Express Pest Risk Analysis: *pest name* Linnaeus, 1735

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Stage 1. Initiation

Reason for performing the PRA: *(e.g. interceptions, outbreak)*

PRA area: *specify the PRA area being assessed*

Stage 2. Pest risk assessment

(1) Taxonomy:

e.g. Genus, species/ subspecies, Authority, Family, Order, Kingdom. Include information on strains and populations, etc. if relevant, and synonyms if appropriate. (EPPO, 2018)

Common name:

(2) Pest overview:

- **Summarize the life cycle** *(e.g. length of life cycle, location of different life stages, temperature thresholds, humidity - requirements) and other relevant information (damage should be described in Q 12). If a datasheet is available, this section should only include the basic information. If available place illustrations of the pest and the symptoms caused in Appendix 1.*
- **Host plants** *(for pests)/habitats (for invasive plants) (more detail should be provided in Q 7)*
- **Symptoms**
- **Detection and identification** *(note if a diagnostic protocol is available). State if and how the pest can be trapped.*
- *Detail if a relevant PRA exists. Note that studies such as a management or contingency plans and/or cost-benefit analysis may also provide useful information for performing a PRA, but can usually not be considered as relevant PRAs.*
- *Describe any socio-economic benefits of the species.*

(3) Is the pest a vector?

Yes / No

(4) Is the vector needed for pest entry or spread?

Yes / No

(5) Regulatory status of the pest:

*This report was generated using R (R Core Team, 2018) with knitr and bookdown (Xie, 2016, 2015)

Is the pest already regulated by any NPPO, or recommended for regulation by any RPPO? (Assessors can check this by reference to EPPO PQR, RPPO and IPPC websites in addition to normal search mechanisms).

(6) Distribution:

Continent	**Distributo**	**Provide comments on the pest status in the different countries where it occurs**	**Reference**
Africa	(list countries, or provide a general indication , e.g. present in West Africa)	(e.g. widespread, native, non-native, established)	NA
North America	Canada	Alberta	NA
		Ontario	NA
	Mexico		NA
South America	Brazil	Rio de Janeiro	NA
Asia	Chiny		NA
	Bangladesh		NA
Europe			NA
Oceania			NA

Information on distribution may be retrieved from PQR, CAPRA datasets, CABI maps, etc. Comments on distribution: (e.g. if known, please comment on the area of origin, how the pest has spread and on any evidence of increasing range / frequency of introductions)

(7) Habitats and where they occur in the PRA area:

Detail the main habitat and the EUNIS habitat types under threat and comment on their occurrence and distribution within the PRA area. Detail if the habitats are threatened or protected giving the classification type where appropriate (see the Habitats Directive for further information). Detail if the habitats threatened by the pest are present in the PRA area and the occurrence and distribution of the habitats in the PRA area. Provide supporting references.

Habitat (main)	**EUNIS habitat types**	**Status of habitat (e.g. threatened or protected)**	**Is the pest present in the habitat in the PRA area**	**Comments**	**References**
fill according to instructions	NA	NA	NA	NA	NA

(8) Pathways for entry:

List in order of importance which pathways are possible and how important they are for the probability of entry? Note: pathways for entry are pathways from outside the PRA area into the PRA area. Pathways within the PRA area should be detailed under spread (section 11).

Examples of pathways are:
Plants for planting
Natural spread
Other possible pathways

* packaging material
* hitchhiking
* soil/growing media
* plant waste
* bird seed
* escape from confinement
* conveyance and machinery
* manufactured plant products
* ship ballast water
* leisure equipment
* intentional introduction

Possible pathway	Pathway:
Short description explaining why it is considered as a pathway	???
Is the pathway prohibited in the PRA area?	???
Has the pest already intercepted on the pathway?	???
What is the most likely stage associated with the pathway?	???
What are the important factors for association with the pathway?	???
Is the pest likely to survive transport and storage along this pathway?	???
Can the pest transfer from this pathway to a suitable habitat?	???
Will the volume of movement along the pathway support entry?	???
Will the frequency of movement along the pathway support entry?	???
Rating of the likelihood of entry	Low/Medium/High
Rating of uncertainty	Low/Medium/High

Repeat table for each pathway considered.

(9) Likelihood of establishment in the natural environment in the PRA area:

Consider in particular the presence of host plants/habitats and climatic suitability and describe the area where establishment is most likely (area of potential establishment). Reference to maps such as Köppen-Geiger climate zones, day degrees and hardiness zones or the use of species distribution models may help assess the likelihood of establishment (see e.g. Rating Guidance for climatic suitability).

Consider for example the reproductive mode of the organism and the ability of the organism to adapt to the PRA area (and habitats within). Consider competition from existing species in the PRA area, and/or natural enemies already present?

Rating	Low	Moderate	High
Rating of the likelihood of establishment in the natural environment	X	.	.
Rating of uncertainty	.	X	.

(10) Likelihood of establishment in managed environment in the PRA area:

Factors to consider for pest plants are for instance the regular mowing of road sides, cleaning of water courses, etc. Existing pest management practice should also be considered.

Rating	Low	Moderate	High
Rating of the likelihood of establishment in the managed environment	X	.	.
Rating of uncertainty	.	X	.

(11) Spread in the PRA area:

Natural spread

Human assisted spread

Briefly describe each mode of spread and indicate the rate or distance of spread.

If possible consider how long it would take for the pest to spread widely within the area of potential establishment if no phytosanitary measures are taken. If no specific data are available, compare with similar organisms.

Rating	Low	Moderate	High
Rating of the magnitude of spread in the PRA area	.	.	.
Rating of uncertainty	.	.	.

(12) Impact in the current area of distribution:

I) Impacts on biodiversity

Describe the environmental impacts with respect to biodiversity in the current area of distribution (only negative impacts are considered).

Briefly describe the existing control measures applied against the pest

Rating	Low	Moderate	High
Rating of magnitude of impact on biodiversity in the current area of distirbution	.	.	.
Rating of uncertainty	.	.	.

II) Impact on ecosystem services

Consider the negative impact the pest may have on categories of ecosystem services (examples of ecosystem service under each main category are detailed in the highlighted box). The categories of ecosystem services are based on the Millennium Ecosystem Assessment (2005).

Examples of ecosystem services to consider under each category include:

Provisioning services
- Fresh water
- Genetic resources
- Food production (crop and livestock etc.)
- Commodity production (fibre, timber etc.)

Regulating services
- Soil formation
- Pollination
- Natural hazard regulation (fire, erosion, flooding)
- Water regulation
- Biodiversity
- Decomposition
- Photosynthesis and primary production
- Air quality regulation
- Pest and disease regulation

Supporting services
- Nutrient cycling
- Primary production
- Habitat stability

Cultural services
- Aesthetic experiences
- Cultural heritage
- Tourism
- Recreation (fishing, nature enjoyment etc.)
- Spiritual wellbeing

Ecosystem service	Does the pest impact on this Ecosystem service?	Short description of impact	Reference
Provisioning	Yes/No	NA	NA
Regulating	Yes/No	NA	NA
Supporting	Yes/No	NA	NA
Cultural	Yes/No	NA	NA

Rating	Low	Moderate	High
Rating of magnitude of impact on ecosystem services in the current area of distirbution	.	.	.
Rating of uncertainty	.	.	.

III) Socio-economic impact**

(e.g. evaluate socio-economic impacts relating to control/management costs, costs relating to habitat degradation and agriculture, forestry and fisheries (i.e. reduction in leisure activities, real estate prices, and yields etc.)

Rating	Low	Moderate	High
Rating of magnitude of socio-economic impact in the current area of distirbution	.	.	.
Rating of uncertainty	.	.	.

(13) Potential impact in the PRA area:

Take into considerations answers to questions 8, 9 & 10. Evaluate if potential negative impacts in the PRA area will be similar to that in areas already colonised in the current area of distribution. Consider natural enemies, cultural practices, etc.in the area of potential establishment.

Will impacts be largely the same as in the current area of distribution? *Yes/No*

If the answer to the above is yes describe the reasoning for this under the following subheadings. If no, describe why the impacts will be different and provide a new rating score.

I) Potential impacts on biodiversity in the PRA area

If No,

Rating	Low	Moderate	High
Rating of magnitude of impact on biodiversity in the area of potential establishment	.	.	.
Rating of uncertainty	.	.	.

II) Potential impact on ecosystem services in the PRA area

If No,

Rating	Low	Moderate	High
Rating of magnitude of impact on ecosystem services in the area of potential establishment	.	.	.
Rating of uncertainty	.	.	.

III) Potential socio-economic impact in the PRA area

If No,

Rating	Low	Moderate	High
Rating of magnitude of socio-economic impact in the area of potential establishment	.	.	.
Rating of uncertainty	.	.	.

(14) Identification of the endangered area:

Define the endangered area (see definition in ISPM 5): describe in which part of the area of potential establishment significant impact is expected.

(15) Climate change:

Consider the influence of projected climate change scenarios on the pest.

I) Define which climate projection you are using from 2050 to 2100**

Climate projection:

following the IPCC projections

Reference: IPCC, 2014: Summary for policymakers. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, et al.,(eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1-32. WG2AR5 SPM FINAL

II) Which component of climate change do you think is the most relevant for this organism?

Delete (*yes/no*) as appropriate

Temperature	*Yes/No*	Precipitation	*Yes/No*	CO_2 levels	*Yes/No*
Sea level rise	*Yes/No*	Salinity	*Yes/No*	Nitrogen deposition	*Yes/No*
Acidification	*Yes/No*	Land use change	*Yes/No*	Other	*Yes/No*

III) Consider the influence of projected climate change scenarios on the pest.

Specifically consider the influence of climate change on entry, establishment, spread and impact of the pest in the PRA area.

In particular, consider the following aspects:
Pathways (see point 8)
Establishment
* Day degree requirements
* Climate limitations
* Changes in reproduction/growth
* Inter-specific competition

Spread
* Density dependent dispersal
* Extreme weather events

Impact
* Increased fitness
* Per capita effects

(16) Overall assessment of risk:

Summarize the likelihood of entry, establishment, spread and possible impact without phytosanitary measure. An overall rating should be given in the summary part which is placed at the beginning of the Express PRA. Then consider whether phytosanitary measures are necessary. If the assessment shows that phytosanitary measures are not required for a country but there are indications that other EPPO countries are at higher risk, mention it.

Stage 3. Pest risk menagment.

(17) Phytosanitary measures

I) Describe potential measures for relevant pathways and their expected effectiveness on preventing introduction (entry & establishment) and / or spread.

If possible, specify prospects of eradication or containment in case of an outbreak. Indicate effectiveness and feasibility of the measures

As described in PM 5/3 possible options for phytosanitary measures include
Options at the place of production:
* Detection of the pest at the place of production by inspection or testing
* Prevention of infestation of the commodity at the place of production (treatment, resistant cultivars, growing the crop in specified conditions, harvest at certain times of the year or growth stages, production in a certification scheme)
* Establishment and maintenance of pest freedom of a crop, place of production or area
Options after harvest, at pre-clearance or during transport:
* Detection of the pest in consignments by inspection or testing
* Removal of the pest from the consignment by treatment or other phytosanitary procedures (remove certain parts of the plant or plant product, handling and packing methods, specific conditions or treatments during transport)
Options that can be implemented after entry of consignments:
* Detection during post-entry quarantine
* Consider whether consignments that may be infested be accepted without risk for certain end uses, limited distribution in the PRA area, or limited periods of entry, and can such limitations be applied in practice
Prohibition
Surveillance, eradication, containment

Possible pathways (in order of importance)	**Measures identified**	**Cost effectiveness of measures**

II) Management measures for eradication, containment and control

Detail all available management measures used to eradicate, contain and control the pest. Indicate the effectiveness (including cost- effectiveness) and feasibility of the measures.

(18) Uncertainty:

List and describe the main sources of uncertainty within the risk assessment and risk management. State whether a detailed PRA is needed to reduce key aspects of uncertainty (if so state which parts of the PRA should be focused on). Comment on what work would be needed to address uncertainties (e.g. for distribution the need for surveys, produce epidemiological data…)

(19) Remarks:

Add any other relevant information or recommendations. For example when phytosanitary measures are not considered appropriate, recommendations for the development of other control strategies can be made (e.g. Integrated Pest Management, certification schemes).

Once the analysis has been completed, a summary should be prepared.
(See the summary box at the beginning of the Express PRA.)

(20) Apendix

Provide any additional information,
as well as any relevant and informative pictures here.

Provide references cited above (see Instructions for authors to the EPPO Bulletin).
When referring to websites, include the web address and date accessed.

References

EPPO, 2018. EPPO global database (available online) [WWW Document]. URL https://gd.eppo.int (accessed 9.30.18).

R Core Team, 2018. R: A language and environment for statistical computing. R Foundation for Statistical

Computing, Vienna, Austria.

Xie, Y., 2016. Bookdown: Authoring books and technical documents with R markdown. Chapman; Hall/CRC, Boca Raton, Florida.

Xie, Y., 2015. Dynamic documents with R and knitr, 2nd ed. Chapman; Hall/CRC, Boca Raton, Florida.