



## **Protected Area Strategies for Conserving Freshwater Biodiversity**

*Challenges, Opportunities,  
and TNC Experiences*

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*The Nature Conservancy*



## Why protection for freshwater?

- Sometimes only strategy available (*e.g. threatened, endemic biodiversity*)
- To create enabling conditions for freshwater management
- To complement other strategies (*e.g. community based management, compatible economic development, etc.*)
- **Key Question: *Under what circumstances and for what freshwater biological features is protection recommended?***
- ***And when are protected areas NOT recommended?***

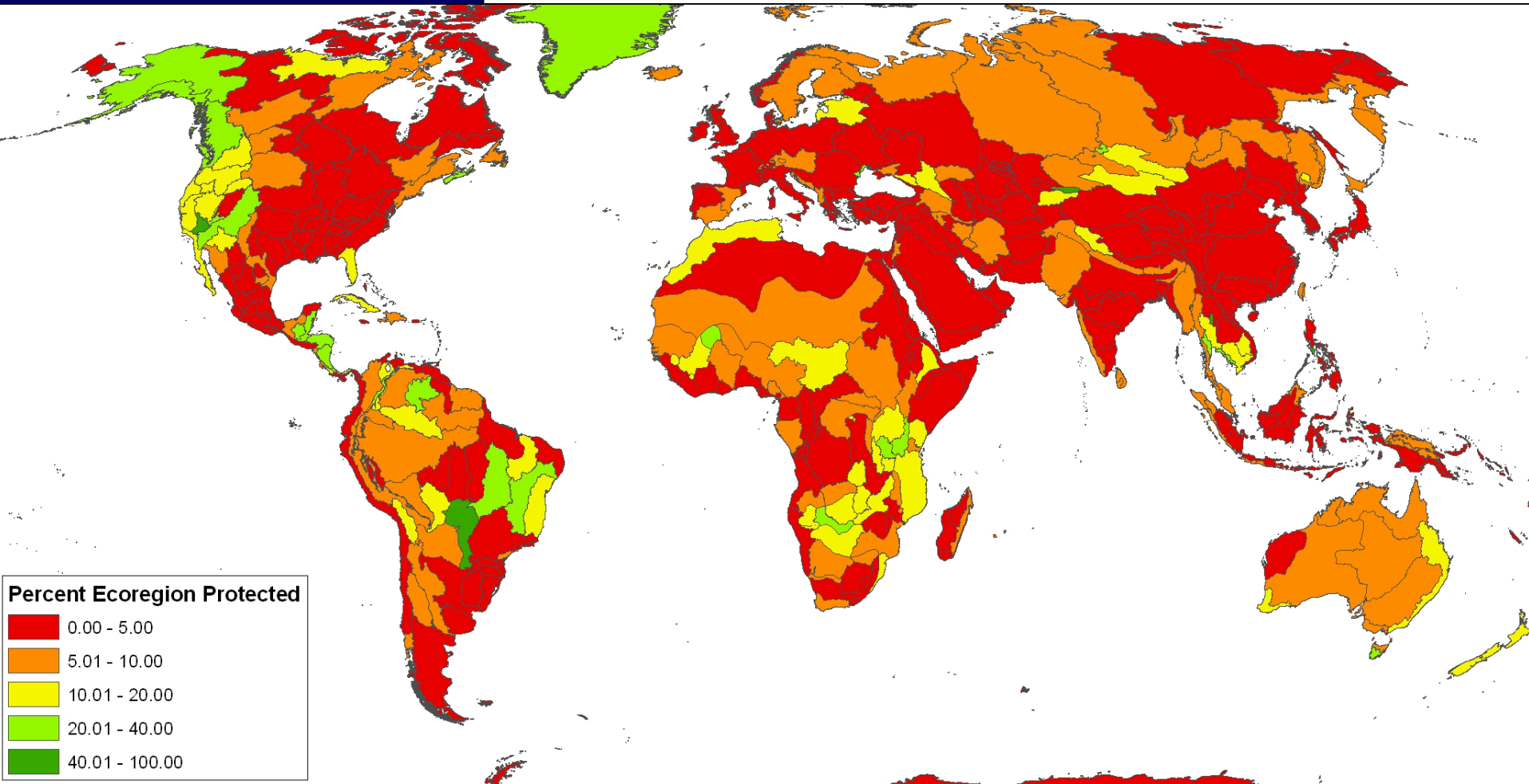


## **Global Scale Gaps**

- **Ramsar: approximately 1500 sites heavily skewed in geographic distribution (Europe)**
- **Global protection levels: Extraordinarily low levels of protection of freshwater ecoregions**

# Freshwater Protected Areas Challenges

## Global Gaps in FW Protection

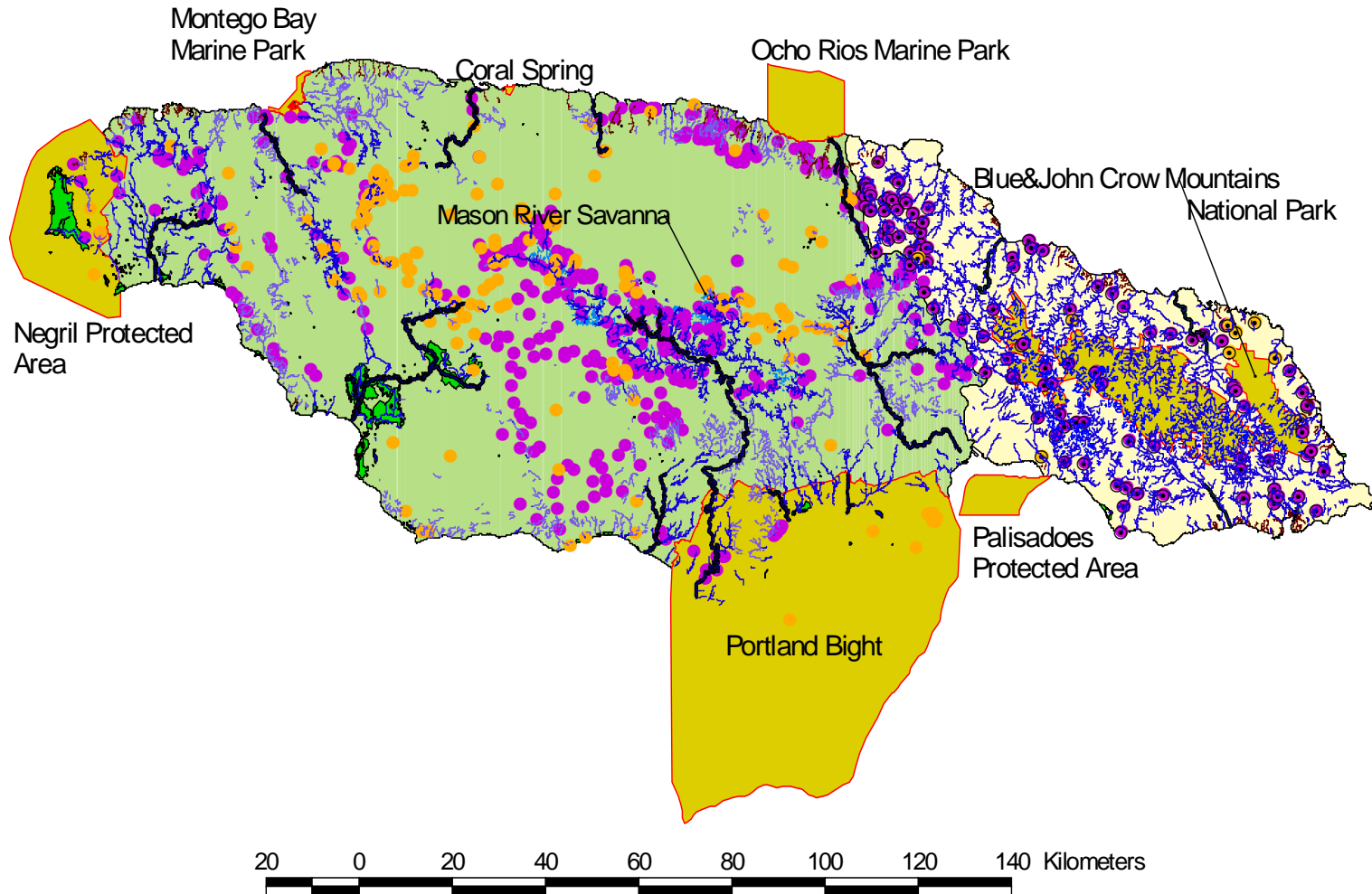




## National Scale Gaps

- **Gaps in Representation**
  - Protection of actual occurrences
  - Protection of ecological processes influencing occurrences
- **Gaps in Management**
  - Ineffective management of PA's
  - Poor understanding of freshwater specific threats and management issues

# Example of National Gaps: Jamaica



# Example of National Gaps: Jamaica

- Only 6 FW habitats adequately represented (*i.e.* >10% of their distribution)
- 5 habitats completely unprotected (large rivers, wetlands, ponds, caves)
- PA network does not protect ecological connectivity.
- PAME for freshwater targets is deficient.

Target	Percentage of target protected	KEY- % represented
Eastern high altitude headwater streams	61.8%	>20%
Western freshwater wetlands	31.2%	10-20%
Western ponds and lakes	18.7%	0-10%
Eastern medium-sized streams	13.8%	0-10%
western large rivers	10.9%	0-10%
Western medium-sized streams	10.5%	0-10%
Eastern springs	7.3%	0-10%
Western coastal springs	6.3%	0-10%
western springs	6.2%	0-10%
Western freshwater caves	5.6%	0-10%
Western karstic streams	4.4%	0-10%
eastern coastal springs	0.5%	0-10%
eastern large rivers	0.0%	no protection
eastern wetlands	0.0%	no protection
eastern ponds and lakes	0.0%	no protection
western_high altitude streams	0.0%	no protection
eastern freshwater caves	0.0%	no protection

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CRITICAL FRESHWATER HABITATS



## National Scale Gaps

- Gaps in Representation
  - Protection of actual occurrences
  - Protection of ecological processes influencing occurrences
- Gaps in Management
  - Ineffective management of PA's in general
  - Poor understanding of freshwater specific threats and management issues in particular



# Freshwater Protected Areas Challenges

## National Scale Gaps

- Gaps in Management
  - Paper Parks Syndrome Magnified for Freshwater
  - Need to identify PAME deficiencies, and build capacity of PA managers for freshwater conservation



**So what can we do to  
address these  
challenges?**





an unprecedented opportunity

# *Freshwater Protected Areas Opportunities*

In 2004,  
188  
governments  
made an  
historic  
commitment  
to protected  
areas.



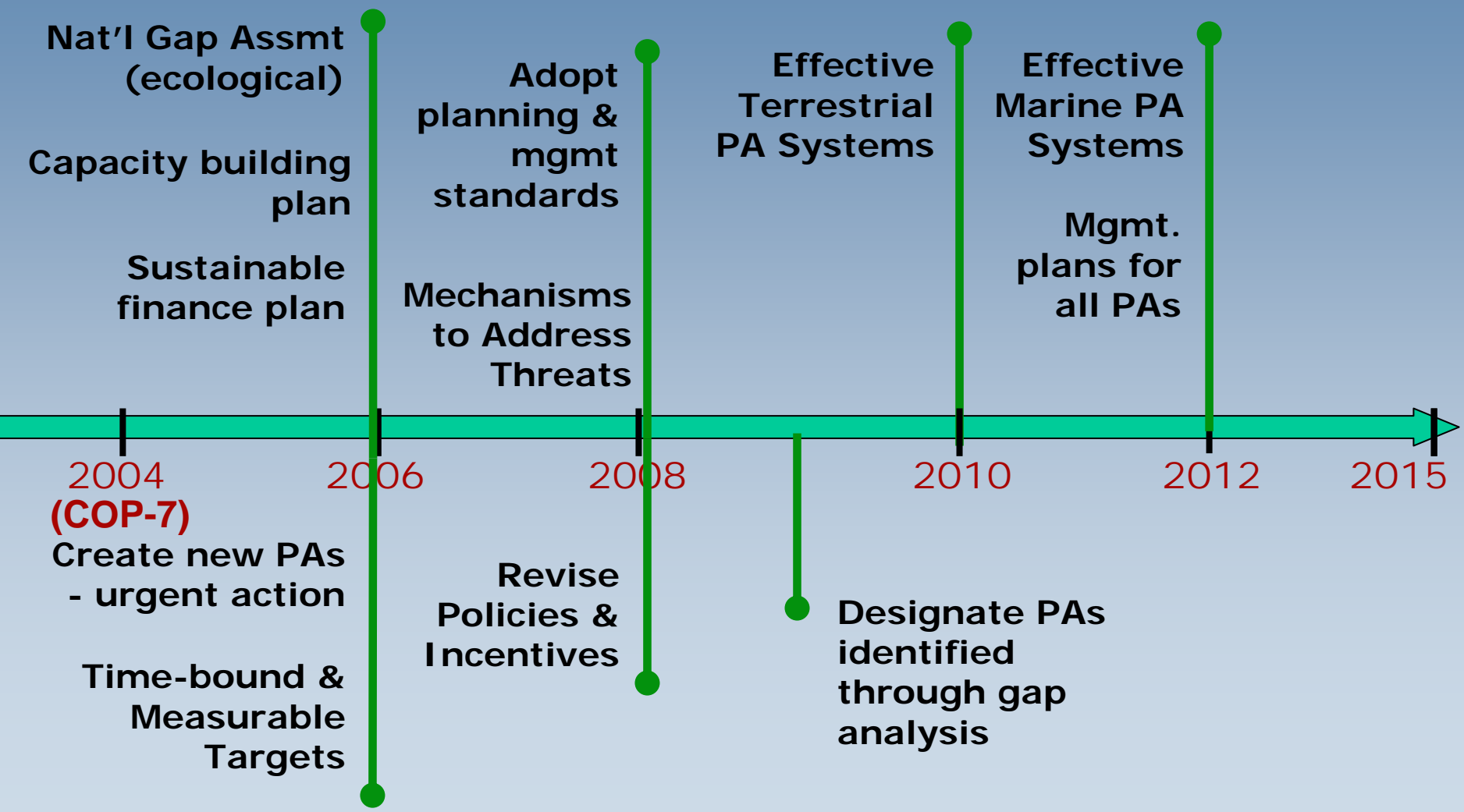


**By 2010 terrestrially and 2012  
in marine areas, establish  
*comprehensive, ecologically  
representative and effectively  
managed* national and  
regional protected area  
systems**

# What about freshwater biodiversity?

Current  
Protection of  
Freshwater  
Biodiversity is a  
“happy  
accident”...

- “...establishment and maintenance by 2010 for terrestrial and by 2012 for marine areas of comprehensive, effectively managed, and ecologically representative national and regional systems of protected areas..”
  - Assumes erroneously that freshwater biodiversity is captured in addressing “terrestrial” biodiversity
- Commitment 1.1.3  
Address the under-representation of inland water ecosystems in protected area systems



# *Freshwater Protected Areas Opportunities*



- Countries have made 92 commitments in the PA's PoW
- Without guidance, tools, examples, technical and financial support, many will not be successful, and will fail specifically with freshwater biodiversity outcomes

# Freshwater Protected Areas Opportunities

## TNC's Global Protected Areas Strategy

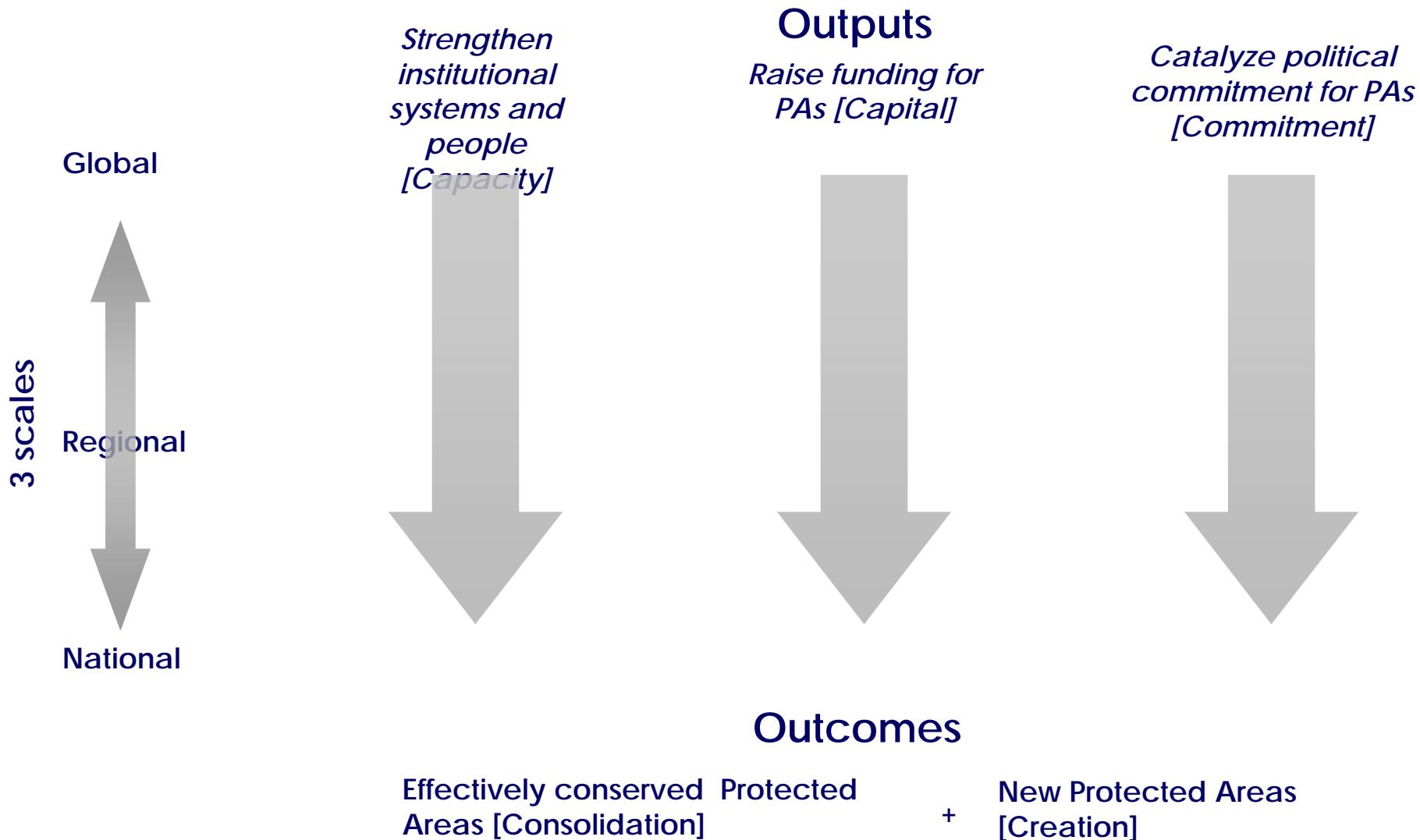
*“Over the next ten years, TNC will work with others to create and effectively conserve 2 billion<sup>1</sup> acres of protected areas across all major realms”*



Consolidation  
of existing  
Protected  
Areas + Creation of  
New  
Protected  
Areas



# TNC's Global Protected Area Strategy

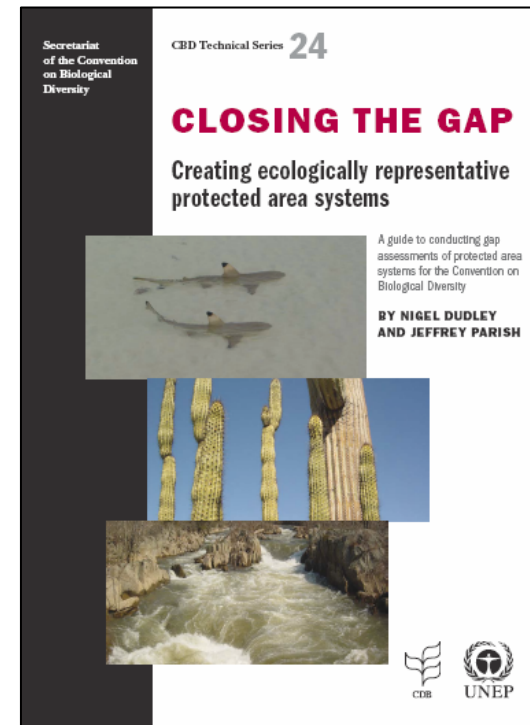


# TNC's Global Protected Area Strategy



## Guidance in Gap Assessments

- Official guidance from the CBD Secretariat
- Distributed to all 188 Signatories to the CBD
- Led by The Nature Conservancy but inclusive of many different methods
- Presents common principles and framework yet flexibility in methods to meet them.



# Freshwater Protected Areas Opportunities

## Gap Assessments:

## Recommended Steps

1. Identify *representative* focal biodiversity features for the PA system, set protection targets.
2. Assess biodiversity occurrences & status
3. Assess protected areas & status
4. Identify and measure gaps (ecological, representation, & management/capacity)
5. Prioritize gaps
6. Design strategies & estimate costs to fill gaps

**Key Question:** What tools can we provide to governments for efficient mapping, target setting, and assessment of freshwater ecosystems?

## **Key Areas of Need for PA Managers**

- 1. Gaps and PA Creation***
- 2. PA Management Planning***
- 3. PA Mgmt Effectiveness***
- 4. PA Capacity Development***
- 5. PA Sustainable Financing***



# Freshwater Protected Areas Challenges

## Policy Challenges

- Water quantity and quality trumps freshwater biodiversity
- COP4 (Program of Work on Inland Water Ecosystems) decoupled from COP7 (PoW on Protected Areas)



# Freshwater Protected Areas Challenges



- Most do not understand importance of watershed protection for human water consumption
- Biodiversity conservation links are, however, “Just-So Stories”
- *Key Question: Can we provide better empirical data to gain support by govts and the public for FPA's and freshwater biodiversity protection?*



## Key Questions

- 1. Under what circumstances and for what freshwater systems is protection the recommended strategy?***
- 2. And when are protected areas NOT recommended?***
- 3. What tools can we provide to governments for efficient mapping, target setting, and assessment of freshwater ecosystems?***
- 4. Can we provide better empirical data to gain support by govts and the public for FPA's?***





The Nature  
Conservancy



SAVING THE LAST GREAT PLACES ON EARTH

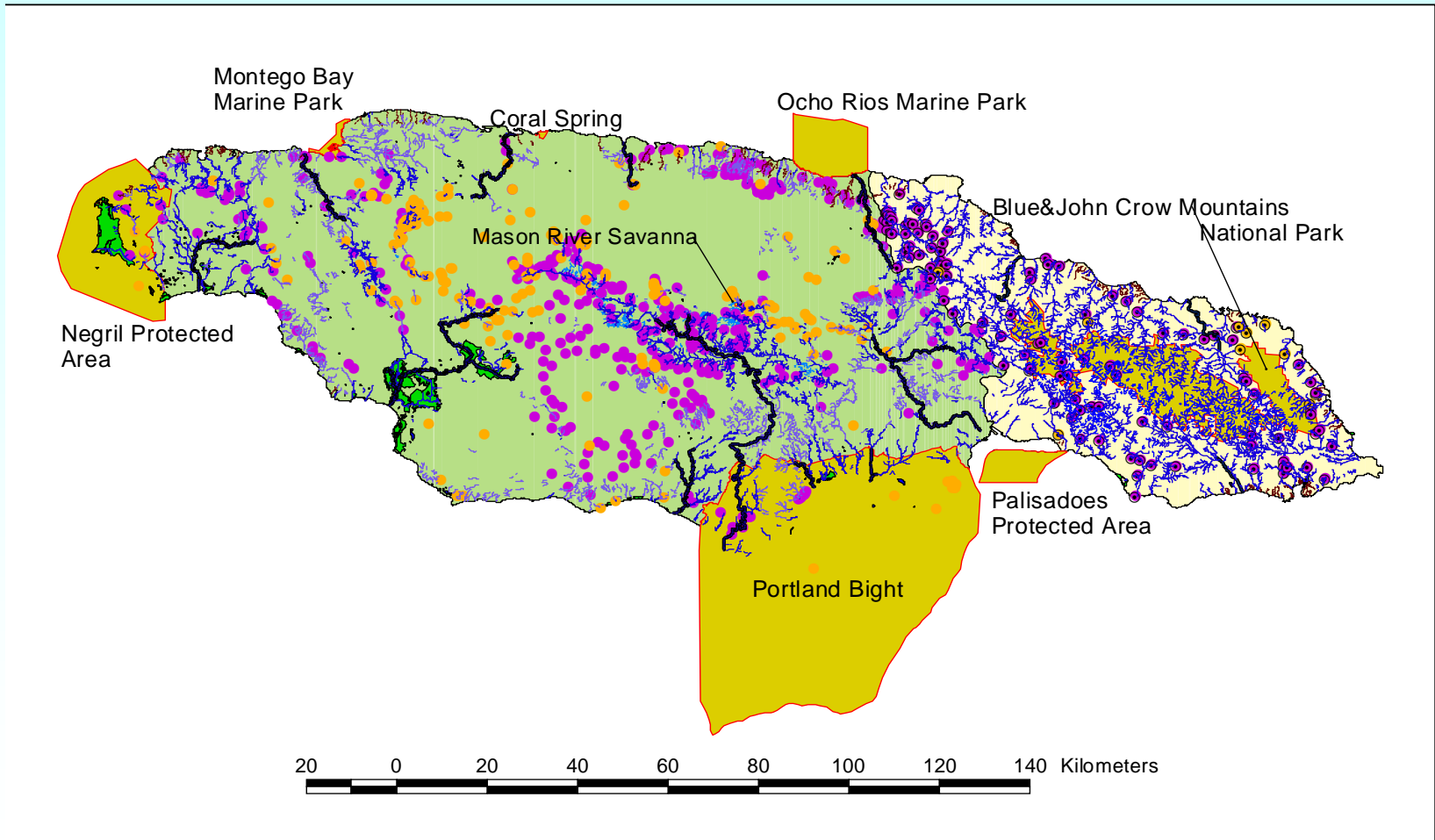


**FONAG**  
FONDO DE QUITO PARA EL AGUA



# JERP Gap analysis - Freshwater

- Distribution of FW targets & existing PAs



# Freshwater gap analysis – (NEPA PAs only)

- Only 6 freshwater habitats are adequately represented (i.e. >10% of their distribution) in the protected area network.)
- 5 habitats (large rivers, wetlands, ponds and caves in the east and high altitude streams in the west) are **completely unprotected**
- The PA network does not protect **ecological connectivity**. (i.e. No complete river systems protected.)
- Management effectiveness of protected areas for freshwater targets has not been assessed but is likely to be deficient.

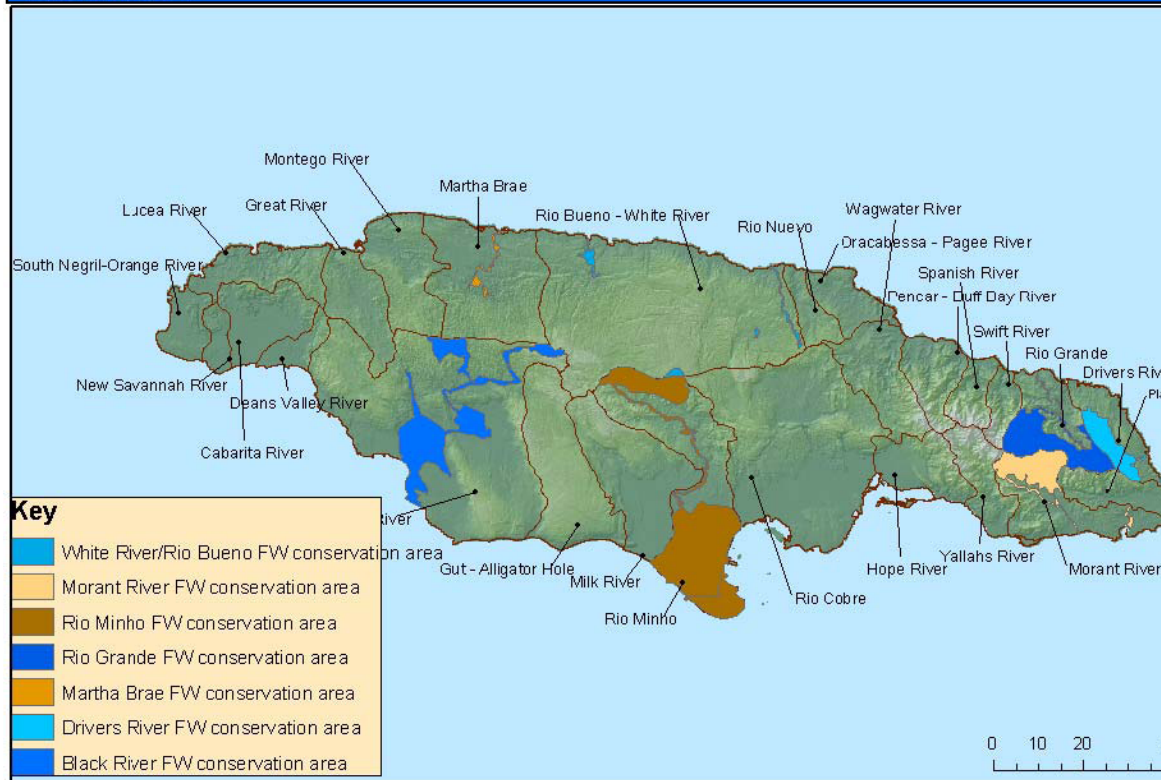
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CRITICAL FRESHWATER HABITATS

# Freshwater - Watershed Prioritization Model

## JAMAICA ECOREGIONAL PLAN: Watershed Prioritisation Model: Proposed Freshwater Conservation Areas in Priority Watersheds\*

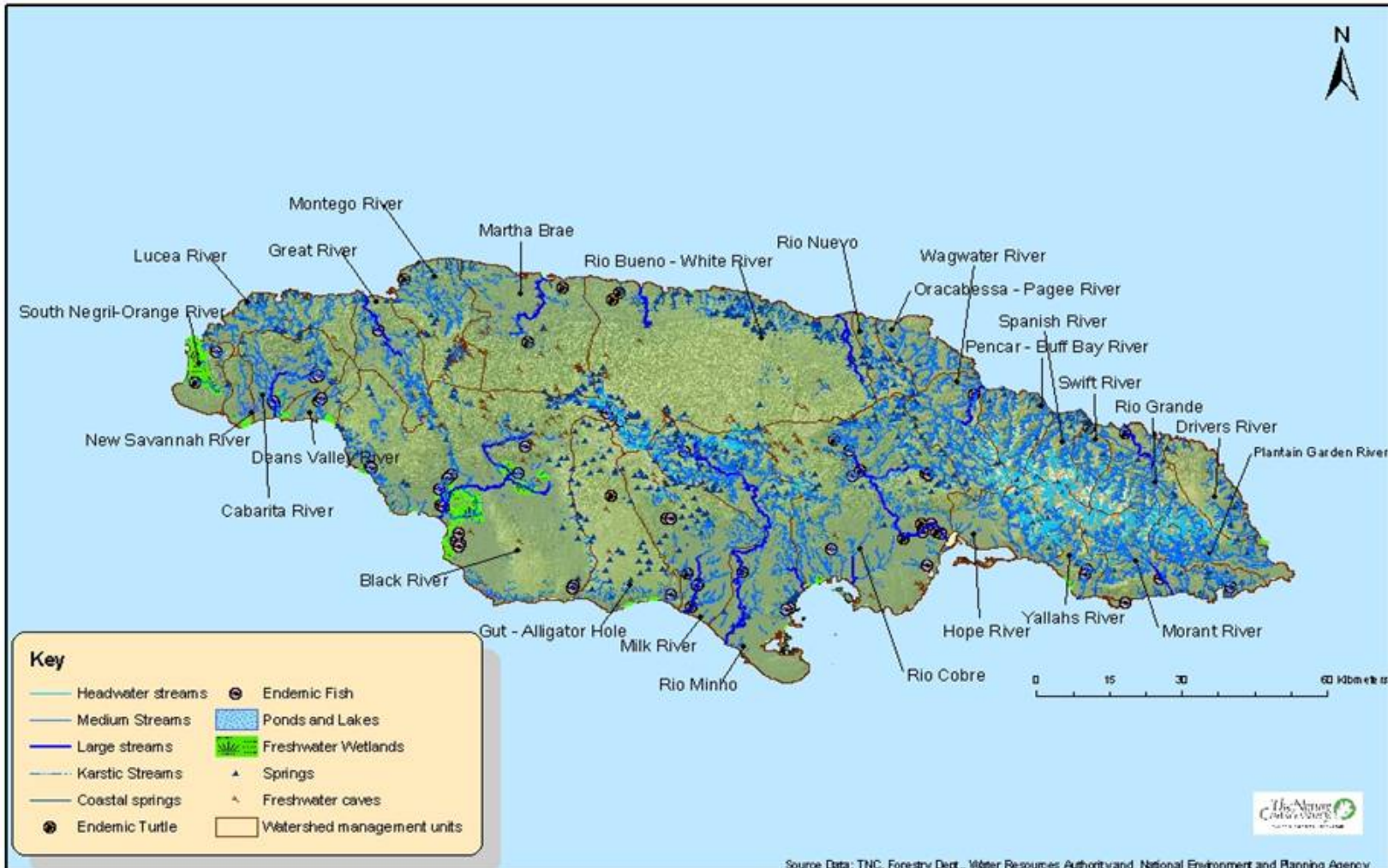


\* Watersheds were prioritised according to their biological richness, ecology and the existence of protected areas (conservation opportunities) in the watershed.



# JAMAICA ECOREGIONAL PLAN

## Freshwater Target Distribution: freshwater ecosystems and species

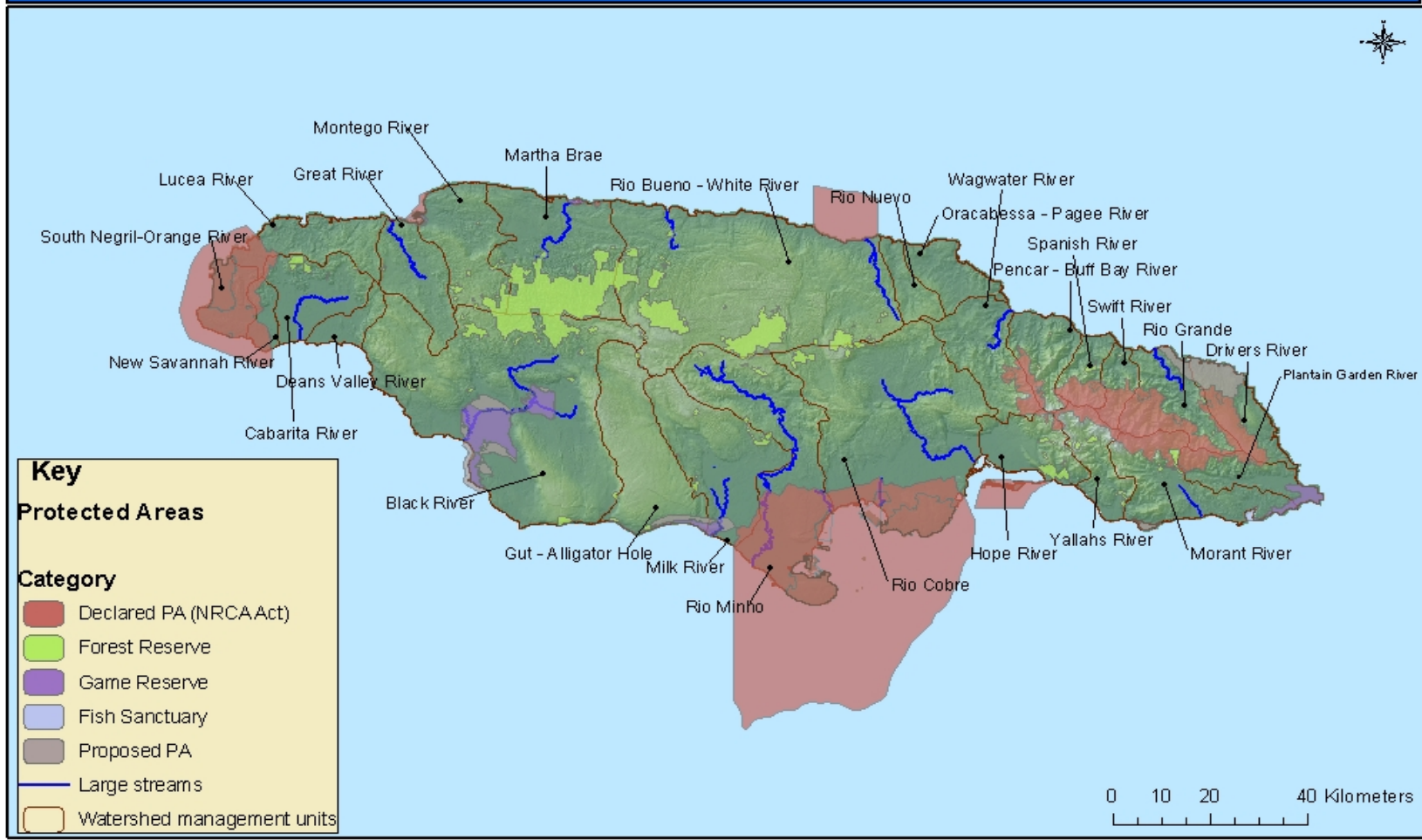


Source Data: TNC, Forestry Dept., Water Resources Authority and National Environment and Planning Agency



Figure : Overlay of Jamaica's Protected area and major freshwater systems

## JAMAICA ECOREGIONAL PLAN: Protected Area Gap Assessment- Distribution of Jamaica's protected areas.







# Conclusions

The main findings of the gap assessment are:

- 1. Almost 50% of Jamaica's FW habitats are under or unrepresented in Jamaica's protected area network.**
- 2. The current PA network fragments freshwater systems and does not preserve the longitudinal and lateral connectivity of freshwater ecosystems.**
- 3. Management (plans, strategies and monitoring) of freshwater systems is a major gap in existing Protected Areas Network.**



# 1<sup>st</sup> Recommendation

*Include un-protected freshwater systems in Protected Area Network across at least 10% of their distribution*

Conservation Actions:

- Explore existing and future mechanisms for protecting entire river corridors (as protected areas or under watershed protection act, development orders, private land conservation )

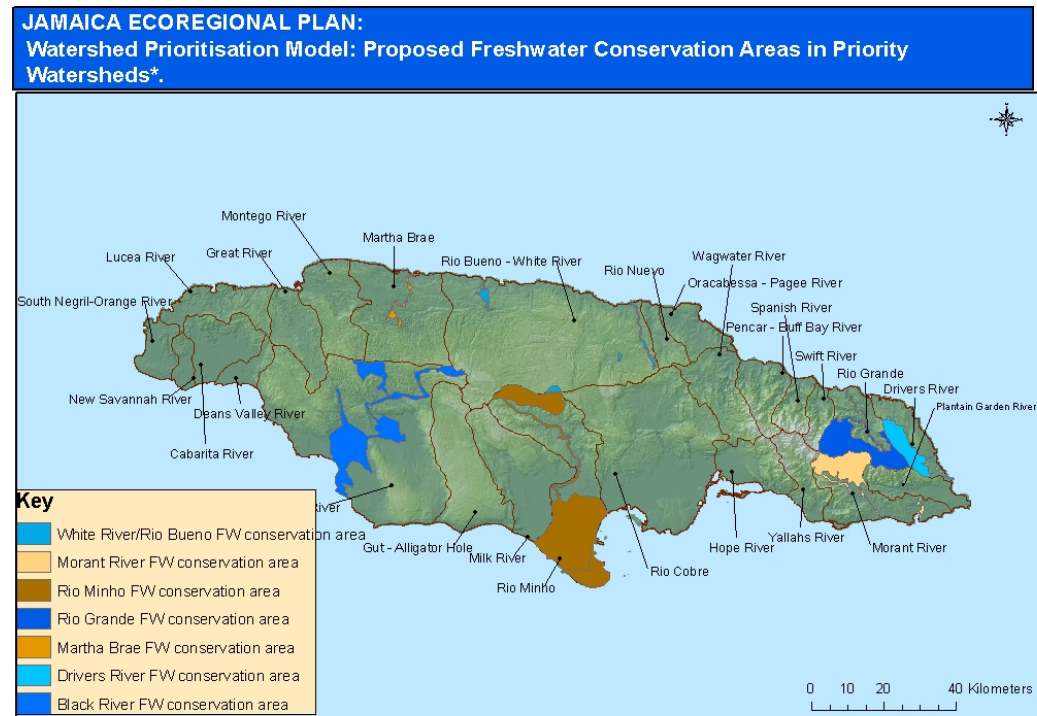




# 2<sup>nd</sup> Recommendation

*Redesign established Protected Areas using a watershed approach to restore lateral and longitudinal connectivity in freshwater ecosystems (See figure below).*

- Conservation Actions:
  - Incorporate lower Rio Grande/ Drivers River into wider Blue and John Crow Mountains Protected Area.
  - Protect from Cockpit Country north into downstream Martha Brae watershed and/or south into Black River watershed.



\*Watersheds were prioritised according to their biological richness, ecological integrity and the existence of protected areas (conservation opportunities) in the watershed.



## 3<sup>rd</sup> Recommendation

***Assess and improve the management effectiveness of protected areas with respect to freshwater ecosystems.***

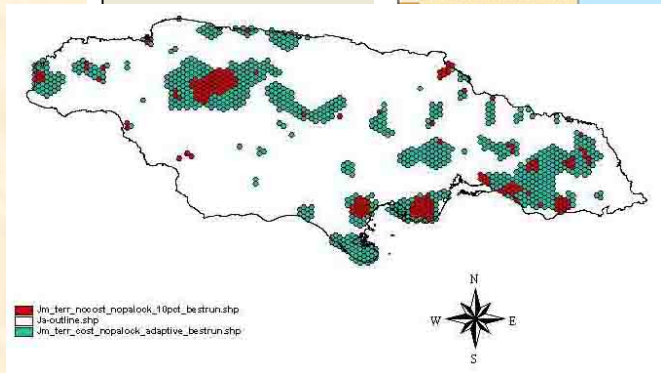
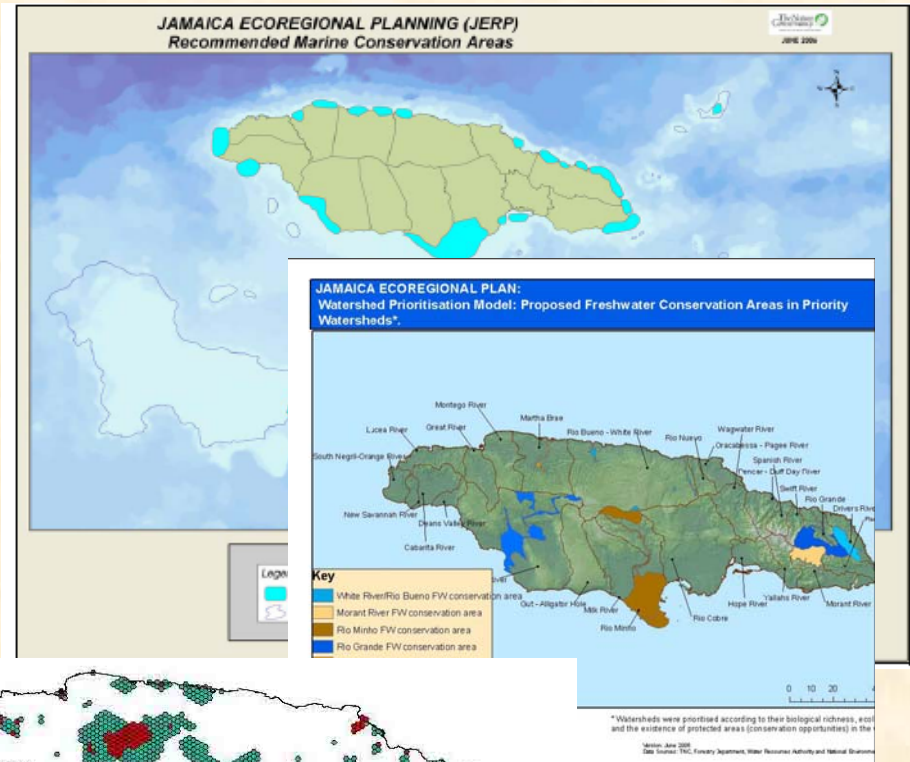
- Train water resource management and protected area practitioners in freshwater conservation methods (planning, implementation and monitoring).





# Proposed new protected areas

- **N.b. analysis is still in progress**
- Areas included in 3 realms include
  - Cockpit Country (plus **Martha Brae**)
  - **Black River upper and lower morass and Wallywash Pond**
  - Portland Bight
  - Blue and John Crow Mountains (to **Port Antonio coast Rio Grande valley and Drivers River corridor**)
- Areas identified in 2 realms include:
  - **Upper Clarendon/St Ann**
  - **Coastal St. Mary**
  - **Coastal St. James/Falmouth**
  - **Montego Bay**





*Draft strategy:*

## Proposed new PAs

- **Black River**
- Current status – Ramsar Site and Game Reserve
- Importance: freshwater, marine and terrestrial biodiversity, potential conservation corridor to Cockpit Country





*Draft strategy:*

## Proposed new PAs

- **Pedro Cays and Bank**
- *Current status:*  
Protected National Heritage
- *Importance:* Rare marine ecosystems, least disturbed marine systems in Jamaica, important fishery, sea turtle nesting and seabird colonies





### *Draft strategy:*

## Modification of existing PAs

- Expansion of boundaries
  - Blue and John Crow Mountains – extend to include Drivers River to sea and Rio Grande valley and marine area coastal Port Antonio
  - Cockpit/Martha Brae – link to North coast
  - Generally use detailed ERP to review protected area boundaries to ensure efficient coverage of targets
- Forest Reserves to be managed more intensively for conservation
  - Cockpit Country (including all satellite reserves such as Dromily, Niagara, Cooks Bottom etc.)
  - Mount Diablo, Douglas Castle
  - Peckham Woods
  - Troja Forest Reserve







*Draft strategy:*

## Improvement of PA management

- Assess management effectiveness of PAs
- Promote CAP as standard methodology for protected area planning
- Develop and test mini-CAPs
- Develop standard formats for Monitoring plans
- Develop criteria and approaches for Zoning
- Seek ways to integrate and coordinate land and water under various forms of management (i.e. at landscape/watershed scale)





*Draft strategy:*

# Modification of existing protected areas

- Improvement of management
- Species management
- Restoration
- Invasive species management
- Monitoring methodology





*Draft strategy:*

## **Improvement of enforcement of existing laws**

- Generally environmental awareness and compliance need to be increased
  - Engage and train Marine Police, JDF Coast Guard, the Courts and fishing communities in active conservation & enforcement
  - Increase involvement of stakeholders generally





## *Draft strategy*

# **New approaches to site conservation outside PAs**

- **Connectivity**
  - River corridors (review existing mechanisms, determine whether new approaches needed)
  - Conservation corridors for terrestrial (spinal forest, coastal forest, river corridors)
  - Small isolated terrestrial sites
- **Conservation on private land (easements, new approaches to integrating conservation with other land uses e.g. mining, agriculture, tourism)**
- **Mining**
  - Develop partnerships to integrate conservation in pre-mining, mining and post-mining phases of bauxite and other operations
    - Payment for environmental services e.g. water

# Make changes to PA legislation as **necessary**

➤ Many Jamaican laws are currently being revised including:

- Natural resources legislation under NEPA being consolidated (Natural Resources Conservation Act, Wildlife Protection Act and others) and addition of legislation for conservation easements is under consideration
- Fishing Industry Act
- Forest Act





*Draft strategy*

## **New categories of PA**

- Existing categories of PA need to be revised to be consistent with IUCN categories, while maintaining flexibility to accommodate Jamaica's special needs.



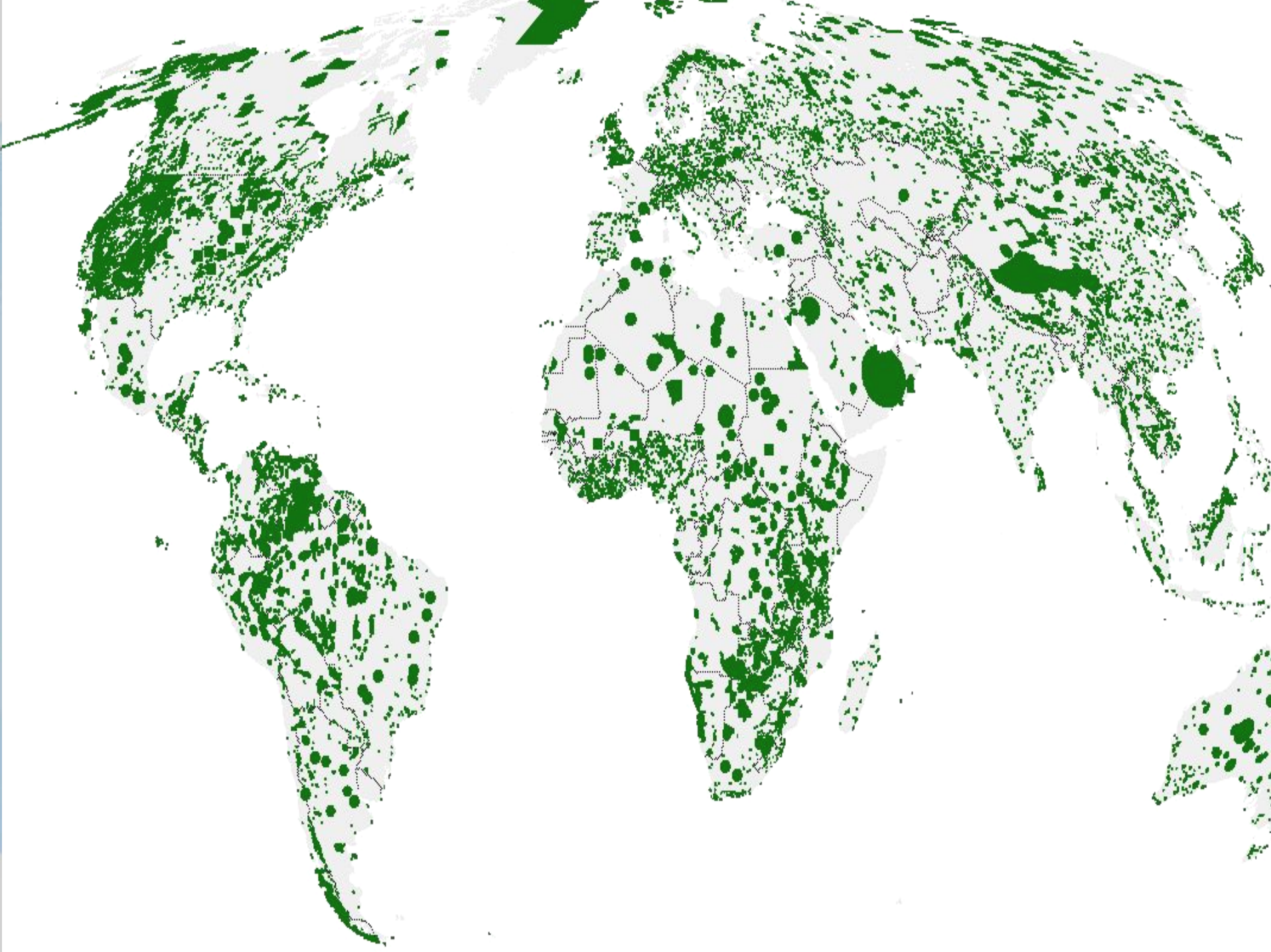


*Draft strategy:*

## Fill data gaps - freshwater

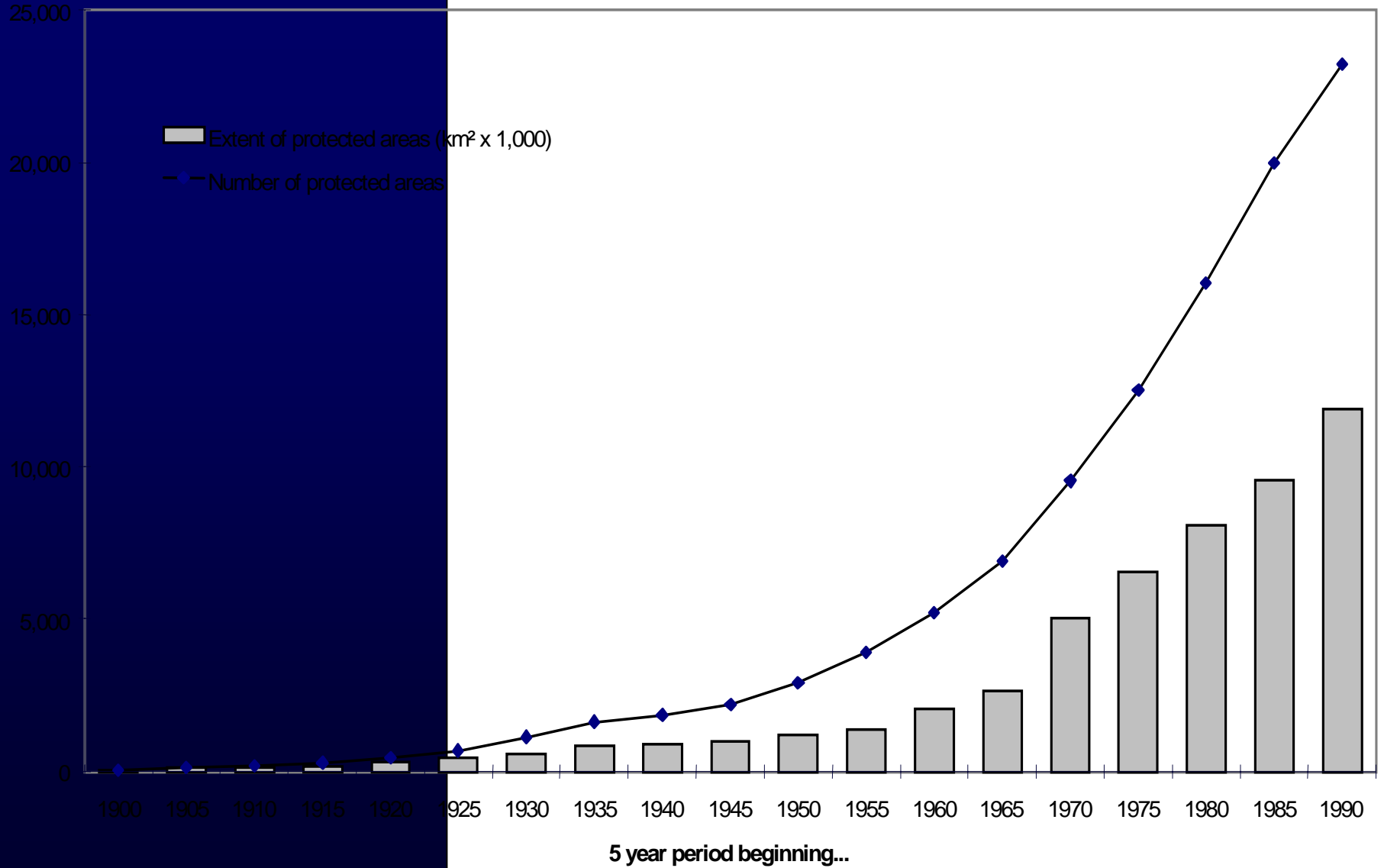
- Freshwater ecosystems are the least well documented in Jamaica. A new focus on research into all aspects of freshwater ecology is needed, particularly
  - Status and management needs of commercially important species and ecosystems
  - Assessment of threats







# GROWTH OF PROTECTED AREAS



## GPAS 2015 goal

*“Over the next ten years, TNC will help create and effectively conserve 2 billion<sup>1</sup> acres of protected areas across all major realms, targeting, in particular, priority ecoregions and countries where we have signed NISP agreements”*

**Consolidation** of existing  
Protected Areas

+

**Creation** of New  
Protected Areas

<sup>1</sup> A course-level estimate, to be refined based on 3-year regional plans protected areas impact

# Framework

Outputs: The 3Cs (Capacity, Capital & Commitment)

*Strengthen institutional systems and people [Capacity]*

*Raise funding for PAs [Capital]*

*Catalyze political commitment for PAs [Commitment]*

**Strategy #1:**  
Global Protected Area conservation tools

**Strategy #3:**  
Global public & private funding for PAs

**Strategy #4:**  
Secure concrete political commitments

**Strategy #2:**  
Provide technical support & capacity development

- 2.1 Technical support & training
- 2.2 Capacity building programs
- 2.3 New geographies

**Strategy #5:**  
Secure domestic political commitments & funding

- 5.1 “Make the Case” for protected areas
- 5.2 Implement protected area “challenges”
- 5.3 Support other in-country policy & legal commitments

Effectively conserved Protected Areas [Consolidation] + New Protected Areas [Creation]

Outcomes: 2 Cs (Creation & Consolidation)

1. Globally, raise the support for and investment in protected areas

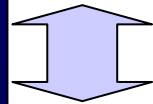
2. Regionally & Nationally, assist governments to plan for, commit to, and implement effective protected area systems

3 scales

# GPAS Technical Strategy

## ***Strengthen Capacity of PA Institutions and People***

**Strategy #1:  
Protected Area  
Knowledge and Tools**



**Strategy #2:  
Technical Support &  
Capacity  
Development**

- 2.1 Technical support & training
- 2.2 Capacity building programs
- 2.3 New geographies

***Aim:***

**Create and strengthen a Cadre of Protected Area Institutions and Staff in Priority Ecoregions/ Countries worldwide that have the knowledge, skills and tools to manage their biodiversity.**

**Effectively conserved  
Protected Areas  
[Consolidation]**

+

**New Protected Areas  
[Creation]**

# Our Mission

*The mission of The Nature Conservancy is to preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive.*



# Our Approach

## Conservation by Design

*Technology for achieving  
effective conservation*



## Conservation by Design

A Framework for Mission Success



# The Conservation Approach

Measure  
Success

**Set Priorities**  
(Ecoregional Assessments)



**Develop  
Strategies**  
(Conservation Action  
Planning)

**Take Action**

# Hallmarks of the Conservation Approach



- **Science-Based**
- **Focus on Biodiversity Health and Threat Status**
- **Derives Priorities**
- **Strong Emphasis on Measures**
- **Multi-scalar**
- **Constantly Improving**
- **Flexible to work with Partners**



# TNC's Strategic Evolution

**1996**

Conservation by Design

**1998**

Strategic Focus Project

**1999**

Conservation Goals and Measures

**2000**

Conservation by Design Update

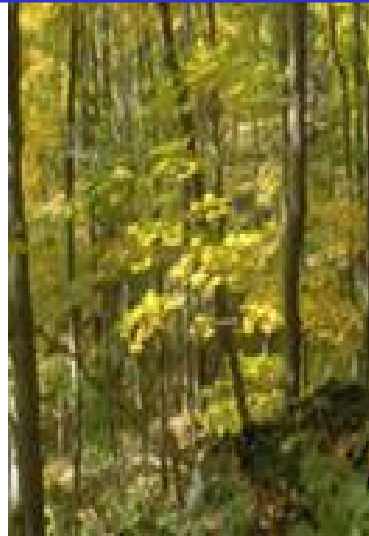
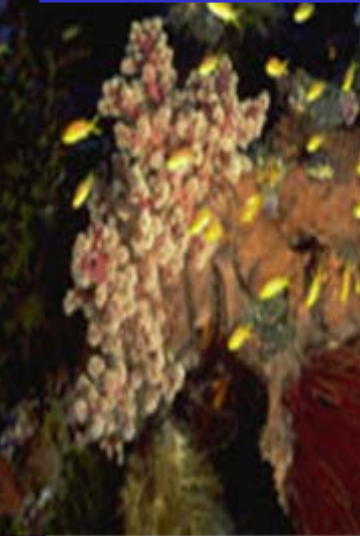
**2001 - 2003**

Transforming TNC Action Agenda

**2015**

**Goal**

***By 2015, The Nature Conservancy will work with others to ensure the effective conservation of places that represent at least 10%\* of every major habitat type on Earth***





Freshwater Portfolio

Terrestrial Portfolio

