



# EFSA opinion on the use of *Trichilogaster acaciaelongifoliae* against invasive *A. longifolia* and observations on the BCA process

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# OUTLINE

- 1/ EFSA PLH Panel Scientific opinion on the release of *Trichilogaster acaciaelongifoliae*
- 2/ PLH Panel observations on BCA release procedure
- 3/ Assessing environmental risks

# TRICHILOGASTER OPINION – PUBLISHED APRIL 2015

Available at: <http://www.efsa.europa.eu/en/efsajournal/pub/4079>



EFSA Journal 2015;13(4):4079

## SCIENTIFIC OPINION

### **Risk to plant health in the EU territory of the intentional release of the bud-galling wasp *Trichilogaster acaciaelongifoliae* for the control of the invasive alien plant *Acacia longifolia*<sup>1</sup>**

EFSA Panel on Plant Health (PLH)<sup>2,3</sup>

European Food Safety Authority (EFSA), Parma, Italy

#### ABSTRACT

The EFSA Panel on Plant Health was requested by the European Commission to assess the risk to plant health in the European Union if the Australian bud-galling wasp *Trichilogaster acaciaelongifoliae* was released for the control of the invasive alien plant *Acacia longifolia* in Portugal. *T. acaciaelongifoliae* feeds on *A. longifolia* and

## BACKGROUND

- *Acacia longifolia* is posing threat to local biodiversity in costal sand dunes and a variety of other habitats
- Voluntary release of *Trichilogaster acaciaelongifoliae* for control of the invasive plant in Portugal
- Is the wasp harmful to other species (in particular native plants) than *A. longifolia*?



## TERMS OF REFERENCE OF THE REQUEST

PLH Panel was requested by the European Commission to provide a scientific opinion on the risk to plant health posed by *Trichilogaster acaciaelongifoliae* for the EU territory focusing on:

- Establishment
- Spread
- Impact





## METHODOLOGY

Qualitative assessment was performed in line with:

- EFSA Guidance on:
  - transparency in the scientific aspects of risk assessment
  - on a harmonised framework for risk assessment in PLH
  - on identification and evaluation of risk reducing options in PLH
- (ISPM) No 3 on the import and release of non-indigenous BCAs
- EPPO guidance on the safe use of BCAs

Data from host range tests (Coimbra University & Polytechnic institute);

Data on the EU distribution of *Acacia* spp. (Procurement project (Stichting Dienst Landbouwkundig Onderzoek);

Literature review and Expert knowledge



# ESTABLISHMENT: CLIMATE SUITABILITY

Köppen-Geiger climate map for Europe (1976-2000)

*T. acaciaelongifoliae* prefers a warm temperate, fully humid, warm summer type climate (Cfb). In South Africa the wasp has developed best under Mediterranean, mild with dry, warm summer (Csb) too

1976-2000 EU  
GRIDCODE

BSk
BSh
Cfa
Cfb
Cfc
Csa
Csb
Dfb
Dfc
ET



# ESTABLISHMENT: CULTIVATION OF *ACACIA* SPP. IN THE EU

Acacia spp	Host status	Countries with cultivation	Scale	Number of nurseries
<i>A. dealbata</i>	No	Croatia, France, Germany, Greece, Italy, Spain, UK	About 400 ha in Liguria (Italy), 18 million stalks (France), common as street tree in Spanish cities (some of the <i>A. dealbata</i> production in Italy and France is actually of <i>A. retinodes</i> )	11 (Germany), 5 (Greece), 7 (Italy), 36 (UK)
<i>A. floribunda</i>	Yes	France, Greece, Italy	-	3 (France), 4 (Greece), 2 (Italy)
<i>A. longifolia</i>	Yes	France, Germany, Greece, Ireland, Italy, the Netherlands, Spain, UK	Grown in many gardens in Cornwall, UK	9 (France), 6 (Germany), 3 (Greece), 1 (Ireland), 10 (Italy), 5 (the Netherlands), 7 (Spain), 3 (UK)
<i>A. melanoxylon</i>	Spill-over	Germany, Greece, UK	Popular in gardens in coastal areas of the UK	4 (Germany), 1 (Greece), 6 (UK)
<i>A. saligna</i>	No	Germany, Greece, the Netherlands, UK	Commonly found in gardens and as a street tree in the UK	4 (Germany), 2 (Greece), 2 (the Netherlands)
<i>A. retinodes</i>	Under testing, but unlikely	France, Germany, Italy, UK	See above	9 (Germany), 9 (UK)



## ESTABLISHMENT

# INVASIVE ACACIA LONGIFOLIA ESTABLISHED IN 4 EUROPEAN COUNTRIES



Preparatory work to support pan European pest risk assessment:  
*Trichilogaster acaciaelongifoliae*

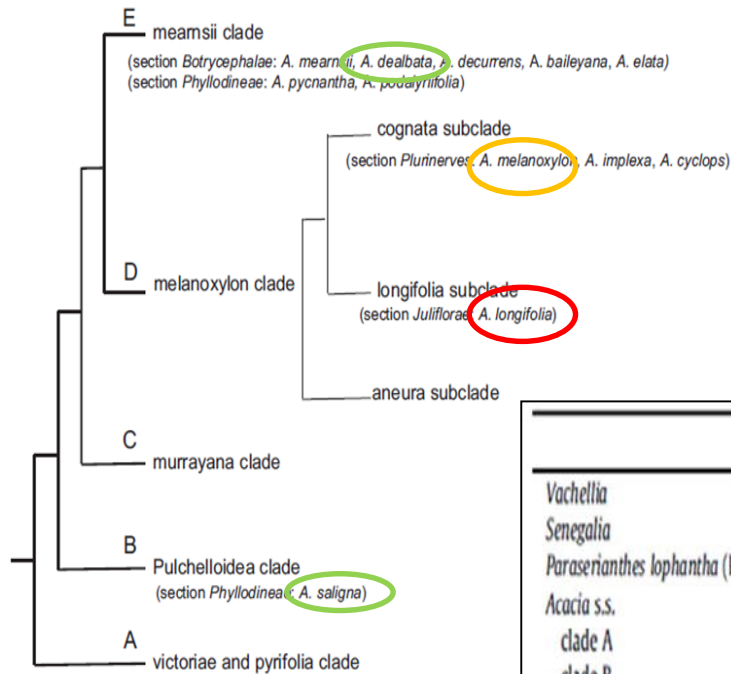


Figure 5. Distribution of *A. longifolia* in Italy, Portugal, Spain and France.



# ESTABLISHMENT: HOST RANGE

- Phylogenetic analysis of Acacia spp. and host tests (Kleinjan & Hoffmann, 2013)



	<i>arabica</i>	<i>acaciaelongifoliae</i>	<i>maidenii</i>	<i>esculenta</i>	<i>pendulae</i>	<i>flavivena</i>	<i>stefani</i>	<i>signiventris</i>
<i>Vachellia</i>	++	0						0
<i>Senegalia</i>		0						0
<i>Paraserianthes lophantha</i> (Ingeae)		+						0
Acacia s.s.								
clade A								
clade B		0				++		
clade C								
clade D								
aneura subclade				++			++	
longifolia subclade		++	++					
cognata subclade		+	++					0
unknown subclade					++			
clade E		0						++

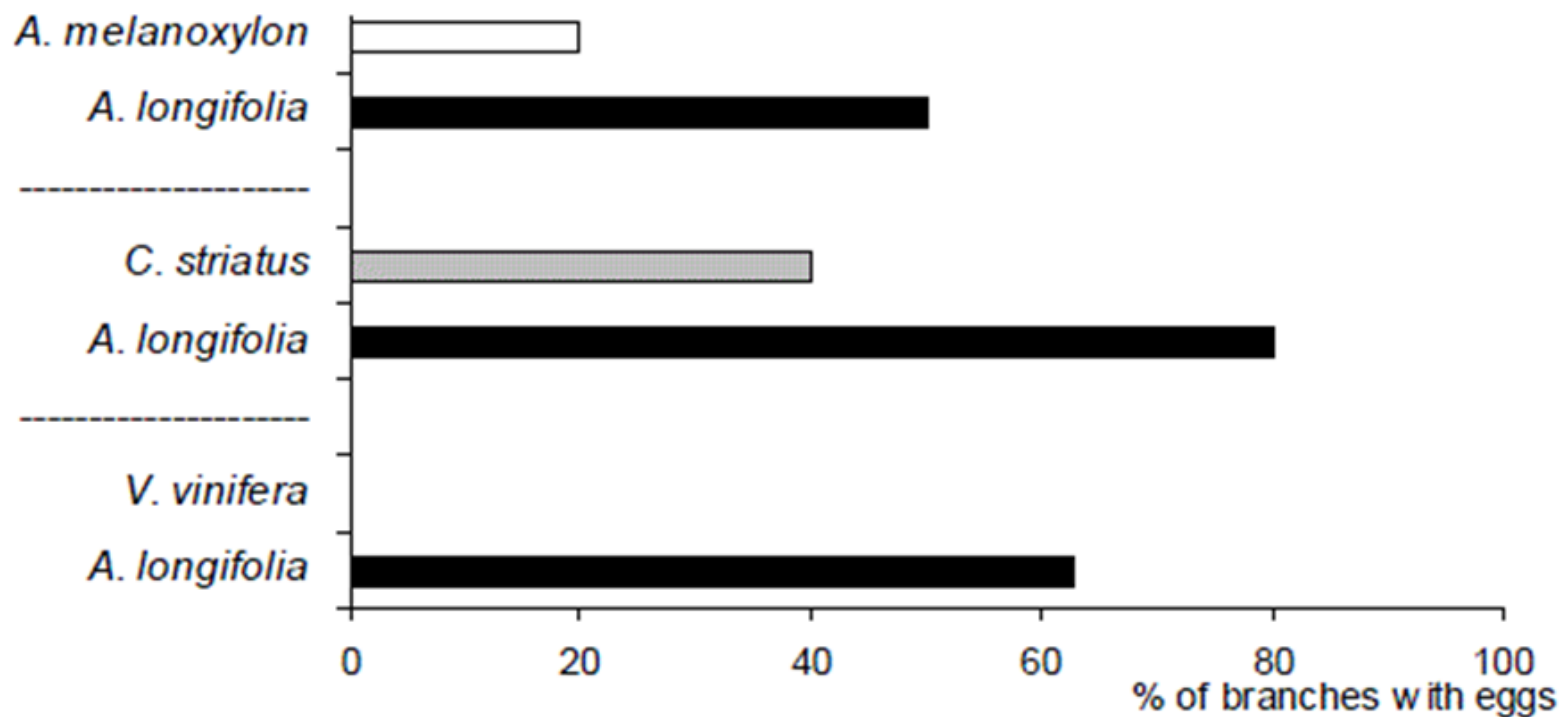
++: Standard host.

+: Non-standard host (gall symptoms occurred in host-specificity tests or occurrence in the field is rare).|

0: No gall symptoms developed in host-specificity tests.

# PAIRED T. ACACIAELONGIFOLIAE CHOICE TESTS

from Marchante, 2011





# RATINGS FOR ESTABLISHMENT AND SPREAD

## Establishment within the target-areas in Portugal

moderately likely  
(based on the previous  
experience in South Africa)

medium uncertainty  
(due to the switch between  
hemispheres)

## Spread to non-target-areas outside of Portugal

**Natural**

moderately likely (due to the  
fragmented host populations)

medium uncertainty (because  
of little information on  
dispersal by wind)

**Human-assisted,  
intentional**

moderately likely (due to the  
experience in South Africa)

low uncertainty

**Human-assisted,  
inadvertent**

unlikely

high uncertainty



## CONSEQUENCES ON INVASIVE ACACIA LONGIFOLIA

### Massive

- Reproductive potential, vegetative growth and ultimately population density of invasive alien *A. longifolia* are reduced substantially
- Negative impacts of invasive alien *A. longifolia* on biodiversity, ecosystem functioning and services are reduced substantially
- Negative impacts of current control measures of invasive alien *A. longifolia* are reduced substantially

## CONSEQUENCES TO CULTIVATION OF *A. LONGIFOLIA* AND *A. FLORIBUNDA*

- Moderate**
- Any use of cultivated *A. longifolia* and *A. floribunda* would be affected by the BCA if it spreads to the areas of production
  - There is a trade in ornamental *A. longifolia* and *A. floribunda*, but the scale is limited compared to other ornamental species (including other *Acacia* spp.) that are not hosts of the BCA
  - Amenity plantings are more likely to be affected than ornamentals in a dynamic production chain and trade
  - Other ornamental Acacias can be substituted for *A. longifolia*



## CONSEQUENCES TO OTHER PLANT SPECIES

### Minor

- In the *Mimosidae*, there has been extensive testing of the host range, with the status of *A. retinodes* unclear, whereas *A. melanoxylon* and *Paraserianthes lophanta* are identified as a spill-over hosts.
- In other subfamilies of the *Fabaceae*, only *Cytisus striatus*, *Cytisus monspessulanus* (= *Teline monspessulana*) and *Spartium junceum* have been tested. For the latter two plant species, there is no evidence that they are hosts. For *C. striatus*, due to the lack of robust information, there is uncertainty over its host status.
- *Vitis vinifera*, because of its importance, has been tested and found not to be a host.



## UNCERTAINTY OF CONSEQUENCES

Consequences	Rating	Uncertainty
for invasive <i>A. longifolia</i> and <i>A. floribunda</i>	massive	medium uncertainty (because the switch between hemispheres might make establishment difficult)
for cultivated <i>A. longifolia</i> and <i>A. floribunda</i>	moderate	Medium uncertainty (information on trade and control measures is missing)
for other plant species	minor	Low uncertainty for hosts other than <i>A. retinodes</i> and <i>C. striatus</i> , where the uncertainty is medium to high.



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## OBSERVATIONS ON THE PROCESS

### STATEMENT

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ADOPTED: 29 May 2015

PUBLISHED: 19 June 2015


doi:10.2903/j.efsa.2015.4134

# **Statement on the assessment of the risk posed to plant health in the EU territory by the intentional release of biological control agents of invasive alien plant species**

## **EFSA Panel on Plant Health (PLH)**



## HOW IS THE PROCESS ORGANIZED IN OTHER COUNTRIES?



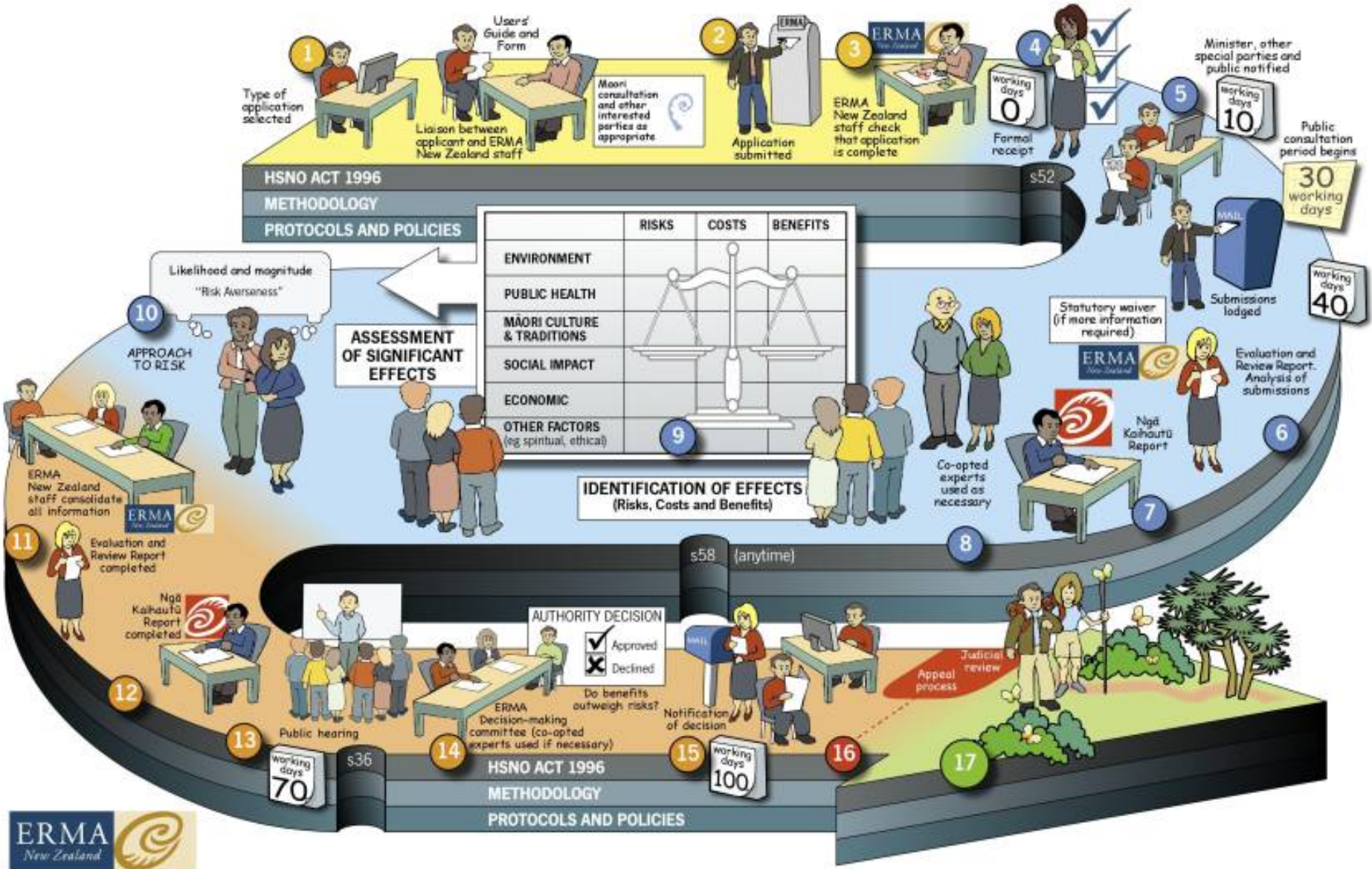
A summary of the procedures used and institutions involved in the assessment of the risk posed by BCAs of invasive alien species was provided for:

Australia, Canada, New Zealand, Switzerland and the USA


Weed BCAs have been extensively and successfully used (after testing and authorization for release) outside Europe

# New Zealand

## DECISION MAKING PROCESS: NEW ORGANISMS FOR RELEASE



## WHAT THE PLH PANEL SUGGESTS FOR THE EU



**Proponent EWG1: Specialists/experts**  
**Harmonised Risk assessment for BCAs**

- Evaluation of host specificity tests
- EU wide/Bioclimatic area
- Negative and Beneficial consequences

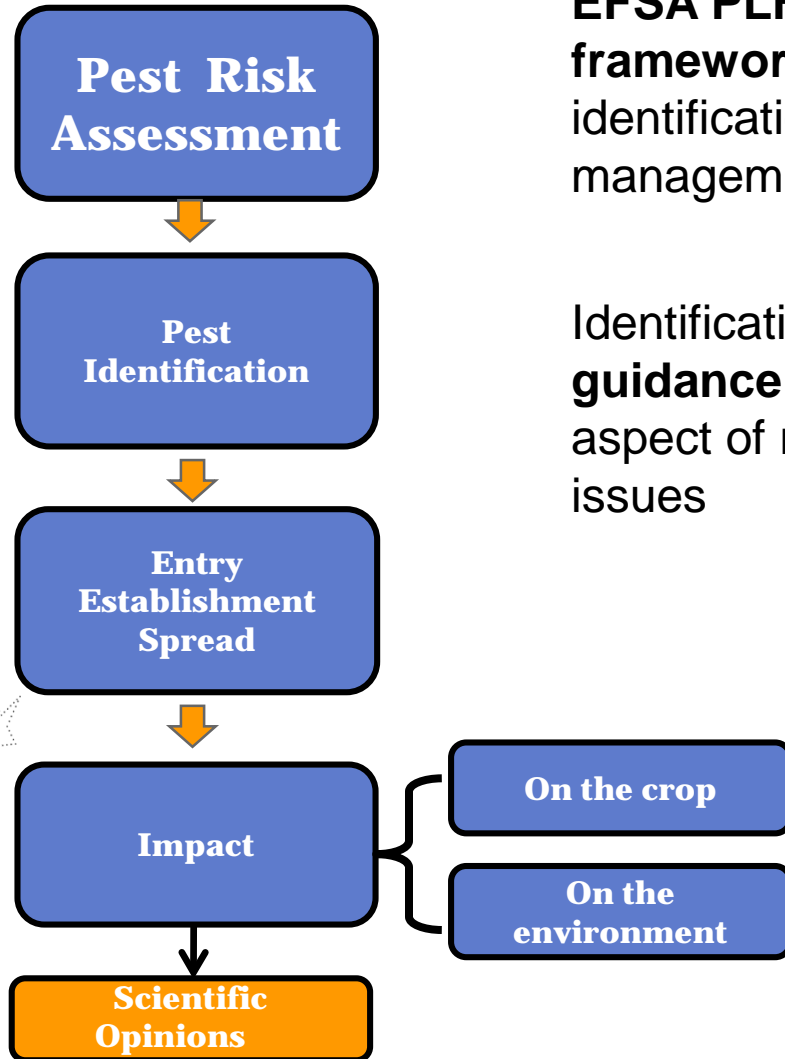
**Review EWG2: Independant scientific reviewers**  
**Data & Risk assessment**

**Decision makers**  
**Science based decision**

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## ERA IN PLH CONTEXT



**EFSA PLH Guidance on a harmonised framework** for pest risk assessment and the identification and evaluation of pest risk management options by EFSA



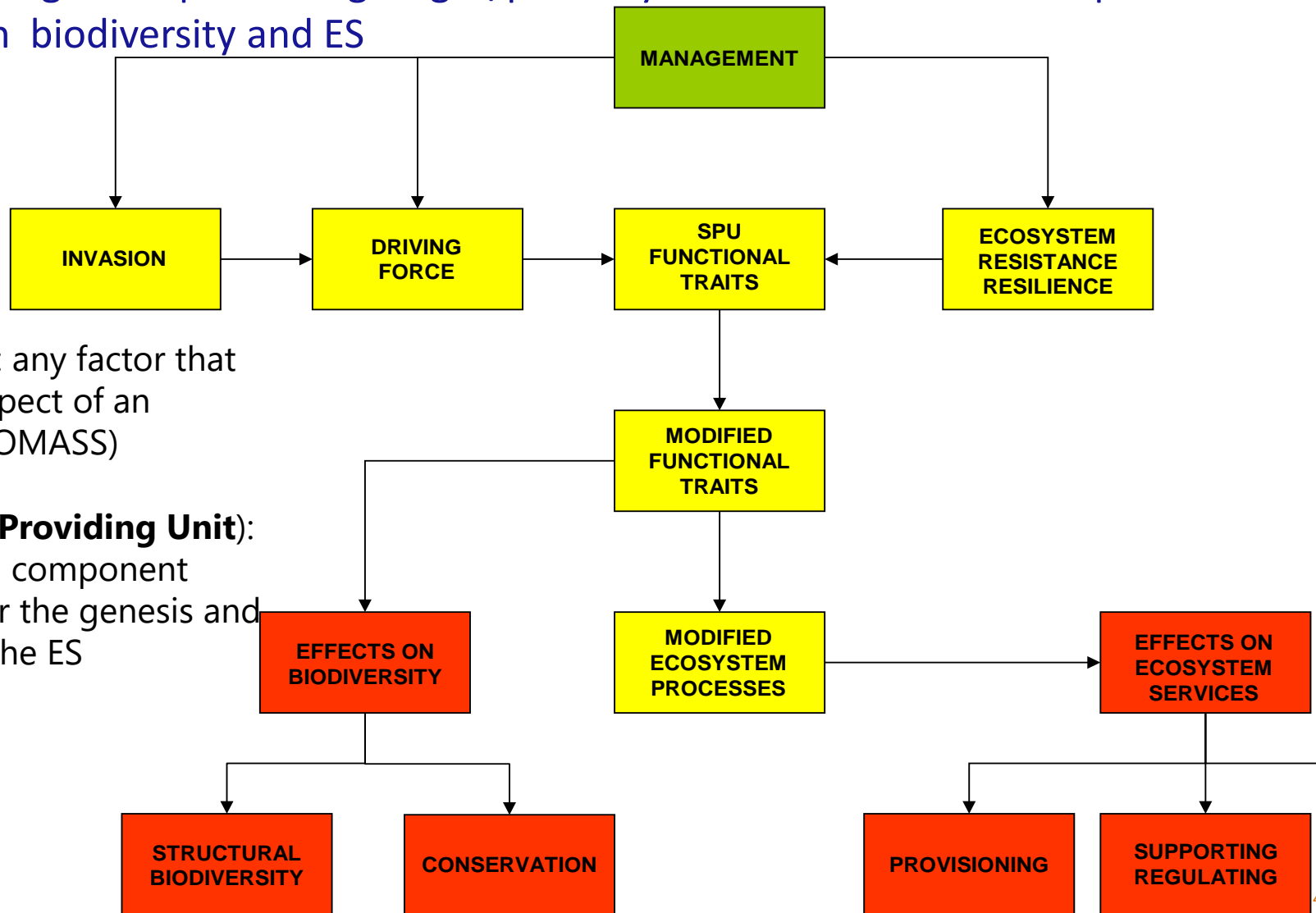
Identification of the **need of further, detailed guidance** on how to assess the environmental aspect of risk assessment linked to plant health issues

Clear guidance is provided for defining the scenarios and include the lists of questions to address in the assessment in EFSA PLH guidance on environmental risk assessment



# HOW TO FRAME AN ERA BASED ON ES

Flux diagram representing stages/pathways for an ERA of invasive species based on biodiversity and ES




**Driving force:** any factor that changes an aspect of an ecosystem (BIOMASS)

**SPU (Service Providing Unit):** environmental component responsible for the genesis and regulation of the ES





## THE ASSESSMENT PROCEDURE

- 
- Scenario assumptions (SPU, temporal horizon, spatial scale, resistance/resilience/management)
  - Assessment of the effect on biodiversity
  - Assessment of the effect on ecosystem services (SPU → modified functional traits → modified ecosystem processes → change in ES provision levels)
  - Uncertainty associated to the evaluation



# EXPERTS ASSESSMENTS

- Time horizons: Short term(ST) and long term(LT)

- Potential Abundance (ST and LT)
- Scaling factors: Resistance; Resilience; Management → ST and LT

	Short term		Long term	
Mean value			Mean value	
95 % confidence interval			95 % confidence interval	

- Ecosystem services ESS
- Biodiversity components Bc

} % of reduction in ESS and Bc

RATING	Minimal	Minor	Moderate	Major	Massive	
IMPACT	Zero or negligible	] 0% , 5% ]	] 5% , 20% ]	] 20% , 50% ]	] 50% , 100% ]	
PROBABILITY			100			100



# EXPERTS ASSESSMENTS

For each ESS and Bc (when relevant for the IAS) the experts provide a probability distribution for both ST and LT

## Ecosystem services

Food

Fibre

Genetic resources

Biochemicals, natural medicines

Ornamental resources

Fresh water

Air quality regulation

Climate regulation

Water regulation/cycling/purification

Erosion regulation

Soil formation and nutrient cycling

Photosynthesis and primary production

Pest and disease regulation

Pollination

## Biodiversity components

Genetic diversity

Native species diversity

Native habitat, community and/or ecosystem diversity

Threatened species

Habitat of high conservation values

## THANKS

### The EFSA Working group on *T. acaciaelongifoliae*

**Members:** Mike Jeger Chair, Richard Shaw and Wopke van der Werf

**Hearing experts:** Helia Marchante, Robert Luttik and Andrea Allavena

**Procurement:** Stichting Dienst Landbouwkundig Onderzoek

**EFSA Staff:** Marco Pautasso

&

The EFSA Plant Health Panel