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**CARIBBEAN FOOD  
CROPS SOCIETY**

**47**

**Forty-Seventh  
Annual Meeting 2011**

**Bridgetown, Barbados  
Volume XLVII – Number 1  
T-STAR Invasive Species Symposium**

PROCEEDINGS  
OF THE  
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July 3–8, 2011

Lloyd Erskine Sandiford Centre  
Bridgetown, Barbados

**“Assuring Caribbean food and nutrition security in the context of climate change”**

**United States Department of Agriculture,  
T-STAR Sponsored Invasive Species Symposium**

**Toward a Collective Safeguarding System for the Greater Caribbean Region:  
Assessing Accomplishments since the first Symposium in Grenada (2003)  
and Coping with Current Threats to the Region**

**Special Symposium Edition  
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## **ACHIEVEMENTS OF THE GEF/CABI MARINE IAS PROJECT AND THE WAY FORWARD**

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Invasive alien species are the greatest threat to biodiversity after habitat destruction. Invasive Alien Species (IAS) are species originating from another location, usually another country that causes problems for the native species. They threaten an area's biodiversity as they tend to out-compete native species and to dominate the area. There is usually low predation and competition pressure on the IAS by the native species.

Marine IAS are introduced into an area by various ways, such as the hulls of ships, barges, and boats; sea chests; naturally (water currents or water flow); aquaria dispensing; poor disposal practices of live material; and deliberate introductions. However, the main way of introducing Marine IAS to an area is via ballast water. Ballast water is seawater used to fill ballast tanks of large cargo vessels for stability. Ballast water loaded at the source point contains various microscopic and macroscopic flora and fauna that are discharged at the destination port. These introduced species withstand harsh conditions such as low oxygen, low light, and low food in these ballast tanks, demonstrating the tenacity of these invasive species. It is now a trend that ships are becoming larger and faster, increasing the survivability of these species. It is estimated that about 7,000 to 10,000 species daily travel in ballast water around the world. Every nine weeks, a new IAS is established somewhere. The International Maritime Organization (IMO) estimated that 10 billion tonnes of water are moved around the world annually.

The impacts of Marine IAS ecologically are that they displace native marine species and reduce biodiversity. Economically, Marine IAS cause the loss or decline of fisheries, and significant expenditures by private and/or public sector companies for IAS biofouling of power plants seawater intake systems. They can also become human health hazards, for example, envenomation from lionfish and consumption of seafood with high concentrations of *Vibrio cholera* (cholera).

Lionfish (*Pterois volitans* and *Pterois miles*) (Figure 1) is one of the most recent marine IAS and is described as the fastest finfish invasion in history (Morris 2009). Lionfish is a *venomous* fish native to the Indo-Pacific Oceans. This fish was introduced through the aquaria trade. Intentional and unintentional releases of this fish into nearby canals and the Atlantic Ocean have created problems since the 1980s. For example, the lionfish was first sighted in South Florida in the 1980s, and has since made its way, travelling through ballast water and/or current, through the Caribbean, the Gulf of Mexico, and Central America. In Jamaica, the first reported sighting was off the north coast in 2008.

Lionfish consumes large quantities of juvenile reef fishes and shellfish. It reproduces rapidly (every four days, all year) and a single female lionfish can produce 2 million eggs annually. They have few natural predators in the Atlantic Ocean and the Caribbean Sea. The lionfish is predicted to spread throughout the entire Wider Caribbean Region (WCR), including South America.



Photo: Omar Spence

Figure 1: Lionfish sighted in Jamaican waters.

A coordinated and consistent regional approach is being taken to combat Marine IAS by streamlining management objectives and strategies. The biology and ecology of these IAS was taken into consideration to counteract their spread and impacts. Some of these groups include:

- Regional Ballast Water Task Force
- Regional Lionfish Committee
- Regional Marine IAS Working Group

The **Regional Ballast Water Task Force** was formed in 2009 and is chaired by Jamaica. This group was formed in an effort to advance the IMO's Globallast Program in the WCR. The lead partner countries of this program in the WCR are Jamaica, the Bahamas, and Trinidad and Tobago.

The ad-hoc **Regional Lionfish Committee** was created from a Regional Lionfish Meeting in Cancun in 2010. It is co-chaired by the United States and Mexico. This committee's objective is to streamline the efforts in the region to fight against the lionfish invasion. **A Regional Manual on Best Strategies for Lionfish Control and Research** is one of the major outputs of this committee to guide coastal managers throughout the WCR towards a coordinated approach to deal with this invasion.

Also formed in 2010 was the **Regional Marine IAS Working Group** through the *Mitigating the Threats of Invasive Alien Species in the Insular Caribbean* (MTIASIC) Project. The main objective of this group is to develop a **Regional Marine Invasive Species Strategy** as a component of the Caribbean Invasive Alien Species (CIAS) Strategy. The group is mainly comprised of the partner countries of the MTIASIC Project (i.e., Jamaica, the Bahamas, St. Lucia, Trinidad and Tobago, and the Dominica Republic). The Regional Marine IAS Working Group is chaired by Jamaica.

Regional cooperation is critical in the control and management of marine invasive species in the WCR and is also important to preventing future invasions of species. The management of ballast water releases and the management of marine aquaria releases are two major steps to prevent marine invasions in the future.