

The Mitigating the Threat of invasive Alien Species in the Insular Caribbean Project

BLACK RIVER LOWER MORASS PILOT PROJECT STATUS REPORT

Prepared by MTIASIC Project
June 2013



The Mitigating the Threat of Invasive Alien Species in the Insular Caribbean Project funded by the Global Environment Facility and the Government of Jamaica under Component 5 seeks to increase capacity to detect, respond, control and manage IAS impacts in Terrestrial, freshwater and marine systems. The Black River Lower Morass has been chosen consultatively as the pilot site for implementation of protection measures for sites of high conservation value targeting a freshwater ecosystem. The Pilot projects targets controlling on two invasive plant species, the Wild Ginger (*Alpinia allughas*) and the Paperbark tree (*Melaleuca quinquenervia*).

The Wild Ginger is native to South East Asia and is grown for their ornamental flashy flowers and is thought to have been introduced for ornamental purposes. The Wild Ginger has been steadily spreading throughout the Lower Morass displacing other plant species. The Paperbark Tree native to Australia is an fast growing evergreen tree that uses a tremendous amount of water in order to grow and can grow up to 100ft. Like the Wild Ginger the Paperbark Tree grows in thick stands displacing other plant species. It can produce as many as 2 million seeds per year which it stores in capsules on the plant. This minute seeds are released by the plant when it feels threatened through incidences such as fire and disturbance. At least 4 patches of Paperbark Tree have been identified within the Lower Morass.

The Black River Lower Morass Pilot Project is headed by Dr. Kurt McLaren of the University of the West Indies' Department of Life Sciences. The objectives of the Pilot Project are as follows:

1. To determine the impact of *A. allughas* on the native biodiversity of the Black River Lower Morass
2. To determine which method of treatment is most appropriate for management of the *M. quinquenervia* in the Black River Lower Morass.
3. To ascertain the impact of the *A. allughas* on swamp forest regeneration in the Black River Lower Morass.
4. To determine which mechanical control treatment is the most suitable for management of the invasive ginger *A. allughas* in the Black River Lower Morass.

Results To Date

Objective 1: To determine the impact of the invasive ginger *A. allughas* on biodiversity. This is being done through a comparison of the status of biodiversity within invaded and un-invaded swamp forest patches.

To date, 48 plots have been established in areas of varying degree of infestation of *Alpinia* throughout the Black River and Burt Savannah areas. Approximately 15,000 trees ≥ 2 cm DBH were tagged and measured within all the plots established to date. Approximately 20 - 30 species of trees have been recorded, several of which have not previously been recorded in Black River. A total of 5,953 seedlings of approximately 10 species have been sampled to date (3374 seedling from the first block and 2579 seedlings from the second block). *Grias cauliflora* dominated the seedling count in both blocks.

Objective 2: To determine which method of treatment is most appropriate for management of the *M. quinquenervia* in the Black River Lower Morass.

In February 2012, experimental plots were established and the following treatments applied:

1. 50% Arsenal
2. 50% Roundup and 25% Arsenal
3. 50% Velpar
4. Control

Machetes were used to frill the trees (cut a ring around the circumference of the trunk), after which the herbicides were applied using a spray bottle. The trees in the control plots were also frilled, but no herbicides were applied. After two weeks, the leaves of all the trees that were sprayed with Arsenal and Arsenal and Round up wilted and were brown in colour. After six weeks, the trees in all three experiments lost their leaves. The trees treated with Velpar however, produced a new flush of leaves indicating that Velpar had little effect on tree mortality. The verification experiment was carried out in February confirming the results. The Project team is now preparing to replicate the successful treatments to the other remaining infested patches within the Lower Morass.



Figure 1: Members of the Project Steering Committee accessing successful treatment plots

Objective 3: To ascertain the impact of the *A. alluhas* on swamp forest regeneration in the Black River Lower Morass.

Experiments have begun and are focusing on seed production and dispersal. Thirty six (36) seed traps have been built and placed into experiment plots to measure seed rain and provide seeds for development of native species plant nursery.



Figure 2. Pictures of the 1 x 1 m, seed traps that were placed in the permanent sample plots.

To access the status of trees within the infested plots, surveys have been conducted on 10 of the 18 swamp patches left in Black River (and in Jamaica). Dendrometer bands are currently being placed on the trees to record (long term) growth. Approximately 2500 bands will be used to accurately record tree growth at each of the four sites.

Objective 4: To determine which mechanical control treatment is the most suitable for management of the invasive ginger *A. allughas* in the Black River Lower Morass.

The experimental plots have been established and experiments are set to begin in July 2013. The experimental treatments to be applied are as follows:

- 1) Cutting and trenching every three months for two years and covering with dark "chicken curtain/blinds" (with 0% light transmissibility)
- 2) Cutting and trenching every 3 months for two years.
- 3) Cutting and trenching once.

Public Awareness Initiatives

Component 3 of the MTIASIC Project addresses knowledge generation, management and dissemination. The MTIASIC Project has been active within the Black River Area raising the level of awareness of stakeholders to what invasive alien species are; the negative impact they have on biodiversity and what they can do as stakeholders to prevent the introduction and spread of IAS. Though the research aspect of the Pilot focuses on 2 plants IAS, the awareness component targets other problematic invasives such as the water hyacinth, Australian Red Claw Crayfish and the Suckermouth Catfish. These interventions include:

- Summer Camps in collaboration with the SDC
- School Expos in collaboration with St. Elizabeth 4H
- Community Expos at Swamp Safari in recognition of environmental signature days (Wetlands and International Biodiversity).
- School based competitions (Debate, poetry and song/DJ)
- Launch of Social Marketing Campaign to address behavioural change issues towards the environment. This activity is ongoing with community focus group meeting being planned for late July 2013.
- Development and distribution of awareness raising material.

BLACK RIVER PUBLIC AWARENESS INITIATIVES APPENDIX 1

STUDENT OUTREACH



Attentive audience observing WWD presentations



Students engaged with IAS material at NEPA's main booth.



Students from Newell High enjoying the boat tour



Pupils registering for WWD 2013 Expo.



Sheries Simpson presenting winning Maggoty High representatives with trophy.



Kemarley Lindo of Newell High proposing moot.

BLACK RIVER PUBLIC AWARENESS INITIATIVES APPENDIX 3 POSTER



Invasive Alien Species Impacting Water Quality and Quantity



Water Hyacinth
(*Eichhornia crassipes*)

Wild Ginger
(*Alpinia allughas*)

Paperbark Tree
(*Melaleuca quinquenervia*)

Prevent The Spread!

The Mitigating the Threats of Invasive Alien Species in the Insular Caribbean (MTIASIC) Project is targeting invasive alien species which have had a negative impact on water quality and quantity in Jamaica.

Invasive Alien Species (IAS) are plants, animals or micro-organisms which are introduced deliberately or unintentionally into areas where they do not belong, and whose introduction and spread threatens biological diversity and socio-economic situation.

The MTIASIC Project supports continued research into areas of bio-control and identification of IAS through investigation of methods for controlling and eradicating where possible those which directly affect our water sources.

Water Hyacinth (*Eichhornia crassipes*)

- Can double its size in 6 days
- Clogs water-ways, reducing the supply of oxygen & sunlight
- Displaces other plants thus changing the ecosystem

Wild Ginger (*Alpinia allughas*)

- Should not be used as a decorative plant
- Displaces and smothers other plants
- Is steadily spreading through-out the wetlands

Paperbark Tree (*Melaleuca quinquenervia*)

- An aggressive and highly invasive plant
- It uses water rapidly which depletes the water available to other species.

For information on the MTIASIC Project in Jamaica and Invasive Alien Species, contact:

GEF/ UNEP/ CABI/ MTIASIC Project
The National Environment & Planning Agency
10 Caledonia Avenue, Kingston 5

Tel : (876) 754-7540 | www.nepa.gov.jm/projects | www.ciasnet.org

BLACK RIVER PUBLIC AWARENESS INITIATIVES APPENDIX 2

INFORMATIONAL MAGNETS



Suckermouth Catfish
(*Hypostomus plecostomus*)

This variety is widely used as an aquarium cleaner in the pet fish trade. This invasive erodes the rivers' banks thus changing the habitat of local species. The Suckermouth Catfish has no local predator and is difficult to eliminate due to its armoured scaling.

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Red-claw Crayfish
(*Cherax quadri carinatus*)

This invasive crayfish is much larger than the native shrimp species but not as tasty as the variety made famous in St. Elizabeth as a delicacy and sold as 'pepper shrimp'. It attacks and kills local varieties and competes for space and food. It has no known predator in Jamaica.

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Water Hyacinth
(*Eichhornia crassipes*)

This invasive is one of the fastest growing plants in the world and is known to double its size in six days. The Water Hyacinth clogs water-ways, streams and rivers, reduces oxygen and sunlight supply to other plant and animals in the water and displaces plants thus changing the eco-system.

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Wild Ginger
(*Alpinia allughas*)

This invasive has been steadily spreading through-out the Lower Morass. Its spread is enhanced by its use as a decorative plant by persons unaware of its rapid growth; which displaces and smothers other plants.

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Paperbark Tree
(*Melaleuca quinquenerva*)

The Paperbark Tree, a native of Australia, is an aggressive and highly invasive plant. Its main danger to the eco-system of the Black River Lower Morass is its rapid use of water which will deplete the water available to other species.

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BLACK RIVER PUBLIC AWARENESS INITIATIVES APPENDIX 4

CAR SUN SHADE & TOTE BAG



BLACK RIVER PUBLIC AWARENESS INITIATIVES APPENDIX 5

NOTE BOOK

