June 2006

Cockpit Country

Conservation Action Plan (a summary)

USAID FROM THE AMERICAN PEOPLE

The Nature Conservancy
SAVING THE LAST GREAT PLACES ON EARTH

forestry department

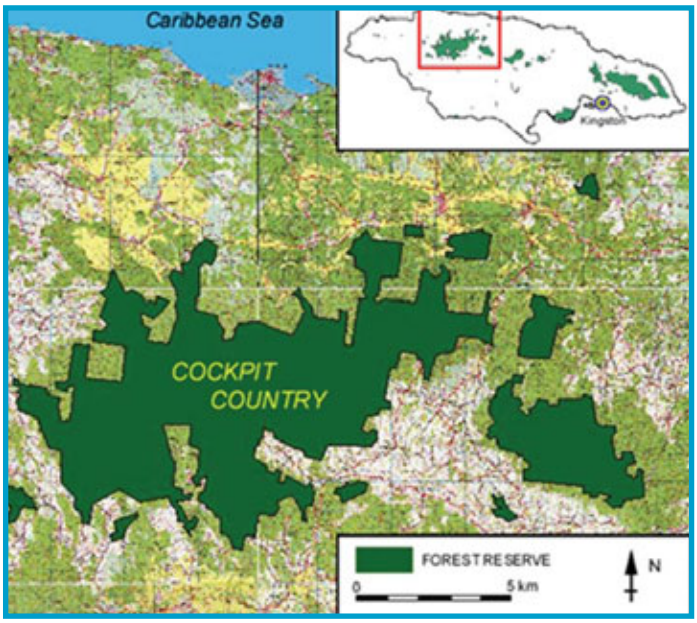
nepa
National Environment & Planning Agency

PARKS IN PERIL

Protecting the Cockpit Country's biodiversity, forests, waters and caves; conserving them for our future.

Table of Contents

Cockpit Country Conservation Area



Map showing position of Cockpit Country forest reserves

The Cockpit Country, located in west central Jamaica is an outstanding centre of the island's natural and cultural heritage and a repository of economically important resources. The main conservation area, bounded by the "Ring Road" is 450 km2 in size and includes 22,327 hectares of **forest reserves.**

The Cockpit Country is a **karstic** area characterized by dense formations of rounded peaks and steep-sided, bowl-shaped depressions sculpted over millennia by erosion and chemical dissolution of limestone. This has resulted in an extensive network of caves.

The Cockpit Country's forests include the largest remaining block of moist to wet limestone forest in Jamaica. The area supplies 40% of the island's freshwater resources and contains significant deposits of bauxite.

Aerial of, Cockpit Country showing characteristic over-turned egg-tray topography © J. Kerr.

Rugged karst limestone hill © D. B. Hay.

Descent into one of Cockpit Country's many caves © R.S. Stewart

The concentration of endemism in the Cockpit Country is one of the most remarkable in the world.

27 of Jamaica's 28 endemic bird species are found in the area along with 1,500 species of plants and several species of amphibians, reptiles and invertebrates. **Many of these species are found only in this area**, some confined to only one hilltop.

Stakeholders and Conservation Partners

Accompong Maroon Festival © K. John

Government and non government stakeholders plan for Cockpit Country's future

Windsor Research Centre © J. Kerr

Loading a yam truck in Rock Spring

Given the Cockpit Country's rich biological and cultural resources, there has been for several decades, widespread consensus in support of its sustainable management. Groups actively involved in Cockpit Country conservation currently include local communities, community based organizations (CBOs), several non-governmental organizations (NGOs), government agencies, and business interests.

The **Forestry Department** has legal jurisdiction over the forest reserves in the area through the Forest Act. The **National Environment and Planning Agency** (NEPA) has responsibility for the wider area through the NRCA Act (concerning planning and protected areas), the Wild Life Protection Act and the Watershed Protection Act.

Key stakeholders in the area include:

- **Maroon Communities:** the descendants of escaped African slaves and Tainos who found refuge in the rugged Cockpit Country territory. Maroons maintain a distinct identity and are a critical group for Cockpit Country conservation.
- **Southern Trelawny Environmental Agency** (STEA): a local NGO which implements environmental conservation and economic opportunity projects in Trelawny.
- **Windsor Research Centre** (WRC): a site-based centre that promotes and facilitates research associated with the Cockpit Country
- The **academic and research community** which provides scientific biodiversity and socioeconomic information.
- **Small Farmers:** nationally important for cultivating a variety of yams for the local and export markets.
- **Private sector interests:** ecotourism ventures, agro-industry (especially sugar) and bauxite companies.

The Cockpit Country Parks-in-Peril (PiP) Project (2001-2007) is aimed at strengthening the long-term conservation of this unique and invaluable area. The project is funded by the **United States Agency for International Development** (USAID) and underpinned by a conservation partnership between **The Nature Conservancy** (TNC) and the **Forestry Department.** The project is managed with the support of an **advisory committee** comprising representatives from Forestry Department, NEPA, TNC and the **Institute of Jamaica**.

Conservation Action Planning (CAP)

Conservation Action Planning is a collaborative and structured approach to conservation planning which uses the principle of adaptive management to develop successful conservation strategies.

CAP was used to collaboratively determine strategies for conserving Cockpit Country's biodiversity. The method utilizes an **Excel spreadsheet tool** for documenting and storing information and for prioritizing actions. The spreadsheet also facilitates the regular update of results as new information becomes available.

Cockpit Country CAP involved a broad range of stakeholders

The basic steps in the CAP process include:

1) Identifying the main elements of a site's biodiversity requiring conservation action
2) Identifying critical threats to the biodiversity
3) Developing conservation objectives & strategic actions
4) Establishing measures of success

The CAP cycle - an iterative process

CAP will form part of Cockpit Country's Forest Management Plan being developed by Forestry Department. Cockpit Country PiP Project is the first Jamaican conservation project to incorporate CAP planning methods from its inception.

Cockpit Country CAP began in 2002, and was informed by biodiversity and preliminary stakeholder assessments. The process was completed 2005 with a conservation strategy assessment, development of a project monitoring framework and an update of all information using scientific literature and interviews with researchers. A final public review was conducted in 2005.

This document summarizes the 2005 conservation Action Plan for Cockpit Country's biodiversity. The full CAP is available in MS Excel format from The Nature Conservancy and Forestry Department.

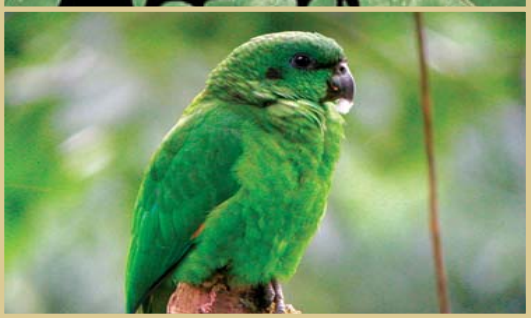
Conservation Targets

Limestone Forest

A karst fresh water system - Black River Blue Hole

A chamber in Windsor Cave

Giant Swallowtail butterfly



Black-billed parrot
© D. B. Hay

The 2005 CAP resulted in the selection of five conservation targets: 2 large ecosystems, three species and a specialized community. These targets are regarded as representative of the total biodiversity of the area. Information on the target selection process is provided in Appendix A.

Conservation Targets

- **Limestone Forest**
- **Karst Freshwater System**
- **Cave Communities**
- **Giant Swallowtail Butterfly**
- **Black-billed & Yellow-billed Parrots**

Species and communities that are acknowledged to be important for conservation, but which are largely protected once their habitat is protected, are listed as nested targets. Targets nested under the Limestone Forest are shown as an example in the table below.

The health or **viability** of each conservation target was also assessed and ranked. This viability assessment is presented in Appendix B.

Targets nested under the Cocpit Country Limestone Forest

Target	Nested Target
Limestone Forest	Hilltop communities
	Other endemic flora
	Orchids and Bromeliads
	Terrestrial & arboreal invertebrates (in particular Land Snails)
	Endemic amphibians and reptiles (in particular Yellow Boa, Epicrates subflavus)
	Forest-dependent bird species (in particular: Jamaican Blackbird, Ring-Tailed Pigeon, Crested Quail-Dove, Blue Mountain Vireos Plain Pigeon)
	Tree-roosting bat species: Aribeus flavescens

Critical Threats to Targets

Limestone Quarry © J. Kerr

Threats are human activities which negatively affect biodiversity. Critical threats to Cockpit Country biodiversity were identified and ranked according to the degree to which they may alter the target's viability and the irreversibility of their effects. The highest ranked threats are shown in the text box above. Appendix C shows the specific threat ranks for each conservation target.

Most of the threats arise from poor resource use including: poor tillage practices and the conversion of forested areas to agriculture, yam-stick harvesting, logging, and amateur and scientific collecting of sometimes rare and endangered Cockpit Country species.

While **bauxite mining** does not currently occur in the Cockpit Country, there are significant bauxite deposits through 70% of the area. Bauxite mining is therefore an impending threat which will affect all conservation targets. Bauxite mining will dredge the cockpit bottoms for bauxite ore and quarrying will remove deposits of limestone which underlie the area. Both activities therefore have the potential to **permanently destroy forest** and **degrade the headwaters** of several important rivers. Bauxite accounts for over half of Jamaica's annual exports. Addressing this threat requires a very collaborative approach that balances the need for conservation with the need for national revenue and employment.

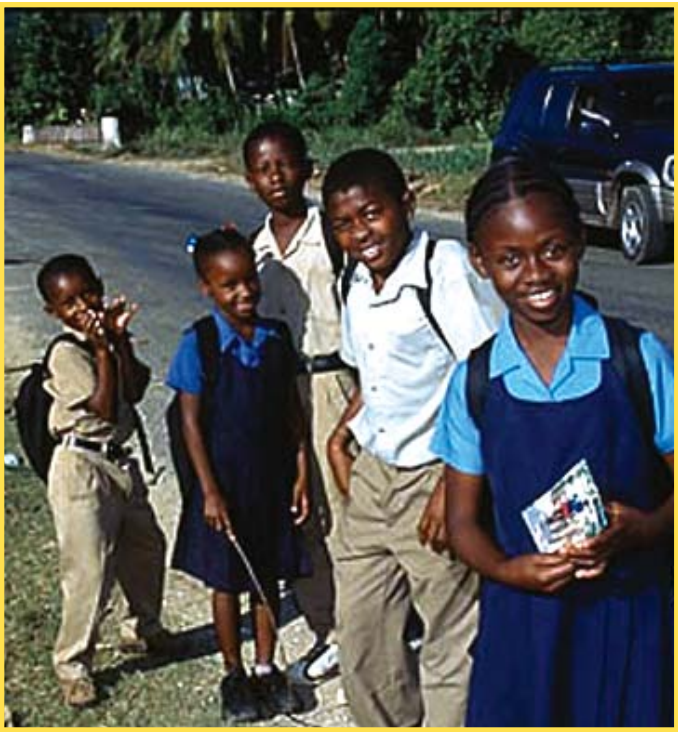
Top Threats:

- **Mining/Quarrying (Impending)**
- **Conversion of Forest (past & potential)**
- **Non-native Invasive Species**
- **Inappropriate Garbage Disposal**
- **Incompatible Agricultural Practices**
- **Amateur/Scientific Collecting & Hunting (food, pet trade, sport)**

From Top

- Hillside farming © D. B. Hay.
- Bamboo, an invasive species in Cockpit Country
- Yam sticks used to support yam vines on a hillside farm © D. B. Hay

Conservation Objectives



From top
- The future of Cockpit Country © J.Kerr
- Local fisherman displays catch from Cockpit Country's periphery © J.Kerr

In light of the high natural and cultural values of Cockpit Country, stakeholders have crafted a vision that integrates biodiversity conservation, sustainable natural resource use and community development. The biodiversity component of this vision is as follows:

Protecting the Cockpit Country's biodiversity, forests, waters and caves; conserving them for our future.

Seven biodiversity conservation objectives were developed to improve biodiversity health, abate threats and build capacity among persons and agencies involved in the long term management of the Cockpit Country. These objectives were based on the target viability assessment, threat assessment and situational analyses.

Of particular importance are the objectives which address forest conversion and bauxite mining, the top two critical threats to the area. If achieved, both objectives will significantly enhance the ecological health of all the conservation targets.

Conservation Objectives

- Prevent forest conversion and restore degraded forest in critical areas within the wider Cockpit Country conservation area.
- Within 5 years reduce the threat of bauxite mining and quarrying in the forest reserves and other critical areas in the Cockpit Country.
- Within 5 years measurably reduce the threat of invasive species on the health of the Cockpit Country
- Within 5 years, identify and create incentives to reduce the degradation of the Cockpit Country biodiversity.
- Within 5 years measurably improve the capacity of government agencies, national and local NGOs and CBOs to sustainably protect Cockpit Country biodiversity.
- Reduce and manage scientific and amateur collection and hunting of Cockpit Country biodiversity
- Reduce the threat of sewage and garbage pollution on Cockpit Country biodiversity

Measures of Success

TNC monitors a stream in Cockpit Country

Measures of success are used to assess whether implemented strategies are working as planned and to ensure that management is responsive to on-the-ground changes.

In this planning stage, **indicators** were selected to evaluate the effectiveness of conservation efforts. Indicators measure changes in biodiversity health and threat status.

Data collection **methods** were developed for each indicator.

The CAP's measures of success will form the framework for the **Monitoring Plan** for the Cockpit Country Conservation Area.

The table below shows the high priority indicators for monitoring the biodiversity health of Cockpit Country.

Priority Measures for Cockpit Country Biodiversity

Conservation Target	Indicators	Monitoring Frequency
Limestone Forest	1. Change in Importance Value Index for trees and DAFOR* scale in sample plots, 2. Total Area of Gaps as a % of Total Forest Area, 3. Change in DBH** Size Class Distribution in permanent sample plots.	Every five to ten years
Karst Freshwater Ecosystems	1. Status of vegetation in 20m buffer around sampling sites (stream, spring or sinkhole), 2. Species diversity (Evenness), 3. Concentration of nitrates, phosphates	Twice per year, once in rainy season & once in dry season
Cave Communities (Terrestrial)	1. Change in relative abundance of characteristic invertebrate and bat species from baseline at cave monitoring sites, 2. Abundance of food trees	Annually
Giant Swallowtail Butterfly	1. Change (from baseline) in relative number of individuals per unit area.	Annually: Every 6 months for 2 week periods
Black-billed and Yellow-billed Parrots	1. Change in DBH Size Class Distribution in permanent sample plots. 2. Average Block Size measured from satellite imagery or aerial photography (every 5 years)	Every five to ten years

*DAFOR- Dominant, Abundant, Frequent, Occasional, Rare **DBH Diameter at Breast Height

Conservation Strategies

Several strategic actions were developed to achieve the seven conservation objectives.

These actions were designed to directly mitigate threats, improve biodiversity health, or create a favourable socioeconomic and legal context for successful conservation. Each strategic action was further broken down into a series of **action steps** with specific expected timelines and responsibilities for implementation as detailed in the CAP Excel spreadsheet.

Strategic actions were ranked according to the following criteria:

- **Benefits**
- **Feasibility** and
- **Cost of implementation.**

The highest priority actions are listed in the table below. The complete list of conservation strategies and details of their ranking are presented in Appendix D.

Jamaican Caves Organisation surveying a Cockpit Country cave. © K. Christenson

Table of Priority Strategic Actions

	Top Ranked Strategic Actions
1	Collaboratively develop and implement a long term funding strategy for conservation in the Cockpit Country
2	Develop an atlas of Cockpit Country targets and threats to quantify them, and to guide and refine conservation actions and land use zoning
3	Develop an economic case for the conservation of the Cockpit Country by conducting an economic valuation of the ecological services, particularly water resources, provided by the Cockpit Country
4	Develop and disseminate appropriate best management practices for small scale commercial and subsistence farming to at least 50 farmers (1 in each of 66 communities) working in close proximity to Cockpit Country primary forest
5	Develop and implement an effective mechanism for co-management of the Cockpit Country conservation area in FY06
6	Develop detailed data on the distribution and impacts of major invasive species (bamboo, Asian fern, American cockroach, shiny cowbird, etc.) on Cockpit Country biodiversity and develop priorities for control and/or eradication
7	Develop techniques and implement projects to restore forest in critical areas such as abandoned agricultural lands
8	Facilitate and promote the declaration of private land holdings under forest as Forest Management Areas
9	Improve the enforcement of the Forest Act (1996) by increasing the number and mobility of forest officers
10	Work with Cockpit Country communities and the relevant solid waste management authority to institute or upgrade appropriate garbage collection and sanitation practices
11	Work with NEPA and other agencies to enforce existing laws and regulations protecting Cockpit Country biodiversity (orchids and bromeliads, parrots, butterflies and research specimens) from collection pressure

References & Acknowledgments

Windsor cave main entrance veiwed from inside © K. Christenson

Conservation Action Planning has been known in previous iterations as Conservation Project Planning (CPP), Site Conservation Planning (SCP) and most recently, Conservation Area Planning.

Important documents which have informed the CAP include:

Bilby, K. 2000. *GEF Cockpit Country Conservation Project Social Assessment Report: Maroon Component.*

D'Andrea, M. 2005. *Jamaica: Preliminary report of the freshwater fauna survey of the Cockpit Country (with emphasis on aquatic invertebrates).*

Koenig, S. 2000. *Cockpit Country Conservation Project: Biodiversity Assessment.*
Koenig, S. 2002. *Site Conservation Planning: Biological Assessment. Final Report.*

Koenig, S. 2002. *Site Conservation Planning: Stakeholder Assessment*.

Spence, B. 2000. *GEF Cockpit Country Conservation Project Land Management Report.*

Stewart, S. et al. 2005. *The Caves of the Jamaican Cockpit Country.*

Taylor, K. 2000. *GEF Report on the legal imperatives and implications of the Cockpit Country Conservation Project.*

Water Resources Authority 2006 *Cockpit Country Hydrological Assessment- A Desk Study of the Hydrological and Hydro-geological Regime Governing Flow in Cockpit Country, Jamaica. (draft)*

A complete bibliography is available from the Forestry Department and The Nature Conservancy Jamaica Programme office on request.

This CAP is the product of the inputs and participation of several individuals and agencies/organizations including:

- Accompong Maroons
- BirdLife Jamaica
- Environmental Foundation of Jamaica
- Forestry Department
- Institute of Jamaica (Natural History Division)
- Jamaica Conservation and Development Trust
- Jamaican Caves Organization
- Jamaica Protected Areas Trust
- Ministry of Land and the Environment
- Montego Bay Marine Park
- National Environment and Planning Agency
- Southern Trelawny Environmental Association
- University of the West Indies
- Water Resources Authority
- Windsor Research Centre
- World Bank

This publication was made possible through support provided by the Office of Regional Sustainable Development, Bureau for Latin America and the Caribbean, U.S. Agency for International Development and The Nature Conservancy, under the terms of Award No. EDG-A-00-01-00023-00 for the Parks in Peril Program. The opinions expressed herein are those of the planning team and do not necessarily reflect the views of the U.S. Agency for International Development and The Nature Conservancy.

Appendix A. Target Selection Criteria

Conservation target selection criteria include:

- *Large ecosystems containing much of the Cockpit Country's biodiversity*
- *Specialized habitats not captured in the above*
- *Important species e.g.: globally imperiled or endemic species found in the area*

Target Selection Criteria Table

Target	Criteria	Nested Targets	Key Ecological Attributes
Limestone Forest (includes: wet, moist, pre-montane moist and moist alluvial forests)	• High level of plant and animal endemism • One of the largest intact remaining blocks of limestone forest in Jamaica • Contains much of the terrestrial biodiversity in Cockpit Country • Possibly high level of threat due to, agricultural incursion, forest plantations, and invasive species. • Economic importance of forest products, forest services, landscape value (ecotourism) • Probable threat of bauxite mining & limestone quarrying • Listed in the Centres of Plant Diversity Project as one of 250 globally important sites for plant biodiversity. (Davis, et al. 1997 Centres of Plant Diversity: A Guide and Strategy for Their Conservation. Volume 3: The Americas. IUCN Publications Unit, Cambridge, England.)	• Hilltop endemic species, • Other endemic flora, • Epiphytes: Orchids + Bromeli ads • Terrestrial & arboreal inverteb-rates (including Land Snails), • Endemic amphibians & reptiles including Yellow Boa • Forest-dependent bird species – Jamaican Blackbird, Ring-Tailed Pigeon, Crested Quail-Dove, Blue-Mountain Vireo • Tree-roosting bat species: Artibeus flavescens	• Regenerative Ecology (including presence of selected species of birds, effects of hurricanes, drought, fire regime & invasive species) • Forest structure • Forest Contiguity & Block Size • Nutrient Content • Floristics • Climatic Regime: temperature and rainfall, light penetration
Karstic Freshwater Ecosystems	• Major recharge area for freshwater supply of western Jamaica • One of few remaining areas with intact karstic watersheds • Highly specialized ecosystems possibly many endemic freshwater species • High level of threat because of sedimentation, nutrient enrichment, and invasive species	• Subterranean aquatic biota (stygobites and stygophiles) largely invertebrates • Spring and river aquatic fauna and flora • Diadromous species e.g. eels - Anguilla, shrimp - Macrobra-chium and Atyidae (Potomiron and Xiphocaris) • Terrestrial riverbank floral and faunal communities	• Characteristic allochthonous inputs • Hydrologic regime • In-stream longitudinal migration • Sediment erosion/deposition regime • Species composition/richness • Water chemistry

Appendix A. Target Selection Criteria cont'd

Target Selection Criteria Table

Target	Criteria	Nested Targets	Key Ecological Attributes
Cave Communities (terrestrial)	• Very specialized fauna and many endemics • Very vulnerable to disturbance and degradation • Low resilience to disturbance	• Cave-dwelling bats, • Guano-dependent invertebrates, • Other cave invertebrates (e.g., detritivores), • Amphibians, esp. Eleutherodactylus cundalli	• Allochthonous inputs (guano and plant material) • Bat foraging resources • Low disturbance levels • Species composition / dominance
Giant Swallowtail	• Endemic to Jamaica • Listed by IUCN as endangered species • Very specific habitat and food plant requirements may not be addressed by protecting the forest	• Other forest-dependent butterfly species	• Predation and parasitism • Presence of larval food plant • Presence of natural forest gaps • Very high relative humidity • Population size
Black-billed and Yellow-billed Parrots	• Major recharge area for fresh-water supply of western Jamaica • One of few remaining areas with intact karstic watersheds • Highly specialized ecosystems possibly many freshwater endemics • High level of threat because of sedimentation, nutrient enrichment, and invasive species	• Other old growth forest dependent bird species	• Availability of medium to large trees for nesting • Natural Predation (e.g. Red-tailed Hawk, Yellow Boa) • In-stream longitudinal migration • Population size • Population structure • Availability of large blocks for population refuges

Appendix B. Target Viability

Target and Site Viability Table

Conservation Target	Landscape Context	Condition	Size	Overall Viability Rank
1 Limestone Forest	Fair	Good	Fair	Fair
2 Karst Freshwater Ecosystems	Fair	Fair		Fair
3 Cave Communities (Terrestrial)	Fair	Poor		Fair
4 Black-billed and Yellow-billed Parrots	Good	Good	Very Good	Good
5 Giant Swallowtail Butterfly	Good	Fair		Good
Site Biodiversity Health Rank				Fair

Explanation of terms:

Landscape Context
Landscape context is an integrated measure of two attributes: the dominant environmental regimes and processes that establish and maintain the target occurrence, and connectivity. Dominant environmental regimes and processes may include, hydrologic and water chemistry regimes, geomorphic processes, climatic regimes, and many kinds of natural disturbance.

Condition
Condition is an integrated measure of the composition, structure and biotic interactions that characterize the occurrence. This includes attributes such as reproduction, age structure, biological composition, structure and biotic interactions.

Size
Size is a measure of the area or abundance of the conservation target's occurrence including the minimum dynamic area. For ecological systems and communities, size is simply a measure of the occurrence's patch size or geographic coverage. For animal and plant species, size takes into account the area of occupancy and number of individuals.

The Overall Viability Ranks are defined as:

Very Good: The target is functioning at an ecologically desirable state, requiring little human intervention for maintenance within the natural range of variation (i.e., is as close to "natural" as possible and has little chance of being degraded by some random event).

Good: The target is functioning within its range of acceptable variation, although it may require some human intervention for maintenance.

Fair: The target's status lies outside of its range of acceptable variation and requires human intervention for maintenance. If unchecked, the target will be vulnerable to serious degradation.

Poor: Allowing the target to remain in this condition for an extended period will make restoration or prevention of extirpation practically impossible (e.g., it will be too complicated, costly, and/or uncertain to reverse the alteration).

Appendix C. Summary of Threats across Targets

Threat Summary Table

Threats Across Systems	Limestone Forest	Karst Freshwater Ecosystems	Cave Communities (Terrestrial)	Black-billed and Yellow-billed Parrots	Giant Swallowtail Butterfly	Overall Viability Rank
1 Mining/quarrying (potential)	High	High	Very High		High	Very High
2 Conversion of forest	High	Medium	Very High	Low	Medium	High
3 Non-native invasive species	High	Medium	Very High			High
4 Inappropriate garbage disposal		Medium	Very High			High
5 Incompatible agriculture practices	High	High	High			High
6 Amateur/scientific collecting and hunting (food, pet trade, sport)	Medium		High	Medium	High	High
7 Inappropriate septic systems		High	Medium			Medium
8 Timber extraction	High			Low		Medium
9 Non-dynamic gaps (trails, tracks & roads)	High					Medium
10 Recreational Tourism			High			Medium
11 Guano Extraction			High			Medium
12 Human-caused fire	Medium					Low
13 Dams		Medium				Low
14 Yam stick harvesting	Medium					Low
15 Over-pumping of groundwater		Low				Low
16 Introduced Diseases				Low		Low
Threat Status for Targets and Site	Very High	High	Very High	Low	High	Very High

Appendix D: Prioritized list of Strategic Actions

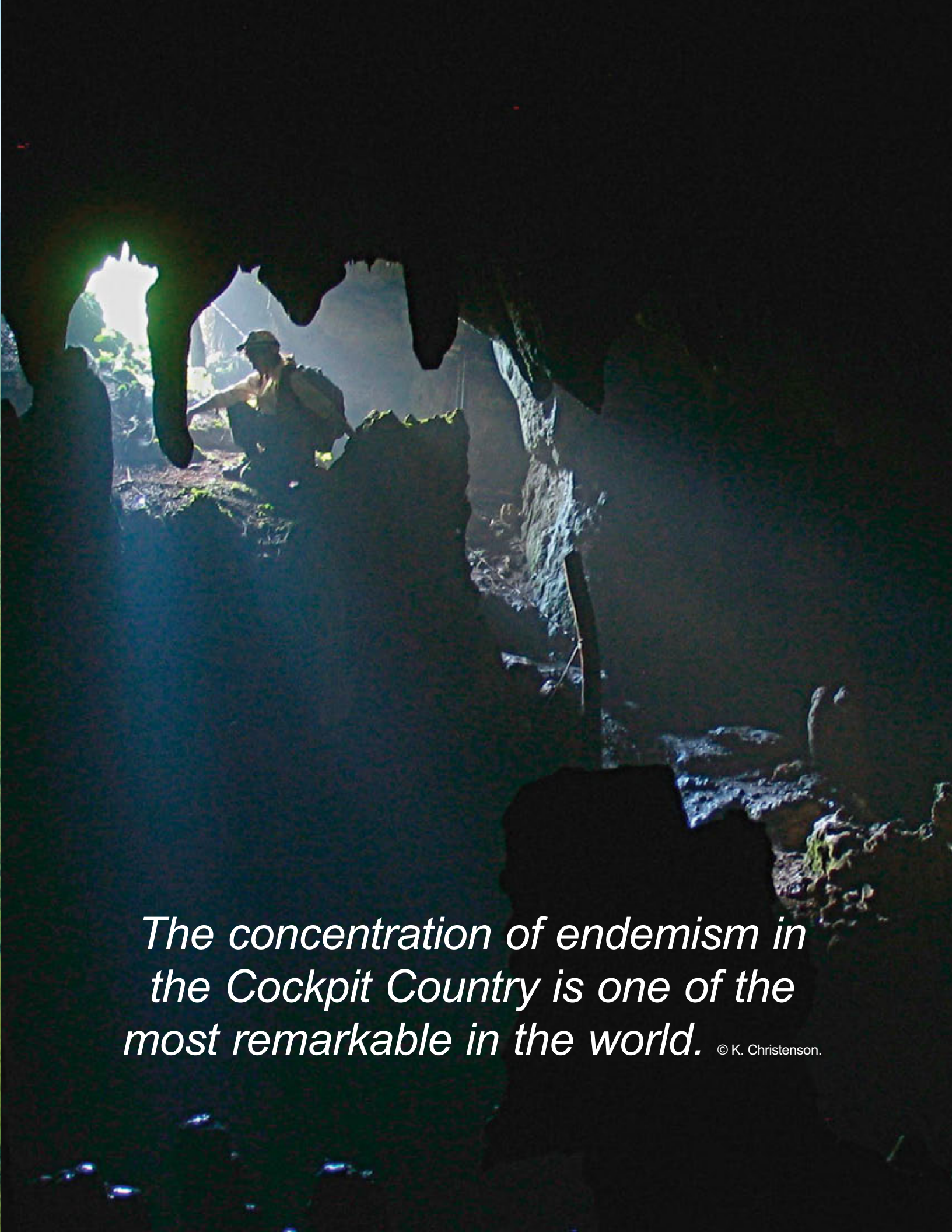
Strategic actions are ranked on nine criteria related to :

1) Benefits (contribution, threat abatement, viability enhancement, duration, leverage),
2) Feasibility (lead individual/institution, ease of implementation, ability to motivate), and
3) Cost.

Table showing ranking detail of conservation strategies

	Strategic Actions	Overal Rank	Benifites	Feasibility	Cost	Overall Rank
1	Collaboratively develop and implement a long term funding strategy for conservation in the Cockpit Country .	Very High	Very High	Very High	Medium	Very High
2	Develop an atlas of Cockpit Country targets and threats to quantify them, and to guide and refine conservation actions and land use zoning.	Very High	Very High	Medium	Medium	Very High
3	Develop an economic case for the conservation of the Cockpit Country by conducting an economic valuation of the ecological services particularly water resources, provided by the Cockpit Country.	Very High	Very High	High	Medium	Very High
4	Develop and disseminate appropriate best management practices for small-scale commercial and subsistence farming to at least 50 farmers working in close proximity to Cockpit Country primary forest	Very High	Very High	High	Medium	Very High
5	Develop and implement an effective mechanism for co-management of the Cockpit Country conservation area in FY06.	Very High	Very High	Medium	Medium	Very High
6	Develop detailed data on the distribution and impacts of major invasive species (bamboo, Asian fern, American cockroach, shiny cowbird, etc) on Cockpit Country biodiversity and develop priorities for control and/or eradication.	Very High	Very High	High	Medium	Very High
7	Develop techniques and implement projects to restore forest in critical areas such as abandoned agricultural lands, river banks and cave entrances using early succession native species.	Very High	Very High	Medium	High	Very High
8	Facilitate and promote the declaration of private land holdings under forest as Forest Management Areas	Very High	Very High	Medium	Medium	Very High
9	Improve the enforcement of the Forest Act (1996) by increasing the number and mobility of forest officers	Very High	Very High	High	Medium	Very High
10	Work with Cockpit Country communities and the relevant solid waste management authority to institute or upgrade appropriate garbage collection and sanitation practices.	Very High	Very High	Very High	Medium	Very High
11	Work with NEPA and other agencies to enforce existing laws and regulations protecting Cockpit Country biodiversity (orchids and bromeliads, parrots, butterflies, and research specimens) from collection pressure.	Very High	Very High	High	Medium	Very High

27 of Jamaica's 28 endemic bird species are found in the area along with 1,500 species of plants and several species of amphibians, reptiles and invertebrates.



The concentration of endemism in the Cockpit Country is one of the most remarkable in the world.

For further information on the Cockpit Country Parks-in-Peril Project or the Conservation Action Plan, please contact:

Ann Sutton
The Nature Conservancy
Jamaica Programme
32 Lady Musgrave Road
Kingston 5
Tel.: (876)-877-7335
email: asutten@tnc.org
www.nature.org/wherewe-work/caribbean/jamaica

Owen Evelyn
Forestry Department
173 Constant Spring Road
Kingston 10
Tel.: (876)-924-2667-8
email: Oevelyn@forestry.gov.jm
www.forestry.gov.jm/home_new.htm

Authors: **Kimberly John and Minke Newman**
TNC Jamaica Programme

Design & layout by: NTyrelldesigns tell: (876) 754-1426