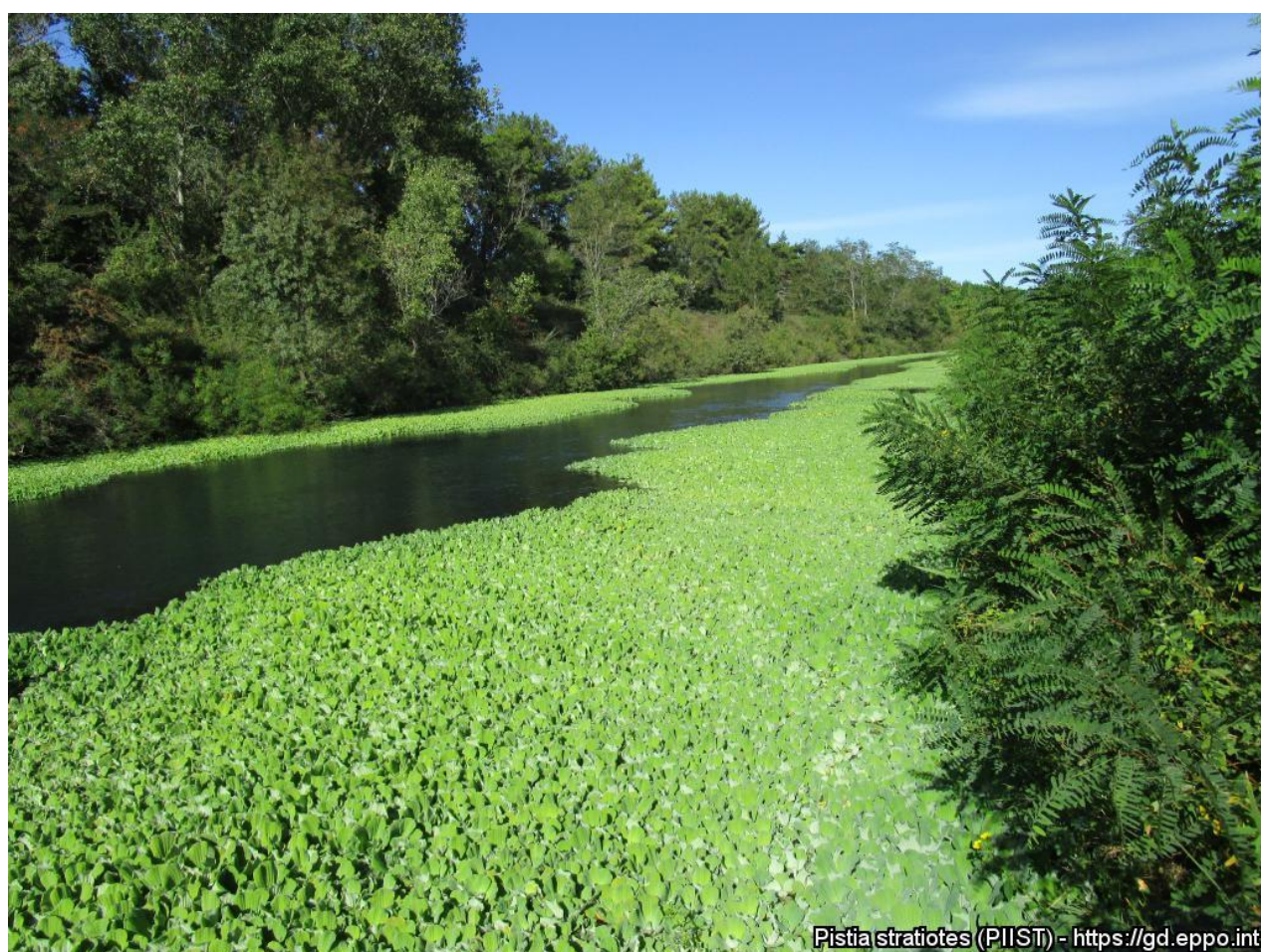


# LIFE IAP-RISK

## 2016 - 2018

Mitigating the Threat of Invasive Alien Plants in the EU  
Through Pest Risk Analysis to Support the EU Regulation  
1143/2014



Layman's Report  
June 2018



# LIFE IAP-RISK identity

Code :LIFE15 PRE FR 001  
Location : France  
Duration : 2 years and 5 months  
Start date : 01/02/2016  
End date :30/06/2018  
Budget : 433 328 euros  
Website : [www.lap-risk.eu](http://www.lap-risk.eu)  
Email :rt@eppo.int

The LIFE IAP-RISK project was coordinated by the European and Mediterranean Plant Protection Organization (EPPO), in collaboration with the NERC Centre for Ecology and Hydrology.

The project is co-financed by the LIFE + program of the European Commission and by the European and Mediterranean Plant Protection Organization (EPPO) and the NERC Centre for Ecology and Hydrology

## About EPPO

EPPO is a Public body and an intergovernmental organization responsible for European cooperation in plant protection in the European and Mediterranean region.



Under the International Plant Protection Convention (IPPC), EPPO is the regional plant protection organization (RPPO) for Europe (and for some countries in the Mediterranean area and Central Asia). The organization was founded in 1951 with the objective to protect plant health in agriculture, forestry and the uncultivated environment, to develop international strategies against the introduction and spread of dangerous pests (including invasive alien plants) and to promote safe and effective control methods.

## About Centre for Ecology and Hydrology

The Centre for Ecology and Hydrology (CEH) is UK's Centre of Excellence for integrated research in terrestrial and freshwater ecosystems. It is one of four research centres belonging to the Natural Environment Research Council (NERC). The government department responsible for NERC and other UK Research Councils is the Department for Business, Innovation and Skills which provides the majority of NERC's funding.



## About LIFE programme

LIFE is the EU's financial instrument supporting environmental, nature conservation and climate action projects throughout the EU. Since 1992, LIFE has co-financed more than 4500 projects. For the 2014-2020 funding period, LIFE will contribute approximately €3.4 billion to the protection of the environment and climate.

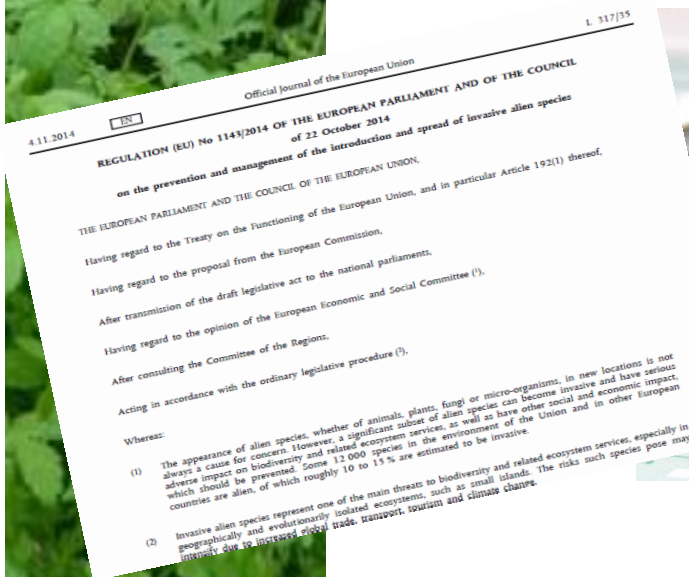


# Introduction

Trade liberalisation and rapid globalisation has led to the increased spread of invasive alien species (IAS) around the world. IAS (plants, animals, fungi or micro-organisms) are recognised as one of the greatest threats to biological diversity inflicting irreversible damage to the ecosystems they invade. There are an estimated 12 000 alien species present within Europe of which 10-15 % are considered invasive, and it is these species that cost the EU around €12-billion per year.

## Regulation (EU) No. 1143/2014

The Regulation (EU) 1143/2014 entered into force on 1 January 2015 and provides a set of measures to be taken across the EU in relation to invasive species including a List of Invasive Alien Species (IAS) of Union concern. For a species to be included in this list, a risk assessment is required to technically and objectively evaluate scientific and economic evidence to determine the level of risk associated with a species. Importantly, a risk assessment should demonstrate a species meets the criteria in Article 4 of the IAS Regulation where, in short, a species is non-native to the whole of the European Union (excluding the outermost territories), has the potential to establish and spread in the natural environment of one biogeographical region shared by two Member States, and has a demonstrable negative impact on biodiversity and ecosystem services.



## Pest risk analysis

A pest risk analysis (PRA) includes risk assessment and risk management and is the technical and objective process of evaluating biological or other scientific and economic evidence to determine the level of invasion risk associated with a species or pathway and identify possible measures. Robust risk analysis methods are required to provide the foundation on which to base measures that may affect imports into the EU and future agreements with trade partners without infringing the rules and disciplines of the World Trade Organisation (WTO) agreements.

LIFE IAP-RISK is a preparatory project funded by the LIFE programme. Preparatory projects are funded by the sub-programme for Environment. Such projects address specific needs for developing and implementing EU environmental or climate policy and legislation. Areas are identified by the Commission in cooperation with Member States on an annual basis.

## Main objectives of IAP-RISK were:

- To determine which species from the EPPO List of Invasive Alien Plants and the horizon scanning exercise (ENV.B.2/ETU/2014/0016) have the highest priority for a risk analysis,
- To assess 16 invasive alien plants by performing a risk analysis which is fully compliant with the Regulation (EU) no. 1143/2014,
- To facilitate knowledge transfer and capacity building in pest risk analysis within the EU.

## IAP-RISK: a three staged project:

IAP-RISK was divided into three distinct stages:

### Stage 1: Selecting species for risk assessment (preparatory work).

Stage 1 produced a risk-based list of invasive alien plants prioritised in compliance with the Regulation from which the top 16 will undergo risk analysis.

### Stage 2: Risk assessment of 16 invasive alien plant species.

Stage 2 produced 16 PRAs compiled by leading experts which are fully compliant with the Regulation (EU) no. 1143/2014. Each PRA produced in stage 2 will undergo the peer review process in stage 3.

### Stage three: Peer review process

This stage produced the main output of the IAP-RISK project – a scientifically sound, robust, fully peer-reviewed risk assessment for each of the 16 species.

## Stage 1: Prioritizing species for PRA

A workshop was convened in March 2016, to amend the EPPO prioritization process into a scheme specifically for use by this project by incorporating requirements of the Regulation 1143/2014. Amendments included adding questions on taxonomic status, the quality of available information, impacts on biodiversity and ecosystem services, absence of invasiveness and rewording other questions to be compliant with the EU. In total, 37 plant species from a recent horizon scanning exercise and the EPPO lists of invasive plants were prioritized using the new scheme where information was gathered for each species in order to answer each question in the prioritization process. Maps and graphics were compiled detailing the current and potential occurrence of each species in Europe.

The resulting prioritization process for EU invasive alien plants has two stages (1) preliminary risk assessment and (2) risk management. The output of Stage 1 is to categorise each species into one of four lists: Residual List of species, EU List of Minor Concern, EU Observation List and EU List of Invasive Alien Plants. Only those in the latter list proceed to Stage 2.

The output of Stage 2 has two possible outcomes where either the species is included in a list of priority invasive alien plants for a EU level RA or the species is included in a list of invasive alien plants that are not a priority for a EU level risk assessment (RA) and national measures should be applied.

### 37 Species prioritized using the new process were:

*Acacia dealbata*, *Albizia lebbek*, *Ambrosia confertiflora*, *Ambrosia trifida*, *Andropogon virginicus*, *Cardiospermum grandiflorum*, *Celastrus orbiculatus*, *Chromolaena odorata*, *Cinnamomum camphora*, *Clematis terniflora*, *Cornus sericea*, *Cortaderia jubata*, *Crypostegia grandiflora*, *Egeria densa*, *Ehrharta calycina*, *Euonymus fortunei*, *Euonymus japonicus*, *Fallopia baldschuanica*, *Gymnocoronis spilanthoides*, *Hakea sericea*, *Humulus scandens*, *Hygrophila polysperma*, *Hydrilla verticillata*, *Lespedeza cuneata*, *Ligustrum sinense*, *Lonicera maackii*, *Lonicera morrowii*, *Lygodium japonicum*, *Oxalis pes-caprae*, *Pennisetum setaceum*, *Pistia stratiotes*, *Prosopis juliflora*, *Prunus campanulata*, *Rubus rosifolius*, *Sapium sebiferum*, *Salvinia molesta* and *Sphagneticola trilobata*.

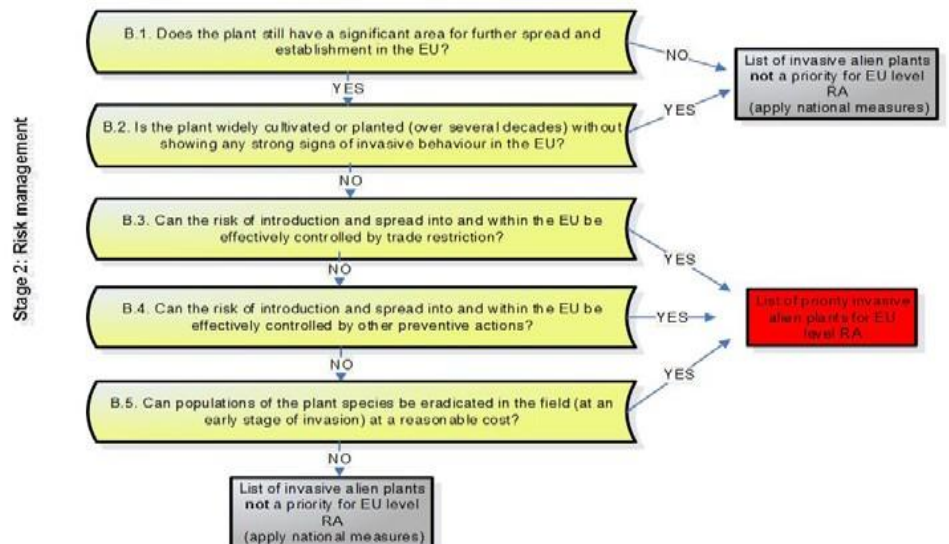
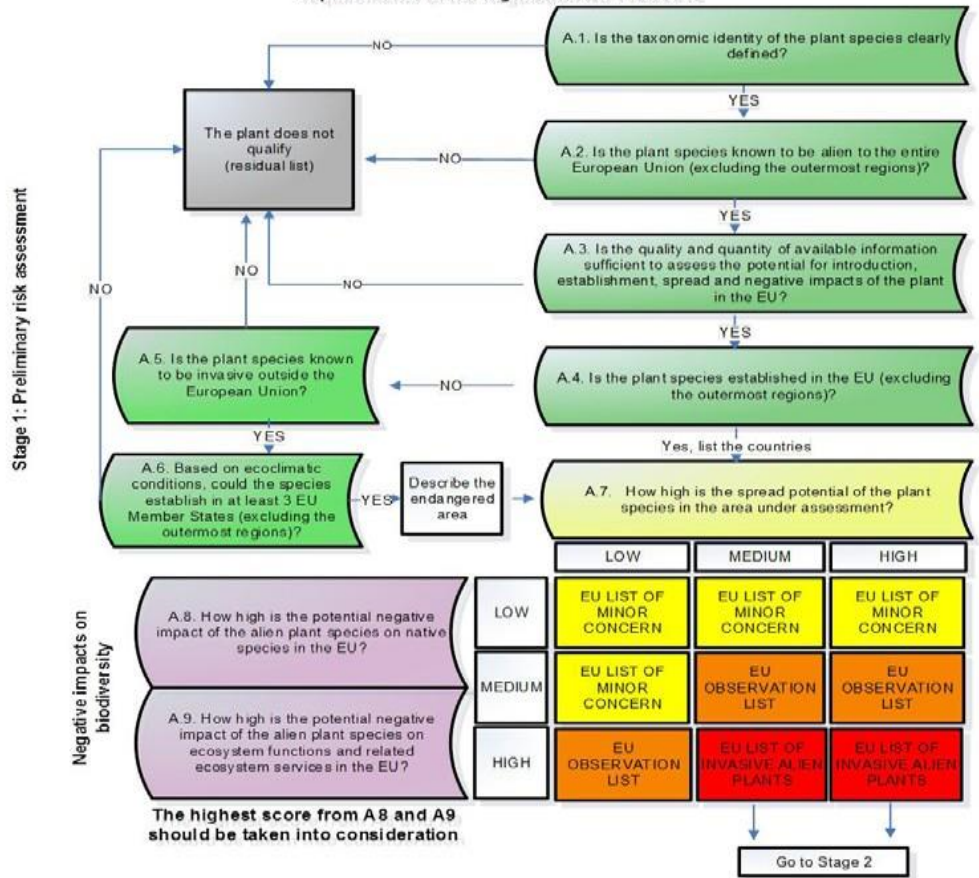
**See page 5 for a schematic view of the prioritization process for EU invasive alien plants.**

### Publication available

The EU prioritization process for invasive alien plants has been published in the EPPO Bulletin and is freely available via the project website: [www. http://www.iap-risk.eu/](http://www.iap-risk.eu/)

# Prioritizing species for PRA

Decision scheme for the prioritization process for EU invasive alien plants incorporating the requirements of the Regulation No 1143/2014



# Results of prioritization



Thirty-seven alien plant species, were prioritised for PRA using the modified version of the EPPO Prioritization Process. In Stage 1, species were categorised into one of four lists – a Residual List, EU List of Minor Concern, EU Observation List and the EU List of Invasive Alien Plants and only those species included in the latter proceeded to the risk management stage where their priority for PRA was assessed.

- Twenty-two species were included in the EU List of Invasive Alien Plants due to a medium or high spread potential coupled with high impacts and proceeded to Stage 2.
- Four species (*Ambrosia trifida*, *Egeria densa*, *Fallopia baldschuanica* and *Oxalis pes-caprae*) were assigned to the EU Observation List due to moderate or low impacts.
- *Albizia lebbbeck*, *Clematis terniflora*, *Euonymus japonicus*, *Lonicera morrowii*, *Prunus campanulata* and *Rubus rosifolius* were assigned to the residual list due to a current lack of information on impacts.
- *Cornus sericea* and *Hydrilla verticillata* were assigned to the residual list due to unclear taxonomy and uncertainty in native status, respectively.
- *Chromolaena odorata*, *Crypostegia grandiflora* and *Spagneticola trilobata* were assigned to the residual list as it is unlikely they will establish in the Union under current climatic conditions.
- In the risk management stage, *Euonymus fortunei*, *Ligustrum sinense* and *Lonicera maackii* were considered low priority for a PRA as they do not exhibit invasive tendencies despite being widely cultivated in the EU over several decades.
- Nineteen species were identified as having a high priority for a PRA but *Acacia dealbata*, *Celastrus orbiculatus* and *Pennisetum setaceum* were omitted from the final list due to logistics.
- The 16 species detailed below were risk assessed as part of the LIFE-IAP-RISK project.

## High priority species for risk assessment

*Ambrosia confertiflora*, *Andropogon virginicus*, *Cardiospermum grandiflorum*, *Cinnamomum camphora*, *Cortaderia jubata*, *Ehrharta calycina*, *Gymnocroronis spilanthis*, *Hakea sericea*, *Humulus scandens*, *Hygrophila polysperma*, *Lespedeza cuneata*, *Lygodium japonicum*, *Prosopis juliflora*, *Sapium sebiferum*, *Pistia stratiotes* and *Salvinia molesta*.



## Publication available

The results of the prioritization of the 37 species was published in the Journal *Neobiota*: **The prioritization of a short list of alien plants for risk analysis within the framework of the Regulation (EU) No. 1143/2014**, and is freely available via the project website: [www. http://www.iap-risk.eu/](http://www.iap-risk.eu/)

## Stage 2: Pest risk analysis of 16 plant species

The 16 species were risk analysed in pairs: eight five day expert working groups (EWG) were conducted where the species were grouped together based on similar forms, for example two grass species were assessed together.

Each EWG included between 7 to 10 international experts encompassing:

- (1) experts on the ecology, biology and management of the two plant species from the native and introduced range,
- (2) members from the EPPO Panel on Invasive Alien Plants (to ensure consistency between evaluations),
- (3) risk management experts,
- (4) experts on species distribution modelling.

All EWGs were held at the EPPO headquarters in Paris, France. Before the participants met, a draft PRA document was produced using a modified version of the EPPO Decision-support scheme for an Express Pest Risk Analysis.

During the meeting the participants critically evaluated the draft document and gathered additional information to answer the sections of the risk assessment.



Experts evaluating the potential impacts of *Lygodium japonicum* during an EWG in 2017



## Key information required in a Pest risk analysis

Taxonomic information on the pest, ecological and biological information on the pest, regulatory information on the pest, distribution data, habitats at risk, pathways for entry, likelihood of establishment, potential for spread, impact of the species on biodiversity, ecosystem services and socio-economic impacts, identification of the endangered area, how will climate change affect the above, levels of uncertainty, phytosanitary measures required to prevent the introduction, entry and spread of the pest.

The output of the EWGs was a risk analysis document for each species. The output of the risk analysis is detailed in the table below.

The overall score for each species is highlighted in the two last columns where the overall phytosanitary risk for the endangered area and the overall uncertainty of the assessment is detailed.

Note: two species (*Cinnamomum camphora* and *Hygrophila polysperma*) were considered a low risk for the EPPO region due to both species being unlikely to establish populations in the natural environment.

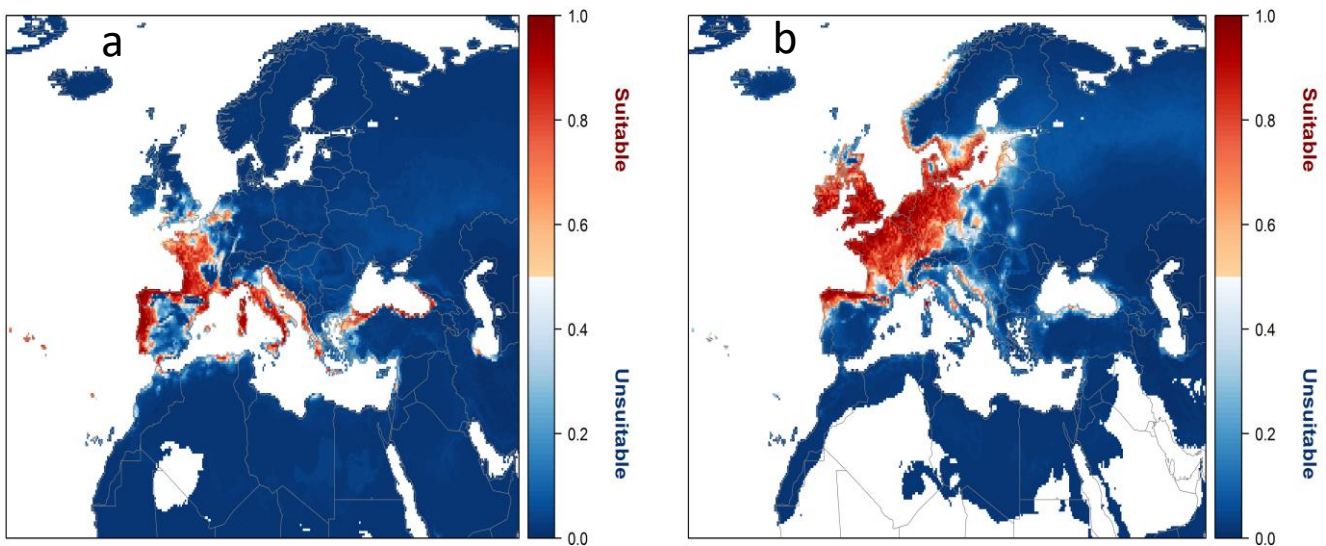
Eight species were assessed as having a high risk and six species were assessed as a moderate risk (see table below).

| Species                           | Establishment | Spread | Potential Impact PRA area |                    |                | Overall risk |         |
|-----------------------------------|---------------|--------|---------------------------|--------------------|----------------|--------------|---------|
|                                   |               |        | Biodiversity              | Ecosystem-services | Socio-economic | Score        | Uncert. |
| <i>Ambrosia confertiflora</i>     | High          | High   | High                      | High               | High           | High         | High    |
| <i>Andropogon virginicus</i>      | High          | High   | Mod                       | Mod                | Mod            | High         | Mod     |
| <i>Cardiospermum grandiflorum</i> | Mod           | Mod    | Mod                       | Mod                | Mod            | Mod          | Mod     |
| <i>Cinnamomum camphora</i>        | Low           | Low    | Low                       | Low                | Low            | Low          | Mod     |
| <i>Cortaderia jubata</i>          | High          | High   | Mod                       | Mod                | Mod            | Mod          | Mod     |
| <i>Ehrharta calycina</i>          | High          | Mod    | High                      | High               | Low            | Mod          | Mod     |
| <i>Gymnocoronis spilanthoides</i> | High          | Mod    | High                      | Mod                | Mod            | High         | High    |
| <i>Hakea sericea</i>              | High          | High   | High                      | High               | Mod            | High         | Low     |
| <i>Humulus scandens</i>           | High          | High   | High                      | Mod                | Mod            | High         | Low     |
| <i>Hygrophila polysperma</i>      | Low           | High   | Low                       | Low                | Low            | Low          | Mod     |
| <i>Lespedeza cuneata</i>          | High          | High   | Mod                       | Mod                | Mod            | Mod          | Mod     |
| <i>Lygodium japonicum</i>         | Low           | High   | High                      | Mod                | Low            | Mod          | High    |
| <i>Pistia stratiotes</i>          | High          | Mod    | High                      | High               | High           | High         | Mod     |
| <i>Prosopis juliflora</i>         | Mod           | High   | High                      | High               | High           | Mod          | Mod     |
| <i>Salvinia molesta</i>           | High          | Mod    | High                      | High               | High           | High         | Mod     |
| <i>Triadica sebifera</i>          | Mod           | High   | High                      | High               | Low            | High         | High    |

# Species distribution modelling



- One key action in the IAP-RISK project was to model and map the potential distributions of the 16 priority invasive alien plants in the EPPO region. This action was led by the Centre for Ecology and Hydrology.
- Using distribution data from the Global Biodiversity Information Facility ([www.gbif.org](http://www.gbif.org)), scientific publications and other databases, along with climate data taken from the WorldClim database, the potential establishment of each species was mapped for the EPPO region under current and predicted future climatic conditions.
- During the EWGs, expert opinion on the biology of the species was used to refine the models to be as accurate as possible in predicting the potential occurrence of the species in the region.
- These maps were then used by the experts to assist in defining countries and biogeographical regions at risk both now and in the future.
- Additionally, the maps were considered by the EWG when defining the endangered area of each pest.



Projected suitability for *Hakea sericea* establishment in Europe and the Mediterranean region in (a) current climate and (b) the 2070s under climate change scenario RCP8.5.



## Stage 3: Peer review processes

Each PRA produced within the IAP-Risk project underwent a peer review by independent expert groups where the scientific contents, level of risk, uncertainty and risk management of the species was expertly reviewed.

Following the finalization of the PRA by the expert working group, each document was sent for review under the EPPO review process to:

- (1) the Panel on Invasive Alien Plants,
- (2) EPPO Core Members for the review of PRAs
- (3) the EPPO Working Party for Phytosanitary Regulations

At each stage of review, questions or comments were taken back to the EWG to consider. During each stage of review the PRA was further amended where necessary.

In June 2018, the Working Party for Phytosanitary Regulations approved the PRAs and the conclusions of these PRAs will be presented for approval in September at the EPPO Council. Following this the species will be recommended for Regulation and included in the EPPO A1 or A2 List of pests recommended for regulation as quarantine pests.



### EPPO Panel on Invasive Alien Plants

The EPPO Panel on Invasive Alien Plants currently consists 20 experts from across the EPPO region. The Panel has been actively involved in this project since its start and members of the Panel have been involved in the EWGs for PRA and importantly in reviewing the PRAs. For more details on the Panel of Invasive Alien Plants and its work see: [https://www.eppo.int/INVASIVE\\_PLANTS/ias\\_plants.htm](https://www.eppo.int/INVASIVE_PLANTS/ias_plants.htm)

## Stage 3: Peer review process

### EPPO A1 or A2 List of pests recommended for regulation as quarantine pests

When an invasive alien plant is evaluated through risk analysis as being a serious phytosanitary concern to the EPPO region the species can be recommended for regulation and included on the EPPO A1 or A2 Lists:

- A1 Pests: species which are absent from the EPPO region
- A2 Pests: species which are locally present in the EPPO region

To-date, four of the IAP-RISK species have been recommended for regulation and these include *Cardiospermum grandiflorum*, *Gymnocoronis spilanthoides*, *Pistia stratiotes* and *Salvinia molesta*.

Ten PRAs (*Ambrosia confertiflora*, *Andropogon virginicus*, *Cortaderia jubata*, *Ehrharta calycina*, *Hakea sericea*, *Humulus scandens*, *Lespedeza cuneata*, *Lygodium japonicum*, *Prosopis juliflora* and *Sapium sebiferum*) are being considered by EPPO for a recommendation for regulation in 2018.

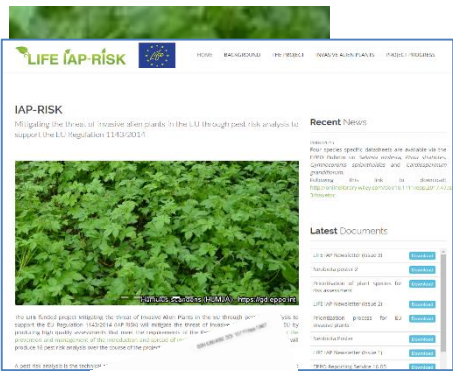
Separate to the EPPO process, each risk assessment is evaluated by the EU Scientific Forum for consideration to be included in the list of species of Union concern. Currently, all 16 species have been or are in the process of being reviewed by this body.



### List of invasive alien species of Union concern

Currently, the list contains 23 plant species and 26 animal species. The species included on the Union list are subject to restrictions and measures set out in the Regulation. These include restrictions on keeping, importing, selling, breeding and growing. Member States are required to take action on pathways of unintentional introduction, take measures for early detection and rapid eradication of these species, and to manage species that are already widely spread in their territory

# Communication actions



## IAP-RISK website

The IAP-RISK website ([www.iap-risk.eu](http://www.iap-risk.eu)) went live shortly after the start of the project. All key documents produced from the project are included on the site for download.

## Datasheets

When each species is recommended for regulation a datasheet is produced on the species which includes important information on the species. The datasheets are an output of the PRA document but present the information in a more reader friendly format. These datasheets can be used by numerous stakeholders and they are freely available via the project website.

## Posters and leaflets

14 posters and 14 leaflets have been produced, one for each of the species assessed as having a high or moderate phytosanitary risk. These information tools are designed to provide key information on the species and can be amended or translated by individuals and institutions to highlight the species and request new sightings. All leaflets and posters are available via the project website.

## Training workshops

IAP-RISK has conducted two training workshops on (1) the prioritization of invasive alien plants and (2) pest risk analysis of invasive alien plants. In total 13 participants attended each training workshop where combined with introductory lectures and practical exercises participants learnt to prioritize and risk assess invasive plant species. In the prioritization workshop participants came prepared with a list of invasive species they wanted to assess for priority for risk assessment. During the second workshop participants divided into three small groups where each group risk assessed one plant species. At the end of each training workshop the participants presented their results to the whole group.



## Overview

Even though IAP-RISK is a preparatory project addressing specific needs for the Regulation 1143/2014, the actions and deliverables produced by the project will continue to be developed and utilised after the project finishes in June 2018. An After LIFE Communication Plan has been prepared to ensure the continuation of some of the actions of the project and is available via the project website.

This After LIFE plan is focused on five main actions: (1) development of documents and tools produced as part of the project, (2) development of PM 9 Standards (3) information dissemination, (4) collaboration between partners and stakeholders and (5) maintenance of the project website.

### (1) Development of documents and tools

Following the completion of the project some key documents will continue to be developed including:

- When recommended for regulation *Ambrosia confertiflora*, *Andropogon virginicus*, *Cortaderia jubata*, *Ehrharta calycina*, *Hakea sericea*, *Humulus scandens*, *Lespedeza cuneata*, *Lygodium japonicum*, *Prosopis juliflora* and *Sapium sebiferum*, detailed datasheets will be published in the EPPO Bulletin in December 2018.
- The 14 species identified as having a moderate or high phytosanitary risk (see table on page 8), will be considered for listing on the List of invasive alien species of Union concern.
- Scientific publications will be produced detailing key aspects of the risk assessments.

### (2) Development of EPPO PM 9 Standards

When a PRA has been produced and the species is recommended for regulation in the EPPO region a PM 9 National regulatory control system Standard for the species may be developed. These Standards provide procedures for official control with the aim of containing and eradicating pests.

Priority species may be selected from: *Andropogon virginicus*, *Cardiospermum grandiflorum*, *Cortaderia jubata*, *Ehrharta calycina*, *Hakea sericea*, *Humulus scandens*, *Lespedeza cuneata*, *Lygodium japonicum*, *Prosopis juliflora* and *Sapium sebiferum*.

### **(3) Information dissemination**

Each of the 16 PRA documents contain detailed information on the biology and ecology of the species. In addition, detailed information is included on the occurrence of the species in the EPPO region, the pathways of entry and spread, the habitats where the species occurs and those at risk in the future, the ecological and economic impact of the species along with detailed modelling of the species under current and future climatic conditions. Following the completion of the LIFE IAP-RISK project, this detailed information will be imported into the EPPO Global Database.

### **(4) Collaboration**

The IAP-RISK project forged a new collaboration between EPPO and CEH and this collaboration will continue following the end of the project. Both CEH and EPPO will continue to explore other collaborative opportunities as and when they arise.

The IAP-RISK partners have continued to explore new networking activities and as an example, EPPO attended the 2018 LIFE Information Day in Brussels in May 2018. Here we explored links with other organisations and the potential of new information – communications projects.

### **(5) Maintenance of project website**

The LIFE IAP-RISK website is key to the dissemination of key information and documents produced by the project. As the PRAs are officially approved, either by EPPO and/or the European Commission (and potentially included on the list of Union concern), the website will be updated to include this information and the PRA documents themselves.



## Contact

European and Mediterranean Plant Protection  
Organization (EPPO/OEPP)  
21 boulevard Richard Lenoir  
75011 PARIS  
FRANCE  
Email: [rt@eppo.int](mailto:rt@eppo.int)

More information is available on the IAP-RISK website:  
<http://www.iap-risk.eu/>

