maintenance to meet acceptable standards</li> </ul>
<b>Gibnut Trail</b>	<ul style="list-style-type: none"> <li>▪ Poor drainage area with mud</li> <li>▪ Slippage on steeper sections</li> <li>▪ Some short cuts to stream edge</li> </ul>	<ul style="list-style-type: none"> <li>▪ Continue ongoing trail maintenance to meet acceptable standards</li> </ul>
<b>Antelope Trail</b>	<ul style="list-style-type: none"> <li>▪ Slippery stream crossings</li> <li>▪ Some slippage in stream bank areas, but generally OK - adventurous</li> </ul>	<ul style="list-style-type: none"> <li>▪ Maintain bridges at the two river crossings</li> <li>▪ Install more benches at scenic points</li> <li>▪ Improve the crossing at the junction with Gibnut</li> <li>▪ Improve directional signage</li> </ul>
<b>Wari Loop</b>	<ul style="list-style-type: none"> <li>▪ Widening of trail with some impact on vegetation</li> <li>▪ Seasonal problem of mud</li> </ul>	<ul style="list-style-type: none"> <li>▪ Continue trail maintenance to meet acceptable standards</li> </ul>

**TABLE 15: RESOURCE CONDITIONS AND CONCERNS**

RESOURCE CONDITIONS AND CONCERNS		
ZONE 3: NATURAL ENVIRONMENT ZONE		
Trail	Trail Conditions	Recommendations
<b>12km Zone 3 Track</b>	<ul style="list-style-type: none"> <li>▪ Visual impacts from mountain bikes</li> <li>▪ Noise impacts and rutting from ATV</li> </ul>	<ul style="list-style-type: none"> <li>▪ Signage at start of Zone 3 on requirement for all individuals / groups to have a site-certified guide and assistant / apprentice guide</li> <li>▪ Continue ongoing trail maintenance to meet acceptable standards</li> <li>▪ Investigate potential for developing a parallel trail for hiking to minimise visual and noise impacts of ATVs and mountain bikes</li> <li>▪ Investigate alternate trail for mountain bikes</li> </ul>
<b>Outlier</b>	<ul style="list-style-type: none"> <li>▪ Widening and compaction of trail</li> <li>▪ Short cuts developing in upper areas</li> <li>▪ Slippage in steep areas</li> <li>▪ Impact on vegetation and safety issues of spongy moss in elfin forest area</li> <li>▪ Potential for removal of rare plants</li> <li>▪ Safety issues close to ridge</li> </ul>	<ul style="list-style-type: none"> <li>▪ Requirement for all individuals / groups to have a site-certified guide and assistant / apprentice guide</li> <li>▪ Continue ongoing trail maintenance to meet acceptable standards</li> <li>▪ Improve trail width - it is considered too narrow in some areas</li> <li>▪ Clear trail definition in elfin forest to prevent climbers from leaving trail</li> <li>▪ Ensure guides carry ropes</li> <li>▪ Ensure guides are engaged in ensuring their guests do not remove plants</li> <li>▪ Install anchor points and ropes in identified high risk areas</li> <li>▪ Signage at last stream to highlight that this is last access to drinking water</li> <li>▪ Ensure people are prepared for level of fitness required</li> </ul>
<b>Victoria Peak</b>	<ul style="list-style-type: none"> <li>▪ Widening and compaction of trail</li> <li>▪ Short cuts developing in upper areas</li> <li>▪ Slippage in steep area</li> <li>▪ Safety issues, particularly towards peak</li> <li>▪ Impact on vegetation of elfin forest area</li> <li>▪ Potential for removal of rare plants</li> <li>▪ Camp infrastructure at both 12km and 19km needs upgrading</li> </ul>	<ul style="list-style-type: none"> <li>▪ Requirement for all individuals / groups to have a site-certified guide and assistant / apprentice guide</li> <li>▪ Continue ongoing trail maintenance to meet acceptable standards</li> <li>▪ Maintain anchor points and ropes in identified high risk areas</li> <li>▪ Ensure guides are engaged in ensuring their guests do not remove plants</li> <li>▪ Upgrade camp infrastructure – ensure shelter roof heights are high enough, picnic tables and seating adequate for 10 people, and replaced when needed</li> <li>▪ Install stepping stones or similar for crossing river</li> <li>▪ Improved waterproof storage for summit log book</li> </ul>

TABLE 15: RESOURCE CONDITIONS AND CONCERNS

RESOURCE CONDITIONS AND CONCERNS		
ZONE 4: PRESERVATION ZONE		
Trail	Trail Conditions	Recommendations
Juan Branch / Mexican Branch	<ul style="list-style-type: none"> <li>▪ impact on wildlife,</li> <li>▪ opening up un-patrolled trails to hunter access</li> </ul>	<ul style="list-style-type: none"> <li>▪ Restrict access to research groups and staff</li> <li>▪ Require all individuals / groups to have a site-certified guide with knowledge of research regulations</li> <li>▪ Ensure all groups have back-up communication and safety equipment</li> <li>▪ Provide training for Maya Mopan in research assistant support for research expeditions</li> <li>▪ Encourage or require research groups to include a research assistant in their group engaged from Maya Mopan</li> <li>▪ Maintain trail access for ATV</li> </ul>

TABLE 15: RESOURCE CONDITIONS AND CONCERNS

### INDICATORS OF RESOURCE AND SOCIAL CONDITION

a total of ten indicators, chosen to represent the condition of tourism factors (such as trail or campsite conditions), to allow an unambiguous definition of the desired conditions of these factors, and to give a baseline against which to assess the effectiveness of the management activities in achieving these (Figure 9). Five **Resource Factors** and four **Social Factors** were selected for Cockscomb, with Ten Resource Factor indicators and four Social Factor indicators were selected for Cockscomb (Table 16)

Indicators should be capable of being measured in a cost effective way at acceptable levels of accuracy, and the condition of the indicator should reflect some relationship to the amount and type of use occurring. For example, resource indicators could be the total area of bare ground in a campsite, or the number of damaged trees within the campsite area. A social indicator may be the number of people within the campsite on any one night.

INDICATOR FACTORS
<b>Resource Factors</b> <ul style="list-style-type: none"> <li>▪ Trail conditions</li> <li>▪ Campsite conditions</li> <li>▪ Water quality</li> <li>▪ Wildlife populations</li> <li>▪ Threatened and endangered species</li> </ul>
<b>Social Factors</b> <ul style="list-style-type: none"> <li>▪ Visitor perception of area</li> <li>▪ Solitude whilst hiking</li> <li>▪ Campsite solitude</li> <li>▪ Level of littering</li> </ul>

FIGURE 9: INDICATOR FACTORS

INDICATORS	
RESOURCE FACTOR	INDICATOR
<b>Trail conditions</b>	▪ Number of muddy areas greater than 2m in length on each trail section
	▪ Number of trail-width monitoring points where trail width is seen to be increasing
	▪ Number of areas on trails showing damage from visitors slipping
	▪ Number of 'short cuts' made by visitors on trails
<b>Campsite conditions</b>	▪ Width of bare ground at campsite at set north-south, east-west monitoring points
	▪ Damage to trees adjacent to campsite on scale of 1 (minimal) to 5 (severe)
	▪ Number of signs of non-official camping encountered on trail
<b>Wildlife</b>	▪ Number of different mammal sightings, tracks and signs seen on trail survey, once a month
	▪ Number of rare or endangered species recorded on trail system on an annual basis
	▪ Proportion of visitors who have had a significant wildlife experience
SOCIAL FACTOR	INDICATOR
<b>Visitor Perception of Area</b>	▪ Proportion of visitors who perceive they are in a wild environment
<b>Solitude while Hiking</b>	▪ Number of other groups or individuals encountered whilst on trails
<b>Campsite Solitude</b>	▪ Number of other groups or individuals camped in same camp site
<b>Level of Littering</b>	▪ Level of litter collected from the trail during monthly trail survey

**TABLE 16: LIMITS OF ACCEPTABLE CHANGE: IDENTIFIED FACTORS AND INDICATORS FOR CBWS**

### INVENTORY OF EXISTING RESOURCE AND SOCIAL CONDITIONS

The Limits of Acceptable Change framework is presented for the trails and river tubing, with individual trails described and mapped, specific concerns identified, and the condition of each indicator developed and inventoried in the field, to allow a baseline for comparison with the target conditions. It is possible to then develop appropriate management decisions and actions to attain these conditions, whilst staying within the criteria specified for the relevant management zone. The following actions need to be completed at the start of plan implementation:

1. Assess current status of trail / river conditions
2. Develop baseline for wildlife factors
3. Develop baseline for social factors through visitor surveys and records
4. Develop and implement actions to mitigate management concerns

**LIMITS OF ACCEPTABLE CHANGE CRITERIA FOR:  
ZONE 2: EDUCATION, RECREATION AND NATURAL ENVIRONMENT**

- **RIVER PATH**
- **RUBBER TREE TRAIL / CURASSOW**
- **BEN'S BLUFF**
- **TIGER FERN**
- **ANTELOPE / WARI LOOP**
- **RIVER TUBING**

LIMITS OF ACCEPTABLE CHANGE: RIVER PATH				
RESOURCE FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	RECOMMENDED ACTION
<b>TRAIL CONDITIONS</b>	Number of muddy areas greater than 2m in length	0		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Trail hardening, improved drainage
	Number of trail-width monitoring points where trail width is seen to be increasing	0		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Continue current trail mitigation activities - raised trail surface with defined edges, drainage ditches. Temporary signs asking for assistance in maintaining trail width once trail modification has taken place
	Number of areas on trails showing damage from visitors slipping	0		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Install / maintain steps that can withstand high visitation and flood waters on steeper trail sections
	Number of 'short cuts' made by visitors on trails	0		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Trail well-defined. Construct deck overlooking river with steps into river to assist with visitor management and reduce impacts to river bank
<b>CAMPSITE CONDITIONS</b>	Width of bare ground at campsite at monitoring points	n/a	n/a	n/a
	Damage to trees adjacent to campsite	n/a	n/a	n/a
	Number of non-permitted signs of camping encountered on trail	0		<b>HOW:</b> Daily patrol to river <b>ACTION:</b> Camping at river edge can be tempting for visitors – ensure visitors are aware of official campsites at HQ on arrival, and enforce regulations if camping does take place
<b>WILDLIFE</b>	Proportion of visitors who feel they have had a significant wildlife experience	>10%		<b>HOW:</b> Visitor surveys; Visitor wildlife sightings in logbook <b>ACTION:</b> Provide interpretive information on print identification to increase visitor perception of wildlife presence.
	Number of different wildlife sightings, tracks and signs seen on trail survey by rangers, surveyed once a month	>4		<b>HOW:</b> Monthly survey of trail – record any wildlife sightings, tracks, other signs, and sounds <b>ACTION:</b> Develop baseline and maintain monitoring on wildlife presence to assess changes over time

LIMITS OF ACCEPTABLE CHANGE: RIVER PATH				
SOCIAL FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	SOCIAL FACTORS
<b>VISITOR PERCEPTIONS</b>	Proportion of visitors who perceive they are in a wild environment	>40%		<b>HOW:</b> Visitor survey to provide indicator information.
<b>SOLITUDE WHILE ON TRAIL</b>	Number of other groups encountered whilst on trail	3		<b>HOW:</b> Visitor survey to provide indicator information. Will decrease if trail returns on different route
<b>CAMPSITE SOLITUDE</b>	Number of other groups camped in same camp site	n/a		n/a
<b>LEVEL OF LITTERING</b>	Level of litter collected from the trail during daily patrol	0		<b>HOW:</b> Daily patrol to river...litter pick-up <b>ACTION:</b> Create awareness of 'no littering' and 'pack in / pack out' policies at HQ, especially with school parties. Enforcement of regulations if necessary.

LIMITS OF ACCEPTABLE CHANGE: RUBBER TREE TRAIL / CURASSOW TRAIL

RESOURCE FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	RECOMMENDED ACTION
<b>TRAIL CONDITIONS</b>	Number of muddy areas greater than 2m in length	1		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Trail modification, improved drainage
	Number of trail-width monitoring points where trail width is seen to be increasing	1		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Continue current trail mitigation activities - raised trail surface with defined edges, drainage ditches. Temporary signs asking for assistance in maintaining trail width once trail modification has taken place
	Number of areas on trails showing damage from visitors slipping	0		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> On steeper slopes - install / maintain steps that can withstand high visitation
	Number of 'short cuts' made by visitors on trails	0		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Trail well-defined.
<b>CAMPSITE CONDITIONS</b>	Width of bare ground at campsite at monitoring points	n/a	n/a	n/a
	Damage to trees adjacent to campsite	n/a	n/a	n/a
	Number of non-permitted signs of camping encountered on trail	0		<b>HOW:</b> Patrol <b>ACTION:</b> Camping at river edge can be tempting for visitors – ensure visitors are aware of official campsites at HQ on arrival, and enforce regulations if camping does take place
<b>WILDLIFE</b>	Proportion of visitors who feel they have had a significant wildlife experience	>15%		<b>HOW:</b> Visitor surveys; Visitor wildlife sightings in logbook <b>ACTION:</b> Provide interpretive information on print identification to increase visitor perception of wildlife presence.
	Number of different wildlife sightings, tracks and signs seen on trail survey by rangers, surveyed once a month	>6		<b>HOW:</b> Monthly survey of trail – record any wildlife sightings, tracks, other signs, and sounds <b>ACTION:</b> Develop baseline and maintain monitoring on wildlife presence to assess changes over time



LIMITS OF ACCEPTABLE CHANGE: RUBBER TREE TRAIL / CURASSOW TRAIL

SOCIAL FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	SOCIAL FACTORS
<b>VISITOR PERCEPTIONS</b>	Proportion of visitors who perceive they are in a wild environment	>50%		<b>HOW:</b> Visitor survey to provide indicator information. <b>ACTION:</b> This trail will be perhaps the most modified, but should still retain a wilderness feel once completed, if designed for interactive education.
<b>SOLITUDE WHILE ON TRAIL</b>	Number of other groups encountered whilst on trail	3		<b>HOW:</b> Visitor survey to provide indicator information. <b>ACTION:</b> Number of other people encountered will decrease if trail returns on different route Groups using this trail would tend to be focused on fun and education rather than wilderness, so encountering other visitors not necessarily a problem for the target groups.
<b>CAMPSITE SOLITUDE</b>	Number of other groups camped in same camp site	n/a		n/a
<b>LEVEL OF LITTERING</b>	Level of litter collected from the trail during patrols	0		<b>HOW:</b> Litter pick-up during patrols <b>ACTION:</b> Create awareness of 'no littering' and 'pack in / pack out' policies at HQ, especially with school parties. Enforcement of regulations if necessary.

**LIMITS OF ACCEPTABLE CHANGE: BEN'S BLUFF TRAIL**

RESOURCE FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	RECOMMENDED ACTION
<b>TRAIL CONDITIONS</b>	Number of muddy areas greater than 2m in length	1		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Continued trail maintenance and hardening, improved drainage
	Number of trail-width monitoring points where trail width is seen to be increasing	1		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Continue current trail mitigation activities - raised trail surface with defined edges, drainage ditches. Temporary signs asking for assistance in maintaining trail width once trail modification has taken place
	Number of areas on trails showing damage from visitors slipping	0		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> On steeper slopes - install / maintain steps that can withstand high visitation
	Number of 'short cuts' made by visitors on trails	0		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Some problems of shortcuts in areas where terrain is steep and trail zig zags as it climbs. Monitoring for development of shortcuts and placing branches at start and finish when they first develop.
<b>CAMPSITE CONDITIONS</b>	Width of bare ground at campsite at monitoring points	n/a	n/a	n/a
	Damage to trees adjacent to campsite	n/a	n/a	n/a
	Number of non-permitted signs of camping encountered on trail	0		<b>HOW:</b> Patrol <b>ACTION:</b> Camping at the lookout can be tempting for visitors – ensure visitors are aware of official campsites at HQ on arrival, and enforce regulations if camping does take place
<b>WILDLIFE</b>	Proportion of visitors who feel they have had a significant wildlife experience	>20%		<b>HOW:</b> Visitor surveys; Visitor wildlife sightings in logbook <b>ACTION:</b> Provide interpretive information on print identification to increase visitor perception of wildlife presence.
	Number of different wildlife sightings, tracks and signs seen on trail survey by rangers, surveyed once a month	>8		<b>HOW:</b> Monthly survey of trail – record any wildlife sightings, tracks, other signs, and sounds <b>ACTION:</b> Develop baseline and maintain monitoring on wildlife presence to assess changes over time

LIMITS OF ACCEPTABLE CHANGE: BEN'S BLUFF TRAIL				
RESOURCE FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	RECOMMENDED ACTION
<b>WATER QUALITY</b>	Level of E. coli and other contaminants in waterfall pool	Within acceptable standards		<b>HOW:</b> Quarterly water sampling of waterfall pool before and after entry point <b>ACTION:</b> Reduce number of people using the waterfall if levels are not within acceptable standards
SOCIAL FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	SOCIAL FACTORS
<b>VISITOR PERCEPTIONS</b>	Proportion of visitors who perceive they are in a wild environment	>70%		<b>HOW:</b> Visitor survey to provide indicator information. <b>ACTION:</b> Despite some modification in steep areas, this trail should still be maintained to retain a wilderness feel once completed.
<b>SOLITUDE WHILE ON TRAIL</b>	Number of other groups encountered whilst on trail	3		<b>HOW:</b> Visitor survey to provide indicator information. <b>ACTION:</b> Visitor management should ensure that groups wanting greater solitude would be directed to Tiger Fern Trail.
<b>CAMPSITE SOLITUDE</b>	Number of other groups camped in same camp site	n/a		n/a
<b>LEVEL OF LITTERING</b>	Level of litter collected from the trail during patrols	0		<b>HOW:</b> Litter pick-up during patrols <b>ACTION:</b> Create awareness of 'no littering' and 'pack in / pack out' policies at HQ, especially with school parties. Enforcement of regulations if necessary.

LIMITS OF ACCEPTABLE CHANGE: TIGER FERN TRAIL

RESOURCE FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	RECOMMENDED ACTION
<b>TRAIL CONDITIONS</b>	Number of muddy areas greater than 2m in length	1		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Continued trail maintenance and hardening, improved drainage
	Number of trail-width monitoring points where trail width is seen to be increasing	1		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Continue current trail mitigation activities.
	Number of areas on trails showing damage from visitors slipping	0		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> On steeper slopes - install / maintain steps that can withstand moderate visitation. Improve steps from top of cliff down to first waterfall. Improve signage warning of slippery rocks at base of lower waterfall. Investigate potential for making entry to the swimming pool easier for more elderly people, reducing slipperiness and improving safety
	Number of 'short cuts' made by visitors on trails	0		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Some problems of shortcuts in areas where terrain is steep and trail zig zags as it climbs. Monitoring for development of shortcuts and placing branches at start and finish when they first develop.
<b>CAMPSITE CONDITIONS</b>	Width of bare ground at campsite at set north-south, east-west monitoring points	2018 width		<b>HOW:</b> Quarterly assessment of trail conditions – measurement of camp site clearance at North-South / East-West widths (place small metal stakes as permanent marker points at current limits of camp site) <b>ACTION:</b> Ensure visitors are aware of official campsites at HQ, and regulations – including fees and fire risks
	Damage to trees adjacent to campsite on scale of 1 (minimal) to 5 (severe)	2018 impact level		<b>HOW:</b> Quarterly assessment of trail conditions – map, label and assess condition of trees within 5m of edge of campsite <b>ACTION:</b> Install sign if impact on trees increases
	Number of non-permitted signs of camping encountered on trail	0		<b>HOW:</b> Patrol reports <b>ACTION:</b> Enforce camping regulations - camping is only permitted at the lookout and has a camping fee. Ensure signs at campsite warn of fire risk and best practices

LIMITS OF ACCEPTABLE CHANGE: TIGER FERN TRAIL				
RESOURCE FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	RECOMMENDED ACTION
<b>WILDLIFE</b>	Proportion of visitors who feel they have had a significant wildlife experience	>20%		<b>HOW:</b> Visitor surveys; Visitor wildlife sightings in logbook <b>ACTION:</b> Provide interpretive information on print identification to increase visitor perception of wildlife presence.
	Number of different wildlife sightings, tracks and signs seen on trail survey by rangers, surveyed once a month	>8		<b>HOW:</b> Monthly survey of trail – record any wildlife sightings, tracks, other signs, and sounds <b>ACTION:</b> Develop baseline and maintain monitoring on wildlife presence to assess changes over time
<b>WATER QUALITY</b>	Level of E. coli and other contaminants in waterfall pool	Within acceptable standards		<b>HOW:</b> Quarterly water sampling of waterfall pool before and after entry point <b>ACTION:</b> Reduce number of people using the waterfall if levels are not within acceptable standards
SOCIAL FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	SOCIAL FACTORS
<b>VISITOR PERCEPTIONS</b>	Proportion of visitors who perceive they are in a wild environment	>70%		<b>HOW:</b> Visitor survey to provide indicator information. <b>ACTION:</b> Despite some modification in steep areas, this trail should still be maintained to retain a wilderness feel once completed.
<b>SOLITUDE WHILE ON TRAIL</b>	Number of other groups encountered whilst on trail	2		<b>HOW:</b> Visitor survey to provide indicator information. <b>ACTION:</b> Visitor management should ensure that groups wanting greater solitude would be directed to Tiger Fern Trail.
<b>CAMPSITE SOLITUDE</b>	Number of other groups camped in same camp site	1		<b>HOW:</b> Camping fees. <b>ACTION:</b> Encourage camping elsewhere if two groups are already logged for camping at Tiger Fern
<b>LEVEL OF LITTERING</b>	Level of litter collected from the trail during patrols	0		<b>HOW:</b> Litter pick-up during patrols <b>ACTION:</b> Create awareness of 'no littering' and 'pack in / pack out' policies at HQ, especially with school parties. Enforcement of regulations if necessary.

LIMITS OF ACCEPTABLE CHANGE: TINAMOU / GIBNUT TRAILS

RESOURCE FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	RECOMMENDED ACTION
<b>TRAIL CONDITIONS</b>	Number of muddy areas greater than 2m in length	2		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Ongoing trail maintenance and hardening, improved drainage to meet acceptable standards
	Number of trail-width monitoring points where trail width is seen to be increasing	1		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Continue current trail mitigation activities - raised trail surface with defined edges, drainage ditches. Temporary signs asking for assistance in maintaining trail width once trail modification has taken place
	Number of areas on trails showing damage from visitors slipping	0		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> On steeper slopes - install / maintain natural steps to assist visitors
	Number of 'short cuts' made by visitors on trails	0		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Ongoing trail maintenance and hardening, improved drainage to meet acceptable standards and discourage short cuts
<b>CAMPSITE CONDITIONS</b>	Width of bare ground at campsite at monitoring points	n/a	n/a	n/a
	Damage to trees adjacent to campsite	n/a	n/a	n/a
	Number of non-permitted signs of camping encountered on trail	0		<b>HOW:</b> Patrol <b>ACTION:</b> Ensure visitors are aware of official campsites at HQ on arrival, and enforce regulations if camping does take place
<b>WILDLIFE</b>	Proportion of visitors who feel they have had a significant wildlife experience	>30%		<b>HOW:</b> Visitor surveys; Visitor wildlife sightings in logbook <b>ACTION:</b> Provide interpretive information on print identification to increase visitor perception of wildlife presence.
	Number of different wildlife sightings, tracks and signs seen on trail survey by rangers, surveyed once a month	>10		<b>HOW:</b> Monthly survey of trail - record any wildlife sightings, tracks, other signs, and sounds. <b>ACTION:</b> Develop baseline and maintain monitoring on wildlife presence to assess changes over time

## LIMITS OF ACCEPTABLE CHANGE: TINAMOU / GIBNUT TRAILS

SOCIAL FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	SOCIAL FACTORS
<b>VISITOR PERCEPTIONS</b>	Proportion of visitors who perceive they are in a wild environment	>90%		<b>HOW:</b> Visitor survey to provide indicator information. <b>ACTION:</b> Limited modification to ensure that this trail retains a wilderness feel.
<b>SOLITUDE WHILE ON TRAIL</b>	Number of other groups encountered whilst on trail	0		<b>HOW:</b> Visitor survey to provide indicator information. <b>ACTION:</b> Visitor management should ensure that groups are staggered to provide solitude and increase potential for wildlife sightings.
<b>CAMPSITE SOLITUDE</b>	Number of other groups camped in same camp site	n/a		n/a
<b>LEVEL OF LITTERING</b>	Level of litter collected from the trail during patrols	0		<b>HOW:</b> Litter pick-up during patrols <b>ACTION:</b> Create awareness of 'no littering' and 'pack in / pack out' policies at HQ, especially with school parties. Enforcement of regulations if necessary.

LIMITS OF ACCEPTABLE CHANGE: ANTELOPE / WARI LOOP TRAILS

RESOURCE FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	RECOMMENDED ACTION
<b>TRAIL CONDITIONS</b>	Number of muddy areas greater than 2m in length	<4		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Ongoing trail maintenance and hardening, improved drainage to meet acceptable standards
	Number of trail-width monitoring points where trail width is seen to be increasing	2		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Continue current trail mitigation activities - raised trail surface with defined edges, drainage ditches. Temporary signs asking for assistance in maintaining trail width once trail modification has taken place
	Number of areas on trails showing damage from visitors slipping	0		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> On steeper slopes - install / maintain steps that can withstand moderate visitation. Maintain bridges at the two river crossings; improve path to address slippery stream crossings
	Number of 'short cuts' made by visitors on trails	0		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Ongoing trail maintenance to discourage short cuts. Directional signs
<b>CAMPSITE CONDITIONS</b>	Width of bare ground at campsite at monitoring points	n/a	n/a	n/a
	Damage to trees adjacent to campsite	n/a	n/a	n/a
	Number of non-permitted signs of camping encountered on trail	0		<b>HOW:</b> Patrol <b>ACTION:</b> Ensure visitors are aware of official campsites at HQ on arrival, and enforce regulations if camping does take place
<b>WILDLIFE</b>	Proportion of visitors who feel they have had a significant wildlife experience	>30%		<b>HOW:</b> Visitor surveys; Visitor wildlife sightings in logbook <b>ACTION:</b> Provide interpretive information on print identification to increase visitor perception of wildlife presence.
	Number of different wildlife sightings, tracks and signs seen on trail survey by rangers, surveyed once a month	>10		<b>HOW:</b> Monthly survey of trail – record any wildlife sightings, tracks, other signs, and sounds <b>ACTION:</b> Develop baseline and maintain monitoring on wildlife presence to assess changes over time



LIMITS OF ACCEPTABLE CHANGE: ANTELOPE / WARI LOOP TRAILS				
SOCIAL FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	SOCIAL FACTORS
<b>VISITOR PERCEPTIONS</b>	Proportion of visitors who perceive they are in a wild environment	>100%		<b>HOW:</b> Visitor survey to provide indicator information. <b>ACTION:</b> Limited modification to ensure that this trail retains a wilderness feel.
<b>SOLITUDE WHILE ON TRAIL</b>	Number of other groups encountered whilst on trail	0		<b>HOW:</b> Visitor survey to provide indicator information. <b>ACTION:</b> Visitor management should ensure that groups are staggered to provide solitude and increase potential for wildlife sightings.
<b>CAMPSITE SOLITUDE</b>	Number of other groups camped in same camp site	n/a		n/a
<b>LEVEL OF LITTERING</b>	Level of litter collected from the trail during patrols	0		<b>HOW:</b> Litter pick-up during patrols <b>ACTION:</b> Create awareness of 'no littering' and 'pack in / pack out' policies at HQ, especially with school parties. Enforcement of regulations if necessary.

LIMITS OF ACCEPTABLE CHANGE: RIVER TUBING				
RESOURCE FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	RECOMMENDED ACTION
<b>RIVER CONDITIONS</b>	Number of snags in river that impact safe river tubing	0		<b>HOW:</b> Weekly assessment of river conditions <b>ACTION:</b> Clearing of floating tree trucks etc. in river
	Number of visitors river tubing when conditions are considered unsafe	0		<b>HOW:</b> Daily assessment of trail conditions <b>ACTION:</b> Ensure clear signage at river entrance and HQ to inform visitors of unsafe water conditions
<b>WILDLIFE</b>	Proportion of visitors who have had a significant wildlife experience	>15%		<b>HOW:</b> Visitor surveys; Visitor wildlife reports in logbook
	Number of different wildlife sightings, tracks and signs seen on river survey by rangers, once a month	>10		<b>HOW:</b> Monthly survey of river, recording sights, and sounds signs of wildlife (parrots, howler monkeys). <b>ACTION:</b> Provide interpretive information on wildlife that may be encountered in the river at entry point and exit point
<b>WATER QUALITY</b>	Level of E. coli and other contaminants in water	Within acceptable standards		<b>HOW:</b> Quarterly water sampling of river before and after entry point <b>ACTION:</b> Reduce number of people using the river if levels are not within acceptable standards
SOCIAL FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	SOCIAL FACTORS
<b>VISITOR PERCEPTIONS</b>	Proportion of visitors who perceive they are in a wild environment	80%		<b>HOW:</b> Visitor surveys;
<b>SOLITUDE WHILE ON RIVER</b>	Number of other groups encountered whilst on river	1		<b>HOW:</b> Visitor survey to provide indicator information. <b>ACTION:</b> Visitor management should ensure that groups are staggered to provide solitude and increase potential for wildlife sightings.
<b>LEVEL OF LITTERING</b>	Level of litter collected from the trail during patrols	0		<b>HOW:</b> Monthly survey of river <b>ACTION:</b> Create awareness of 'no littering' and 'pack in / pack out' policies at HQ, especially with school parties. Enforcement of regulations if necessary.

**LIMITS OF ACCEPTABLE CHANGE CRITERIA FOR:  
ZONE 3: WILDERNESS ZONE**

- 12KM
- VICTORIA PEAK
- OUTLIER

**LIMITS OF ACCEPTABLE CHANGE: PARK HQ TO 12KM (IGNACIO BIKE TRAIL)**

RESOURCE FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	RECOMMENDED ACTION
<b>TRAIL CONDITIONS</b>	Number of muddy areas greater than 2m in length	<6		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Ongoing trail maintenance and hardening, improved drainage to meet acceptable standards
	Number of trail-width monitoring points where trail width is seen to be increasing	<3		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Continue current trail mitigation activities - raised trail surface with defined edges, drainage ditches.
	Number of areas on trails showing damage from visitors slipping	0		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Continue current trail mitigation activities - raised trail surface with defined edges, drainage ditches where identified as required
	Number of 'short cuts' made by visitors on trails	0		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Ongoing trail maintenance to discourage short cuts
<b>CAMPSITE CONDITIONS</b>	Width of bare ground at campsite at set north-south, east-west monitoring points	2018 width		<b>HOW:</b> Quarterly assessment of trail conditions – measurement of camp site clearance at North-South / East-West widths (place small metal stakes as permanent marker points at current limits of camp site) <b>ACTION:</b> Ensure visitors are informed of official campsites at HQ, and regulations – including fees and fire risks
	Damage to trees adjacent to campsite on scale of 1 (minimal) to 5 (severe)	2018 impact level		<b>HOW:</b> Quarterly assessment of trail conditions – map, label and assess condition of trees within 5m of edge of campsite <b>ACTION:</b> Install sign if impact on trees increases
	Number of non-permitted signs of camping encountered on trail	0		<b>HOW:</b> Patrol reports <b>ACTION:</b> Enforce camping regulations - camping is only permitted at 12KM on payment of camping fee. Ensure signs at campsite warn of fire risk and best practices

LIMITS OF ACCEPTABLE CHANGE: PARK HQ TO 12KM (IGNACIO BIKE TRAIL)

RESOURCE FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	RECOMMENDED ACTION
<b>WILDLIFE</b>	Proportion of visitors who feel they have had a significant wildlife experience	>35%		<b>HOW:</b> Visitor surveys; Visitor wildlife sightings in logbook <b>ACTION:</b> Provide interpretive information on print identification to increase visitor perception of wildlife presence.
	Number of different wildlife sightings, tracks and signs seen on trail survey by rangers, surveyed once a month	>12		<b>HOW:</b> Monthly survey of trail – record any wildlife sightings, tracks, other signs, and sounds <b>ACTION:</b> Develop baseline and maintain monitoring on wildlife presence to assess changes over time
SOCIAL FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	SOCIAL FACTORS
<b>VISITOR PERCEPTIONS</b>	Proportion of visitors who perceive they are in a wild environment	>90%		<b>HOW:</b> Visitor survey to provide indicator information. <b>ACTION:</b> Limited modification to ensure that this trail retains a wilderness feel.
<b>SOLITUDE WHILE ON TRAIL</b>	Number of other groups encountered whilst on trail	0		<b>HOW:</b> Visitor survey to provide indicator information. <b>ACTION:</b> Visitor management to ensure that groups are staggered to provide solitude and increase potential for wildlife sightings.
<b>CAMPSITE SOLITUDE</b>	Number of other groups camped in same camp site	1		<b>HOW:</b> From camping fee records <b>ACTION:</b> Schedule VP groups to minimize overlap at 12KM campsite
<b>LEVEL OF LITTERING</b>	Level of litter collected from the trail during patrols	0		<b>HOW:</b> Litter pick-up during patrols <b>ACTION:</b> Create awareness of ‘no littering’ and ‘pack in / pack out’ policies at HQ, especially with school parties. Enforcement of regulations if necessary.

## LIMITS OF ACCEPTABLE CHANGE: 12KM TO VICTORIA PEAK

RESOURCE FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	RECOMMENDED ACTION
<b>TRAIL CONDITIONS</b>	Number of muddy areas greater than 2m in length	<6		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Ongoing trail maintenance and hardening, improved drainage to meet acceptable standards
	Number of trail-width monitoring points where trail width is seen to be increasing	<3		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Continue current trail mitigation activities - raised trail surface with defined edges, drainage ditches.
	Number of areas on trails showing damage from visitors slipping	0		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> On steeper slopes - install / maintain ropes AS recommended to assist visitors
	Number of 'short cuts' made by visitors on trails	0		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Ongoing trail maintenance to meet acceptable standards and discourage short cuts
<b>CAMPSITE CONDITIONS</b>	Width of bare ground at campsite at set north-south, east-west monitoring points	2018 width		<b>HOW:</b> Bi-annual assessment of campsite conditions (at start and end of open season) – measurement of camp site clearance at North-South / East-West widths (place small metal stakes as permanent marker points at current limits of camp site) <b>ACTION:</b> Ensure visitors are informed of official campsites at HQ, and regulations – including fees and fire risks
	Damage to trees adjacent to campsite on scale of 1 (minimal) to 5 (severe)	2018 impact level		<b>HOW:</b> Bi-annual assessment of campsite conditions (at start and end of open season) – map, label and assess condition of trees within 5m of edge of campsite <b>ACTION:</b> Install sign if impacts on trees increases
	Number of non-permitted signs of camping encountered on trail	0		<b>HOW:</b> Patrol reports <b>ACTION:</b> Enforce camping regulations - camping is only permitted at 19KM on payment of camping fee. Ensure signs at campsite warn of fire risk and best practices

## LIMITS OF ACCEPTABLE CHANGE: 12KM TO VICTORIA PEAK

RESOURCE FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	RECOMMENDED ACTION
<b>WILDLIFE</b>	Proportion of visitors who feel they have had a significant wildlife experience	>35%		<b>HOW:</b> Visitor surveys; Visitor wildlife sightings in logbook <b>ACTION:</b> Provide interpretive information on print identification to increase visitor perception of wildlife presence.
	Number of different wildlife sightings, tracks and signs seen on trail survey by rangers, surveyed once a month	>12		<b>HOW:</b> Monthly survey of trail during open season – record any wildlife sightings, tracks, other signs, and sounds <b>ACTION:</b> Develop baseline and maintain monitoring on wildlife presence to assess changes over time
SOCIAL FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	SOCIAL FACTORS
<b>VISITOR PERCEPTIONS</b>	Proportion of visitors who perceive they are in a wild environment	>90%		<b>HOW:</b> Visitor survey to provide indicator information. <b>ACTION:</b> Limited modification to ensure that this trail retains a wilderness feel.
<b>SOLITUDE WHILE ON TRAIL</b>	Number of other groups encountered whilst on trail	2		<b>HOW:</b> Visitor survey to provide indicator information. <b>ACTION:</b> Visitor management should ensure that groups are staggered to provide solitude and increase potential for wildlife sightings.
<b>CAMPSITE SOLITUDE</b>	Number of other groups camped in same camp site	1		<b>HOW:</b> Camping fee records <b>ACTION:</b> Schedule VP groups to minimize overlap at 19KM campsite
<b>LEVEL OF LITTERING</b>	Level of litter collected from the trail during patrols	0		<b>HOW:</b> Litter pick-up during patrols <b>ACTION:</b> Create awareness of 'no littering' and 'pack in / pack out' policies at HQ, especially with school parties. Enforcement of regulations if necessary.

LIMITS OF ACCEPTABLE CHANGE: OUTLIER				
RESOURCE FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	RECOMMENDED ACTION
<b>TRAIL CONDITIONS</b>	Number of muddy areas greater than 2m in length	<4		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Ongoing trail maintenance and hardening, improved drainage to meet acceptable standards
	Number of trail-width monitoring points where trail width is seen to be increasing	<2		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Continue current trail mitigation activities - raised trail surface with defined edges, drainage ditches.
	Number of areas on trails showing damage from visitors slipping	0		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> On steeper slopes - install / maintain ropes to assist visitors if considered necessary for safety
	Number of 'short cuts' made by visitors on trails	0		<b>HOW:</b> Quarterly assessment of trail conditions <b>ACTION:</b> Ongoing trail maintenance and hardening, improved drainage to meet acceptable standards and discourage short cuts
<b>CAMPSITE CONDITIONS</b>	Width of bare ground at campsite at set north-south, east-west monitoring points	2018 width		<b>HOW:</b> Bi-annual assessment of campsite conditions (at start and end of open season) – measurement of camp site clearance at North-South / East-West widths (place small metal stakes as permanent marker points at current limits of camp site) <b>ACTION:</b> Ensure visitors are informed of official campsites at HQ, and regulations – including fees and fire risks
	Damage to trees adjacent to campsite on scale of 1 (minimal) to 5 (severe)	2018 impact level		<b>HOW:</b> Bi-annual assessment of campsite conditions (at start and end of open season) – map, label and assess condition of trees within 5m of edge of campsite <b>ACTION:</b> Install sign if impacts on trees increases
	Number of non-permitted signs of camping encountered on trail	0		<b>HOW:</b> Patrol reports <b>ACTION:</b> Enforce camping regulations - camping is only permitted at Outlier campsite on payment of camping fee. Ensure signs at campsite warn of fire risk and best practices



LIMITS OF ACCEPTABLE CHANGE: OUTLIER				
RESOURCE FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	RECOMMENDED ACTION
<b>WILDLIFE</b>	Proportion of visitors who feel they have had a significant wildlife experience	>35%		<b>HOW:</b> Visitor surveys; Visitor wildlife sightings in logbook <b>ACTION:</b> Provide interpretive information on print identification to increase visitor perception of wildlife presence.
	Number of different wildlife sightings, tracks and signs seen on trail survey by rangers, surveyed once a month	>12		<b>HOW:</b> Monthly survey of trail during open season – record any wildlife sightings, tracks, other signs, and sounds <b>ACTION:</b> Develop baseline and maintain monitoring on wildlife presence to assess changes over time
SOCIAL FACTORS	INDICATORS	ACCEPTABLE LIMIT	CURRENT STATUS	SOCIAL FACTORS
<b>VISITOR PERCEPTIONS</b>	Proportion of visitors who perceive they are in a wild environment	>90%		<b>HOW:</b> Visitor survey to provide indicator information. <b>ACTION:</b> Limited modification to ensure that this trail retains a wilderness feel.
<b>SOLITUDE WHILE ON TRAIL</b>	Number of other groups encountered whilst on trail	2		<b>HOW:</b> Visitor survey to provide indicator information. <b>ACTION:</b> Visitor management should ensure that groups are staggered to provide solitude and increase potential for wildlife sightings.
<b>CAMPSITE SOLITUDE</b>	Number of other groups camped in same camp site	1		<b>HOW:</b> Camping fees. <b>ACTION:</b> Schedule VP groups to minimize overlap at 19KM campsite
<b>LEVEL OF LITTERING</b>	Level of litter collected from the trail during patrols	0		<b>HOW:</b> Litter pick-up during patrols <b>ACTION:</b> Create awareness of ‘no littering’ and ‘pack in / pack out’ policies at HQ, especially with school parties. Enforcement of regulations if necessary.

## 6. RECOMMENDED STRATEGIES

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### **Objective 1: CBWS provides a visitor destination that is appreciated and valued by the tourism sector and visitors for its wildlife and wilderness**

- By 2022, CBWS has the infrastructure to effectively support internationally-respected tourism that maintains its wilderness values
- Between 2018 and 2022, CBWS maintains its visitor safety record through pro-active accident prevention
- Between 2018 and 2022, CBWS maintains its environmental sustainability through effective planning of tourism activities
- By 2022, BAS has improved the financial sustainability of CBWS by at least 20% from the 2017 baseline of Bz\$316,355

### **Objective 2: Improved local support for conservation / environmental stewardship in local communities and stakeholders**

- By 2022, 75% or more of the local tour guides using Cockscomb support the vision and objectives of the protected area (50% at the moment)
- By 2022, 90% or more of the local tour guides using Cockscomb are active partners in maintaining the values of the protected area

### **Objective 3: Sound research informing public perceptions and management decisions**

- By 2022, BAS is implementing a PRUP limits of acceptable change monitoring programme that provides data for informed management decisions
- By 2022, BAS is effectively communicating information on the status of the resources and environmental services to its tourism stakeholders

### **Objective 4: Contribution towards the environmental services provided by conservation areas – clean air, clean water, socio-economic benefit and climate change amelioration**

- By 2022, BAS has assessed the financial value of Cockscomb tourism and contribution to the local economy
- By 2022, less than 3-4% of the environmental services of Cockscomb have been affected by tourism impacts

**Objective 5: Provision of a resource that is valued by visitors**

- By 2022, 90% or more of the tour guides using Cockscomb are active partners, ensuring Cockscomb provides high visitor satisfaction
- By 2022, 90% or more of visitors to Cockscomb consider the protected area meets their expectations

STRATEGIC FRAMEWORK FOR COCKSCOMB BASIN WILDLIFE SANCTUARY		
TARGET	ACTIVITIES	INDICATORS
<b>Objective 1: CBWS provides a visitor destination that is appreciated and valued by the tourism sector and visitors for its wildlife and wilderness</b>		
By 2022, CBWS has the infrastructure to effectively support internationally-respected tourism that maintains its wilderness values	<ul style="list-style-type: none"> <li>▪ Establish a second Zone 1 (Zone 1 (2)) at the White House, extending into the adjacent forest, to accommodate facilities for cruise tourism visitation.</li> <li>▪ Establish research infrastructure</li> <li>▪ Upgrade the HQ visitor center</li> <li>▪ Ensure continued road maintenance</li> </ul>	<ul style="list-style-type: none"> <li>▪ Established and active Zone 1 (2)</li> <li>▪ Established and active research infrastructure</li> <li>▪ Upgraded visitor center</li> <li>▪ Number of complaints about the road to staff or in tripadvisor reports per year</li> </ul>
Between 2018 and 2022, CBWS maintains its visitor safety record through pro-active accident prevention	<ul style="list-style-type: none"> <li>▪ Ensure all tour guides guiding in CBWS have valid licenses when arriving in CBWS (license number written down at the White House gate)</li> <li>▪ Improved signage in the river to indicate river tubing route and exit</li> <li>▪ Strengthen decision making process for when conditions are unsafe for tubing, and mechanism for transferring this information to visitors</li> <li>▪ Installation of a standardized green, yellow and red water level to be used to indicate safe and dangerous river levels, backed by written protocol and regulations as to when the river is closed to tubing groups</li> <li>▪ Ensure that all people doing river tubing are required to wear life jackets</li> <li>▪ Ensure that all BAS tubes meet professional grade / quality standards</li> <li>▪ Review safety policies for river tubing – number of guests, night tubing etc.</li> <li>▪ Conduct an annual safety assessment for the Victoria Peak and Outlier climbs, and replace infrastructure where required before the trail is opened</li> <li>▪ Maintain current opening times for Victoria Peak</li> <li>▪ Develop specific regulations for Outlier</li> <li>▪ Ensure that each group attempting Victoria Peak has a guide and assistant licensed guide regardless of group size</li> </ul>	<ul style="list-style-type: none"> <li>▪ Number of complaints about safety of river tubing</li> <li>▪ Number of incidents of people not exiting at the river tubing exit point per year</li> <li>▪ Number of incidents of people tubing the river when it has been closed</li> <li>▪ Number of tour guides doing river tubing tours identified as not following safety guidelines / best practices</li> <li>▪ Number of incidents requiring support on Victoria Peak / Outlier trails per year</li> <li>▪ Number of groups attempting to climb Victoria Peak / Outlier without guides</li> <li>▪ % of Victoria Peak groups that complete the trek successfully</li> </ul>

STRATEGIC FRAMEWORK FOR COCKSCOMB BASIN WILDLIFE SANCTUARY		
TARGET	ACTIVITIES	INDICATORS
<b>Objective 1: CBWS provides a visitor destination that is appreciated and valued by the tourism sector and visitors for its wildlife and wilderness</b>		
Between 2018 and 2022, CBWS maintains its visitor safety record through pro-active accident prevention	<ul style="list-style-type: none"> <li>▪ Impose maximum group size regulations for both Victoria Peak and Outlier</li> <li>▪ Set standards for certification and ensure that all guides for Victoria Peak and Outlier are certified for guiding these two peaks</li> <li>▪ Require a certified and assistant / apprentice guides for Outlier</li> <li>▪ Conduct training workshops for site-specific guide certification for Victoria Peak and Outlier</li> <li>▪ Ensure all guides submit an emergency plan for climbing Victoria Peak (workshop with guides to develop emergency plans)</li> <li>▪ Improve communication for emergency procedures</li> </ul>	<ul style="list-style-type: none"> <li>▪ % guides leading Victoria Peak and Outlier trips that are certified for these treks</li> <li>▪ Number of guides completing training workshops for guiding at CBWS</li> <li>▪ % guides that have First Aid certificate</li> <li>▪ % of VP groups per year that exceed maximum regulated size</li> <li>▪ % guides that have submitted an emergency plan for Victoria Peak at the start of the season</li> <li>▪ Number of times ATV has been used for emergency situations per year</li> </ul>
Between 2018 and 2022, CBWS maintains its environmental sustainability through effective planning of tourism activities	<ul style="list-style-type: none"> <li>▪ Address the boundary situation for the waterfalls and view points</li> <li>▪ Continued maintenance of trails following Limits of Acceptable Change guidelines</li> <li>▪ Ensure that all guides only use designated camp sites for overnight camping</li> <li>▪ Ensure adequate communication on fire risks at the Headquarters, Tiger Fern and Ben's Bluff viewpoints</li> <li>▪ As with Victoria Peak, Outlier group size should be limited to ten (inclusive of guides), and a site-certified guide and a second assistant or apprentice guide should be a standard requirement</li> <li>▪ All site-certified guides should be trained in minimizing impacts in the upper elevation elfin forest</li> </ul>	<ul style="list-style-type: none"> <li>▪ Boundary situation has been addressed – BAS has management authority for Tiger Fern and Ben's Bluff</li> <li>▪ Quarterly list of current resource conditions in CBWS based on LoAC framework</li> <li>▪ List of activities conducted to address resource conditions outside acceptable limits</li> <li>▪ Annual summary of LoAC outputs</li> <li>▪ Number of unofficial camp sites identified per year</li> <li>▪ % guides leading Victoria Peak and Outlier trips that are certified for these treks</li> </ul>

STRATEGIC FRAMEWORK FOR COCKSCOMB BASIN WILDLIFE SANCTUARY		
TARGET	ACTIVITIES	INDICATORS
<b>Objective 1: CBWS provides a visitor destination that is appreciated and valued by the tourism sector and visitors for its wildlife and wilderness</b>		
By 2022, BAS has improved the financial sustainability of CBWS by at least 20% from the 2017 baseline of Bz\$316,355	<ul style="list-style-type: none"> <li>▪ Improve signage at Maya Centre to ensure more visitors stop to pay entrance fee here</li> <li>▪ Continue ticket system in Maya Centre that is easy for the women’s group to use and for CBWS staff to check</li> <li>▪ Install a gate house and gate at the entrance to the protected area to improve monitoring of visitors and fee collection</li> <li>▪ Upgrade tubing equipment (tubes, life jackets etc.) to professional quality and make available for rent for Bz\$10 per person (standardised with St. Herman’s Blue Hole National Park), allowing for maintenance and repair of tubes</li> <li>▪ Increase fees for river tubing to \$15, with separate fees for use of the river and for hiring tubes - equipment would need to be upgraded to justify the increased fees, would need to ensure that there are sufficient inner tubes for demand – or use</li> <li>▪ Market Outlier as an achievement, as something that can be charged a fee for</li> <li>▪ The per person fee for climbing Victoria Peak should be increased to at least US\$50 for non-Belizeans to reduce pressure on the trail and upper elevation ecosystems</li> <li>▪ Increase the ATV use fee to US\$200 to prevent misuse of BAS equipment for non-injury situations (it is currently US\$50)</li> <li>▪ Value added...Investigate marketing of other local tourism venues in stakeholder communities - “chocolate outlet” in Maya Centre, Red Bank scarlet macaws as trips from CBWS</li> <li>▪ Ensure key travel guides to Belize and Central America are provided with accurate, updated information</li> </ul>	<ul style="list-style-type: none"> <li>▪ % of entrance fees payed in Maya Centre per year</li> <li>▪ Installation of manned gate house at White House, with fee collection and collection of visitor / tour guide data</li> <li>▪ Fee for river tubing</li> <li>▪ Fee for hiring tubes</li> <li>▪ Income from river tubing per year</li> <li>▪ Marketing of Outlier as a two-day trek</li> <li>▪ Income from Outlier treks per year</li> <li>▪ Fee for climbing Victoria Peak</li> <li>▪ Fee for climbing Outlier</li> <li>▪ Fee for use of ATV in emergency situations on Victoria Peak trail</li> <li>▪ % of key travel guides that have accurate information on CBWS</li> </ul>

STRATEGIC FRAMEWORK FOR COCKSCOMB BASIN WILDLIFE SANCTUARY		
TARGET	ACTIVITIES	INDICATORS
<b>Objective 2: Improved local support for conservation / environmental stewardship in local communities and stakeholders</b>		
By 2022, 75% or more of the local tour guides using Cockscomb support the vision and objectives of the protected area (50% at the moment)	<ul style="list-style-type: none"> <li>▪ Continue to engage CBWS tour guides through workshops and site-specific trainings</li> <li>▪ Maintain and improve communication with tour guides, involving them in decision making process when changes impact tour guides / visitors, and keeping them updated on management changes</li> <li>▪ Create an environment of greater ownership and stewardship of CBWS by tour guides through encouraging them to introduce their families to CBWS through an incentives package – e.g. overnight accommodation and food, or covering transport costs</li> <li>▪ Clearly identify mechanisms that can allow guides to actively participate in CBWS activities (e.g. river clean-ups)</li> </ul>	<ul style="list-style-type: none"> <li>▪ List of guides using CBWS and community</li> <li>▪ Annual survey of guides to include               <ul style="list-style-type: none"> <li>▪ Knowledge of CBWS visions and objectives</li> <li>▪ Level of support for BAS</li> </ul> </li> <li>▪ % of guides providing input into annual trail health and safety checks</li> <li>▪ % of guides considered to be using best practices</li> <li>▪ % of guides who have participated in support activities</li> <li>▪ % of targeted guides who have taken up the incentives package</li> </ul>
By 2022, 90% or more of the local tour guides using Cockscomb are active partners in maintaining the values of the protected area		
<b>Objective 2: Sound research informing public perceptions and management decisions</b>		
By 2022, BAS is implementing a PRUP limits of acceptable change monitoring programme that provides data for informed management decisions	<ul style="list-style-type: none"> <li>▪ Assess LoAC trail conditions weekly, where relevant, and address any resource conditions outside the Limits of Acceptable Change</li> <li>▪ Conduct visitor surveys once a quarter on visitor satisfaction</li> </ul>	<ul style="list-style-type: none"> <li>▪ Weekly list of current resource conditions in CBWS based on LoAC framework</li> <li>▪ List of activities conducted to address resource conditions outside acceptable limits</li> <li>▪ Annual summary of LoAC outputs</li> </ul>
By 2022, BAS is effectively communicating information on CBWS, the status of the resources and environmental services to its tourism stakeholders	<ul style="list-style-type: none"> <li>▪ Develop e-mail list of guides, tour operators, hotels/resorts, BTIA chapters and other key stakeholders using CBWS</li> <li>▪ Improve communication with CBWS tourism stakeholders through:               <ul style="list-style-type: none"> <li>▪ Quarterly news briefs by e-mail</li> <li>▪ Develop simple system for tour guide feedback</li> <li>▪ Maintaining daily sightings and information board at HQ</li> <li>▪ Email alert system for closure of park or activities (e.g. flooded road, river tubing closed)</li> </ul> </li> <li>▪ Identify potential areas for collaboration to strengthen partnership with tour operators, hotels / resorts, BTIA</li> </ul>	<ul style="list-style-type: none"> <li>▪ Quarterly news briefs keeping tourism sector (tour guides, tour operators, BTIA chapters) informed of biodiversity monitoring outputs, status of resources and ongoing research in CBWS</li> <li>▪ Number of tourism sector individuals on the news brief distribution list</li> <li>▪ % of tourism sector representatives participating in key meetings / workshops on tourism in CBWS</li> <li>▪ % tourism sector representatives considered as CBWS partners</li> </ul>

STRATEGIC FRAMEWORK FOR COCKSCOMB BASIN WILDLIFE SANCTUARY		
TARGET	ACTIVITIES	INDICATORS
<b>Objective 2: Sound research informing public perceptions and management decisions</b>		
By 2022, BAS is effectively communicating information on CBWS, the status of the resources and environmental services to its tourism stakeholders	<ul style="list-style-type: none"> <li>▪ Maintain and improve communication with tour guides, involving them in decision making process when changes impact cruise-visitor tours, and keeping them updated on management changes</li> <li>▪ Use meetings to ensure that changes in regulations or fees that affect guides / visitors are well communicated in advance to tourism sector, and backed by e-mail notifications</li> <li>▪ Improve communication with BTIA chapters, and engage BTIA staff through familiarization visits to CBWS</li> <li>▪ Identify key frontline tour operator staff for engagement through familiarization visits to CBWS, to improve promotion of CBWS as a day tour, and to ensure hotels and resorts can align visitor expectations with reality</li> <li>▪ Develop, print and disseminate best practice guidelines for tour guides, including summary of CBWS regulations, with the participation of CBWS guides</li> <li>▪ Ensure tour operators, hotels / resorts and BTIA chapters have accurate information to be able to market CBWS as a destination</li> <li>▪ Participate in meetings being held for the tourism sector in Dangriga, Hopkins and Placencia, and give presentations on regulations / changes in regulations for CBWS when relevant</li> </ul>	<ul style="list-style-type: none"> <li>▪ Number of local tourism sector meetings (Dangriga, Hopkins and Placencia) attended by CBWS staff</li> <li>▪ Number of presentations given by CBWS to local tourism sector (Dangriga, Hopkins and Placencia)</li> <li>▪ Best practice guidelines for tour guides using CBWS</li> <li>▪ Tourism information on CBWS updated annually and disseminated to tourism stakeholders and key Belize tourism guide publications</li> </ul>



STRATEGIC FRAMEWORK FOR COCKSCOMB BASIN WILDLIFE SANCTUARY		
TARGET	ACTIVITIES	INDICATORS
<b>Objective 3: Contribution towards the environmental services provided by conservation areas – clean air, clean water, socio-economic benefit and climate change amelioration</b>		
By 2022, BAS has assessed the financial value of Cockscomb tourism and contribution to the local economy	<ul style="list-style-type: none"> <li>▪ Conduct an ecosystem service evaluation for the protected area (linked to NBSAP Action C4.4)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ecosystem / tourism service evaluation for CBWS / VPNM</li> </ul>
By 2022, less than 3-4% of the environmental services of Cockscomb have been affected by tourism impacts	<ul style="list-style-type: none"> <li>▪ Mapping of visitor impacted area as a % of total CBWS area</li> </ul>	<ul style="list-style-type: none"> <li>▪ % of CBWS total area impacted by tourism</li> <li>▪ % of each zone impacted by tourism</li> </ul>
By 2022, community knowledge of and benefits from tourism at CBWS have increased	<ul style="list-style-type: none"> <li>▪ Improve communication between CBWS and the communities</li> <li>▪ Identify ways in which community leaders and their communities can be more involved in tourism and management activities at CBWS.</li> <li>▪ Engage hunters as expedition trackers towards income diversification and improved understanding of role of CBWS as replenishment area</li> <li>▪ Build capacity of Maya Mopan guides for guided research expedition groups and as research assistants in Juan Branch / Mexican Branch area</li> <li>▪ Training of Red Bank tour guides for bird tourism in Red Bank area, and increased community stewardship, based on lessons learnt</li> <li>▪ Continue providing support to the Women’s group in Maya Centre</li> <li>▪ Increase opportunities and incentives for community visitation to Cockscomb</li> <li>▪ Provide community leaders with a guided day of activities in CBWS to show them why people visit CBWS.</li> </ul>	<ul style="list-style-type: none"> <li>▪ CBWS Community Communication Plan</li> <li>▪ % of CBWS Community Communication Plan that has been implemented successfully</li> <li>▪ % of communities with leaders who are considered to be engaged in CBWS activities</li> <li>▪ % of known hunters who are considered to be engaged in CBWS activities and respecting CBWS boundaries</li> <li>▪ Number of Maya Mopan guides trained as research assistants</li> <li>▪ Number of research expeditions to CBWS per year that include Maya Mopan guides</li> <li>▪ Number of Red Bank guides trained for bird tourism</li> <li>▪ Number of Red Bank guides reporting an increase in income as a result of bird guide training</li> <li>▪ Income provided to the Maya Centre Women’s group</li> <li>▪ Number of visitors to CBWS from local communities</li> </ul>

STRATEGIC FRAMEWORK FOR COCKSCOMB BASIN WILDLIFE SANCTUARY		
TARGET	ACTIVITIES	INDICATORS
<b>Objective 3: Contribution towards the environmental services provided by conservation areas – clean air, clean water, socio-economic benefit and climate change amelioration</b>		
By 2022, community knowledge of and benefits from tourism at CBWS have increased	<ul style="list-style-type: none"> <li>▪ Develop a workable framework for requests for investment in small scale tourism initiatives in the communities that addresses community buy-in, land tenure-ship Invest in viable tourism entrepreneur start up initiatives, or add value to tourism businesses in the community that are succeeding</li> <li>▪ Assist entrepreneurs in location of micro-loans for support of viable tourism start up initiatives, or add value to tourism businesses that are already succeeding in the communities</li> <li>▪ Provide opportunities for sales of community products / crafts at stalls / concession stands at proposed Zone 1 (2) cruise visitor tourism site</li> <li>▪ Continue to engage the youths in conservation through the schools, building youth stewardship of the natural environment</li> </ul>	<ul style="list-style-type: none"> <li>▪ % of households per community reporting an increase in income as a result of CBWS tourism</li> <li>▪ Level of investment as microloans in income diversification projects in the stakeholder communities (Bz\$)</li> <li>▪ Level of investment per year as grants in income diversification projects in the stakeholder communities (Bz\$)</li> <li>▪ Number of youths from stakeholder communities involved in CBWS outreach activities per year</li> </ul>
<b>Objective 4: Delivering a product that is valued by visitors</b>		
By 2022, 90% or more of visitors to Cockscomb consider the protected area meets their expectations	<ul style="list-style-type: none"> <li>▪ Continue to maintain trails to meet acceptable conditions</li> <li>▪ Structure time for tubing so groups don't coincide or limit the number of inner tubes to regulate the number of people on the river at one time</li> <li>▪ More signs on tubing route to reassure visitors that they are on the right track</li> <li>▪ Engage hotels in the area – facilitate a site visit for concierges and local tour operators so that they can adequately and accurately market the area to their guests</li> </ul>	<ul style="list-style-type: none"> <li>▪ Level of visitor satisfaction (visitor survey / trip advisor)</li> <li>▪ Visitors and guide are satisfied with level and type of signage (visitor survey)</li> <li>▪ % of invited hotels that have participated in a site visit to CBWS</li> </ul>

STRATEGIC FRAMEWORK FOR COCKSCOMB BASIN WILDLIFE SANCTUARY		
TARGET	ACTIVITIES	INDICATORS
<b>Objective 4: Delivering a product that is valued by visitors</b>		
By 2022, 90% or more of visitors to Cockscomb consider the protected area meets their expectations	<ul style="list-style-type: none"> <li>▪ Ensure accommodation is maintained and, where necessary, upgraded, to meet visitor satisfactions</li> <li>▪ Expand infrastructure to provide improved staff and researcher accommodation and facilities</li> <li>▪ Reassess the cost-benefit of dry-season mountain bike activity in terms of level of use vs. maintaining wilderness trail conditions for hikers and the conflicting of requiring a tour guide in Zone 3</li> </ul>	<ul style="list-style-type: none"> <li>▪ Level of visitor satisfaction with accommodation (visitor survey)</li> <li>▪ New accommodation for staff</li> <li>▪ New accommodation for researchers</li> <li>▪ Number of visitors that use mountain bikes on the mountain bike trail</li> </ul>

## REFERENCES

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- Belize Audubon Society (2010). Guidelines for Expeditions to Victoria Peak Natural Monument.
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