FREDON’s contribution to the monitoring and the control of IAS in Martinique

Rémi Picard – march 22, 2016
1st CARIBAEA INITIATIVE Research & Conservation workshop
A feedback of Plant Protection to IAS

from a field actor of Martinique

Regulation (EU) 1143/2014

Prevention and Management of the introduction and spread of IAS

Effective in France and Martinique since 1 January 2015

Article 6: Provisions for the outermost regions

By 2 January 2017, adoption of a list of IAS of concern for each of these regions

Article 2: This regulation does not apply to harmful organisms listed into Directive 2000/29/EC
<table>
<thead>
<tr>
<th>Biological invasion</th>
<th>Plant protection</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Convention on Biological Diversity (CBD)</strong></td>
<td><strong>International Plant Protection Convention (IPPC)</strong></td>
</tr>
<tr>
<td>1992</td>
<td>1951</td>
</tr>
<tr>
<td>Invasive Alien Species IAS</td>
<td>Harmful Organism / Sanitary Hazard</td>
</tr>
<tr>
<td>IAS of concern</td>
<td>Regulated HO / SH cat 1 &amp; 2</td>
</tr>
</tbody>
</table>
What is FREDON?

Fédération RÉgionale de Défense contre les Organismes Nuisibles

Regional federation for protection against pests

A professional technical organization in the plant field
A partner of the administration and local authorities
An adaptative and operational field actor
A center of expertise on local biodiversity
1952 International Plant Protection Convention
1958 Creation of the martinican pests protection group
2003 FDGDEC became FREDON
2008 Plant health laboratory became plant clinic
2010 French general assembly of sanitary
2014 became sanitary-oriented organization in the plant field
2015 became delegate of plant health inspection
FREDON involvement on monitoring

Prevention

● Support to customs control of the tourist way
● Awareness campaign

Monitoring

● Plant clinic,
● Assigned prospecting,
● Technical support for farmers
Expertise and networks

- A large range of skills on local biodiversity
- Connections with plant health & natural heritage nationals networks

Rapid eradiction

- Crisis committees involvement,
- Implementation of control plan,
Management of widely spread IAS

- Rodents management
- Giant african snails

- Multiplication of normative discourses on the management of health and environmental problems that focus on the need to strengthen surveillance activities.
- The monitoring systems have become a major public modes of action relating the health and environmental risks.

TYLCV crisis of 2003-2006 in continental France after detecting many greenhouses contaminated
Is the virus present durably in the production area?

If not, is it an accidental introduction or the exceptional weather conditions that fostered the development of the virus vector?

- Implementation of an exceptional monitoring but mandatory control measures are an obstacle to its effectiveness
- Their operations are often based on cooperation between actors with conflicting interests.
- Coercion and incentives are not always enough to ensure their operations.
3 main categories of stakeholders:
- administrations,
- professionals (farmers, producer groups, technicians)
- research

Emergence of 2 actors playing the role of surveillance mediator:

- A local officer detached from the administration of Plant Protection
- An experimental station of public research based in the focus area
Surveillance mediators

They overcomes blockages created by the formal framework of monitoring.

They relay information on the disease situation between the administrative world and the agricultural productive world.

They convince the various monitoring actors for the need to take into account the views of the others stakeholders.

They are able to relate to different social world thanks to:

- their durable local roots and
- their technical qualifications.
First detections of IAS?

This is a non exhaustive list because no systematic information centralization exists.

Less useful organisms for crops (earthworms, parasitoids, ladybugs…)

31 first detections of alien species in Martinique put in evidence as part of the FREDON activities since 2005.
## IAS detections retrospective

<table>
<thead>
<tr>
<th>date</th>
<th>common name</th>
<th>Latin name</th>
<th>detection</th>
<th>response</th>
<th>publication</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 2005</td>
<td>Lace bug</td>
<td><em>Pseudocysta perseae</em></td>
<td>report of a particular</td>
<td>no</td>
<td>Etienne &amp; Streito 2008</td>
</tr>
<tr>
<td>Aug. 2005</td>
<td>Scale</td>
<td><em>Icerya seychellarum</em></td>
<td>report of a particular</td>
<td>no</td>
<td>Matile-Ferrero &amp; Etienne 2006</td>
</tr>
<tr>
<td>Mar. 2006</td>
<td>Virus</td>
<td><em>Banana Bract Mosaic Potyvirus</em></td>
<td>focused survey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 2007</td>
<td>Thrips</td>
<td><em>Holaphrothrips tabebuia</em></td>
<td>report of a particular</td>
<td>no</td>
<td>Michel et al. 2008</td>
</tr>
<tr>
<td>Sep. 2009</td>
<td>Scale</td>
<td><em>Crypticerya genistae</em></td>
<td>focused survey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan. 2010</td>
<td>Slug</td>
<td><em>Sarasinula linguiformis</em></td>
<td>report of a farmer</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>Aug. 2010</td>
<td>Fungus</td>
<td><em>Mycosphaerella fijiensis</em></td>
<td>focused survey</td>
<td>attempt to eradicate</td>
<td>Ioos et al. 2011</td>
</tr>
<tr>
<td>Nov. 2010</td>
<td>Plant</td>
<td><em>Desmodium heterophyllum</em></td>
<td>report of a professional</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>May 2011</td>
<td>Bird</td>
<td><em>Psittacula krameri</em></td>
<td>report of a particular</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>Aug. 2011</td>
<td>White fly</td>
<td><em>Aleurocanthus woglumi</em></td>
<td>other survey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apr. 2012</td>
<td>Psyllid</td>
<td><em>Diaphorina citri</em></td>
<td>focused survey</td>
<td>attempt to eradicate</td>
<td>Cellier et al. 2014</td>
</tr>
<tr>
<td>May. 2012</td>
<td>Gall wasp</td>
<td><em>Quadrastrictus erythrinae</em></td>
<td>other survey</td>
<td>no</td>
<td>Etienne &amp; Dumbardon-Martial 2013</td>
</tr>
<tr>
<td>Jun. 2012</td>
<td>Moth</td>
<td><em>Cadra cautella</em></td>
<td>focused survey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jun. 2012</td>
<td>Moth</td>
<td><em>Coryxra cephalonica</em></td>
<td>focused survey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jun. 2012</td>
<td>Gall midge</td>
<td><em>Clinodiplosis capsici</em></td>
<td>other survey</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>Sep. 2012</td>
<td>Fungus</td>
<td><em>Lasiodiplodia pseudotheobromae</em></td>
<td>other survey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oct. 2012</td>
<td>Bark beetle</td>
<td><em>Hypothenemus hampei</em></td>
<td>report of a farmer</td>
<td>attempt to eradicate</td>
<td>Dufour 2013</td>
</tr>
<tr>
<td>Jun. 2013</td>
<td>Earwig</td>
<td><em>Euborellia stali</em></td>
<td>report of a farmer</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>Jun. 2013</td>
<td>Slug</td>
<td><em>Polilfera sp.</em></td>
<td>report of a farmer</td>
<td>no</td>
<td>Delannoye et al. 2015</td>
</tr>
<tr>
<td>Apr. 2015</td>
<td>Land planarian</td>
<td><em>Bipolium vagum</em></td>
<td>other survey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apr. 2015</td>
<td>Aphid</td>
<td><em>Neotoxoptera formosana</em></td>
<td>report of a particular</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>Jul. 2015</td>
<td>Scale</td>
<td><em>Proccoccus acutissimus</em></td>
<td>other survey</td>
<td>vigilance request</td>
<td></td>
</tr>
<tr>
<td>Jul. 2015</td>
<td>Aphid</td>
<td><em>Aphis sedi</em></td>
<td>other survey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oct. 2015</td>
<td>Virus</td>
<td><em>Virus papayer indéterminé</em></td>
<td>report of a farmer</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>Feb. 2016</td>
<td>Land planarian</td>
<td><em>Bipolium kweense</em></td>
<td>report of a particular</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>Feb. 2016</td>
<td>Land planarian</td>
<td><em>Dolichoplopa striata</em></td>
<td>report of a particular</td>
<td>molecular analysis</td>
<td></td>
</tr>
<tr>
<td>Mar. 2016</td>
<td>Fly</td>
<td><em>Zaprionus indianus</em></td>
<td>focused survey</td>
<td>specific monitoring</td>
<td></td>
</tr>
</tbody>
</table>

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March 22, 2016

Fédération Régionale de Défense contre les Organismes Nuisibles

MINISTÈRE DE L’AGRICULTURE, DE L’ALIMENTATION ET DE LA FORÊT
First detections by Phyla

- Vertebrate (Bird)
- Arthropods (Insects)
- Molluscs (slugs)
- Platyhelminthes (Land planarians)
- Plants
- Fungi
- Bacteria
- Virus

Rose-ringed Parakeet (2011)
Psittacula krameri

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IAS detections retrospective

**Erythrina gall wasp (2012)**

*Quadrastichus erythrinae*

**Tabebuia thrips (2006)**

*Holopothrips tabebuia*
 Detection modes

- Focused survey: 26%
- Other survey: 22%
- Report of a particular: 23%
- Report of a farmer: 23%
- Report of a professional: 6%

Active surveillance: 48.4%
Voluntary surveillance: 51.6%

Erigeron belloides DC
(Asteraceae)

2013

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## IAS detections retrospective

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Active surveillance</th>
<th>Voluntary surveillance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulated harmful organisms</td>
<td>7 (22.5 %)</td>
<td>6 (85.7 % of RHO)</td>
<td>1 (14.3 % of RHO)</td>
</tr>
<tr>
<td>Other species</td>
<td>24 (77.4 %)</td>
<td>9 (37.5 % of OS)</td>
<td>15 (62.5 % of OS)</td>
</tr>
</tbody>
</table>

### Citrus canker

*Xanthomonas citri pv Citri*

2014

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*Fédération Régionale de Défense contre les Organismes Nuisibles*
## IAS detections retrospective

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Regulated harmful organisms</th>
<th>Other species</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Response after detection</strong></td>
<td>11 (35.5 %)</td>
<td>6 (85.7 % of RHO)</td>
<td>5 (20.8 % of OS)</td>
</tr>
<tr>
<td><strong>No reaction</strong></td>
<td>20 (64.5 %)</td>
<td>1 (14.3 % of RHO)</td>
<td>19 (79.2 % of OS)</td>
</tr>
</tbody>
</table>

Citrus blackfly

*Aleurocanthus woglumi*

2011
Kinds of response

- Attempt of early eradication: 6
- Request for natural enemy introduction: 1
- Risk assessment: 1
- Specific monitoring: 1
- Molecular analysis: 1
- Vigilance request: 1

Banana Bract Mosaic Potyvirus

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The invasive land planarians

2013 first reporting of invasive species in the hexagon

Participatory science studies of Jean-Lou Justine

Call for evidence on internet

7 species identified in Martinique

5 potentials IAS

Dolichoplana striata 2016

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Build on what is still existing to decline the new IAS framework

Skills and datas fragmented between actors who are not accustomed to having direct contact

The importance of voluntary surveillance

Outdated ideological positions to achieve an operational and concerted IAS prevention system

Need of relation between different social worlds.
Conclusion

Lack of coordination and centralization

The IAS data reporting is not standardized
  Coexistence of OMB, INPN & other databases
  Articulation between caribbean and european networks
  Early detection notifications

No local instance addressing the issue with a transversal view
  Like the ASR & CROPSEAV for sanitary hazards
  Setting up an early warning & rapid response system
  Progressive updating of the IAS of concern list

What about the future martiniquan biodiversity agency?
Deficient outreach on the threat of biological invasions

Landusers and travelers

Politics

The various and segmented administrations

Professionnals of various economic sectors

Customs

Definition of operational structures for official controls
Operational tools for IAS surveillance measures

Pathways of IAS analysis (art. 13)
Action plan

Development of Information support system (art. 25)
Risk assessment (art. 5)

Adoption of a list of IAS of concern (art. 6)
Cost-benefit analysis

Surveillance system (art. 14)
Early detections notifications (art. 16)
Rapid eradication at an early stage of invasion (art. 17)
Questions