EPPO’s work on assessing risks to forestry, using *Heterobasidion irregulare* as an example

Fabienne Grousset & Françoise Petter
EPPO secretariat
Outline of the presentation

• Brief introduction to the context of Pest Risk Analysis activities of EPPO

• The Pest Risk Analysis process in EPPO and illustration with *Heterobasidion irregulare*
Aims of EPPO

- To protect plant health in agriculture, forestry and the uncultivated environment.
- To ensure cooperation and harmonization in all areas of plant protection where Governments take official measures (regulated pests or “Quarantine”).
- **To develop a common strategy against the introduction and spread of pests (recommend phytosanitary measures)**
- To promote the use of modern, safe and effective pest control methods.
- To provide information services for provision and exchange of information.
“Pest risk analysis”

Process of evaluating biological or other scientific and economic evidence to determine whether a pest should be regulated and the strength of any phytosanitary measures to be taken against it.

International Standards for Phytosanitary Measures (ISPMs) on PRA have been developed.


ISPM No. 11 (2004) Pest risk analysis for pests, including analysis of environmental risks and living modified organisms

Available on https://www.ippc.int
Initiated in the 1990’s

PM 5/3 (5) Decision-support scheme for quarantine pests

PM 5/5 (1) Decision-Support Scheme for an Express Pest Risk Analysis

PM 5/6 (1) EPPO prioritization process for invasive alien plants

PM 5/7 (1) EPPO Screening process to identify the need for a commodity PRA to import plants for planting

Other standards on PRA

- PM 5/1 (1) Check-list of information required for PRA
- PM 5/2 (2) PRA on detection of a pest in an imported consignment
Performing and reviewing PRA to recommend regulation of pests

Any request for addition to the EPPO Lists should be supported by a PRA

PRAs prepared by EPPO member countries or EFSA
PRAs performed by an EPPO Expert Working Group for PRA

PRAs are reviewed by EPPO Panels and depending on the outcome of the assessment pests are added to the EPPO A1/A2 Lists with recommendations on management options (phytosanitary measures)

EPPO recommendations may serve as a basis for establishing the EPPO member countries regulations on plant health.
Selection of pests for PRA

• Usually pests are selected from:
  - the EPPO Alert List
  - proposals from EPPO countries
  - Commodity studies

• Priorities for PRA evaluated by the Panel on Quarantine Pests for Forestry and the Panel on Phytosanitary Measures

• Final selection by the Working Party on Phytosanitary Regulations

Programme of EWG in 2014 included:

**Thousand cankers disease** (*Geosmithia morbida* and its insect vector *Pityophthorus juglandis*)

**Heterobasidion irregulare**
Dr Gonthier (University of Torino) and Dr Garbelotto (University of California, Berkeley) contacted the EPPO Secretariat in August 2013 and suggested that this pathogen should be added to the EPPO Alert List because of the risk it may present to pine trees in the EPPO region.

**Heterobasidion irregulare** added to the EPPO Alert List in 2013-10.

**Review Alert List in Spring 2014**

Panel on Phytosanitary Measures: spreads slowly and could still be contained **PRA needed**

Panel on Quarantine Pests for Forestry limited spread over a long period **PRA not needed**

Working Party considered it was a priority for PRA (June 2014)
PRA to be performed in an Expert Working Group

Usually 5 Expert Working Groups per year

Objectives:
- Perform risk assessment
- Identify the endangered area
- Identify risk management options

- EPPO Scheme
- Risk management
- Core member
- GIS and Climex
Call for experts sent to NPPOs and relevant EPPO Panels in August 2014 + contacts with specific experts. Experts selected in October 2014

Expert Working Group on *Heterobasidion irregulare*

2014-12-01/04

**Group composition**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
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<tbody>
<tr>
<td>DOUANLA-MELI Clovis (Mr)</td>
<td>Mycologist, Germany</td>
</tr>
<tr>
<td>DUTECH Cyril (Mr)</td>
<td>Forest mycologist, France</td>
</tr>
<tr>
<td>GARBELOTTO Matteo (Mr)</td>
<td>Forest mycologist, USA (pest present there alerted EPPO)</td>
</tr>
<tr>
<td>GONTHIER Paolo (Mr)</td>
<td>Forest mycologist, Italy (researched on the Italian outbreak and alerted EPPO)</td>
</tr>
<tr>
<td>HIETALA Ari Mikko (Mr)</td>
<td>Forest mycologist, Norway</td>
</tr>
<tr>
<td>MATTHEW-BERRY Sharon (Ms)</td>
<td>Risk manager, United Kingdom</td>
</tr>
<tr>
<td>MONTECCHIO Lucio (Mr)</td>
<td>Member of the Panel on Quarantine pests for Forestry, Core member for PRAs, Italy (Forest mycologist)</td>
</tr>
<tr>
<td>STENLID Jan (Mr)</td>
<td>Forest mycologist, Sweden</td>
</tr>
<tr>
<td>GROUSSET Fabienne (Ms)</td>
<td>EPPO Secretariat</td>
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</tbody>
</table>
Draft PRA prepared using the EPPO Express PRA scheme (PM 5/5) by the EPPO Secretariat (Ms Grousset)

Draft circulated for comments to all members of the EWG end of October 2014 (comments by 20th of November)

Compiled comment version prepared and circulated in advance for discussion at the meeting
The Pest Risk Analysis for *Heterobasidion irregulare*
**Heterobasidion irregulare**

- **Fungi**
- **H. irregulare** is part of **H. annosum** complex
- recently considered as distinct species

Infection through spores or mycelial spread
**Heterobasidion irregulare**

- Host plants: Most important hosts are in the families Pinaceae and Cupressaceae, in particular the genera *Pinus* and *Juniperus*, and the species *Calocedrus decurrens*, but also other coniferous hosts (including *Abies balsamea*, *Pseudotsuga menziensii*).

- Also non-coniferous host (sporadic records)

- Symptoms: Root rot and butt rot. Mortality within a few years in species whose roots are extensively attacked.
Symptoms and damages caused by *Heterobasidion* spp.
From a presentation Paulo Gonthier (2014/12)
**Heterobasidion irregulare**

**Geographical distribution**

**North America:** Canada, Mexico, USA

**Caribbean:** Cuba, Dominican Republic

*Uncertainties for Central America, Caribbean, Brazil*

**EPPO region:**
Central Italy (Lazio) – restricted distribution
**Heterobasidion irregulare: risk of entry**

Pathway for entry in the EPPO region and further spread were considered

**Unusual pathway of introduction in the EPPO region**

However trade pathway exists

Main pathways considered

- Natural spread from infested area in Italy (probability of entry moderate-high)
- Untreated wood packaging material (probability of entry moderate-high).
- Wood of conifer host species (probability of entry moderate/low).
- Plants for planting (probability of entry low risk, except for large ornamental trees)
Establishment: Probability high (low uncertainty)

- Probability of establishment: high with low uncertainty
- Potential to establish throughout the EPPO region where Pinus occurs, possibly up to the northern distribution border of H. annosum s.s. (62°N in Sweden).

Impact: probability High (low uncertainty)

- Root and butt rots, tree mortality
- Affect quantity and quality of wood (staining)
- Decrease pine nuts production
- Environmental impact
- Social impact (amenity trees)
- Interaction/Hybridization with H. annosum s.s?
### Heterobasidion irregulare

**Competitive advantages over H. annosum s.s. include**

- Higher production of fruiting bodies.
- Higher production of basidiospores.
- Develops in both dry and wet forest stands.
- Basidiospore production occurs throughout the year.
- Higher infectivity.
- Higher ability to saprophytically colonize wood leading to higher inoculum potential for secondary infection (5 time larger).
Endangered area throughout the EPPO region where *Pinus* occurs, possibly up to the northern distribution border of *H. annosum s.s.* (62°N in Sweden)
Heterobasidion irregulare

Management

• Wood packaging material: Treatment according to ISPM 15

• Wood of conifers
  • Pest-free Area
  • Treatment (heat - 56°C for 30 min)

• Bark of conifers: if needed similar to wood
Plants for planting

- PFA
- Grown under complete physical protection throughout their life + transported in condition preventing infestation
- Systems approach (on the basis of bilateral agreement): Plants younger than 5 years + grown in pots in sterilized substrate + wounds should be avoided + at least 20 km from the closest infestation (or, if the proposed containment plan is applied, at least 10 km from the demarcated infested area) + intensive monitoring in the space between the nursery and the closest infestation

*If needed*, similar measures may be taken for Christmas trees of host species
**Heterobasidion irregulare**

**Management: requirements for a Pest-free Area**

- PFA should be separated by 100km of the nearest infested area
- Based on:
  - surveillance for at least 3 years (monitoring with visual examination and spore trapping)
  + measures to prevent entry of the pest + prevention of infection during transport outside PFA.

PFA requirement only need to be applied to North America and Italy, the Caribbean, and possibly Central America, but not to countries from other continents where the pest is known not to occur.

**Distances for buffer zones have caused concern with risk managers and currently under review.**
**Heterobasidion irregulare**

**Management: natural spread**

- Containment programme

- Infested area (10 km beyond known infestations) + buffer zone (80 km)
  - Treatment of stump surfaces immediately after felling,
  - Thinning and felling operations when spore production is the lowest
  - Avoidance of logging injuries
  - Green logs and untreated wood of hosts must not be moved outside of the infested area

- Sanitation
- Monitoring

⚠️ Distances for buffer zones have caused concern with risk managers and currently under review.
Further stages after the EWG were

<table>
<thead>
<tr>
<th>Further steps</th>
<th>timing</th>
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<tbody>
<tr>
<td>Email consultation of core members (group of experts reviewing each PRA prepared by EWG)</td>
<td>January 2015</td>
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<tr>
<td>Review by the Panels on Phytosanitary Measures and Quarantine Pests for Forestry</td>
<td>March 2015</td>
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<tr>
<td>Recommendation for regulation Executive Committee and Council</td>
<td>Yesterday!!</td>
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</table>
## Communication on PRA

PRA documents available on the EPPO website:

### PRAs conducted by EPPO Expert Working Groups

Since 2006, EPPO organizes meetings of Experts Working Groups which are conducting PRAs on specific pests following the EPPO Decision-support scheme and its computerized version CAPRA (see above). The conclusions resulting from these PRAs are addressed to the EPPO member countries only (the area potentially at risk that is considered during these PRAs is the EPPO region, not the other parts of the world).

- **Finalized PRAs**

<table>
<thead>
<tr>
<th>Pest</th>
<th>PRA Documents</th>
<th>Data sheets</th>
<th>Final decision</th>
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<tbody>
<tr>
<td><em>Insects and mites</em></td>
<td></td>
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<tr>
<td>Agrilus anius</td>
<td>PRA (11-1692) · PRA rep (11-16988)</td>
<td>Final Dr</td>
<td>A1 - 2011</td>
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<tr>
<td>Aulacaspis yasumatsul</td>
<td>PRA (08-14021) · PRA rep (08-14022)</td>
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<td>Bactrocera cockerelli</td>
<td>PRA (12-17835) · PRA rep (12-18190)</td>
<td>Final Dr (in prep)</td>
<td>A1 - 2012</td>
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<tr>
<td>Bactrocera invadens</td>
<td>PRA (10-16101) · PRA rep (10-16120)</td>
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<td>A1 - 2010</td>
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<tr>
<td>Diocalandra frumenti</td>
<td>PRA (11-16940) · PRA rep (11-16332)</td>
<td>Draft DS (10-15852)</td>
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<tr>
<td>Drosophila suzukii</td>
<td>PRA (11-17759) · PRA rep (11-17759)</td>
<td>-</td>
<td>A2 - 2011</td>
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<tr>
<td>Epitrix spp.</td>
<td>PRA (11-17750) · PRA rep (11-17751)</td>
<td>-</td>
<td>A1/A2 - 2010</td>
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<tr>
<td>Megaplatypus mutatus</td>
<td>PRA (07-13272) · PRA rep (07-13273)</td>
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<tr>
<td>Meteorasis hemipterus</td>
<td>PRA (05-15022) · PRA rep (05-15146)</td>
<td>Draft DS (05-15171)</td>
<td>A1 - 2009</td>
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<tr>
<td>Raioella indica</td>
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<tr>
<td>Saperda candida</td>
<td>PRA (11-16381) · PRA rep (10-16144)</td>
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<tr>
<td>Tetranychus evansi</td>
<td>PRA (08-14559) · PRA rep (08-14562)</td>
<td>Draft DS (07-13524)</td>
<td>A2 - 2008</td>
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### Nematodes

<table>
<thead>
<tr>
<th>Pest</th>
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<th>Final decision</th>
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</thead>
<tbody>
<tr>
<td>Bursaphelenchus xyophilus</td>
<td>PRA (05-15449) · PRA rep (05-15450)</td>
<td>Final Dr</td>
<td>A1 - transferred to A2 in 2010</td>
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<tr>
<td>Meloidogyne enterolobii</td>
<td>PRA (10-16243) · PRA rep (10-16246)</td>
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<td>A2 - 2010</td>
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### Fungi (and fungus-like)

<table>
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<tbody>
<tr>
<td>Phytophthora lateralis</td>
<td>PRA (06-12730) · PRA rep (06-12731)</td>
<td>Final Dr</td>
<td>A1 - transferred to A2</td>
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</table>
EPPO’s achievements are based on collaboration between experts from our region but also from other parts of the world.

Thank you for your attention!