Florida-Caribbean Fire & Invasives Learning Network

6.6 million acres

Tropical islands are host to some of the richest biodiversity in the world. They are also home to some of the most vulnerable landscapes. Increasing the capacity of land managers to foresee, prevent and control threats before habitat is compromised is the only recognized method to efficiently and successfully ensure healthy landscapes.

Although fire and invasive plant management are typically seen as two separate land management needs, the increase of invasive grasses, vines and other plants that promote or are promoted by fire has forced practitioners on both sides to learn the others' tools—although often too late to abate the threat efficiently or effectively.

Advancing the needs and tools of both the fire and invasives communities requires a proactive approach that explores the connections between fire and invasives across the greater landscape, while building the capacity of practitioners on the ground. A regional learning network addressing these dynamics is an ideal format to identify priorities, develop and disseminate information and tools, and build the overall capacity of the region to effectively mitigate the threats of invasive species and fire.

The Caribbean-Florida Fire & Invasives Learning Network seeks to collaborate with practitioners across the region in order to:

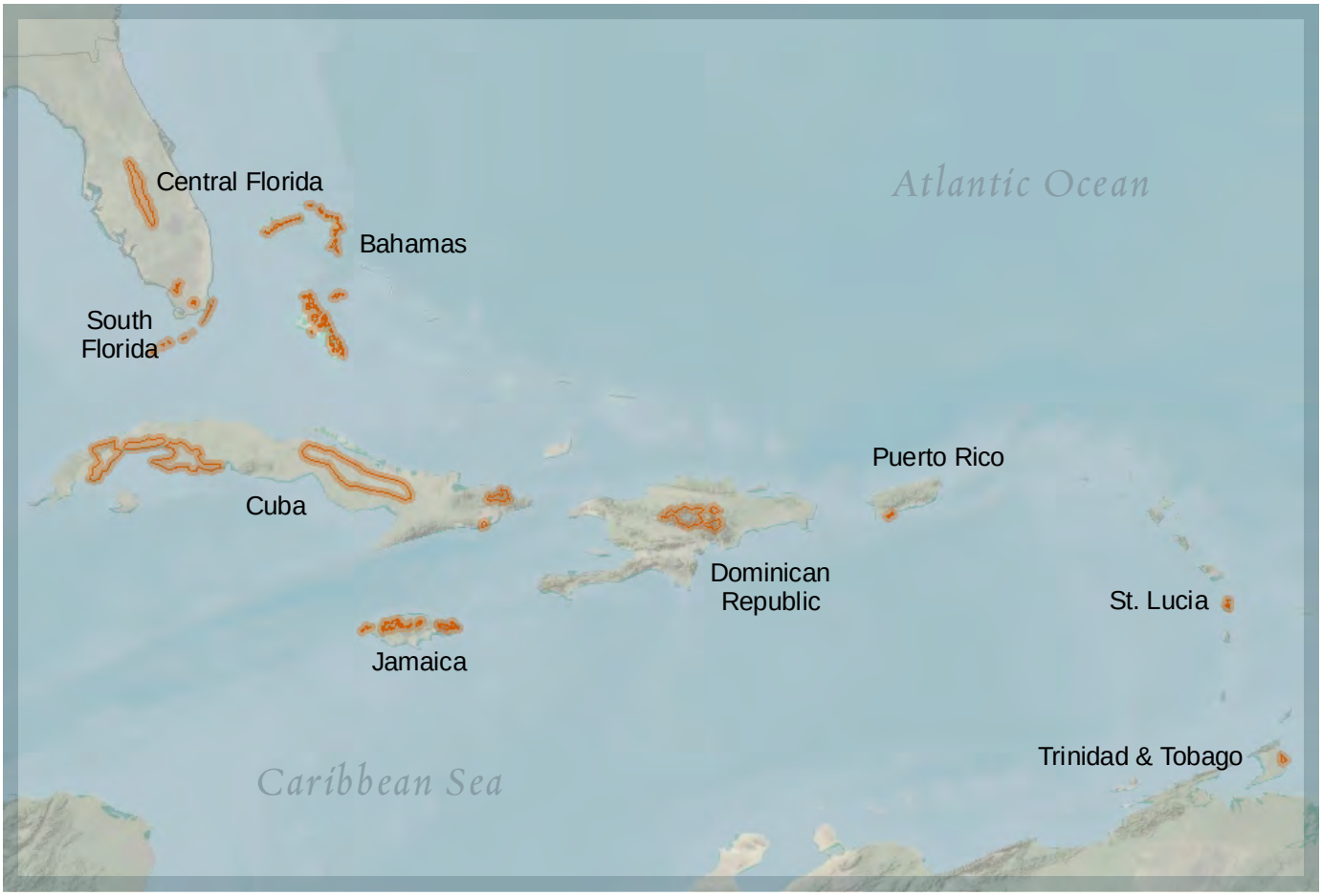
- Assess the state of knowledge about the interactions of fire and invasive plants, including fire management practices related to control and susceptibility, influence of invasive species on fire regimes, influence of fire on invasive species, and influence of land use and land management practices on invasive species and fire;
- Identify and prioritize management information needs and related research needs;
- Identify critical barriers to the prevention of invasion and successful implementation of restoration projects and fire, and develop strategies to overcome these barriers;
- Develop integrated management plans that appropriately coordinate the management of fire and the control of invasive species;
- Transfer knowledge and lessons learned throughout the Network to facilitate ecological objective setting, effective stakeholder engagement, efficient on-the-ground efforts, and successful funding of ecological fire/invasives projects;
- Achieve tangible and measureable progress in maintaining or increasing the health of fire-dependent and fire-sensitive habitats throughout the network by increasing on-the-ground abatement of fire/invasives threats; and
- Build a peer-to-peer network of practitioners and experts that can share information and experiences, build capacity and develop appropriate tools and methodologies to address fire and invasive threats.

Puerto Rico hosted partners from across the region for the 2010 annual workshop. In 2011, to allow a broader range of participation, the network hosted a series of bi-monthly webinars, culminating in a web-based workshop in December. *© Alison Higgins/TNC*

Network Vision

The Network aims to investigate the connections between fire and invasive species, build the capacity of on-the-ground practitioners, develop and disseminate information and tools; and build the overall capacity of the region to effectively mitigate associated threats. Ideally, project sites throughout the region will have adequate knowledge, technical capacity, funding, policies and stakeholder support for managing fire/invasives interfaces, and will be able to demonstrate measurable progress towards achievement of ecological management objectives.

Bahamas
Central Florida
Cuba
Dominican Republic
Jamaica
Puerto Rico
South Florida
St. Lucia
Trinidad & Tobago



map © 2011 Liz Rank /TNC

Strategies identified by Fire & Invasives Learning Network (FILN) partners through results chain planning process:

- Build capacity and knowledge through training
- Develop and use effective communications tools within the FILN
- Develop bilingual communications hub for the FILN
- Develop tools to promote effective communication with stakeholders
- Document findings for wide practitioner base concerned with fire and invasives
- Educate country program institutions about the FILN
- Gain official status for the FILN within countries
- Keep FILN focused and accelerating learning
- Research funding sources

More information:

The FILN maintains a library of recordings of web presentations covering both landscape updates and topics of regional interest:

http://vimeo.com/channels/crfl#27013261

Network Partners

CABI
Grupo Caras del Fuego
National Park Service– Florida and Caribbean Exotic Plant Management Team
The Institute for Regional Conservation
The Nature Conservancy
U.S. Fish & Wildlife Service– Region IV Invasives Strike Team

A fire and invasives training session held at the Caroni Swamp visitors' center during a Trindad and Tobago team meeting in November 2011
© Blane Heumann/TNC

Contacts:	Kristina Serbesoff-King	kserbesoffking@tnc.org	(561) 744-6668
	Alison Higgins	alison@inthekeys.org	(305) 923-1783
	Keith Bradley	bradley@regionalconservation.org	(305) 247-6547

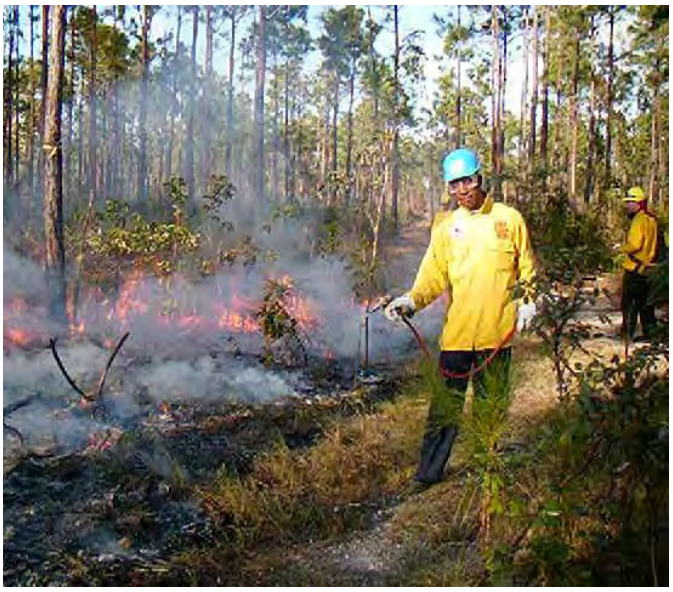
Bahamas

Florida-Caribbean
Fire & Invasives Learning Network
432,000 acres

Fire-dependent Bahamian pine forests comprise 23 percent of the terrestrial ecosystems in this archipelago. These forests of Bahamian pine (*Pinus caribaea* var. *bahamensis*) are the largest and most intact forests of their kind; the only other pine rocklands are found in southeast Florida, the Florida Keys and the Turks & Caicos Islands. Although these forests are in good condition, the long-term health of the forests—and the numerous globally imperiled and endemic species they support—is threatened by fire that has become too frequent and by the presence of invasive tree species such as Australian pine (*Casuarina glauca*) and monkey tamarind (*Mucuna pruriens*).

In the Bahamas, fire and invasive species threats have not been considered together. However, it is recognized that invasive species threaten the integrity of pinelands and that more research on the connection between fire and invasive species is needed. There are also questions about the impact of climate change on fire-dependent and fire-sensitive ecosystems. Such information is recognized as integral in making informed management decisions. The Bahamas seeks to participate in exchange and mentorship opportunities with the network.

At a stakeholder meeting in late 2011, partners reviewed the country's formal plan for controlling invasive melaleuca, as well as the 2010 Forestry Act and Draft Forestry Regulations, and discussed means of enhancing prescribed burning awareness. The FILN also met with the Bahamas National Trust to discuss further development the management plan for Abaco National Park.



Prescribed fire training in the ecotones separating pine rocklands from coppice will help to keep both habitats healthy. © *Chris Bergh/TNC*

Landscape Partners

Bahamas Department of Lands & Surveys
Bahamas Ministry of Environment
Bahamas National Trust
Friends of the Environment
Royal Bahamas Police Force
The Nature Conservancy

Immediate actions for this network include steps to control melaleuca (*Melaleuca quinquenervia*). This includes establishing a task force to finalize the existing draft National Melaleuca Control Plan, increasing public awareness and implementing a program of monitoring, mapping and treatments. Climbing fern (*Lygodium* spp.) prevention and bracken fern (*Pteridium* spp.) control are also high priorities. © *Chris Bergh/TNC*

Regional Goal

The overall goal in the Bahamas, as described in the National Biodiversity Strategy and Action Plan, is to control invasive alien species as a threat to biodiversity. In terms of fire management, it is envisioned that efforts will lead to a sustainably managed healthy pine forest, maintaining the uniqueness of the Bahamian pineland and the conservation priorities which exist within the ecosystem.

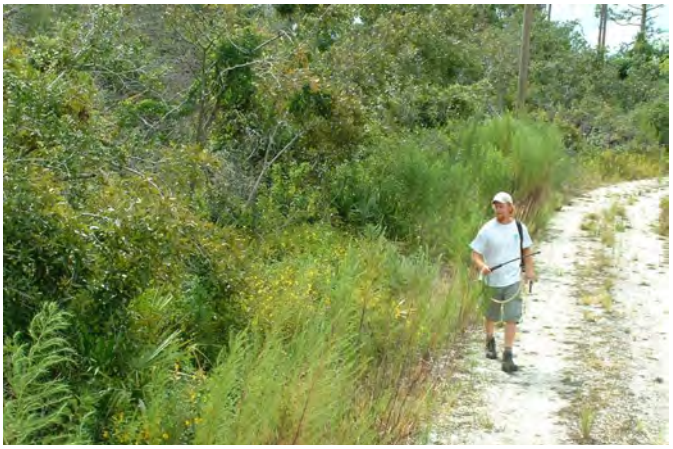
Contact: Chris Bergh cbergh@tnc.org (305) 745-8402

Central Florida

Florida-Caribbean
Fire & Invasives Learning Network
552,000 acres

Lake Wales Ridge in central Florida was once—650,000 years ago, when sea levels were higher—part of a small chain of islands. As is often the case with islands, species diverged from those on the mainland. The island heritage remains today, in the high concentration of rare species found in the area. This rich scrub landscape is subject to numerous pressures, including development, changes in fire regime and invasion by non-native plants.

Partners in this network are addressing the latter two threats together, because fire and invasive species are intimately bound together here: The three plant species of most concern are *Lygodium*, cogon grass and natal grass. The first two of these cause fires to burn hotter, and natal grass then thrives in the openings left by fire.



Treating invasive *Lygodium* (climbing fern) helps keep fire from spreading to tree crowns. © *Steve Morrison/TNC*

In 2011, The Lake Wales Ridge Ecosystem Support Team conducted numerous controlled burns throughout central Florida and, when conditions were unsuitable for fire, treated for invasive plant species on the Avon Park Air Force Range and Conservancy preserves.

The Heartland CISMA (Cooperative Invasive Species Management Area):

- Hosted a webinar for the regional FILN, with presentations on coordinating fire and invasives treatments and using GIS grids to track invasive work;
- Held two invasive species identification and treatment workshops for beginner and intermediate naturalists;
- Had an Early Detection Scavenger Hunt with prizes to encourage more people to be able to identify invasives and enter them on a database through www.IveGot1.org;
- Created and disseminated Early Detection, Rapid Response (EDRR) weed decks, with species prioritized as our most likely new invaders in this region; and
- Launched a website (http://www.floridainvasives.org/Heartland/Projects.html) and a Twitter page (@Heartland-CISMA) to maintain communications internally and with the public.

Landscape Objectives

Partners are working to:

- Identify how fire and invasives interests overlap, identify what is known, fill gaps in this knowledge and adopt guidelines to reduce the spread of invasives during burning;
- Seek funding for an invasives "mop-up" crew to follow strike team burns and wildfires;
- Train the fire team to identify the Top 10 invasive plants on the Ridge and report them; and
- Incorporate the integration of fire and invasives into the new Cooperative Invasive Species Management Area on the Ridge.

Landscape Partners

Bok Tower Gardens
Florida Division of Parks and Recreation
Florida Fish and Wildlife Conservation Commission
Institute for Regional Conservation
National Park Service—Florida and Caribbean Exotic Plant Management Team
The Nature Conservancy—Florida
U.S. Fish & Wildlife Service—Region IV Invasives Strike Team

Contact: Steve Morrison steve_morrison@tnc.org (863) 635-7506

Cuba

Florida-Caribbean
Fire & Invasives Learning Network
4.6 million acres

The Cuban archipelago is located in the Greater Antilles and comprises 4,196 islands and keys. Much of the biota is unique: over 50 percent of the flora and 32 percent of the vertebrate fauna are endemic to Cuba. Invasive alien species have been identified by the National Environmental Strategy as a serious threat to Cuban biodiversity and one of the principal causes for biodiversity loss. Vulnerability is due to the insular condition and the high level of endemism, as well as the vast diversity of species and ecosystems.

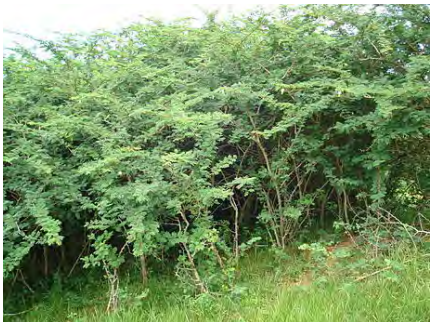
Although Cuba has four species of the fire-adapted pine trees (*Pinus* spp.), Cuban law prohibits the use of fire in forests and or within 200 meters of forests. Fire is frequently used, however, by the agricultural community as a management tool in their fields. Partners in the FILN have some local, preliminary experience in managing fire and invasive species together, but have not yet considered them together general way, or at the landscape scale. Cuba has also been working for some time on predictions and scenarios related to climate change, but has not directly related this to work with invasive species and fire. The FILN will allow partners to better assess fire and invasive species together, and develop management options to control some species in specific areas. In their first year in the FILN, partners have identified some protected áreas as pilot sites to develop management plans and begun to design and implement a monitoring system.

Cuba's savannas, which are dependent on fire, are dominated by various species of palms, the majority of which are endemic to the island.
© *Ron Myers/TNC*

Recent Activities & Accomplishments

Cuban stakeholders are working towards hosting a workshop that will include field visits to several sites with fire and/or invasive species issues followed by hands-on training covering both conceptual and practical subject matter. Likely topics include hands-on fire training and herbicide application training.

The Zapata Swamp has been identified as a potential small-scale—but very visible—pilot site for management actions; successful implementation there will help ease concerns about collateral damage in herbicide control of *Melalecua quinquenervia*.



Left: The impenetrable thickets formed by marabu (*Dicrostachys cinera*) have made this invasive exotic one of Cuba's top priorities for control.© *Alison Higgins/TNC*
Below: Colubrina asiatica, a very problematic invasive of pristine shoreline areas in the United States, was identified in Cuba by FLN coach Chris Bergh on a recent visit. © *David Eickhoff*

Regional Objectives

Partners aim to safeguard globally-significant biodiversity in vulnerable ecosystems by building capacity at the systemic level to prevent, detect, control and manage the spread of invasive alien species in Cuba.

Landscape Partners

Cuba Forest Guard Service
Cuba Forest Service
Cuba Ministry of Science, Technology and Environment
Global Environment Facility
Santa Clara Flora and Fauna Reserve
Sierra del Rosario Biosphere Reserve
The Nature Conservancy

Contact: Francisco Núñez fnunez@tnc.org + (809) 697-9110

Dominican Republic

Florida-Caribbean
Fire & Invasives Learning Network
720,000 acres

The Madre de las Aguas region in the central mountain range of Hispaniola Island is the source of water for hydroelectric power, domestic water supplies and irrigation systems that together benefit more than 70 percent of the country's population. The area also has high levels of biodiversity and endemism: about 90 percent of the amphibians and reptiles, half the butterflies, 35 percent of the birds and 40 percent of the plants in the area are unique to the area. Both fire and invasive species have been recognized as threats to this landscape, and both have been addressed individually; however, strategies to date have not focused on both simultaneously, or on their interactions. Partners are now working to remedy this.

As part of the FILN, partners were asked to identify the top five fire-related invasive species in their region. Using five criteria—presence in different environments, presence in a protected area, speed of propagation, permanence in a location, possibility of cost-effective action—the Dominican Republic team selected five species to focus on. Plans for managing these invasives, with strategies ranging from public education and equipment cleaning protocols to grazing management and policy change, have been developed for five pilot projects:

- *Acacia mangium* in Quita Espuela
- *Calliandra calothyrsus* in Valle Nuevo
- *Leucaena leucocephala* in Sierra de Bahoruco National Park
- *Melinis minutiflora* in José del Carmen Ramírez
- *Senna spectabilis* in Nalga de Maco

After an Early Detection, Rapid Response eradication effort to eradicate *Mimosa pigra* in Uvero Alto, La Altagracia Province, park rangers and managers of the Ministry of Environment were trained to conduct a monitoring program to avoid re-sprouting of the species.

Leucaena leucocephala © Francisco Núñez/TNC

A training program on fire and invasives was established with support of the Environmental Protection Program sponsored by USAID and implemented by The Nature Conservancy, ProNatura and the Ministry of Environment. More than 180 community members and park rangers have been trained in six locations along the Dominican Republic-Haiti border.

An Invasive Alien Species National Strategy has been completed; the Strategy incorporates the relationship of fire and invasive species as one of the elements to considered in policies and regulations developed to reduce the threats of invasives to the country.

Landscape Partners

Dominican Republic Ministry of Environment & Natural Resources
ProNatura
República Dominicana Viceministerio Áreas Protegidas
Santo Domingo National Botanical Gardens
The Nature Conservancy—Dominican Republic

Regional Objectives

Partners in the Dominican Republic are working to:

- Improve habitat quality and restore natural conditions in protected areas to sustain the healthy biodiversity of Hispaniola Island;
- Promote a participatory process to prevent, control and eradicate invasive alien species in the country; and
- Facilitate management tools, training and regulatory mechanisms to implement strategies that will reduce fire and invasive species threats.

Contact: Francisco Núñez fnunez@tnc.org + (809) 697-9110

Jamaica

Florida-Caribbean
Fire & Invasives Learning Network
224,000 acres

The island of Jamaica consists of a highland interior with a backbone of peaks, hills and plateaus running the length of the island, surrounded by flat coastal plains. Forests, which account for about 30 percent of the landcover, are the main repositories of biodiversity; as with many islands, there is a high level of endemism. Although about a third of the island's forests are in designated protected areas, they remain threatened by both non-native invasive species and changes in the frequency and type of fires now experienced.

Although both fire and invasive species have long been managed, there has been little integration of the two, and protected area plans do not always address these issues. A coordinated approach, in which species are prioritized and treatments are funded would be desirable, as is the adoption and use of a National Invasive Species Strategy adopted and applied. As part of the Fire & Invasives Learning Network, partners are working to increase the available knowledge and focus addition attention on fire, invasive species and the interactions between them in both fire-dependent and fire-sensitive landscapes across the island, and throughout the Caribbean.

Recent Actitivies & Accomplishments

As part of their FILN work, partners have evaluated the risks and fire effects of a number of invasive species. Root Cause Analysis—methodical tracing back to discover why a species has become invasive—has been completed for four species: *Pittosporum undulatum*, *Bambusa vulgaris*, *Panicum maximum* and *Melinis minutiflora*. With this information in hand, effective management strategies can be planned and implemented. Partners in Jamaica have also begun researching the control and management of invasive plants in the Lower Black River Morass, the largest freshwater wetland ecosystem in the Caribbean. The Morass has been designated a wetland of international importance under the Ramsar Convention; it therefore requires very "light on the land" control methods to populations of melaleuca (*Melaleuca quinquenervia*) and ginger (*Alpinia allughas*)

Melaleuca, a highly flammable, fire-adapted tree, has invaded some of the most inaccessible wetland areas in the Lower Black River Morass.

that have escaped there. Melaleuca is a very flammable fire-adapted tree, and can release hundreds of seeds when disturbed; treatments therefore require follow-up. The current project includes mapping of the infestation, consultation and testing of various control methods, training of local conservation workers, and monitoring of progress. Implementation begins in 2012.

Melaleuca flower (*left*) and fruit (*right*); each fruit capsule contains 200-300 tiny seeds.

Landscape Partners

Institute of Jamaica
Jamaica Forestry Department
Jamaica National Environment & Planning Agency
The Institute for Regional Conservation

Regional Goal

Partners wish to integrate the management of invasive plant species and fire so that forests can be restored to their natural fire regimes and native species can flourish.

Contact: Keith Bradley bradley@regionalconservation.org (305) 247-6547

Puerto Rico

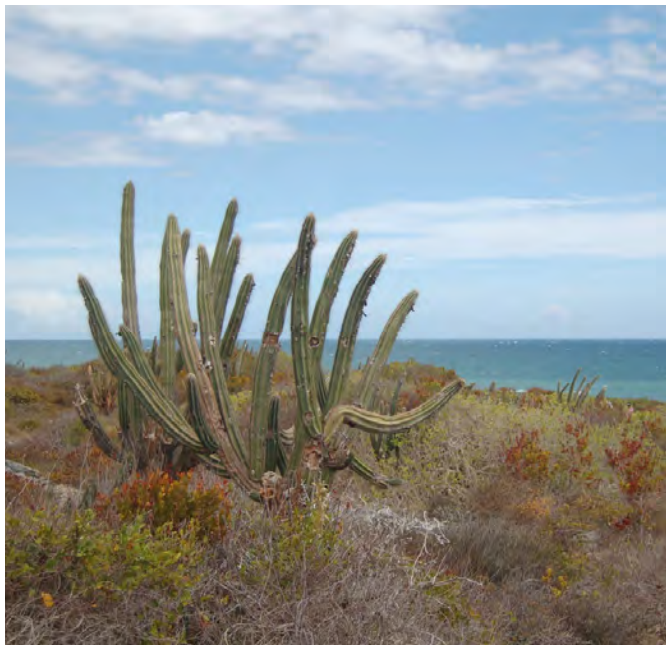
Florida-Caribbean
Fire & Invasives Learning Network
10,000 acres

The Guanica Dry Forest Reserve, a designated United Nations Biosphere Reserve, consists of 10,000 acres of dry land inhabited by over 600 species of plants and animals, including 48 endangered species and 16 species endemic to Puerto Rico. This fire-sensitive habitat is considered one of the best examples of Caribbean dry forest.

The forest has an altered fire regime due to invasion by non-native grasses that support seasonal fires. Partners have identified the elimination of the invading grasslands as a desired future condition, which will allow the current cycle of annual dry season fires to be broken.

To accomplish this, fire planning and implementation of restoration actions have been identified as the primary needs, followed by increased funding and improved coordination among local and federal agencies. Lessons learned in this landscape will provide the basis for improved management in other parts of Puerto Rico.

In the last year, the USDA Forest Service has renewed its interest in participation in this region's stakeholder group. This is particularly important, because cuts in state government have made the Forest Service the driving force among agencies in terms of both invasives and fire issues, and has been instrumental in funding and guiding a wildland firefighter training program on the island. In late 2011, stakeholders met to formalize island-wide strategies in relation to fire and invasive species management.



Invasive grasses fuel inappropriate fires in fire-sensitive habitats on the Guanica Dry Forest Reserve. *© US FWS*

Breaking the Fire/ Invasion Cycle

1. Work to limit unplanned human-caused ignitions by increasing awareness and detection.
2. Strategically place fuel breaks to limit fire spread into high-value forest areas.
3. Use fuel reduction burns to control grass fuels in fire prone areas near roads or adjacent to forest.
4. Begin native forest reforestation activities to switch fuel types from flammable grass to less fire-prone native woody vegetation.

Regional Objectives

Team members are working to:

- Improve awareness about fire, invasive species and their interactions at the local government level and in agencies with jurisdiction over tasks related to them;
- Increase the level of priority for these issues;
- Enhance technology transfer and training; and
- Coordinate all planning and implementation tasks.

Landscape Partners

Puerto Rico Department of Natural and Environmental Resources
Puerto Rico Environmental Quality Board
University of Puerto Rico
USDA Forest Service
USDA Natural Resource Conservation Service, Caribbean Headquarters

Contact: Alison Higgins alison.higgins@inthekeys.org (305) 923-1783

South Florida

Florida-Caribbean
Fire & Invasives Learning Network
26,000 acres

Florida's pine rockland forests are dominated by a single canopy tree, slash pine (*Pinus elliottii*), with a diverse hardwood and palm understory, and a rich herbaceous layer. The assemblage of plants is a unique combination of tropical and temperate taxa, including many endemic species; these support a wide array of wildlife, including five federally-listed animals. There are about 20,000 acres of pine rockland in Everglades National Park, 2,000 in the Florida Keys and another highly-fragmented 4,000 acres scattered across Miami-Dade County. Periodic fire is required to eliminate invading hardwoods, aid nutrient cycling and reduce litter. Fire exclusion and invasion by non-native species—and the interactions between the two—are altering the very character of this system.

Recent Activities

FILN partners met in conjunction with the South Florida Prescribed Fire Council Meeting in October 2011. Topics covered at this practitioner workshop included invasive species to watch for, equipment decontamination methods, presentations by expert burners on their successes, failures, and lessons learned.

The Florida Keys Cooperative Invasive Species Management Areas (CISMAs) recently documented and revised its invasives control list as well as its Early Detection, Rapid Response (EDRR) priority plant list. The Everglades CISMA held its annual Invasive Species Summit in July with stakeholder reports from agencies across the region.

Partners from this region contributed significantly to the Network's report to the Fire Effects Information System (FEIS) database, providing information on natal grass (*Melinis repens*).

Full report: http://www.fs.fed.us/database/feis/research_project_summaries/FILN11/all.html

Regional Goals

Goals for this landscape include returning it to a more natural fire regime of frequent (3-15 year interval) surface fires, increasing the capacity to burn in pineland areas owned by smaller land managers, managing existing invasions by non-native species and preventing new invasive species from becoming established.

Fire exclusion has contributed to the invasion by non-native species that alter the fire regime in various ways from its historic pattern of frequent, low-intensity surface fires. For example, Brazilian pepper trees can shade out native grasses and herbaceous plants, reducing flammability; on the other hand, Burma reed increases the fuel load and raises the fuel height, which can lead to excessive pine mortality.

Landscape Partners

Florida Division of Parks and Recreation
Florida Fish and Wildlife Conservation Commission
Institute for Regional Conservation
Miami-Dade County
National Park Service—Florida and Caribbean Exotic Plant Management Team
South Florida Water Management District
The Nature Conservancy—Florida
U.S. Fish & Wildlife Service—Region IV Invasives Strike Team

Contact: Kristina Serbesoff-King kserbesoffking@tnc.org (561) 744-6668

St. Lucia

Florida-Caribbean
Fire & Invasives Learning Network
12,000 acres

Dry forests are found in small pockets on several of the Caribbean's Windward Islands—Curacao, Grenada, Martinique, St. Lucia and St. Vincent. Characterized by steep topography and found between the rugged interior mountains and flatter, xeric coastal areas, these fire-sensitive areas are under increasing pressure from agriculture and other development. More frequent fires and invasion by non-native species are two of the threats associated with this development.

Progress has been made in the management of both fire and invasive species in the last few years. A Wildfire Management Plan has been developed, based on stakeholder meetings and consultations, the Strategy for the Cooperation of the Caribbean on Management of Wildfires, the Jamaica National Fire Management Plan (2002) and the Central American Strategy for Fire Management (2005-2015). Funds were allocated in the national budget (under the National Emergency Management Agency) for training, equipment and public outreach. The country has both an invasive species working group and a National Invasive Species Strategy. Partners are working to ensure that efforts are integrated, both between disciplines and across the Caribbean.

Recent Activities

The St. Lucia Forestry Department (and its units), St. Lucia Fire & Emergency Service, Durrell Wildlife Conservation Trust and the national invasive alien species team held an April 2011 meeting with the theme of "Fire and Invasive Plant Management Awareness." A Forest Officer from the FILN team gave an updates on lemon grass (*Cymbopogon citrates*), as well as a report on Florida-Caribbean Fire & Invasives Network workshop held in Puerto Rico (December 2010). He also participated in the discussions of Draft Action Plans concerning invasives and some ornamentals.

Landscape Partners

St. Lucia National Emergency Management Organisation
St. Lucia Fire Service
St. Lucia Ministry of Agriculture, Forestry and Fisheries—Forestry Department
St. Lucia National Trust
The Nature Conservancy

Fires that occur in fire-sensitive dry forests expose steep slopes to erosion that can result in mudslides and long-term ecological and economic damage. *© St. Lucia Fire Service*

In September, a fire manager from the Florida chapter of The Nature Conservancy travelled to St. Lucia to discuss fire training needs in the country that the Florida chapter could assist with. It was agreed a few participants from the St. Lucia Fire & Emergency Service and the St. Lucia Forestry Department should be sent to Florida in order to participate in courses there (including basic wildland fire training S130/S190, and possibly S212, L180, S131 and S133) to develop a core crew of skilled practitioners. The Conservancy would offer the courses at no cost to the crew; the remaining financial arrangements are being investigated.

Regional Goals

Partners wish to minimize the negative impact of wildfires and invasive species on human life, biodiversity and infrastructure.

Contact: Zach Prusak zprusak@tnc.org (407) 682-3664

Trinidad & Tobago

Florida-Caribbean
Fire & Invasives Learning Network
28,000 acres

Many parts of Trinidad and Tobago—including Nariva Swamp, deemed of international importance under the Ramsar Convention on Wetlands—face threats from fire and from invasive species that promote or take advantage of fire. Of particular concern are *Leucaena leucocephala* (a prolific seed bearer), *Acacia mangium* (which colonizes after fire), various fire-hardy vines, and bamboo. Until the Fire & Invasives Learning Network began its work, the management of fire and invasives had not been considered together.

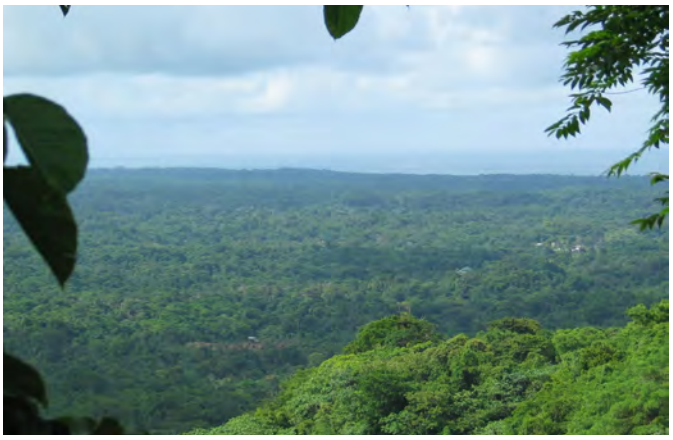
Partners in Trinidad and Tobago are now working to strengthen the collaborative efforts that will support existing management efforts; these include an active fire prevention and education program during the fire season, fire patrols, monitoring fire behavior, controlled burning in teak plantations, removal of fire hazards along roads in plantations, and clearing trees infested with invasive vines. In addition, they are working to gain recognition for the importance of invasive species, add an invasives management component to an existing fire protection unit, increase staffing in the unit that looks after invasives and promote the use of fire in the management of ecosystems for community benefit.

Landscape Partners

CABI
The Nature Conservancy
The University of Trinidad & Tobago
Trinidad & Tobago Department of Natural Resources and the Environment
Trinidad & Tobago Ministry of Agriculture, Lands and Marine Resources—Forestry Division

Regional Objectives

Partners are working to minimize the risk of invasive species and to reduce the frequency and intensity of fire in fire-sensitive habitats.



The role of fire at Aripo Savannas Scientific Reserve is currently being studied. It has been assumed that all fire was detrimental for the habitat, but early indications are that the situation is more complex.
© Seepersad Ramnarine/Trinidad Department of Forestry

In February 2011, the Trinidad & Tobago team presented a webinar for the regional network highlighting two research programs:

- Dr. Puran Bridgemohan (University of Trinidad) applied a weed risk assessment to biofuel species being considered for widespread planting. Key findings included that the industry-favored *Jatropha carcus* and *Rincinus communis* had only slightly higher yields of oil than other species, but had very high potential for escape and invasion into natural areas; based on this study, *Moringa oliefera* is recommended as a preferred biofuel.
  Recording: http://vimeo.com/channels/crfl#21445115
- Mr. Seepersad Ramnarine (Trinidad Department of Forestry) reported on a project investigating the effects of fire on the flora of the Aripo Savannas Scientific Reserve and Environmentally Sensitive Area. In addition to establishing a pictorial library of all plants within the savannas, fire effects on sundew and bladder worts, and on seed banks will be documented.
  Recording: http://vimeo.com/channels/crfl#21444498

Trinidad and Tobago's stakeholders met for four days in November 2011, visiting both islands and progressing on regional goals. More training in fire behavior, ecology and prescribed burning has been identified as a major goal across the region. Partners have found funding to help make this happen in 2012.

Contact:	Blane Heumann	bheumann@tnc.org	(573) 323-0093
	Naitram (Bob) Ramnanan	b.ramnanan@cabi.org	+1 (868) 645-7628