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CHALLENGES IN SAFEGUARDING THE GREATER CARIBBEAN BASIN AGAINST INVASIVE PESTS, DISEASES, WEEDS, AND OTHER AGENTS: A FLORIDA PERSPECTIVE

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ABSTRACT: There is a clear and significant problem with the invasion of basin ecosystems by a wide array of biological agents impacting the social and economic systems, food supply, and unique environments. Basin members share both an interest in and dependency on trade with a great vulnerability to the inherent risks associated with it. Moreover, what threatens one generally is a threat to all. Mostly unilateral, occasional bilateral and few multilateral initiatives have been taken to cope with invasive alien species and more are in the planning stages. Now the challenge is how to take advantage of these initiatives and weave them into a strategic, coordinated set of actions to enhance prevention, exclusion, detection and management of high-threat agents basin-wide. Through this collective security approach, initiatives in regulation development, institution building, training, research, public affairs, and pest/disease/weed management would serve to strengthen safeguarding systems basin-wide.

KEY WORDS: Regional safeguarding strategy, ecological and economic impacts, trade, invasive alien species, interdiction, collective security, Caribbean

INTRODUCTION

Florida, as a neighbor of countries within and adjacent to the Caribbean Sea, has a major stake in the effectiveness of safeguarding throughout this entire region against invasive alien species. I wish to briefly describe the enormous problem that invasive indigenous species pose to the political and ecological community described as the "Caribbean Basin", and to suggest a more strategic approach to addressing it. Whereas invasive species problems tend to be framed and attacked on an individual basis by each political jurisdiction, they impact the entire ecology, social structure, and economy of the region. As such, they would be more effectively attacked with our collective resources, as the collective priority they really are. Herein lies the relevance to the Caribbean Food Crops Society in providing this forum for focusing science and research directed to the prevention, detection, and management of key invasive species threats. This is the key outcome needed from this symposium.

THE FLORIDA PERSPECTIVE

As a member of the Caribbean Basin ecological community, the state of Florida, with its $6 billion agricultural industry, substantial marine and freshwater fisheries, major terrestrial and marine parks, extensive forests and naturalized areas, various unique ecosystems, and 15 million people, is presently faced with a tremendous amount of pressure from unwanted species introductions conveyed by international commerce. Florida receives 80% of all propagative plant material and 70% of all cut flowers imported into the United States. The port of Miami is the third largest cargo port in the world, and it is estimated that over 70 million passengers will pass through Miami by the year 2010. In addition, 70% of passengers traveling between the

United States, the Caribbean, and Latin America pass through Miami. During the past decade, the tonnage of trade through Florida's sea- and airports has been doubling every 5 to 6 years. The number of interceptions of quarantine pests intercepted at Florida's ports-of-entry has been doubling every 4-5 years.

Florida's proximity to the Caribbean makes it especially vulnerable to exotic pest introductions. This high-risk pathway has been confirmed year after year with repeated detections of exotic pests that make their way from the Caribbean islands to Florida's shores. We have witnessed the introduction and establishment of the Diaprepes Weevil, Black Parlatoria Scale, Brown Citrus Aphid, Tomato Yellow Leaf Curl Virus, a Geminivirus complex with associated whiteflies, and variety of thrips, Pink Hibiscus Mealybug, scale insects, and various termites.

We are now facing the imminent introduction of Stellate Scale, and damaging sugarcane and citrus root weevils, Africanized honeybee, Bont tick, Swine fever, Giant African Snail and various invasive plants –to name a few. More invaders are poised to attack the Caribbean ecosystem: Medfly, Carambola Fly, Citrus Greening Disease.

In recent two decades roughly 55% of the harmful alien species that established in Florida were of neotropical origin; about 40% originated in Asia, but established in the Caribbean before entering Florida, and about 5% come from Europe, Africa, and our more northerly states. We are acutely aware that a number of damaging pests have entered the Caribbean region from Florida and other parts of the U.S. Mainland. The key point is that neither Florida nor anyone of Florida's Caribbean neighbors has been able to safeguard completely, or even adequately, against damaging species originating within the region or from as far away as Asia.

ADEQUACY OF CURRENT MEASURES

It is readily apparent that current inspection, detection, and eradication efforts are currently being challenged to address the increasing volume of international trade and associated pests. In managing the repeated outbreaks of exotic pests, Florida has had to incur an enormous financial and social burden, and deal with increasing environmental and public concerns. In addition, the introductions of these damaging pests compromise our efforts in facilitating exports with our trading partners who are equally concerned that these pest species may cause massive ecosystem disruption and other impacts. Florida can be viewed as a beachhead for exotic pest threats to the rest of the U.S., both as a key entryway for imported goods destined to other areas and as a place where non-indigenous species first establish on the continent.

The United States has in place a program funded at over $100 million annually to identify and control the risks associated with international trade. These funds are obtained through user fees assessed to passengers and carriers and must be used for port-of-entry-related activities. This pest exclusion network is neither infallible nor impermeable and some exotic organisms gain entry in spite of our best efforts. To ensure we have the strong, effective, and responsive safeguarding system in the U.S., APHIS asked our State counterparts at the National Plant Board to form a stakeholder team, review the primary components of the safeguarding system and make recommendations for enhancement. In total, 310 recommendations resulted and are currently being addressed. One highly relevant recommendation of special note was that the U.S. safeguarding system should shift primary reliance from port-of-entry inspection to off-shore actions, including risk mitigation in production areas, certification of pest-free status at point of origin, and preclearance at the port of export.

In addition, the system in the Caribbean Basin was addressed at a 1999 Workshop, "Mitigating the Effects of Exotic Pests on Trade and Agriculture," sponsored by the USDA

Tropical and Subtropical Agriculture Research (T-STAR) program and convened by the University of Florida.

Although the workshop's purpose was to identify economic and biological research needs, the Proceedings have been quite valuable in defining strategic problems in the basin that badly need to be addressed. Some of the key issues that emerged:

1. The array of unwanted species is scientifically diverse.
2. The number of successful invasions by unwanted species is increasing, as is the trade that moves them.
3. The impact of individual species affects not only agricultural sustainability, but also public health, environmental diversity, tourism, economic viability, and, in the end, the quality of life of individual citizens.
4. Close linkages between Basin members contribute to rapid spread by successfully invading species.
5. Environmental vulnerability and trade connections define the basin community plagued by this problem as 35 political entities, including the state of Florida.
6. Although there are some excellent examples of strategic, coordinated action on unwanted species problems there are too few, given the known scope of these problems.
7. A diverse array of organizations and institutions are investing considerable resources on various aspects of the problem; however, the strategic direction and coordination of efforts needed to obtain maximum impact on the problem appear to be lacking. Mechanisms to facilitate this coordination have not been up to the task.

Earlier this year CAB International conducted a review of invasive species threats in the basin, under the sponsorship of the Nature Conservancy. The issues emerging during this process appear to be similar to those listed above; however, the CABI review adds great value in validating, analyzing, and defining the many opportunities and barriers to managing these issues more effectively in a deeper, more systematic way.

NATURE OF SAFEGUARDING SYSTEMS

In the context of this discussion, a safeguarding system can be viewed as a set of interdependent, science based actions implemented to manage the risk posed by an unwanted biological agent or group of agents to an acceptable level. The quest to enhance safeguarding systems in the Caribbean could benefit from being addressed in such a systematic way, rather than the current approaches, which appear to be the placement of patches in response to crises, or short term funding opportunities that have no significant strategic impact.

All of our countries have a safeguarding system of some type in place, but the nature and extent of these government programs are driven by political and public policies and priorities, and even cultural considerations of each sovereign nation which dictate:

1. What particular invasive species are the most important;
2. Fiscal and human resource availability;
3. Nature and content of regulatory authorities and mandates;
4. Stakeholder involvement and influence;
5. Availability and focus of science and technology to manage issues;
6. Definition of tolerable levels of risk.

This complex patchwork of factors make addressing the safeguarding of the Basin such a daunting task, and explain why identification of threats, those most important to all, is the key first step to having a strategically sound basin safeguarding plan. This and the quality of

scientific knowledge about individual problems is what fuel the 5 components of an effective safeguarding system, namely:

1. Prevention-regulatory restrictions (prohibitions, permits, best management practices, etc.) that reduce risk at the point of origin.
2. Port of entry measures-control at point of arrival of entry risk from passengers, cargo, carriers, and application of appropriate mitigative actions.
3. Detection-formal programs in place focused on early detection of key invaders.
4. Eradication-elimination of introductions where it is technically, economically, socially and environmentally feasible.
5. Management-development and transfer of technology to live with invasive species that cannot be eradicated.

There are many organizations doing high quality work towards enhancing capacities to safeguard the Caribbean basin from unwanted species. The infrastructure discussions cited above identify the need for training, regulatory frameworks, science and research, and information systems that are subjects for this work. Nevertheless, without a commonly accepted set of threat targets, framework for their management, and agreement on the outcomes needed, we may simply be shoring up and patching the system while missing opportunities to achieve the maximum return on the resources invested. Moreover, in some cases we may be falling prey to the paradigm of defining the problem in terms of the particular training, research, or other solutions we individually have to offer. Some examples may illustrate these points.

Citrus greening disease is recognized as a key exotic threat to new world citrus production. Its primary vector has recently been introduced, and has spread to certain Basin members. The most likely pathway of introduction of the pathogen is the inadequately restricted propagative material imports. As was recently reported at the 13th Session of the Intergovernmental Group on Citrus in Havana, Cuba, in May 2003, this disease, along with a number of other exotic agents affecting citrus, needs to be addressed in a regionalized approach that addresses preventive actions at the source (budwood), interdiction and action at time of entry, detection and development of the legal, regulatory, and scientific capacities to manage these agents when they are introduced. From a practical standpoint it is impossible to achieve this on a country-by-country basis.

Exotic fruit flies, as a broad group of pests, have long been recognized for their potential to spread and colonize new ecosystems. Their pathways of entry are passengers, carriers, and inadequately regulated cargo. The carambola fruit fly is one species currently threatening the Region. Introduction of any of these exotic species would thwart economic development initiatives and pose an immediate threat to the entire Region. The significance of this impact warrants a close look at all 5 components of the safeguarding systems in place in each basin member to reduce the potential for introduction, provide for timely detection, and effectively respond to invasion incidents. This major threat cannot be effectively addressed one country at a time, but requires a basin wide approach to protect our mutual interests.

Classical swine fever is a key disease threat to the basin that has been introduced multiple times, and subjected to eradication efforts. It can enter not only with live animals, but also with passenger-carried meat products, and with vessel and air carrier waste that may be fed to swine. It is worth noting that these same pathways move exotic fruit flies and other unwanted species. The basin infrastructure discussions cited earlier describe current inadequacies in the control of carrier waste materials as a major point of weakness.

Eradication programs are difficult, expensive, disruptive and unpleasant, and sometimes they fail. Where the risks are clear, as they are here, a consistent basin-wide strategy would be a good business decision.

TOWARD A REGIONAL STRATEGY

The key step in moving towards a regional strategy is to accept that prevention and point-of-entry interdiction are far from infallible, although empirically they can be demonstrated to have significant impact on the problem. Clearly, if there were no border controls, our problems would be much worse.

The term "Caribbean Basin" has been defined in many ways on political, sociological, and economic bases. However, all of these definitions tend to divide us in managing this problem. When one looks closely at the history of invasive species problems, it is clear that we are joined in our vulnerability to the economic, social, and environmental impact of invasive species. What effects one of us eventually impacts us all. The realities that confront us are:

1. Intense trade, agricultural production, linkages, and geographic proximity facilitate the spread of invasive species within the community.
2. Invasions by highly disruptive organisms of many types appear to be increasing.
3. With some exceptions, individual political entities act independently to exclude, detect, and manage invasive species.
4. Speaking as a public servant, I maintain that it does not appear to be most effective for the public interest to continue addressing these shared threats to our common ecosystems on an individual, country-by-country basis.

Assuring safe trade in a globalized trading environment requires an international coalition. Indeed, what may be needed is development of a Caribbean Basin Safeguarding Strategy that would include the following components:

1. Identify the nature and significance of invasives in the "Basin".
2. Identify key external biological threats to "Basin" ecosystems.
3. Build public and private coalitions around those problems, and implement appropriate actions (preventive, but, if necessary, curative).
4. Establish equivalent risk management and safeguarding systems among "Basin" members.
5. Establish appropriate surveillance strategies for key organisms.
6. Provide enhanced scientific and research support on high priority invasive issues.

The capacity to manage this problem is absolutely dependent on sound science and technology that is transferable to the problem. The above strategy is meant to provide a context that can maximize the possibility of this happening.

The Caribbean Region is fortunate to have in place several regional organizations positioned to provide the leadership for such a strategy to emerge.