

# South Florida Ecosystem Restoration Task Force

## Invasive Exotic Species Strategic Action Framework

### *EDRR Case Study: Tephritid Fruit Flies*

Since 1997, the Tephritidae species of fruit flies has been detected in Florida 22 times. Early detection and rapid response (EDRR) activities conducted jointly by the United States Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) and the Florida Department of Agriculture and Consumer Services (FDACS) have successfully eradicated each introduction.

### **Tephritid Fruit Flies: A Severe Threat to U.S. Agriculture**

Fruit flies in the family Tephritidae are considered the most destructive pests of fruits and vegetables, attacking more than 400 different plants. The genera, *Anastrepha*, *Bactrocera*, and *Ceratitis*, pose the greatest risk to U.S. agriculture and are the focus of APHIS' Exotic Fruit Fly Strategic Plan and Fruit Fly Exclusion and Detection cooperative programs. The permanent establishment of these pests in the U.S. could cause significant economic losses as a result of the destruction and spoilage of a number of commodities, the costs associated with implementing control measures, and loss of market share due to restrictions on domestic and export shipment of affected commodities. In addition, the establishment of exotic fruit flies in Florida could indirectly impact natural systems as a result of an increased need for treatments to control established infestations in agricultural and/or urban areas near wild lands and/or tribal lands. APHIS employs a number of regulatory and non-regulatory actions to prevent the entry of fruit fly species and to address outbreaks when outbreaks occur.

### **Recent History of Detections and Emergency Response in Florida**

APHIS' emergency response to fruit fly detections involves two actions: delimitation and eradication. Delimitation includes early detection of a new population and ongoing monitoring to ensure permanent establishment does not occur. Eradication includes measures to control or eliminate the population. A number of factors trigger eradication activities, including the total number of adult fruit flies detected during delimitation, the number or type of life stages detected, or the presence of a mated female fruit fly. Since 1997, there have been multiple detections in Florida of the Mediterranean Fruit Fly, Oriental Fruit Fly, Guava Fruit Fly, Peach Fruit Fly, and Mexican Fruit Fly. In each case, APHIS' emergency response led to delimitation and/or eradication.

### **Actions to Prevent the Introduction or Establishment of Fruit Flies in Florida**

The ever-growing volume of international trade and travel places constant pressure on the safeguarding system designed to prevent the introduction of fruit flies in Florida. The APHIS/FDACS Cooperative Fruit Fly Exclusion and Detection Program (FFED) addresses the potential risk of fruit fly introductions associated with global commerce and travel through continual pest monitoring and sterile insect release. With approximately 56,000 traps distributed in 43 Florida counties covering more than 8,354 square miles, the FFED continuously monitors the environment to detect new populations.

Under the Medfly Sterile Insect Technique Preventative Release Program, FFED releases sterile Medflies by air over

### **A Danger to Agriculture**

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Photo: USDA-ARS.

the highest-risk urban areas of the state (approximately 633 square miles). The release rate is 125,000 flies per square mile per week. These sterile male flies compete with wild male flies from a potential exotic incursion to cause any new wild population to die out. In addition, new traps, lures, and protocols are always in development to increase efficiencies in an ever increasing risk situation compounded by globalization, liberalized trade, and increase passenger traffic.

## A World-Class Safeguarding System

The U.S. has developed a safeguarding system that uses a number of exclusion and response strategies to mitigate the plant health risks that come with global trade and international travel. It is a dynamic, data-driven operation that considers and addresses risk not only at ports of entry, but at every point in the risk spectrum.

### Offshore strategies:

- Monitor pest data from around the world to uncover potential new pathways
- Harmonize quarantines, exclusion strategies, and other safeguarding initiatives with countries in the Greater Caribbean Region to guard against the introduction of high-risk pests
- Maintain a line of defense along Mexico's southern border to prevent the northern movement of fruit flies from this region through the production and release of sterile flies and the use of bait sprays
- Inspect and treat commodities in their country of origin to mitigate pest risks prior to export to the U.S.
- Assess the trapping protocols of countries that export commodities known to host fruit flies

### Strategies at the border:

- Conduct pest and commodity risk assessments to determine the level of risk associated with specific commodities and measures that can be used to mitigate the risk
- Assess and analyze risks through our Port Risk Committees (which include representatives from USDA APHIS, U.S. Department of Homeland Security's Customs and Border Protection, and FDACS) to focus port-of-entry inspection activities to target what is truly risky in an ever-changing global trade environment
- Develop import policies and procedures to ensure that adequate safeguards, such as inspections or treatments, are applied to prevent the introduction of plant pests and diseases
- Inspect live plants and propagative plant material and direct the inspections of commercial vessels, trucks, aircraft, railcars, cargo, and international passenger

baggage (conducted by the U.S. Department of Homeland Security's Customs and Border Protection) to intercept pests before they can enter the U.S.

- Develop, conduct, and monitor treatments to eliminate viable pests from agricultural goods and commodities entering the U.S.
- Provide high-quality and time-sensitive identifications of fruit fly specimens found during port-of-entry inspections
- Develop molecular diagnostics for fruit fly specimens to better identify the source of incursions so we can work with trading partners to minimize risk
- Develop methods with key partners to expand the tools available to us to mitigate risk from fruit fly pests

### Strategies inside the U.S.:

- Conduct joint USDA and FDACS trapping programs in accordance with the USDA APHIS National Fruit Fly Strategic Plan
- Release sterile insects to prevent incursions from becoming established
- Collect and manage trapping data to focus trapping on the highest risk areas and manage delimitation and eradication activities in an efficient manner
- Provide high-quality and time-sensitive identifications of fruit fly specimens found during delimitation programs
- Conduct aggressive and coordinated emergency and eradication responses based on the USDA Action Plans and New Pest Response Guidelines when a wild fruit fly is detected
- Coordinate public communications between FDACS Public Information and USDA Public Affairs staffs to ensure public awareness and cooperation during responses to fruit fly incursions

In fiscal year 2013, the cost to operate the Fruit Fly Exclusion and Detection program and the Sterile Insect Technique Preventative Release Program was \$9.5 million. From an internal APHIS report, each dollar APHIS invested in these programs yielded approximately \$120 in cost benefits to the U.S. citrus industry alone. This cost benefit ratio increases significantly when you consider the fact that fruit flies affect a wide variety of fruits and vegetables. Benefits of an aggressive and proactive fruit fly exclusion and eradication program include sustainable crop yields, continued access to domestic and foreign markets, and lower production costs for producers who don't have to implement additional pest management measures. On a larger scale, society benefits from the abundant availability of a wide array of fruits and vegetables at a reasonable cost.

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This document is part of a series of case studies developed for the Invasive Exotic Species (IES) Strategic Action Framework. This particular case study highlights issues within the Eradication/EDRR Phase of the IES Invasion Curve. 6/1/15