



# Science and Regulation: A Canadian Approach to Invasive Alien Species

Eric Allen – Natural Resources Canada

Lesley Cree – Canadian Food Inspection Agency





# *Canadian Food Inspection Agency Plant Health Program*

- ❧ **Canada's National Plant Protection Organization**
  
- ❧ Protecting plant health & production in Canada by preventing the introduction and spread of quarantine pests that threaten Canada's agriculture, forestry, nursery and horticultural sectors
  - ❧ **Prediction (risk assessment)**
  - ❧ **Prevention (policy)**
  - ❧ **Early Response (operations)**



*Plant Health Risk  
Assessment Unit  
Science Division*

- ❧ **Risk Assessment Section**
  - ❧ 3 entomologists
  - ❧ 3 plant pathologists
  - ❧ 1 weed biologist
- ❧ **Pest risk assessments**
- ❧ **Pest fact sheets**
- ❧ **Technical advice**
- ❧ **Early warning system**



# *Pest Risk Assessment*

## *Why do a PRA?*

- ❧ New pest situation in Canada or abroad
  - *Phytophthora ramorum* (SOD) discovered in US and Europe
  - interceptions of ALHB in packing materials
  - first report of fanwort in Canada
  
- ❧ New trade situation
  - request to import spruce logs from Siberia for pulping
  - request to import earthworms from Europe for fish bait
  - request to import compost from Cuba for soil amendment





# *Pest Risk Assessment*

## What kinds of commodities ?

- ❧ Any kind of plant, plant product or other article potentially contaminated with plant pests
- ❧ e.g., products of/for Agriculture, Horticulture / Floriculture, Forestry, Gardening/Hobbyists, Industrial Uses etc.





# *Pest Risk Assessment*

## What kinds of pests ?

- ✧ Any organism that is injurious to plants or plant products
- ✧ *Invertebrate pests* - insects, mites, nematodes, etc
- ✧ *Pathogens* - fungi, bacteria, viruses etc.
- ✧ *Plants* - intended imports or unintended contaminants



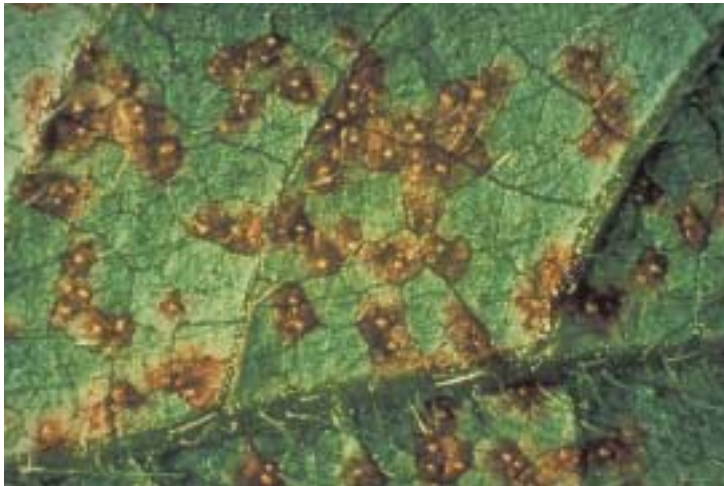




# *Pest Risk Assessment*

## Classic Examples

- ❧ Swede midge
- ❧ Soybean rust
- ❧ Strawberry plants from UK





# *Pest Risk Assessment*

## Non-traditional examples

- ❧ Fanwort
- ❧ Black soldier fly
- ❧ Compost from Cuba







# *Pest Risk Assessment*

- ❧ Where to begin?
- ❧ What questions to ask?
- ❧ Who to ask?
- ❧ How to organize the answers?
- ❧ The Teamwork Approach





## *Where to Begin?*

- ❧ Define the challenge
  - ❧ Identify information needs
  - ❧ Seek partners with expertise
  - ❧ Teamwork
  - ❧ Consultation
- 
- ❧ Case study: *Phytophthora ramorum*





## Where to Begin?

- ❧ Define the Challenge
  - ❧ relatively unknown pest
  - ❧ forestry & horticulture effects
  - ❧ environmental effects
  - ❧ high anxiety
  - ❧ no parallel disease crisis in Canada
  - ❧ other PRAs underway in US, Europe, UK...
  - ❧ other Canadian *Phytophthora* spp. pertinent??







## *Where to Begin?*

- ❧ Identify information needs -- ISPM 11, rev. 1
  - ❧ understanding *Phytophthora* **biology & effects on hosts**
  - ❧ knowledge of **hosts** in Canada
  - ❧ knowledge of **environmental significance of hosts** in Canada
  - ❧ knowledge of **economic significance of hosts** in Canada
  - ❧ knowledge of **trade patterns**
  - ❧ knowledge of **ecosystems at risk**
  - ❧ tools to predict **distribution**
  - ❧ expertise to predict **importance**





# *Where to Begin?*

Seek partners with expertise

## Canadian Food Inspection Agency

- ⌘ risk assessment experience
- ⌘ legal authority



Canadian Food  
Inspection Agency

Agence canadienne  
d'inspection des aliments

## Canadian Forest Service

- ⌘ research capacity & mandate
- ⌘ scientific expertise
- ⌘ predictive modelling capacity
- ⌘ baseline data on hosts in Canada



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# *What questions to ask? Who to ask?*

## Likelihood

- ❧ Means of transport / spread
  - Canadian Forest Service, external researchers in US, UK, EU
- ❧ Trade patterns
  - Agriculture & Agrifood Canada, Canadian Food Inspection Agency, industry groups, provincial governments
- ❧ Availability of hosts
  - Canadian Forest Service, Industry groups, city foresters, provincial governments







## *What questions to ask? Who to ask?*

### Impact

- ❧ Suitability of climate
  - Canadian Forest Service, external researchers
- ❧ Susceptibility of hosts
  - Canadian Forest Service, external researchers
- ❧ Importance of hosts / ecosystems at risk
  - Canadian Forest Service, Canadian Food Inspection Agency, provincial governments, industry groups



PRA# 00-39

## PLANT HEALTH RISK ASSESSMENT

# Sudden Oak Death *Phytophthora ramorum*

Plant Health Risk Assessment Unit  
Science Division  
Nepean, Ontario

Pacific Forestry Centre  
Canadian Forest Service  
Victoria, British Columbia

and

Great Lakes Forestry Centre  
Canadian Forest Service  
Sault Ste. Marie, Ontario

December 20, 2001



## *Other Non-traditional PRA Examples*

### **Compost from Cuba**

- ❧ CFIA
  - Plant Health Risk Assessment
  - Animal Health Risk Assessment
  - expertise in AAFC, universities, provincial governments
- ❧ Potential introduction of a wide variety of biotic agents, e.g., parasites of wild & domestic animals, plant parasites, new earthworm spp. and others
- ❧ Unacceptable environmental impacts anticipated
- ❧ Possible human health effects





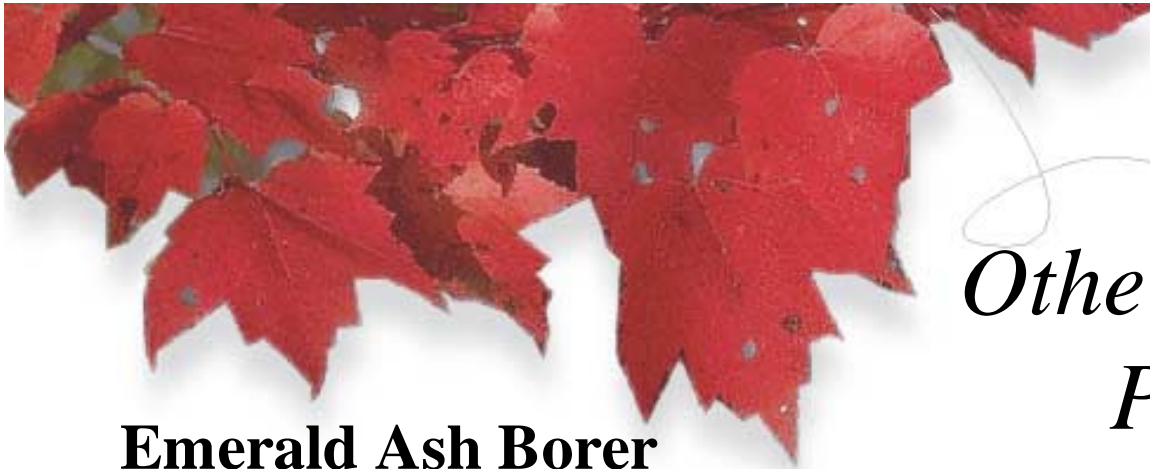


## Other Non-traditional PRA Examples

### Fanwort

- ✧ CFIA
  - Plant Health Risk Assessment
  - expertise in provincial government & universities
- ✧ Highly adaptable aquarium plant
- ✧ Establishment is likely in some parts of Canada
- ✧ Economic impacts due to effects on commercial & recreational uses of waterways
- ✧ Environmental impacts due to effects on native aquatic plant & animal species





## *Other Non-traditional PRA Examples*

### **Emerald Ash Borer**

- ❧ Canadian Forest Service & CFIA
  - Plant Health Risk Assessment
  - Joint task force
  - expertise in provincial & municipal governments & universities
- ❧ High likelihood of establishment
- ❧ High environmental & economic impacts anticipated
- ❧ Vulnerable ash species in Ontario threatened
- ❧ Mitigation measures implemented





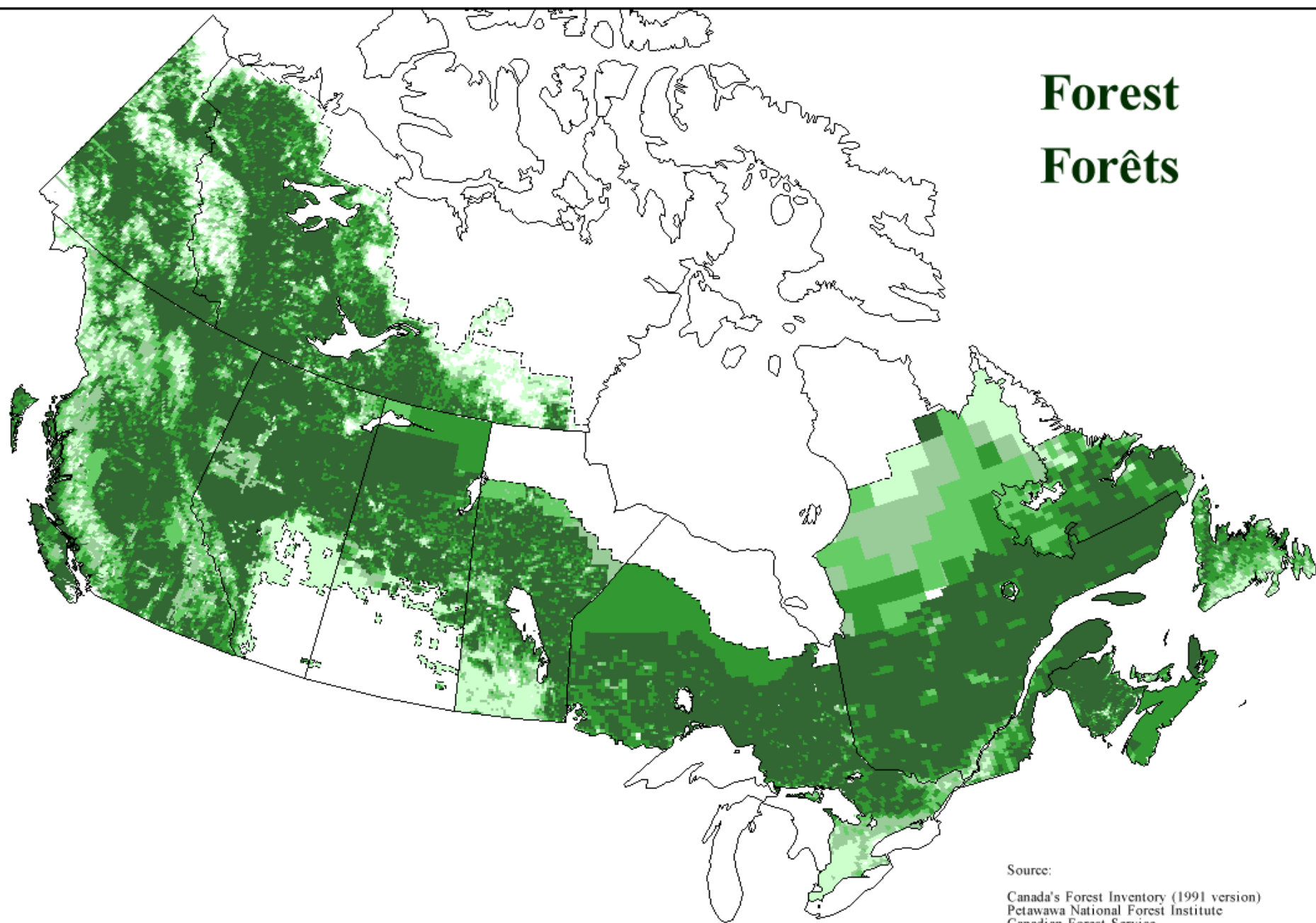
# Canadian Forest Service


- Federal agency with national and international focus
- Organizational mandate
  - promote sustainable forest management
  - collect and integrate forestry information
  - scientific research in support of forest policy development





# Forest Forêts



 **Natural Resources Canada**    **Ressources naturelles Canada**  
**Canadian Forest Service**        **Service canadien des forêts**

Source:  
Canada's Forest Inventory (1991 version)  
Petawawa National Forest Institute  
Canadian Forest Service  
  
Inventaire des forêts du Canada (version de 1991)  
Institut forestier national de Petawawa  
Service canadien des forêts



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## *CFS Alien Species Program*

1. Pest Ecology, Prediction and Pathways
2. Alien Species Surveillance
3. Mitigation and Control Options
4. Collections and Diagnostics
5. National and International Science/Trade/Policy Advice
6. Alien species syntheses





## *CFS/CFIA Program Objectives*

- Research on pest biology and management in support of regulatory activities
- Technical advice for CFIA policy, PRAs and phytosanitary trade agreements
- Development of detection and identification methods
- Collaborate in survey, monitoring and diagnostics
- Joint action on pest emergencies







# *Interagency Cooperation*

CFS – CFIA

- Formal Memorandum of Understanding
- Informal working relationship
  - joint planning



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  - document review



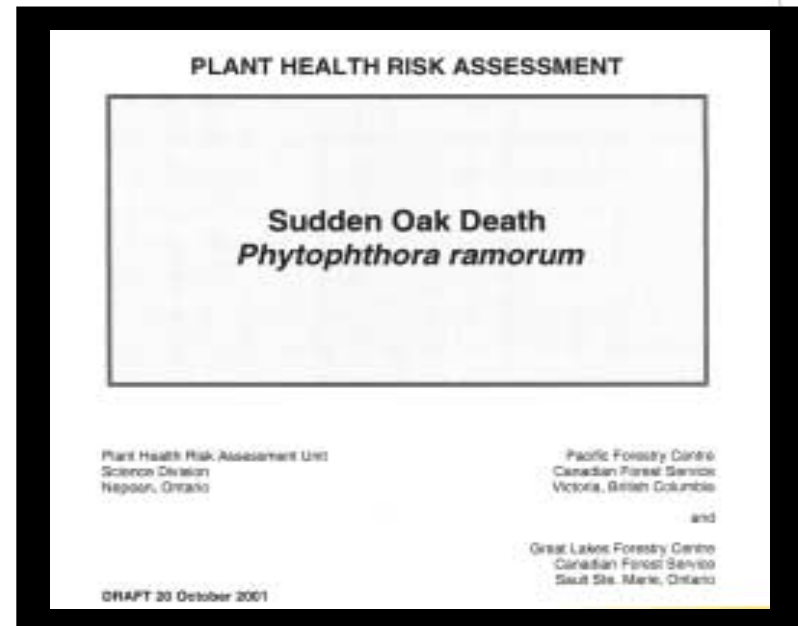




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  - training





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  - document review
  - joint publications
  - training
  - emergency Task Forces



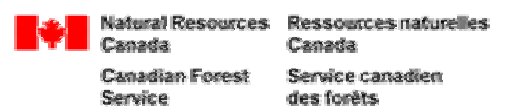


# *Inter-agency Task Forces*

Collaboration in response to new alien pest emergencies

- Government
  - Science
  - Quarantine regulators
- Industry

Brown Spruce Longhorned Beetle (1999) , Emerald Ash Borer (2002),  
Sudden Oak Death (2003), Asian Longhorned Beetle (2003)







# *Canadian Forest Service and the IPPC*

## Benefits to CFS

- Access to global phytosanitary community
- Glossary of Phytosanitary Terms
- Focus for research programs

## Contributions from CFS

- Science support for policy development
- Research capacity



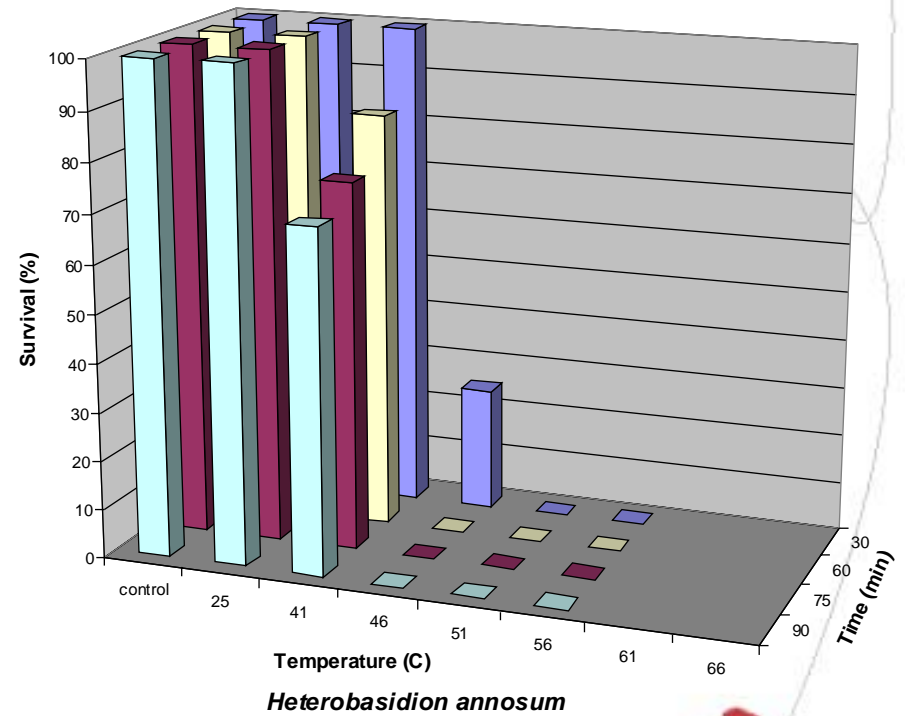


# *IPPC Wood Packing Standard ISPM #15*





# Fungal Heat Treatment Study








# *International Forestry Quarantine Research Group*

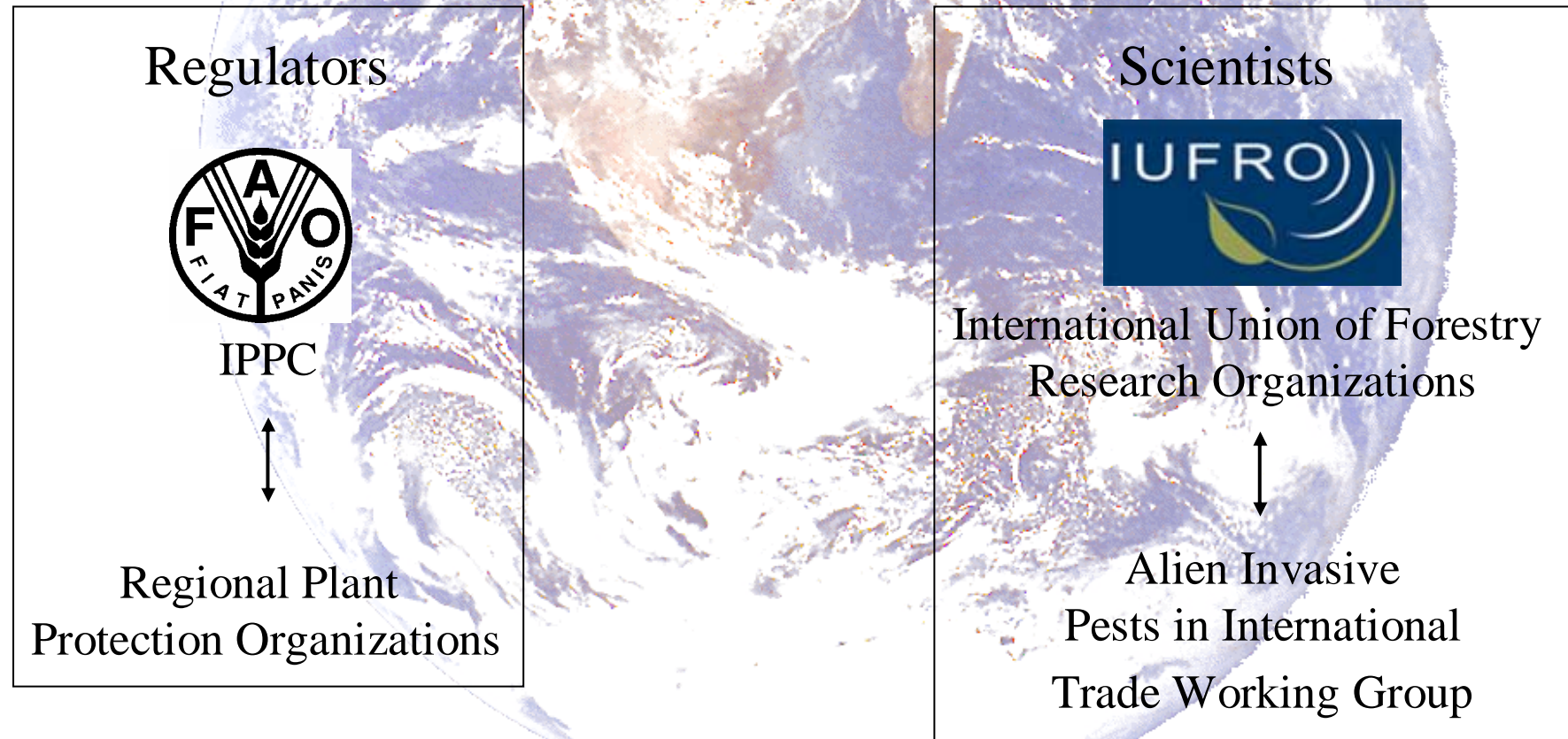
- Advisory body to the IPPC providing scientific analysis and review of global phytosanitary issues and new information
- Forum for the discussion and clarification of key issues related to the phytosanitary implications of global trade
- Identify and undertake collaborative scientific research aimed at high priority forestry quarantine questions
- To encourage multilateral discussion about forestry quarantine issues

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# International Forestry Quarantine Research Group






# *International Forestry Quarantine Research Group*

## Current Activities

- reviewing Korea-China MeBr/PWN study
- Website being established to facilitate communication

**[www.forestry-quarantine.org](http://www.forestry-quarantine.org)**

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# *The Partnership Approach*

## **Benefits**

- ❧ Improved capacity
- ❧ Broadened expertise
- ❧ Greater credibility
- ❧ Shared responsibility
- ❧ Greater understanding between partners

## **Challenges**

- ❧ More expensive initially
- ❧ Slower process initially
- ❧ Different agency mandates
- ❧ Legislative Authority
- ❧ Funding





# *Acknowledgements*

- ❧ Canadian Food Inspection Agency
- ❧ Canadian Forest Service
- ❧ Environment Canada
- ❧ Canadian provincial governments & municipalities
  
- ❧ American and European scientists
- ❧ US regulatory and forest health personnel

